# UNLESS OTHERWISE STATED ALL PARAMETERS TAKEN FROM NSW MODEL (OCTOBER 2006 NSW version)

# adapted from NSW version for VMPA model from latest version of vmpa\_biol.txt

# Sept 6

## Biological parameter file for use with the NSW version of the Boxmodel (Atlantis) model

#

## For reference, the following are the codenames for each biological component.

# Those marked with a + also have Si pool too. Those marked special have three pools, a sructural N

# (mg N individual-1), reserve N (mg N individual-1) and numbers (per box)

# Description Symbol Units

# Large phytoplankton PL mg N m-3

# Small phytoplankton (pico) PS mg N m-3

# Dinoflagellates DF mg N m-3

# Seagrass SG mg N m-2

# Macroalgae MA mg N m-2

# Microphytobenthos MB mg N m-3

# Small planktivorous fish FPS special

# Large planktivorous fish FPL special

# Jackass Morwong FPO special

# oceanic planktivores FVD special

# Gemfish FVV special

# Shallow piscivorous fish FVS special

# Ocean Perch FVB special

# Oceanic piscivorous fish FVT special

# School whiting FVO special

# Migratory mesopelagics fish FMM special

# Non-migratory mesopelagics fish FMN special

# Blue Grenadier FBP special

# Deep demersal fish FDD special

# Shallow demersal fish FDS special

# shallow demersal herbivorous FDE special

# Pink Ling FDC special

# Tiger flathead FDB special

# Trevallies FDO special

# Flat deep demersal fish FDF special

# shallow territorial demersal FDP special

# Redfish FDM special

# Demersal sharks SHD special

# Spiky dogshark SHC special

# Dogsharks SHB special

# Pelagic sharks SHP special

# Grey Nurse Shark SHR special

# Skates and rays SSK special

# Seabirds SB special

# Penguins SP special

# Reptiles REP special

# Pinnipeds PIN special

# Sea lions WDG special

# Baleen whales WHB special

# Small toothed whales (dolphins) WHS special

# Toothed whales (orcas) WHT special

# Com migratory prawns PWN mg N m-3

# Squids CEP mg N m-3

# Gelatinous zooplankton ZG mg N m-3

# Large carnivorous zooplankton ZL mg N m-3

# Mesozooplankton ZM mg N m-3

# Small zooplankton ZS mg N m-3

# Pelagic associated bacteria PB mg N m-2

# Sedimentary bacteria BB mg N m-2

# Meiobenthos BO mg N m-2

# Deposit feeders BD mg N m-2

# Benthic infaunal carnivores BC mg N m-2

# Benthic grazers BG mg N m-2

# Comm filter feeders shallow BFS mg N m-2

# Benthic filter feeders deep BFD mg N m-2

# Non comm benthic filter feeders BFF mg N m-2

# Comm macrozoob (crabs octop) BMS mg N m-2

# non commercial macrozoobenthos BMD mg N m-2

# rock lobster BML mg N m-2

# Carrion (detritus) DC mg N m-3

# Labile detritus DL mg N m-3

# Refractory detritus DR mg N m-3

# Dissolved organic nitrogen DON mg N m-3

# Ammonia NH mg N m-3

# Nitrate NO mg N m-3

# Dissolved silica Si mg Si m-3

# Biogenic silica DSi mg Si m-3

# Dissolved oxygen O2 mg O m-3

# Light IRR W m-2

#

#

## Parameter list

# Symbol Value Description Units Default Value

#

## Flags and switches

# Those determining set-up and recording

ecotest 2 Messages: 0=no, 1=part, 2=more, 3=all, 4=fluxs, 5= do 1 iter only 2

availflag 1 Switch to filter flows based on active groups 1

flagrandom 0 Flag indicating whether add random wobble in aging/spawning dates (0=no, 1=yes)

# Parameters defining the numbers of certain types of groups (needed to define parameter arrays in the

# initialisation section of the model, best left untouched for now)

K\_num\_invmig 9 Maximum number of vertically migrating invertebrate groups 9

readin\_popratio 0 Switch to indicate whether loading pre-existing age distributions or not 0

# If fish respiration is off then the fish model is essentially/very similar to a Deriso-Schnute

flagresp 0 Switch to turn fish respiration on/off: off=0, on=1 1

flagavgmig 0 Switch to turn averaging of migrant sizes on/off: off=0, on=1 1

flagkdrop 0 Switch to turn cubic bacterial growth on/off: off=0, on=1 0

flagbactstim 0 Switch to turn stimulation of bacterial growth on/off: off=0, on=1 0

flagBOlim 1 Switch to turn OB population limitation on/off: off=0, on=1 0

flagBDlim 1 Switch to turn BD population limitation on/off: off=0, on=1 0

flagBGlim 1 Switch to turn BG population limitation on/off: off=0, on=1 -1 0

flagBFlim 1 Switch to identify filter feeding crowding used: simple=0, ERSEM=1 0

flagBFSlim 1 Switch to identify filter feeding crowding used: simple=0, ERSEM=1 0

flagBFDlim 1 Switch to identify filter feeding crowding used: simple=0, ERSEM=1 0

flagBFFlim 1 Switch to identify filter feeding crowding used: simple=0, ERSEM=1 0

flagBClim 0

# Those determining which environmental

# interaction formulations used

flagtrackpops 1 Flag to indicate whether yearly stock value required 1

flagseason 1 Flag of seasonal change, 0 for no, 1 yes 1

flaglight 0 Light adaptation: 1 = on, 0 = off 1

flagIsEstuary 0

flaglightopt 3 Light model: 0=orig, 1=bottom, 2=top, 3=mid-depth of cell 3

flagmodeltemp 0 Temperature model used: 1 = regression, 0 = from data 1

flagmodelpH 0

flagmodelArag 0

flagq10 1 Q10 corrections used in the model: 1 = yes, 0 = no 1

O2case 3 Oxygen limitation used: 0 = ambient O2, 1 = based on depth, 2 = IGBEM, 3 = quadratic lim 3

flagnut 0 Nutrient lim used: 0=Leibig (min), 1=multiplicative, 2=WQI 0

flagmicro 0 Nutrient lim by micronutrient: 0 = no, 1 = yes 0

flagtempchange 0 Mean temperature changes: 0 = no, 1 = yes 0

flagsaltchange 0 Mean salinity changes: 0 = no, 1 = yes 0

flagstarve 1 Give starvation notices: 0 = no, 1 = yes 0

flagdegrade 0 Degrade coastal habitats (effects growth of MA, SG and BFS) 0

flagroc 0 Density dependent drop off option: 0 = none, 1 = ratio drop off, 2 = exponential decline 0

flaghomog\_sp 1 Body condition homogenised across the entire area: 0 = no, 1 = yes 0

flagagestruct 1 Age structure option: 0 = homogeneous cohorts, 1 = track cohorts 0

flagsenesce 1 Oldest sub-part of final age group senesces, 1 = yes, 0 = no 0

flagtsforcerecruit 0 Force recruitment of 1+ groups with environmental forcing 0

lim\_sun\_hours 0 Whether using limted hours of sun oer day or the default assumption of half the day is "day"

flag\_macro\_model 0

swr\_scalar 0.45 # Proportion of shortwave radiation available to photosynthesis

flag\_olddiet 1 Whether to use old (1) or new (0) diet calculations 1

UseHardFeedingWindow 1 Whether to use Heaviside based feeding window (1) or smoother curve (0) 1

flag\_fine\_ontogenetic\_diets 0

flag\_report\_water\_detritus 0

# Preferred location trend (whether to weight vertical distributions towards surface or bottom

# layers when in depths where there were less than complete set of depth layers. 0 is top, 1 is demersal (?))

flagdemPL 0 PL: 1 = on, 0 = off 1

flagdemPS 0 PS: 1 = on, 0 = off 1

flagdemDF 0 DF: 1 = on, 0 = off 1

flagdemMA 1 MA: 1 = on, 0 = off 1

flagdemMB 1 MB: 1 = on, 0 = off 1

flagdemSG 1 SG: 1 = on, 0 = off 1

flagdemZG 0 ZG: 1 = on, 0 = off 1

flagdemZL 0 ZL: 1 = on, 0 = off 1

flagdemZM 0 ZM: 1 = on, 0 = off 1

flagdemZS 0 ZS: 1 = on, 0 = off 1

flagdemFPS 0 FPS: 1 = on, 0 = off 1

flagdemFPL 0 FPL: 1 = on, 0 = off 1

flagdemFPO 1 FPO: 1 = on, 0 = off 1

flagdemFVD 0 FVD: 1 = on, 0 = off 1

flagdemFVV 1 FVV: 1 = on, 0 = off 1

flagdemFVS 0 FVS: 1 = on, 0 = off 1

flagdemFVT 0 FVT: 1 = on, 0 = off 1

flagdemFVO 1 FVO: 1 = on, 0 = off 1

flagdemFVB 1 FVB: 1 = on, 0 = off 1

flagdemFMM 0 FMM: 1 = on, 0 = off 1

flagdemFMN 0 FMN: 1 = on, 0 = off 1

flagdemFBP 1 FBP: 1 = on, 0 = off 1

flagdemFDD 1 FDD: 1 = on, 0 = off 1

flagdemFDS 1 FDS: 1 = on, 0 = off 1

flagdemFDB 1 FDB: 1 = on, 0 = off 1

flagdemFDC 1 FDC: 1 = on, 0 = off 1

flagdemFDO 1 FDO: 1 = on, 0 = off 1

flagdemFDE 1 FDE: 1 = on, 0 = off 1

flagdemFDF 0 FDF: 1 = on, 0 = off 1

flagdemFDP 1 FDP: 1 = on, 0 = off 1

flagdemFDM 1 FDM: 1 = on, 0 = off 1

flagdemSHD 1 SHD: 1 = on, 0 = off 1

flagdemSHC 1 SHC: 1 = on, 0 = off 1

flagdemSHP 0 SHP: 1 = on, 0 = off 1

flagdemSHB 1 SHB: 1 = on, 0 = off 1

flagdemSHR 1 SHR: 1 = on, 0 = off 1

flagdemSSK 1 SSK: 1 = on, 0 = off 1

flagdemSB 0 SB: 1 = on, 0 = off 1

flagdemSP 0 SP: 1 = on, 0 = off 1

flagdemREP 1 REP: 1 = on, 0 = off 1

flagdemPIN 0 PIN: 1 = on, 0 = off 1

flagdemWDG 0 WDG: 1 = on, 0 = off 1

flagdemWHB 0 WHB: 1 = on, 0 = off 1

flagdemWHT 0 WHT: 1 = on, 0 = off 1

flagdemWHS 0 WHS: 1 = on, 0 = off 1

flagdemPB 0 PB: 1 = on, 0 = off 1

flagdemBB 1 BB: 1 = on, 0 = off 1

flagdemBO 1 BO: 1 = on, 0 = off 1

flagdemBD 1 BD: 1 = on, 0 = off 1

flagdemBC 1 BC: 1 = on, 0 = off 1

flagdemBFS 1 BFS: 1 = on, 0 = off 1

flagdemBFD 1 BFD: 1 = on, 0 = off 1

flagdemBFF 1 BFF: 1 = on, 0 = off 1

flagdemBG 1 BG: 1 = on, 0 = off 1

flagdemBMS 1 BMS: 1 = on, 0 = off 1

flagdemBMD 1 BMD: 1 = on, 0 = off 1

flagdemBML 1 BML: 1 = on, 0 = off 1

flagdemCEP 0 CEP: 1 = on, 0 = off 1

flagdemjCEP 0 jCEP: 1 = on, 0 = off 1

flagdemPWN 1 PWN: 1 = on, 0 = off 1

flagdemjPWN 1 jPWN: 1 = on, 0 = off 1

# Flag indicating whether or not the vertebrate is a planktivore

flagplankfishFPS 1 FPS: 1 = yes, 0 = no 1

flagplankfishFPL 1 FPL: 1 = yes, 0 = no 1

flagplankfishFPO 0 FPO: 1 = yes, 0 = no 1

flagplankfishFVD 1 FVD: 1 = yes, 0 = no 1

flagplankfishFVV 0 FVV: 1 = yes, 0 = no 1

flagplankfishFVS 0 FVS: 1 = yes, 0 = no 1

flagplankfishFVT 0 FVT: 1 = yes, 0 = no 1

flagplankfishFVO 1 FVO: 1 = yes, 0 = no 1

flagplankfishFVB 0 FVB: 1 = yes, 0 = no 1

flagplankfishFMM 1 FMM: 1 = yes, 0 = no 1

flagplankfishFMN 1 FMN: 1 = yes, 0 = no 1

flagplankfishFBP 0 FBP: 1 = yes, 0 = no 1

flagplankfishFDD 0 FDD: 1 = yes, 0 = no 1

flagplankfishFDS 0 FDS: 1 = yes, 0 = no 1

flagplankfishFDB 0 FDB: 1 = yes, 0 = no 1

flagplankfishFDC 0 FDC: 1 = yes, 0 = no 1

flagplankfishFDO 0 FDO: 1 = yes, 0 = no 1

flagplankfishFDE 0 FDE: 1 = yes, 0 = no 1

flagplankfishFDF 0 FDF: 1 = yes, 0 = no 1

flagplankfishFDP 1 FDP: 1 = yes, 0 = no 1

flagplankfishFDM 0 FDM: 1 = yes, 0 = no 1

flagplankfishSHD 0 SHD: 1 = yes, 0 = no 1

flagplankfishSHC 0 SHC: 1 = yes, 0 = no 1

flagplankfishSHP 0 SHP: 1 = yes, 0 = no 1

flagplankfishSHB 0 SHB: 1 = yes, 0 = no 1

flagplankfishSHR 0 SHR: 1 = yes, 0 = no 1

flagplankfishSSK 0 SSK: 1 = yes, 0 = no 1

flagplankfishSB 0 SB: 1 = yes, 0 = no 1

flagplankfishSP 0 SP: 1 = yes, 0 = no 1

flagplankfishREP 0 REP: 1 = yes, 0 = no 1

flagplankfishPIN 0 PIN: 1 = yes, 0 = no 1

flagplankfishWDG 0 WDG: 1 = yes, 0 = no 1

flagplankfishWHB 1 WHB: 1 = yes, 0 = no 1

flagplankfishWHT 0 WHT: 1 = yes, 0 = no 1

flagplankfishWHS 0 WHS: 1 = yes, 0 = no 1

# Recruitment flags

flagtrecruitdistrib 1 0=humped recruit arrival distrib, 1=flat distrib of recruits 1

# Vertebrate reproduction related flags. The flagrecruit entries refer to the recruitment function used.

# 1=const, 2=dependent on prim producers (Chla), 3=Beverton-Holt, 4=lognormal, 5=dependent on all plankton

# groups not just Chla, 6=Bev-Holt with lognormal variation added, 7=Bev-Holt with encourage recovery

# 8=Bev-Holt with perscribed recovery, 9=Ricker, 10=Standard Bev-Holt (no explict use of spawn included)

# 11=pupping/calving linearly dependent on maternal condition, 12=pupping/calving a fixed number per adult

# spawning, 13=forced timeseries of recruitment

flagrecruitCEP 1 3

flagseperateCEP 0 CEP, CEPj are: 1 = seperate groups (or single pool), 0 = age structured single group

flagrecruitPWN 1 3

flagseperatePWN 0 PWN, PWNj are: 1 = seperate groups (or single pool), 0 = age structured single group

flagrecruitFPS 3 3

flagrecruitFPO 3 3

flagrecruitFPL 3 3

flagrecruitFVD 3 3

flagrecruitFVV 3 3

flagrecruitFVS 3 3

flagrecruitFVT 1 3

flagrecruitFVO 3 3

flagrecruitFVB 3 3

flagrecruitFMM 3 3

flagrecruitFMN 3 3

flagrecruitFBP 3 3

flagrecruitFDD 3 3

flagrecruitFDS 3 3

flagrecruitFDB 3 3

flagrecruitFDC 3 3

flagrecruitFDO 3 3

flagrecruitFDF 3 3

flagrecruitFDE 3 3

flagrecruitFDP 3 3

flagrecruitFDM 3 3

flagrecruitSHD 12 3

flagrecruitSHC 12 3

flagrecruitSHP 12 3

flagrecruitSHB 12 3

flagrecruitSHR 12 3

flagrecruitSSK 12 3

flagrecruitSB 12 3

flagrecruitSP 3 3

flagrecruitREP 3 3

flagrecruitPIN 12 3

flagrecruitWDG 3 3

flagrecruitWHB 12 3

flagrecruitWHT 12 3

flagrecruitWHS 12 3

# External reproduction - spawn is based on adult population within model domain, but actual reproduction

# occurs outside model domain (0 = no, 1 = yes)

flagext\_reprodFPS 0 0

flagext\_reprodFPL 0 0

flagext\_reprodFPO 0 0

flagext\_reprodFVD 0 0

flagext\_reprodFVV 0 0

flagext\_reprodFVS 0 0

flagext\_reprodFVT 0 0

flagext\_reprodFVO 0 0

flagext\_reprodFVB 0 0

flagext\_reprodFMM 0 0

flagext\_reprodFMN 0 0

flagext\_reprodFBP 0 0

flagext\_reprodFDD 0 0

flagext\_reprodFDS 0 0

flagext\_reprodFDB 0 0

flagext\_reprodFDC 0 0

flagext\_reprodFDO 0 0

flagext\_reprodFDF 0 0

flagext\_reprodFDE 0 0

flagext\_reprodFDP 0 0

flagext\_reprodFDM 0 0

flagext\_reprodSHD 0 0

flagext\_reprodSHC 0 0

flagext\_reprodSHP 0 0

flagext\_reprodSHB 0 0

flagext\_reprodSHR 0 0

flagext\_reprodSSK 0 0

flagext\_reprodSB 0 0

flagext\_reprodSP 0 0

flagext\_reprodREP 0 0

flagext\_reprodPIN 0 0

flagext\_reprodWDG 0 0

flagext\_reprodWHB 0 0

flagext\_reprodWHT 0 0

flagext\_reprodWHS 0 0

flagext\_reprodCEP 0 0

flagext\_reprodPWN 0 0

# Vertebrate reproduction strength flags (1=very strong year classes possible, relative strength

# set using recruitRange and 0=only moderate variation in year class strength possible, mainly

# for top predators with few young per reproductive event, relative strength set using recruitRangeFlat)

flagrecpeakFPS 1 1

flagrecpeakFPO 1 1

flagrecpeakFPL 1 1

flagrecpeakFVD 1 1

flagrecpeakFVV 1 1

flagrecpeakFVS 1 1

flagrecpeakFVT 1 1

flagrecpeakFVO 1 1

flagrecpeakFVB 1 1

flagrecpeakFMM 1 1

flagrecpeakFMN 1 1

flagrecpeakFBP 1 1

flagrecpeakFDD 1 1

flagrecpeakFDS 1 1

flagrecpeakFDB 1 1

flagrecpeakFDC 1 1

flagrecpeakFDO 1 1

flagrecpeakFDF 1 1

flagrecpeakFDE 1 1

flagrecpeakFDP 1 1

flagrecpeakFDM 1 1

flagrecpeakSHD 0 1

flagrecpeakSHC 0 1

flagrecpeakSHP 0 1

flagrecpeakSHB 0 1

flagrecpeakSHR 0 1

flagrecpeakSSK 0 1

flagrecpeakSB 0 1

flagrecpeakSP 1 1

flagrecpeakREP 0 1

flagrecpeakPIN 0 1

flagrecpeakWDG 0 1

flagrecpeakWHB 0 1

flagrecpeakWHT 0 1

flagrecpeakWHS 0 1

# Local recruitment (1 = demersal and piscivorous fish recruit at parental locations, 0 = independent distribution)

flaglocalrecruitFPS 0 0

flaglocalrecruitFPL 0 0

flaglocalrecruitFPO 0 0

flaglocalrecruitFVD 0 0

flaglocalrecruitFVV 0 0

flaglocalrecruitFVS 0 0

flaglocalrecruitFVT 0 0

flaglocalrecruitFVO 0 0

flaglocalrecruitFVB 0 0

flaglocalrecruitFMM 0 0

flaglocalrecruitFMN 0 0

flaglocalrecruitFBP 0 0

flaglocalrecruitFDD 0 0

flaglocalrecruitFDS 0 0

flaglocalrecruitFDB 0 0

flaglocalrecruitFDC 0 0

flaglocalrecruitFDO 0 0

flaglocalrecruitFDF 0 0

flaglocalrecruitFDE 0 0

flaglocalrecruitFDP 1 0

flaglocalrecruitFDM 0 0

flaglocalrecruitSHD 1 0

flaglocalrecruitSHC 1 0

flaglocalrecruitSHP 1 0

flaglocalrecruitSHB 1 1

flaglocalrecruitSHR 1 0

flaglocalrecruitSSK 1 0

flaglocalrecruitSB 1 1

flaglocalrecruitSP 0 1

flaglocalrecruitREP 0 0

flaglocalrecruitPIN 1 1

flaglocalrecruitWDG 1 1

flaglocalrecruitWHB 1 1

flaglocalrecruitWHT 1 1

flaglocalrecruitWHS 1 1

flaglocalrecruitCEP 1 1

# Flag indicating whether the vertebrate group bearslive young (0 = no, 1 = yes)

flagbearliveFPS 0 0

flagbearliveFPL 0 0

flagbearliveFPO 0 0

flagbearliveFVD 0 0

flagbearliveFVV 0 0

flagbearliveFVS 0 0

flagbearliveFVT 0 1

flagbearliveFVO 0 0

flagbearliveFVB 0 0

flagbearliveFMM 0 0

flagbearliveFMN 0 0

flagbearliveFBP 0 0

flagbearliveFDD 0 0

flagbearliveFDS 0 0

flagbearliveFDB 0 0

flagbearliveFDC 0 0

flagbearliveFDO 0 0

flagbearliveFDF 0 0

flagbearliveFDE 0 0

flagbearliveFDP 1 0

flagbearliveFDM 0 0

flagbearliveSHD 1 0

flagbearliveSHC 1 0

flagbearliveSHP 1 1

flagbearliveSHB 1 0

flagbearliveSHR 1 1

flagbearliveSSK 0 0

flagbearliveSB 0 0

flagbearliveSP 0 0

flagbearliveREP 0 0

flagbearlivePIN 1 1

flagbearliveWDG 1 1

flagbearliveWHB 1 1

flagbearliveWHT 1 1

flagbearliveWHS 1 1

# Flag indicating whether the vertebrate group provides parental care for young until maturity

# (0 = no, 1 = yes, -1 = semelparous so die after reproduction)

flagmotherFPS 0 0

flagmotherFPL 0 0

flagmotherFPO 0 0

flagmotherFVD 0 0

flagmotherFVV 0 0

flagmotherFVS 0 0

flagmotherFVT 0 1

flagmotherFVO 0 0

flagmotherFVB 0 0

flagmotherFMM 0 0

flagmotherFMN 0 0

flagmotherFBP 0 0

flagmotherFDD 0 0

flagmotherFDS 0 0

flagmotherFDB 0 0

flagmotherFDC 0 0

flagmotherFDO 0 0

flagmotherFDF 0 0

flagmotherFDE 0 0

flagmotherFDM 0 0

flagmotherFDP 0 0

flagmotherSHD 0 0

flagmotherSHC 0 0

flagmotherSHP 0 0

flagmotherSHB 0 0

flagmotherSHR 1 0

flagmotherSSK 0 0

flagmotherSB 0 1

flagmotherSP 0 0

flagmotherREP 0 0

flagmotherPIN 0 0

flagmotherWDG 1 0

flagmotherWHB 1 0

flagmotherWHT 1 0

flagmotherWHS 1 0

# Flag indicating whether feed during the spawning period (0 = no, 1 = yes)

feed\_while\_spawnFPS 1 0

feed\_while\_spawnFPL 1 0

feed\_while\_spawnFPO 1 0

feed\_while\_spawnFVD 1 0

feed\_while\_spawnFVV 1 0

feed\_while\_spawnFVS 1 0

feed\_while\_spawnFVT 1 0

feed\_while\_spawnFVO 1 0

feed\_while\_spawnFVB 1 0

feed\_while\_spawnFMM 1 0

feed\_while\_spawnFMN 1 0

feed\_while\_spawnFBP 1 0

feed\_while\_spawnFDD 1 0

feed\_while\_spawnFDS 1 0

feed\_while\_spawnFDB 1 0

feed\_while\_spawnFDC 1 0

feed\_while\_spawnFDO 1 0

feed\_while\_spawnFDF 1 0

feed\_while\_spawnFDE 1 0

feed\_while\_spawnFDP 1 0

feed\_while\_spawnFDM 1 0

feed\_while\_spawnSHD 1 0

feed\_while\_spawnSHC 1 0

feed\_while\_spawnSHP 1 0

feed\_while\_spawnSHB 1 0

feed\_while\_spawnSHR 1 0

feed\_while\_spawnSSK 1 0

feed\_while\_spawnSB 1 0

feed\_while\_spawnSP 1 0

feed\_while\_spawnREP 1 0

feed\_while\_spawnPIN 1 0

feed\_while\_spawnWDG 1 0

feed\_while\_spawnWHB 1 0

feed\_while\_spawnWHT 1 0

feed\_while\_spawnWHS 1 0

feed\_while\_spawnCEP 1 0

feed\_while\_spawnPWN 1 0

# Switch indicating whether or not efficiency of assimilation is temperature dependent

# 0 = no (same efficiency regardless), 1 = poorer when cooler, 2 = poorer when warmer

flagq10effFPS 0 1

flagq10effFPL 0 1

flagq10effFPO 0 1

flagq10effFVD 0 1

flagq10effFVV 0 1

flagq10effFVS 0 1

flagq10effFVT 0 1

flagq10effFVO 0 1

flagq10effFVB 0 1

flagq10effFMM 0 1

flagq10effFMN 0 1

flagq10effFBP 0 1

flagq10effFDD 0 1

flagq10effFDS 0 1

flagq10effFDB 0 1

flagq10effFDC 0 1

flagq10effFDO 0 1

flagq10effFDF 0 1

flagq10effFDE 0 1

flagq10effFDM 0 1

flagq10effFDP 0 1

flagq10effSHD 0 1

flagq10effSHC 0 1

flagq10effSHP 0 1

flagq10effSHB 0 1

flagq10effSHR 0 1

flagq10effSSK 0 1

flagq10effSB 0 1

flagq10effSP 0 1

flagq10effREP 0 1

flagq10effPIN 0 1

flagq10effWDG 0 1

flagq10effWHB 0 1

flagq10effWHT 0 1

flagq10effWHS 0 1

# Temperature sensitivty of vertebrates and CEP, PWN: 0 = no, 1 = yes

flagtempsensitiveFPS 0 0

flagtempsensitiveFPL 0 0

flagtempsensitiveFPO 0 0

flagtempsensitiveFVD 0 0

flagtempsensitiveFVV 0 0

flagtempsensitiveFVS 0 0

flagtempsensitiveFVT 0 0

flagtempsensitiveFVO 0 0

flagtempsensitiveFVB 0 0

flagtempsensitiveFMM 0 0

flagtempsensitiveFMN 0 0

flagtempsensitiveFBP 0 0

flagtempsensitiveFDD 0 0

flagtempsensitiveFDS 0 0

flagtempsensitiveFDB 0 0

flagtempsensitiveFDC 0 0

flagtempsensitiveFDO 0 0

flagtempsensitiveFDF 0 0

flagtempsensitiveFDE 0 0

flagtempsensitiveFDM 0 0

flagtempsensitiveFDP 0 0

flagtempsensitiveSHD 0 0

flagtempsensitiveSHC 0 0

flagtempsensitiveSHP 0 0

flagtempsensitiveSHB 0 0

flagtempsensitiveSHR 0 0

flagtempsensitiveSSK 0 0

flagtempsensitiveSB 0 0

flagtempsensitiveSP 0 0

flagtempsensitiveREP 0 0

flagtempsensitivePIN 0 0

flagtempsensitiveWDG 0 0

flagtempsensitiveWHB 0 0

flagtempsensitiveWHS 0 0

flagtempsensitiveWHT 0 0

flagtempsensitiveCEP 0 0

flagtempsensitivePWN 0 0

## Habitat dependency

flag\_rel\_cover 0 to show ehther using cumulative habitat (0) or average relative cover (1) when interacting with predators

# 1st one just to know if it is necessary to read the whole list of dependency par

flaghabdepend 0 general vertebrate demersal habitat dependency: 0 = no, 1 = yes 0

FPS\_habdepend 0 small planktivores dependent on demersal habitat: 0 = no, 1 = yes 0

FPL\_habdepend 0 large planktivores dependent on demersal habitat: 0 = no, 1 = yes 0

FPO\_habdepend 0 other planktivores dependent on demersal habitat: 0 = no, 1 = yes 0

FVD\_habdepend 0 deep piscivorous fish depend. on demersal habitat: 0 = no, 1 = yes 0

FVV\_habdepend 0 vulnerable pisciv fish depend on demersal habitat: 0 = no, 1 = yes 0

FVS\_habdepend 0 shallow pisciv. fish dependent on demersal habitat: 0 = no, 1 = yes 0

FVT\_habdepend 0 tropical pisciv. fish depend. on demersal habitat: 0 = no, 1 = yes 0

FVO\_habdepend 0 other tuna dependent on demersal habitat: 0 = no, 1 = yes 0

FVB\_habdepend 0 other piscivorous dependent on demersal habitat: 0 = no, 1 = yes 0

FMM\_habdepend 0 migratory mesopelag. depend. on demersal habitat: 0 = no, 1 = yes 0

FMN\_habdepend 0 non-mig. mesopelag. depend. on demersal habitat: 0 = no, 1 = yes 0

FBP\_habdepend 0 benthopelagic dependent on demersal habitat: 0 = no, 1 = yes 0

FDD\_habdepend 0 deep demersal fish dependent on demersal habitat: 0 = no, 1 = yes 0

FDS\_habdepend 0 shallow demersal fish depend. on demersal habitat: 0 = no, 1 = yes 0

FDB\_habdepend 0 other shallow dem. dependent on demersal habitat: 0 = no, 1 = yes 0

FDC\_habdepend 0 other deep demersal dependent on demersal habitat: 0 = no, 1 = yes 0

FDO\_habdepend 0 longlived demersal dependent on demersal habitat: 0 = no, 1 = yes 0

FDE\_habdepend 0 herbivorous demersal dependent on demersal habitat: 0 = no, 1 = yes 0

FDF\_habdepend 0 flat deep demersal dependent on demersal habitat: 0 = no, 1 = yes 0

FDM\_habdepend 0 miscell. demersal dependent on demersal habitat: 0 = no, 1 = yes 0

FDP\_habdepend 0 protected demersal dependent on demersal habitat: 0 = no, 1 = yes 0

SHD\_habdepend 0 demersal sharks dependent on demersal habitat: 0 = no, 1 = yes 0

SHC\_habdepend 0 dogfish dependent on demersal habitat: 0 = no, 1 = yes 0

SHP\_habdepend 0 pelagic sharks dependent on demersal habitat: 0 = no, 1 = yes 0

SHB\_habdepend 0 other shark dependent on demersal habitat: 0 = no, 1 = yes 0

SHR\_habdepend 0 reef shark dependent on demersal habitat: 0 = no, 1 = yes 0

SSK\_habdepend 0 skates and rays dependent on demersal habitat: 0 = no, 1 = yes 0

SB\_habdepend 0 seabirds dependent on demersal habitat: 0 = no, 1 = yes 0

SP\_habdepend 0 penguins dependent on demersal habitat: 0 = no, 1 = yes 0

PIN\_habdepend 0 pinnipeds dependent on demersal habitat: 0 = no, 1 = yes 0

REP\_habdepend 0 reptiles dependent on demersal habitat: 0 = no, 1 = yes 0

WDG\_habdepend 0 dugongs dependent on demersal habitat: 0 = no, 1 = yes 0

WHB\_habdepend 0 baleen whales dependent on demersal habitat: 0 = no, 1 = yes 0

WHS\_habdepend 0 small toothed whales dependent on demersal habitat: 0 = no, 1 = yes 0

WHT\_habdepend 0 toothed whales dependent on demersal habitat: 0 = no, 1 = yes 0

# Vertebrate density dependent movement related flags

flagtempdepend 0 0 = off, 1 = temperature preferences used

flagsaltdepend 0 0 = off, 1 = salinity preferences used

flagO2depend 0 0 = off, 1 = oxygen preferences used

FPS\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FPL\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FPO\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FVD\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FVV\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FVS\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FVT\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FVO\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FVB\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FMM\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FMN\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FBP\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FDD\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FDS\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FDB\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FDC\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FDO\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FDE\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FDF\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FDM\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

FDP\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

SHD\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

SHC\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

SHP\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

SHB\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

SHR\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

SSK\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

SB\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

SP\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

PIN\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

REP\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

WDG\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

WHB\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

WHS\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

WHT\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 0

CEP\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky, 4 = no explicit movement 4

PWN\_ddepend\_move 0 0 = off, 1 = sedentary, 2 = on, 3 = sticky 4 = no explicit movement 4

BML\_ddepend\_move 4 0 = off, 1 = sedentary, 2 = on, 3 = sticky 4 = no explicit movement 4

ZL\_ddepend\_move 4 0 = off, 1 = sedentary, 2 = on, 3 = sticky 4 = no explicit movement 4

# Identifier indicating whether vertebrate group seeks channels during low tide - in tidal models

flagchannelFPS 0 0

flagchannelFPL 0 0

flagchannelFPO 0 0

flagchannelFVD 0 0

flagchannelFVV 0 0

flagchannelFVS 0 0

flagchannelFVT 0 0

flagchannelFVO 0 0

flagchannelFVB 0 0

flagchannelFMM 0 0

flagchannelFMN 0 0

flagchannelFBP 0 0

flagchannelFDD 0 0

flagchannelFDS 0 0

flagchannelFDB 0 0

flagchannelFDC 0 0

flagchannelFDO 0 0

flagchannelFDE 0 0

flagchannelFDF 0 0

flagchannelFDP 0 0

flagchannelFDM 0 0

flagchannelSHD 0 0

flagchannelSHC 0 0

flagchannelSHP 0 0

flagchannelSHB 0 0

flagchannelSHR 0 0

flagchannelSSK 0 0

flagchannelSB 0 0

flagchannelSP 0 0

flagchannelREP 0 0

flagchannelPIN 0 0

flagchannelWDG 0 0

flagchannelWHB 0 0

flagchannelWHT 0 0

flagchannelWHS 0 0

# Flags for invertebrate migration out of model domain (enter juveniles and adults

# separately for CEP and PWN - as may be separate groups, rather than age groups)

flagZLMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagBMLMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagjCEPMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagCEPMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagjPWNMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagPWNMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

# Flags for migration out of model domain (maximum number of times juvenile OR

# adult stages must leave the model domain). For example if juvenile FVT leave once,

# but adults leave 3 times then enter 3 here

flagFPSMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFPLMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFPOMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFVDMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFVVMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFVSMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFVTMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFVOMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFVBMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFMMMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFMNMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFBPMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFDDMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFDSMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFDBMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFDCMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFDOMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFDEMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFDFMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFDMMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagFDPMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagSHDMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagSHCMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagSHPMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagSHBMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagSHRMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagSSKMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagSBMigrate 1 0=always remain within the model domain, 1+=migrate in/out of the model

flagSPMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagREPMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagPINMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagWDGMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagWHBMigrate 1 0=always remain within the model domain, 1+=migrate in/out of the model

flagWHSMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

flagWHTMigrate 0 0=always remain within the model domain, 1+=migrate in/out of the model

# Predation formulation switches. 0=Holling type II, 1=Holling type I, 2=Holling type III,

# 3=ECOSIM (currently disabled), 4=min-max, 5=Size specific Holling type III

predcase\_DF 0

predcase\_ZG 0 0

predcase\_ZL 0 0

predcase\_ZM 0 0

predcase\_ZS 0 0

predcase\_CEP 0 0

predcase\_PWN 0 0

predcase\_BO 0 0

predcase\_BD 0 0

predcase\_BC 0 0

predcase\_BFS 0 0

predcase\_BFD 0 0

predcase\_BFF 0 0

predcase\_BMS 0 0

predcase\_BML 0 0

predcase\_BMD 0 0

predcase\_BG 0 0

predcase\_FPS 0 0

predcase\_FPL 0 0

predcase\_FPO 0 0

predcase\_FVD 0 0

predcase\_FVV 0 0

predcase\_FVS 0 0

predcase\_FVT 0 0

predcase\_FVO 0 0

predcase\_FVB 0 0

predcase\_FMM 0 0

predcase\_FMN 0 0

predcase\_FBP 0 0

predcase\_FDD 0 0

predcase\_FDS 0 0

predcase\_FDB 0 0

predcase\_FDC 0 0

predcase\_FDO 0 0

predcase\_FDE 0 0

predcase\_FDF 0 0

predcase\_FDM 0 0

predcase\_FDP 0 0

predcase\_SHD 0 0

predcase\_SHC 0 0

predcase\_SHP 0 0

predcase\_SHB 0 0

predcase\_SHR 0 0

predcase\_SSK 0 0

predcase\_SB 0 0

predcase\_SP 0 0

predcase\_PIN 0 0

predcase\_REP 0 0

predcase\_WDG 0 0

predcase\_WHB 0 0

predcase\_WHS 0 0

predcase\_WHT 0 0

# Period of activity for consumer groups

flagZGday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagZLday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagZMday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagZSday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagFPSday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFPLday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFPOday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFVDday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagFVVday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFVSday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFVTday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFVOday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFVBday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFMMday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagFMNday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFBPday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFDDday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagFDSday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagFDBday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFDCday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFDOday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagFDEday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagFDFday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagFDMday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagFDPday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagSHDday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagSHCday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagSHPday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagSHBday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagSHRday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagSSKday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagSBday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagSPday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagPINday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagREPday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagWDGday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagWHBday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagWHSday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagWHTday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagPBday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagBBday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagBOday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagBDday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagBCday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagBFSday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagBFFday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagBFDday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagBGday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagBMSday 1 Active: 2 = no preference, 1 = day, 0 = night 2

flagBMLday 2 Active: 2 = no preference, 1 = day, 0 = night 2

flagBMDday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagCEPday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagjCEPday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagPWNday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagjPWNday 0 Active: 2 = no preference, 1 = day, 0 = night 2

flagDFday 0

## Physical and chemical parameters

# Bioturbation

Enviro\_turb 0.000002 Background level of bioturbation (physcial mixing) 0.000002

K\_TUR 116 Half saturation of bioturbation 116

KTUR\_BC 0.5 Bioturbation contribution by infaunal carnivores 0.5

KTUR\_BD 1 Bioturbation contribution by deposit feeders 1

KTUR\_BMS 0.5 Bioturbation contribution by shallow macrozoobenthos 0.5

KTUR\_BML 0.5 Bioturbation contribution by megazoobenthos 0.5

KTUR\_BMD 0.5 Bioturbation contribution by deep macrozoobenthos 0.5

KTUR\_BG 0.5 Bioturbation contribution by benthic grazers 0.5

K\_TUR\_DEP 0.02 Bioturbation depth m 0.02

K\_MAX\_TUR 10 Maximum contributions to bioturbation 10

# Bioirrigation

K\_IRR 101 Half saturation of bioirrigation 101

KIRR\_BC 1 Bioirrigation contribution by infaunal carniv 1

KIRR\_BD 1 Bioirrigation contribution by deposit feeders 1

KIRR\_BO 0.2 Bioirrigation contribution by meiobenthos 0.2

K\_MAX\_IRR 10 Maximum contributions to bioirrigation 10

K\_MIN\_IRR 2 Minimum contributions to bioirrigation 2

# Detrital breakdown (DL and DR breakdown not used if bacteria groups are on)

r\_DC\_T15 0.5 Rate of carrion breakdown to detritus at 15 deg C d-1 0.5

r\_DL\_T15 0.1 Rate of labile detrital breakdown at 15 deg C d-1 0.1

r\_DR\_T15 0.008 Rate of ref detrital breakdown at 15 deg C d-1 0.008

r\_DON\_T15 0.00176 Rate of DON breakdown at 15 deg C d-1 0.00176

r\_DSi\_T15 0.033 Rate of detrital Si breakdown at 15 deg C d-1 0.05 -0.04

FDR\_DC 0.2 Fraction of carrion that breaks down to refractory detrit 0.1

FDR\_DL 0.2 Fraction of lab detrit that breaks down to refractory detrit 0.2

FDON\_D 0.05 Fraction od DON breakdown that becomes detritus 0.05

# Nitrification and denitrification

R\_0\_T15 200 Minimum rate of sediment respiration that supports nitrification 200 - 250

R\_D\_T15 10 Peak of nitrification-denitrification curve 10 - 20

Dmax 0.25 Maximum rate of denitrification 0.25

K\_nit\_T15 0.01 Rate of nitrification by free bacteria 0.01

K\_conc 2000 Half concentration level for nitrification by PFB mg N m-3 2000

# Adsorption

p\_NH\_anad 3 Proportion of NH4 adsorped to NH4 dissolved 3

# Redfield

X\_ON 16 Redfield ratio of O:N 16

X\_CN 5.7 Redfield ratio of C:N 5.7

X\_CHLN 7 Ratio of chla to N 7

X\_SiN 3 Redfield ratio of Si:N 3

X\_FeN 30000 Redfield ratio of Fe:N 30000

#AFDW to wet weight

k\_wetdry 20 Ratio of Wet weight to AFDW 20

# Light penetration through the water column

k\_w\_depth 55 Bottom depth marking estuarine vs oceanic water (for light absorp) m 55

k\_w\_cdepth 205 Bottom depth marking coastal from oceanic water (for light absorp) m 205

k\_w\_deep 0.014 Coefficient of background light absorption due to oceanic water 0.005 - 0.016

k\_w\_shallow 0.03 Coefficient of background light absorption due to coastal water 0.016 - 0.078

k\_PN 0.0035 Coefficient of light absorption due to particulate matter 0.0035

k\_DON 0.0009 Coefficient of light absorption due to DON 0.0009

k\_DL 0.0038 Coefficient of light absorption due to labile detritus 0.0038

k\_IS 0.05 Basic coefficient of light absorption 0.05

k\_SED 0.05 Coefficient of light absoption due to sediment. Only used if flagIsEstuary is on.\*

KIOP\_min 4 Minimum level of light adaptation 4

KIOP\_shift 0.25 Minimum rate of shift under light adaptation 0.25

KI\_avail 0.5 Available light 0.5

K\_addepth 10 Depth down to which adaptation occurs 10

## Temperature effects

Q10 2.0 Exponent in temperature effect on rate parameters 2.0

temp\_coefftB 1.066 Coefficient B in Gary Griffith temperature function 1.066

temp\_coefftC 0.5 Coefficient C in Gary Griffith temperature function 1.0

temp\_exp 1.0 Exponent in Gary Griffith temperature function 3.0

# temp\_coefftA is a Coefficient A in Gary Griffith temperature function originally 0.851 overall

temp\_coefftA\_PL 0.851

temp\_coefftA\_PS 0.851

temp\_coefftA\_DF 0.851

temp\_coefftA\_MA 0.851

temp\_coefftA\_MB 0.851

temp\_coefftA\_SG 0.851

temp\_coefftA\_ZG 0.851

temp\_coefftA\_ZL 0.851

temp\_coefftA\_ZM 0.851

temp\_coefftA\_ZS 0.851

temp\_coefftA\_FPS 0.851

temp\_coefftA\_FPL 0.851

temp\_coefftA\_FPO 0.851

temp\_coefftA\_FVD 0.851

temp\_coefftA\_FVV 0.851

temp\_coefftA\_FVS 0.851

temp\_coefftA\_FVT 0.851

temp\_coefftA\_FVO 0.851

temp\_coefftA\_FVB 0.851

temp\_coefftA\_FMM 0.851

temp\_coefftA\_FMN 0.851

temp\_coefftA\_FBP 0.851

temp\_coefftA\_FDD 0.851

temp\_coefftA\_FDS 0.851

temp\_coefftA\_FDB 0.851

temp\_coefftA\_FDC 0.851

temp\_coefftA\_FDO 0.851

temp\_coefftA\_FDE 0.851

temp\_coefftA\_FDF 0.851

temp\_coefftA\_FDP 0.851

temp\_coefftA\_FDM 0.851

temp\_coefftA\_SHD 0.851

temp\_coefftA\_SHC 0.851

temp\_coefftA\_SHP 0.851

temp\_coefftA\_SHB 0.851

temp\_coefftA\_SHR 0.851

temp\_coefftA\_SSK 0.851

temp\_coefftA\_SB 0.851

temp\_coefftA\_SP 0.851

temp\_coefftA\_REP 0.851

temp\_coefftA\_PIN 0.851

temp\_coefftA\_WDG 0.851

temp\_coefftA\_WHB 0.851

temp\_coefftA\_WHT 0.851

temp\_coefftA\_WHS 0.851

temp\_coefftA\_PB 0.851

temp\_coefftA\_BB 0.851

temp\_coefftA\_BO 0.851

temp\_coefftA\_BD 0.851

temp\_coefftA\_BC 0.851

temp\_coefftA\_BFS 0.851

temp\_coefftA\_BFD 0.851

temp\_coefftA\_BFF 0.851

temp\_coefftA\_BG 0.851

temp\_coefftA\_BMS 0.851

temp\_coefftA\_BMD 0.851

temp\_coefftA\_BML 0.851

temp\_coefftA\_CEP 0.851

temp\_coefftA\_PWN 0.851

# Exponent in temperature effect on rate parameters 2

q10\_PL 2.0

q10\_PS 2.0

q10\_DF 2.0

q10\_MA 2.0

q10\_MB 2.0

q10\_SG 2.0

q10\_ZG 2.0

q10\_ZL 2.0

q10\_ZM 2.0

q10\_ZS 2.0

q10\_FPS 2.0

q10\_FPL 2.0

q10\_FPO 2.0

q10\_FVD 2.0

q10\_FVV 2.0

q10\_FVS 2.0

q10\_FVT 2.0

q10\_FVO 2.0

q10\_FVB 2.0

q10\_FMM 2.0

q10\_FMN 2.0

q10\_FBP 2.0

q10\_FDD 2.0

q10\_FDS 2.0

q10\_FDB 2.0

q10\_FDC 2.0

q10\_FDO 2.0

q10\_FDE 2.0

q10\_FDF 2.0

q10\_FDP 2.0

q10\_FDM 2.0

q10\_SHD 2.0

q10\_SHC 2.0

q10\_SHP 2.0

q10\_SHB 2.0

q10\_SHR 2.0

q10\_SSK 2.0

q10\_SB 2.0

q10\_SP 2.0

q10\_REP 2.0

q10\_PIN 2.0

q10\_WDG 2.0

q10\_WHB 2.0

q10\_WHT 2.0

q10\_WHS 2.0

q10\_PB 2.0

q10\_BB 2.0

q10\_BO 2.0

q10\_BD 2.0

q10\_BC 2.0

q10\_BFS 2.0

q10\_BFD 2.0

q10\_BFF 2.0

q10\_BG 2.0

q10\_BMS 2.0

q10\_BMD 2.0

q10\_BML 2.0

q10\_CEP 2.0

q10\_PWN 2.0

# The method of calculating Q10 0 is the 'normal' way of calculating it. 1 is the 'new' climate change method from Gary G.

q10\_method\_PL 0

q10\_method\_PS 0

q10\_method\_DF 0

q10\_method\_MA 0

q10\_method\_MB 0

q10\_method\_SG 0

q10\_method\_ZG 0

q10\_method\_ZL 0

q10\_method\_ZM 0

q10\_method\_ZS 0

q10\_method\_FPS 0

q10\_method\_FPL 0

q10\_method\_FPO 0

q10\_method\_FVD 0

q10\_method\_FVV 0

q10\_method\_FVS 0

q10\_method\_FVT 0

q10\_method\_FVO 0

q10\_method\_FVB 0

q10\_method\_FMM 0

q10\_method\_FMN 0

q10\_method\_FBP 0

q10\_method\_FDD 0

q10\_method\_FDS 0

q10\_method\_FDB 0

q10\_method\_FDC 0

q10\_method\_FDO 0

q10\_method\_FDE 0

q10\_method\_FDF 0

q10\_method\_FDP 0

q10\_method\_FDM 0

q10\_method\_SHD 0

q10\_method\_SHC 0

q10\_method\_SHP 0

q10\_method\_SHB 0

q10\_method\_SHR 0

q10\_method\_SSK 0

q10\_method\_SB 0

q10\_method\_SP 0

q10\_method\_REP 0

q10\_method\_PIN 0

q10\_method\_WDG 0

q10\_method\_WHB 0

q10\_method\_WHT 0

q10\_method\_WHS 0

q10\_method\_PB 0

q10\_method\_BB 0

q10\_method\_BO 0

q10\_method\_BD 0

q10\_method\_BC 0

q10\_method\_BFS 0

q10\_method\_BFD 0

q10\_method\_BFF 0

q10\_method\_BG 0

q10\_method\_BMS 0

q10\_method\_BMD 0

q10\_method\_BML 0

q10\_method\_CEP 0

q10\_method\_PWN 0

# The optimum temperature of each functional group - this is only read in for groups where the q10\_method is 1.

q10\_optimal\_temp\_PL 0

q10\_optimal\_temp\_PS 0

q10\_optimal\_temp\_DF 0

q10\_optimal\_temp\_MA 0

q10\_optimal\_temp\_MB 0

q10\_optimal\_temp\_SG 0

q10\_optimal\_temp\_ZG 0

q10\_optimal\_temp\_ZL 0

q10\_optimal\_temp\_ZM 0

q10\_optimal\_temp\_ZS 0

q10\_optimal\_temp\_FPS 0

q10\_optimal\_temp\_FPL 0

q10\_optimal\_temp\_FPO 0

q10\_optimal\_temp\_FVD 0

q10\_optimal\_temp\_FVV 0

q10\_optimal\_temp\_FVS 0

q10\_optimal\_temp\_FVT 0

q10\_optimal\_temp\_FVO 0

q10\_optimal\_temp\_FVB 0

q10\_optimal\_temp\_FMM 0

q10\_optimal\_temp\_FMN 0

q10\_optimal\_temp\_FBP 0

q10\_optimal\_temp\_FDD 0

q10\_optimal\_temp\_FDS 0

q10\_optimal\_temp\_FDB 0

q10\_optimal\_temp\_FDC 0

q10\_optimal\_temp\_FDO 0

q10\_optimal\_temp\_FDE 0

q10\_optimal\_temp\_FDF 0

q10\_optimal\_temp\_FDP 0

q10\_optimal\_temp\_FDM 0

q10\_optimal\_temp\_SHD 0

q10\_optimal\_temp\_SHC 0

q10\_optimal\_temp\_SHP 0

q10\_optimal\_temp\_SHB 0

q10\_optimal\_temp\_SHR 0

q10\_optimal\_temp\_SSK 0

q10\_optimal\_temp\_SB 0

q10\_optimal\_temp\_SP 0

q10\_optimal\_temp\_REP 0

q10\_optimal\_temp\_PIN 0

q10\_optimal\_temp\_WDG 0

q10\_optimal\_temp\_WHB 0

q10\_optimal\_temp\_WHT 0

q10\_optimal\_temp\_WHS 0

q10\_optimal\_temp\_PB 0

q10\_optimal\_temp\_BB 0

q10\_optimal\_temp\_BO 0

q10\_optimal\_temp\_BD 0

q10\_optimal\_temp\_BC 0

q10\_optimal\_temp\_BFS 0

q10\_optimal\_temp\_BFD 0

q10\_optimal\_temp\_BFF 0

q10\_optimal\_temp\_BG 0

q10\_optimal\_temp\_BMS 0

q10\_optimal\_temp\_BMD 0

q10\_optimal\_temp\_BML 0

q10\_optimal\_temp\_CEP 0

q10\_optimal\_temp\_PWN 0

# The q10 correction factor for each functional group - this is only read in for groups where the q10\_method is 1.

q10\_correction\_PL 0

q10\_correction\_PS 0

q10\_correction\_DF 0

q10\_correction\_MA 0

q10\_correction\_MB 0

q10\_correction\_SG 0

q10\_correction\_ZG 0

q10\_correction\_ZL 0

q10\_correction\_ZM 0

q10\_correction\_ZS 0

q10\_correction\_FPS 0

q10\_correction\_FPL 0

q10\_correction\_FPO 0

q10\_correction\_FVD 0

q10\_correction\_FVV 0

q10\_correction\_FVS 0

q10\_correction\_FVT 0

q10\_correction\_FVO 0

q10\_correction\_FVB 0

q10\_correction\_FMM 0

q10\_correction\_FMN 0

q10\_correction\_FBP 0

q10\_correction\_FDD 0

q10\_correction\_FDS 0

q10\_correction\_FDB 0

q10\_correction\_FDC 0

q10\_correction\_FDO 0

q10\_correction\_FDE 0

q10\_correction\_FDF 0

q10\_correction\_FDP 0

q10\_correction\_FDM 0

q10\_correction\_SHD 0

q10\_correction\_SHC 0

q10\_correction\_SHP 0

q10\_correction\_SHB 0

q10\_correction\_SHR 0

q10\_correction\_SSK 0

q10\_correction\_SB 0

q10\_correction\_SP 0

q10\_correction\_REP 0

q10\_correction\_PIN 0

q10\_correction\_WDG 0

q10\_correction\_WHB 0

q10\_correction\_WHT 0

q10\_correction\_WHS 0

q10\_correction\_PB 0

q10\_correction\_BB 0

q10\_correction\_BO 0

q10\_correction\_BD 0

q10\_correction\_BC 0

q10\_correction\_BFS 0

q10\_correction\_BFD 0

q10\_correction\_BFF 0

q10\_correction\_BG 0

q10\_correction\_BMS 0

q10\_correction\_BMD 0

q10\_correction\_BML 0

q10\_correction\_CEP 0

q10\_correction\_PWN 0

# Temperature changes over time. Only read in if flagtempchange is set to 1. Otherwise you can remove from your input file.

Tchange\_max\_num 1 Number of changes in average base temperature 1

# Day changes in base temperature begins (must have same number of entries as given by Tchange\_num)

Tchange\_start 1

0

# Period of time changes in base temperature take (must have same number of

# entries as given by Tchange\_num)

Tchange\_period 1

1

# Scale of change in base temperature (must have same number of entries as given by Tchange\_num)

Tchange\_mult 1

1

# Differential scaling with depth (must be as many entries as

# number of water column layers \* number of changes)

vertTchange\_mult 6

1 1 1 1 1 1

## Salinity changes over time, Only read in if flagsaltchange is set to 1. Otherwise you can remove from your input file.

Schange\_max\_num 1 Number of changes in average base salinity 1

# Day changes in base salinity begins (must have same number of entries as given by Schange\_num)

Schange\_start 1

0

# Period of time changes in base salinity take (must have same number of

# entries as given by Schange\_num)

Schange\_period 1

1

# Scale of change in base salinity (must have same number of entries as given by Schange\_num)

Schange\_mult 1

1

# Differential scaling with depth (must be as many entries as

# number of water column layers \* number of changes)

vertSchange\_mult 6

1 1 1 1 1 1

## pH effects

flagpHchange 0 Whether the pH values change through time following a forced trend - yes = 1, no = 0

pHchange\_max\_num 1 Number of changes in average base temperature 1

# Day changes in base tepmerature begins (must have same number of entries as given by Schange\_num)

pHchange\_start 1

0

# Period of time changes in base tepmerature take (must have same number of

# entries as given by Schange\_num)

pHchange\_period 1

1

# Scale of change in base temperature (must have same number of entries as given by Schange\_num)

pHchange\_mult 1

1.0

# Differential scaling with depth (must be as many entries as

# number of water column layers \* number of changes)

vertpHchange\_mult 5

1.0 1.0 1.0 1.0 1.0

pH\_sensitivity\_model 1 Whether using monod (0) or nonlinear model (1)

# Constants for empirical pH model

pH\_surface\_depth 200.0 Depth of surface layer

pH\_mid\_depth 1600.0 Depth of midwater layer

pH\_surface\_coefft\_T -2.6214 Temperature term coefficient for surface waters

pH\_surface\_coefft\_S 59.764 Salinity term coefficient for surface waters

pH\_surface\_coefft\_O 0.0419 Oxygen term coefficient for surface waters

5pH\_surface\_const 2341.0 Constant term coefficient for surface waters

pH\_mid\_coefft\_T -6.3912 Temperature term coefficient for mid-level waters

pH\_mid\_coefft\_S 87.186 Salinity term coefficient for mid-level waters

pH\_mid\_coefft\_O -0.1123 Oxygen term coefficient for mid-level waters

pH\_mid\_const 2407.9 Constant term coefficient for mid-level waters

pH\_deep\_coefft\_T -18.274 Temperature term coefficient for deep waters

pH\_deep\_coefft\_S 126.66 Salinity term coefficient for deep waters

pH\_deep\_coefft\_O -0.781 Oxygen term coefficient for deep waters

pH\_deep\_const 2579.6 Constant term coefficient for deep waters

# Whether the species growth or non predation mortality is sensitive to pH

flagpHsensitive\_PL 0

flagpHsensitive\_PS 0

flagpHsensitive\_DF 0

flagpHsensitive\_MA 0

flagpHsensitive\_MB 0

flagpHsensitive\_SG 0

flagpHsensitive\_ZG 0

flagpHsensitive\_ZL 0

flagpHsensitive\_ZM 0

flagpHsensitive\_ZS 0

flagpHsensitive\_FPS 0

flagpHsensitive\_FPL 0

flagpHsensitive\_FPO 0

flagpHsensitive\_FVD 0

flagpHsensitive\_FVV 0

flagpHsensitive\_FVS 0

flagpHsensitive\_FVT 0

flagpHsensitive\_FVO 0

flagpHsensitive\_FVB 0

flagpHsensitive\_FMM 0

flagpHsensitive\_FMN 0

flagpHsensitive\_FBP 0

flagpHsensitive\_FDD 0

flagpHsensitive\_FDS 0

flagpHsensitive\_FDB 0

flagpHsensitive\_FDC 0

flagpHsensitive\_FDO 0

flagpHsensitive\_FDE 0

flagpHsensitive\_FDF 0

flagpHsensitive\_FDP 0

flagpHsensitive\_FDM 0

flagpHsensitive\_SHD 0

flagpHsensitive\_SHC 0

flagpHsensitive\_SHP 0

flagpHsensitive\_SHB 0

flagpHsensitive\_SHR 0

flagpHsensitive\_SSK 0

flagpHsensitive\_SB 0

flagpHsensitive\_SP 0

flagpHsensitive\_REP 0

flagpHsensitive\_PIN 0

flagpHsensitive\_WDG 0

flagpHsensitive\_WHB 0

flagpHsensitive\_WHT 0

flagpHsensitive\_WHS 0

flagpHsensitive\_PB 0

flagpHsensitive\_BB 0

flagpHsensitive\_BO 0

flagpHsensitive\_BD 0

flagpHsensitive\_BC 0

flagpHsensitive\_BFS 0

flagpHsensitive\_BFD 0

flagpHsensitive\_BFF 0

flagpHsensitive\_BG 0

flagpHsensitive\_BMS 0

flagpHsensitive\_BMD 0

flagpHsensitive\_BML 0

flagpHsensitive\_CEP 0

flagpHsensitive\_PWN 0

# Whether the species fecundity is sensitive to pH

flagfecundsensitive\_PL 0

flagfecundsensitive\_PS 0

flagfecundsensitive\_DF 0

flagfecundsensitive\_MA 0

flagfecundsensitive\_MB 0

flagfecundsensitive\_SG 0

flagfecundsensitive\_ZG 0

flagfecundsensitive\_ZL 0

flagfecundsensitive\_ZM 0

flagfecundsensitive\_ZS 0

flagfecundsensitive\_FPS 0

flagfecundsensitive\_FPL 0

flagfecundsensitive\_FPO 0

flagfecundsensitive\_FVD 0

flagfecundsensitive\_FVV 0

flagfecundsensitive\_FVS 0

flagfecundsensitive\_FVT 0

flagfecundsensitive\_FVO 0

flagfecundsensitive\_FVB 0

flagfecundsensitive\_FMM 0

flagfecundsensitive\_FMN 0

flagfecundsensitive\_FBP 0

flagfecundsensitive\_FDD 0

flagfecundsensitive\_FDS 0

flagfecundsensitive\_FDB 0

flagfecundsensitive\_FDC 0

flagfecundsensitive\_FDO 0

flagfecundsensitive\_FDE 0

flagfecundsensitive\_FDF 0

flagfecundsensitive\_FDP 0

flagfecundsensitive\_FDM 0

flagfecundsensitive\_SHD 0

flagfecundsensitive\_SHC 0

flagfecundsensitive\_SHP 0

flagfecundsensitive\_SHB 0

flagfecundsensitive\_SHR 0

flagfecundsensitive\_SSK 0

flagfecundsensitive\_SB 0

flagfecundsensitive\_SP 0

flagfecundsensitive\_REP 0

flagfecundsensitive\_PIN 0

flagfecundsensitive\_WDG 0

flagfecundsensitive\_WHB 0

flagfecundsensitive\_WHT 0

flagfecundsensitive\_WHS 0

flagfecundsensitive\_PB 0

flagfecundsensitive\_BB 0

flagfecundsensitive\_BO 0

flagfecundsensitive\_BD 0

flagfecundsensitive\_BC 0

flagfecundsensitive\_BFS 0

flagfecundsensitive\_BFD 0

flagfecundsensitive\_BFF 0

flagfecundsensitive\_BG 0

flagfecundsensitive\_BMS 0

flagfecundsensitive\_BMD 0

flagfecundsensitive\_BML 0

flagfecundsensitive\_CEP 0

flagfecundsensitive\_PWN 0

# Whether the species nutritional value is sensitive to salinity or pH (mainly an issue for phytoplankton)

flagnutvaleffect\_PL 0

flagnutvaleffect\_PS 0

flagnutvaleffect\_DF 0

flagnutvaleffect\_MA 0

flagnutvaleffect\_MB 0

flagnutvaleffect\_SG 0

flagnutvaleffect\_ZG 0

flagnutvaleffect\_ZL 0

flagnutvaleffect\_ZM 0

flagnutvaleffect\_ZS 0

flagnutvaleffect\_FPS 0

flagnutvaleffect\_FPL 0

flagnutvaleffect\_FPO 0

flagnutvaleffect\_FVD 0

flagnutvaleffect\_FVV 0

flagnutvaleffect\_FVS 0

flagnutvaleffect\_FVT 0

flagnutvaleffect\_FVO 0

flagnutvaleffect\_FVB 0

flagnutvaleffect\_FMM 0

flagnutvaleffect\_FMN 0

flagnutvaleffect\_FBP 0

flagnutvaleffect\_FDD 0

flagnutvaleffect\_FDS 0

flagnutvaleffect\_FDB 0

flagnutvaleffect\_FDC 0

flagnutvaleffect\_FDO 0

flagnutvaleffect\_FDE 0

flagnutvaleffect\_FDF 0

flagnutvaleffect\_FDP 0

flagnutvaleffect\_FDM 0

flagnutvaleffect\_SHD 0

flagnutvaleffect\_SHC 0

flagnutvaleffect\_SHP 0

flagnutvaleffect\_SHB 0

flagnutvaleffect\_SHR 0

flagnutvaleffect\_SSK 0

flagnutvaleffect\_SB 0

flagnutvaleffect\_SP 0

flagnutvaleffect\_REP 0

flagnutvaleffect\_PIN 0

flagnutvaleffect\_WDG 0

flagnutvaleffect\_WHB 0

flagnutvaleffect\_WHT 0

flagnutvaleffect\_WHS 0

flagnutvaleffect\_PB 0

flagnutvaleffect\_BB 0

flagnutvaleffect\_BO 0

flagnutvaleffect\_BD 0

flagnutvaleffect\_BC 0

flagnutvaleffect\_BFS 0

flagnutvaleffect\_BFD 0

flagnutvaleffect\_BFF 0

flagnutvaleffect\_BG 0

flagnutvaleffect\_BMS 0

flagnutvaleffect\_BMD 0

flagnutvaleffect\_BML 0

flagnutvaleffect\_CEP 0

flagnutvaleffect\_PWN 0

# Whether the species availability to predators is sensitive to pH (mainly behaviour in fish)

flagpredavaileffect\_PL 0

flagpredavaileffect\_PS 0

flagpredavaileffect\_DF 0

flagpredavaileffect\_MA 0

flagpredavaileffect\_MB 0

flagpredavaileffect\_SG 0

flagpredavaileffect\_ZG 0

flagpredavaileffect\_ZL 0

flagpredavaileffect\_ZM 0

flagpredavaileffect\_ZS 0

flagpredavaileffect\_FPS 0

flagpredavaileffect\_FPL 0

flagpredavaileffect\_FPO 0

flagpredavaileffect\_FVD 0

flagpredavaileffect\_FVV 0

flagpredavaileffect\_FVS 0

flagpredavaileffect\_FVT 0

flagpredavaileffect\_FVO 0

flagpredavaileffect\_FVB 0

flagpredavaileffect\_FMM 0

flagpredavaileffect\_FMN 0

flagpredavaileffect\_FBP 0

flagpredavaileffect\_FDD 0

flagpredavaileffect\_FDS 0

flagpredavaileffect\_FDB 0

flagpredavaileffect\_FDC 0

flagpredavaileffect\_FDO 0

flagpredavaileffect\_FDE 0

flagpredavaileffect\_FDF 0

flagpredavaileffect\_FDP 0

flagpredavaileffect\_FDM 0

flagpredavaileffect\_SHD 0

flagpredavaileffect\_SHC 0

flagpredavaileffect\_SHP 0

flagpredavaileffect\_SHB 0

flagpredavaileffect\_SHR 0

flagpredavaileffect\_SSK 0

flagpredavaileffect\_SB 0

flagpredavaileffect\_SP 0

flagpredavaileffect\_REP 0

flagpredavaileffect\_PIN 0

flagpredavaileffect\_WDG 0

flagpredavaileffect\_WHB 0

flagpredavaileffect\_WHT 0

flagpredavaileffect\_WHS 0

flagpredavaileffect\_PB 0

flagpredavaileffect\_BB 0

flagpredavaileffect\_BO 0

flagpredavaileffect\_BD 0

flagpredavaileffect\_BC 0

flagpredavaileffect\_BFS 0

flagpredavaileffect\_BFD 0

flagpredavaileffect\_BFF 0

flagpredavaileffect\_BG 0

flagpredavaileffect\_BMS 0

flagpredavaileffect\_BMD 0

flagpredavaileffect\_BML 0

flagpredavaileffect\_CEP 0

flagpredavaileffect\_PWN 0

# Whether the species growth or non predation mortality is sensitive to pH

flagcontract\_tol\_PL 0

flagcontract\_tol\_PS 0

flagcontract\_tol\_DF 0

flagcontract\_tol\_MA 0

flagcontract\_tol\_MB 0

flagcontract\_tol\_SG 0

flagcontract\_tol\_ZG 0

flagcontract\_tol\_ZL 0

flagcontract\_tol\_ZM 0

flagcontract\_tol\_ZS 0

flagcontract\_tol\_FPS 0

flagcontract\_tol\_FPL 0

flagcontract\_tol\_FPO 0

flagcontract\_tol\_FVD 0

flagcontract\_tol\_FVV 0

flagcontract\_tol\_FVS 0

flagcontract\_tol\_FVT 0

flagcontract\_tol\_FVO 0

flagcontract\_tol\_FVB 0

flagcontract\_tol\_FMM 0

flagcontract\_tol\_FMN 0

flagcontract\_tol\_FBP 0

flagcontract\_tol\_FDD 0

flagcontract\_tol\_FDS 0

flagcontract\_tol\_FDB 0

flagcontract\_tol\_FDC 0

flagcontract\_tol\_FDO 0

flagcontract\_tol\_FDE 0

flagcontract\_tol\_FDF 0

flagcontract\_tol\_FDP 0

flagcontract\_tol\_FDM 0

flagcontract\_tol\_SHD 0

flagcontract\_tol\_SHC 0

flagcontract\_tol\_SHP 0

flagcontract\_tol\_SHB 0

flagcontract\_tol\_SHR 0

flagcontract\_tol\_SSK 0

flagcontract\_tol\_SB 0

flagcontract\_tol\_SP 0

flagcontract\_tol\_REP 0

flagcontract\_tol\_PIN 0

flagcontract\_tol\_WDG 0

flagcontract\_tol\_WHB 0

flagcontract\_tol\_WHT 0

flagcontract\_tol\_WHS 0

flagcontract\_tol\_PB 0

flagcontract\_tol\_BB 0

flagcontract\_tol\_BO 0

flagcontract\_tol\_BD 0

flagcontract\_tol\_BC 0

flagcontract\_tol\_BFS 0

flagcontract\_tol\_BFD 0

flagcontract\_tol\_BFF 0

flagcontract\_tol\_BG 0

flagcontract\_tol\_BMS 0

flagcontract\_tol\_BMD 0

flagcontract\_tol\_BML 0

flagcontract\_tol\_CEP 0

flagcontract\_tol\_PWN 0

# Form of the pH effects model applied for the group

# 0 = no effect, 0 = monod, 0 = nonlinear (humped form as of Hinga 0000), 0 = linear

pHsensitive\_model\_PL 0

pHsensitive\_model\_PS 0

pHsensitive\_model\_DF 0

pHsensitive\_model\_MA 0

pHsensitive\_model\_MB 0

pHsensitive\_model\_SG 0

pHsensitive\_model\_ZG 0

pHsensitive\_model\_ZL 0

pHsensitive\_model\_ZM 0

pHsensitive\_model\_ZS 0

pHsensitive\_model\_FPS 0

pHsensitive\_model\_FPL 0

pHsensitive\_model\_FPO 0

pHsensitive\_model\_FVD 0

pHsensitive\_model\_FVV 0

pHsensitive\_model\_FVS 0

pHsensitive\_model\_FVT 0

pHsensitive\_model\_FVO 0

pHsensitive\_model\_FVB 0

pHsensitive\_model\_FMM 0

pHsensitive\_model\_FMN 0

pHsensitive\_model\_FBP 0

pHsensitive\_model\_FDD 0

pHsensitive\_model\_FDS 0

pHsensitive\_model\_FDB 0

pHsensitive\_model\_FDC 0

pHsensitive\_model\_FDO 0

pHsensitive\_model\_FDE 0

pHsensitive\_model\_FDF 0

pHsensitive\_model\_FDP 0

pHsensitive\_model\_FDM 0

pHsensitive\_model\_SHD 0

pHsensitive\_model\_SHC 0

pHsensitive\_model\_SHP 0

pHsensitive\_model\_SHB 0

pHsensitive\_model\_SHR 0

pHsensitive\_model\_SSK 0

pHsensitive\_model\_SB 0

pHsensitive\_model\_SP 0

pHsensitive\_model\_REP 0

pHsensitive\_model\_PIN 0

pHsensitive\_model\_WDG 0

pHsensitive\_model\_WHB 0

pHsensitive\_model\_WHT 0

pHsensitive\_model\_WHS 0

pHsensitive\_model\_PB 0

pHsensitive\_model\_BB 0

pHsensitive\_model\_BO 0

pHsensitive\_model\_BD 0

pHsensitive\_model\_BC 0

pHsensitive\_model\_BFS 0

pHsensitive\_model\_BFD 0

pHsensitive\_model\_BFF 0

pHsensitive\_model\_BG 0

pHsensitive\_model\_BMS 0

pHsensitive\_model\_BMD 0

pHsensitive\_model\_BML 0

pHsensitive\_model\_CEP 0

pHsensitive\_model\_PWN 0

# Monod inflection point for pH impact function

KN\_pH\_PL 0.0

KN\_pH\_PS 0.0

KN\_pH\_DF 0.0

KN\_pH\_MA 0.0

KN\_pH\_MB 0.0

KN\_pH\_SG 0.0

KN\_pH\_ZG 0.0

KN\_pH\_ZL 7.0

KN\_pH\_ZM 7.0

KN\_pH\_ZS 0.0

KN\_pH\_FPS 0.0

KN\_pH\_FPL 0.0

KN\_pH\_FPO 0.0

KN\_pH\_FVD 0.0

KN\_pH\_FVV 0.0

KN\_pH\_FVS 0.0

KN\_pH\_FVT 7.0

KN\_pH\_FVO 0.0

KN\_pH\_FVB 0.0

KN\_pH\_FMM 0.0

KN\_pH\_FMN 0.0

KN\_pH\_FBP 0.0

KN\_pH\_FDD 0.0

KN\_pH\_FDS 0.0

KN\_pH\_FDB 0.0

KN\_pH\_FDC 0.0

KN\_pH\_FDO 0.0

KN\_pH\_FDE 0.0

KN\_pH\_FDF 0.0

KN\_pH\_FDP 0.0

KN\_pH\_FDM 0.0

KN\_pH\_SHD 0.0

KN\_pH\_SHC 0.0

KN\_pH\_SHP 0.0

KN\_pH\_SHB 0.0

KN\_pH\_SHR 0.0

KN\_pH\_SSK 0.0

KN\_pH\_SB 0.0

KN\_pH\_SP 0.0

KN\_pH\_REP 0.0

KN\_pH\_PIN 0.0

KN\_pH\_WDG 0.0

KN\_pH\_WHB 0.0

KN\_pH\_WHT 0.0

KN\_pH\_WHS 0.0

KN\_pH\_PB 0.0

KN\_pH\_BB 0.0

KN\_pH\_BO 0.0

KN\_pH\_BD 0.0

KN\_pH\_BC 0.0

KN\_pH\_BFS 0.0

KN\_pH\_BFD 9.0

KN\_pH\_BFF 0.0

KN\_pH\_BG 0.0

KN\_pH\_BMS 7.0

KN\_pH\_BMD 7.0

KN\_pH\_BML 7.0

KN\_pH\_CEP 7.0

KN\_pH\_PWN 7.0

# Optimal pH for nonlinear pH impact function

optimal\_pH\_PL 4.0

optimal\_pH\_PS 5.0

optimal\_pH\_DF 0.0

optimal\_pH\_MA 6.0

optimal\_pH\_MB 0.0

optimal\_pH\_SG 5.0

optimal\_pH\_ZG 0.0

optimal\_pH\_ZL 0.0

optimal\_pH\_ZM 0.0

optimal\_pH\_ZS 0.0

optimal\_pH\_FPS 0.0

optimal\_pH\_FPL 0.0

optimal\_pH\_FPO 0.0

optimal\_pH\_FVD 0.0

optimal\_pH\_FVV 0.0

optimal\_pH\_FVS 0.0

optimal\_pH\_FVT 0.0

optimal\_pH\_FVO 0.0

optimal\_pH\_FVB 0.0

optimal\_pH\_FMM 0.0

optimal\_pH\_FMN 0.0

optimal\_pH\_FBP 0.0

optimal\_pH\_FDD 0.0

optimal\_pH\_FDS 0.0

optimal\_pH\_FDB 0.0

optimal\_pH\_FDC 0.0

optimal\_pH\_FDO 0.0

optimal\_pH\_FDE 0.0

optimal\_pH\_FDF 0.0

optimal\_pH\_FDP 0.0

optimal\_pH\_FDM 0.0

optimal\_pH\_SHD 0.0

optimal\_pH\_SHC 0.0

optimal\_pH\_SHP 0.0

optimal\_pH\_SHB 0.0

optimal\_pH\_SHR 0.0

optimal\_pH\_SSK 0.0

optimal\_pH\_SB 0.0

optimal\_pH\_SP 0.0

optimal\_pH\_REP 0.0

optimal\_pH\_PIN 0.0

optimal\_pH\_WDG 0.0

optimal\_pH\_WHB 0.0

optimal\_pH\_WHT 0.0

optimal\_pH\_WHS 0.0

optimal\_pH\_PB 0.0

optimal\_pH\_BB 0.0

optimal\_pH\_BO 0.0

optimal\_pH\_BD 0.0

optimal\_pH\_BC 0.0

optimal\_pH\_BFS 0.0

optimal\_pH\_BFD 0.0

optimal\_pH\_BFF 0.0

optimal\_pH\_BG 0.0

optimal\_pH\_BMS 0.0

optimal\_pH\_BMD 0.0

optimal\_pH\_BML 0.0

optimal\_pH\_CEP 0.0

optimal\_pH\_PWN 0.0

# Correction scalar pH for nonlinear pH impact function

pH\_correction\_PL 150.0

pH\_correction\_PS 200.0

pH\_correction\_DF 1.0

pH\_correction\_MA 150.0

pH\_correction\_MB 1.0

pH\_correction\_SG 100.0

pH\_correction\_ZG 1.0

pH\_correction\_ZL 1.0

pH\_correction\_ZM 1.0

pH\_correction\_ZS 1.0

pH\_correction\_FPS 1.0

pH\_correction\_FPL 1.0

pH\_correction\_FPO 1.0

pH\_correction\_FVD 1.0

pH\_correction\_FVV 1.0

pH\_correction\_FVS 1.0

pH\_correction\_FVT 1.0

pH\_correction\_FVO 1.0

pH\_correction\_FVB 1.0

pH\_correction\_FMM 1.0

pH\_correction\_FMN 1.0

pH\_correction\_FBP 1.0

pH\_correction\_FDD 1.0

pH\_correction\_FDS 1.0

pH\_correction\_FDB 1.0

pH\_correction\_FDC 1.0

pH\_correction\_FDO 1.0

pH\_correction\_FDE 1.0

pH\_correction\_FDF 1.0

pH\_correction\_FDP 1.0

pH\_correction\_FDM 1.0

pH\_correction\_SHD 1.0

pH\_correction\_SHC 1.0

pH\_correction\_SHP 1.0

pH\_correction\_SHB 1.0

pH\_correction\_SHR 1.0

pH\_correction\_SSK 1.0

pH\_correction\_SB 1.0

pH\_correction\_SP 1.0

pH\_correction\_REP 1.0

pH\_correction\_PIN 1.0

pH\_correction\_WDG 1.0

pH\_correction\_WHB 1.0

pH\_correction\_WHT 1.0

pH\_correction\_WHS 1.0

pH\_correction\_PB 1.0

pH\_correction\_BB 1.0

pH\_correction\_BO 1.0

pH\_correction\_BD 1.0

pH\_correction\_BC 1.0

pH\_correction\_BFS 1.0

pH\_correction\_BFD 1.0

pH\_correction\_BFF 1.0

pH\_correction\_BG 1.0

pH\_correction\_BMS 1.0

pH\_correction\_BMD 1.0

pH\_correction\_BML 1.0

pH\_correction\_CEP 1.0

pH\_correction\_PWN 1.0

# Coefficient pH for nonlinear pH impact function

pH\_constA\_PL 1.4

pH\_constA\_PS 3.7

pH\_constA\_DF 1.0

pH\_constA\_MA 1.6

pH\_constA\_MB 1.0

pH\_constA\_SG 4.2

pH\_constA\_ZG 1.0

pH\_constA\_ZL 5.0

pH\_constA\_ZM 5.0

pH\_constA\_ZS 1.0

pH\_constA\_FPS 1.0

pH\_constA\_FPL 1.0

pH\_constA\_FPO 2.0

pH\_constA\_FVD 1.0

pH\_constA\_FVV 1.0

pH\_constA\_FVS 1.0

pH\_constA\_FVT 6.0

pH\_constA\_FVO 1.0

pH\_constA\_FVB 1.0

pH\_constA\_FMM 1.0

pH\_constA\_FMN 1.0

pH\_constA\_FBP 1.0

pH\_constA\_FDD 2.25

pH\_constA\_FDS 2.5

pH\_constA\_FDB 2.0

pH\_constA\_FDC 2.0

pH\_constA\_FDO 1.0

pH\_constA\_FDE 2.0

pH\_constA\_FDF 2.0

pH\_constA\_FDP 2.0

pH\_constA\_FDM 2.0

pH\_constA\_SHD 1.0

pH\_constA\_SHC 1.0

pH\_constA\_SHP 1.0

pH\_constA\_SHB 1.0

pH\_constA\_SHR 1.0

pH\_constA\_SSK 1.0

pH\_constA\_SB 1.0

pH\_constA\_SP 1.0

pH\_constA\_REP 1.0

pH\_constA\_PIN 1.0

pH\_constA\_WDG 1.0

pH\_constA\_WHB 1.0

pH\_constA\_WHT 1.0

pH\_constA\_WHS 1.0

pH\_constA\_PB -3.0

pH\_constA\_BB -3.0

pH\_constA\_BO 1.0

pH\_constA\_BD 1.0

pH\_constA\_BC 1.0

pH\_constA\_BFS -3.0

pH\_constA\_BFD 6.0

pH\_constA\_BFF -7.0

pH\_constA\_BG -3.0

pH\_constA\_BMS 5.5

pH\_constA\_BMD 6.0

pH\_constA\_BML 5.5

pH\_constA\_CEP 6.0

pH\_constA\_PWN 5.0

# Base coefficient pH for nonlinear pH impact function

pH\_constB\_PL 1.1705

pH\_constB\_PS 1.0

pH\_constB\_DF 0.0

pH\_constB\_MA 1.1

pH\_constB\_MB 0.0

pH\_constB\_SG 1.0

pH\_constB\_ZG 0.0

pH\_constB\_ZL 1.7

pH\_constB\_ZM 1.7

pH\_constB\_ZS 0.0

pH\_constB\_FPS 0.0

pH\_constB\_FPL 0.0

pH\_constB\_FPO -0.125

pH\_constB\_FVD 0.0

pH\_constB\_FVV 0.0

pH\_constB\_FVS 0.0

pH\_constB\_FVT 1.5

pH\_constB\_FVO 0.0

pH\_constB\_FVB 0.0

pH\_constB\_FMM 0.0

pH\_constB\_FMN 0.0

pH\_constB\_FBP 0.0

pH\_constB\_FDD -0.155

pH\_constB\_FDS -0.19

pH\_constB\_FDB -0.125

pH\_constB\_FDC -0.125

pH\_constB\_FDO 0.0

pH\_constB\_FDE -0.125

pH\_constB\_FDF -0.125

pH\_constB\_FDP -0.125

pH\_constB\_FDM -0.125

pH\_constB\_SHD 0.0

pH\_constB\_SHC 0.0

pH\_constB\_SHP 0.0

pH\_constB\_SHB 0.0

pH\_constB\_SHR 0.0

pH\_constB\_SSK 0.0

pH\_constB\_SB 0.0

pH\_constB\_SP 0.0

pH\_constB\_REP 0.0

pH\_constB\_PIN 0.0

pH\_constB\_WDG 0.0

pH\_constB\_WHB 0.0

pH\_constB\_WHT 0.0

pH\_constB\_WHS 0.0

pH\_constB\_PB 0.5

pH\_constB\_BB 0.5

pH\_constB\_BO 0.0

pH\_constB\_BD 0.0

pH\_constB\_BC 0.0

pH\_constB\_BFS 0.5

pH\_constB\_BFD 2.0

pH\_constB\_BFF 1.0

pH\_constB\_BG 0.5

pH\_constB\_BMS 1.5

pH\_constB\_BMD 1.5

pH\_constB\_BML 1.5

pH\_constB\_CEP 1.5

pH\_constB\_PWN 1.7

# Correction scalar pH for nonlinear pH impact function

contract\_tol\_PL 0.0

contract\_tol\_PS 0.0

contract\_tol\_DF 0.0

contract\_tol\_MA 0.0

contract\_tol\_MB 0.0

contract\_tol\_SG 0.0

contract\_tol\_ZG 1.0

contract\_tol\_ZL 1.0

contract\_tol\_ZM 1.0

contract\_tol\_ZS 0.0

contract\_tol\_FPS 3.0

contract\_tol\_FPL 3.0

contract\_tol\_FPO 3.0

contract\_tol\_FVD 4.0

contract\_tol\_FVV 4.0

contract\_tol\_FVS 3.0

contract\_tol\_FVT 2.0

contract\_tol\_FVO 3.0

contract\_tol\_FVB 3.0

contract\_tol\_FMM 3.0

contract\_tol\_FMN 3.0

contract\_tol\_FBP 3.0

contract\_tol\_FDD 3.0

contract\_tol\_FDS 4.0

contract\_tol\_FDB 3.0

contract\_tol\_FDC 3.0

contract\_tol\_FDO 3.0

contract\_tol\_FDE 3.0

contract\_tol\_FDF 3.0

contract\_tol\_FDP 3.0

contract\_tol\_FDM 3.0

contract\_tol\_SHD 3.0

contract\_tol\_SHC 3.0

contract\_tol\_SHP 3.0

contract\_tol\_SHB 3.0

contract\_tol\_SHR 3.0

contract\_tol\_SSK 3.0

contract\_tol\_SB 0.0

contract\_tol\_SP 3.0

contract\_tol\_REP 4.0

contract\_tol\_PIN 1.0

contract\_tol\_WDG 1.0

contract\_tol\_WHB 1.0

contract\_tol\_WHT 1.0

contract\_tol\_WHS 1.0

contract\_tol\_PB 0.0

contract\_tol\_BB 0.0

contract\_tol\_BO 0.0

contract\_tol\_BD 0.0

contract\_tol\_BC 0.0

contract\_tol\_BFS 1.0

contract\_tol\_BFD 1.0

contract\_tol\_BFF 1.0

contract\_tol\_BG 1.0

contract\_tol\_BMS 4.0

contract\_tol\_BMD 3.0

contract\_tol\_BML 4.0

contract\_tol\_CEP 0.0

contract\_tol\_PWN 1.0

# Whether the species is sensitive to salinity

flagSaltSensitive\_PL 0

flagSaltSensitive\_PS 0

flagSaltSensitive\_DF 0

flagSaltSensitive\_MA 0

flagSaltSensitive\_MB 0

flagSaltSensitive\_SG 0

flagSaltSensitive\_ZG 0

flagSaltSensitive\_ZL 0

flagSaltSensitive\_ZM 0

flagSaltSensitive\_ZS 0

flagSaltSensitive\_FPS 0

flagSaltSensitive\_FPL 0

flagSaltSensitive\_FPO 0

flagSaltSensitive\_FVD 0

flagSaltSensitive\_FVV 0

flagSaltSensitive\_FVS 0

flagSaltSensitive\_FVT 0

flagSaltSensitive\_FVO 0

flagSaltSensitive\_FVB 0

flagSaltSensitive\_FMM 0

flagSaltSensitive\_FMN 0

flagSaltSensitive\_FBP 0

flagSaltSensitive\_FDD 0

flagSaltSensitive\_FDS 0

flagSaltSensitive\_FDB 0

flagSaltSensitive\_FDC 0

flagSaltSensitive\_FDO 0

flagSaltSensitive\_FDE 0

flagSaltSensitive\_FDF 0

flagSaltSensitive\_FDP 0

flagSaltSensitive\_FDM 0

flagSaltSensitive\_SHD 0

flagSaltSensitive\_SHC 0

flagSaltSensitive\_SHP 0

flagSaltSensitive\_SHB 0

flagSaltSensitive\_SHR 0

flagSaltSensitive\_SSK 0

flagSaltSensitive\_SB 0

flagSaltSensitive\_SP 0

flagSaltSensitive\_REP 0

flagSaltSensitive\_PIN 0

flagSaltSensitive\_WDG 0

flagSaltSensitive\_WHB 0

flagSaltSensitive\_WHT 0

flagSaltSensitive\_WHS 0

flagSaltSensitive\_PB 0

flagSaltSensitive\_BB 0

flagSaltSensitive\_BO 0

flagSaltSensitive\_BD 0

flagSaltSensitive\_BC 0

flagSaltSensitive\_BFS 0

flagSaltSensitive\_BFD 0

flagSaltSensitive\_BFF 0

flagSaltSensitive\_BG 0

flagSaltSensitive\_BMS 0

flagSaltSensitive\_BMD 0

flagSaltSensitive\_BML 0

flagSaltSensitive\_CEP 0

flagSaltSensitive\_PWN 0

# Correction scalar salt for nonlinear salinity impact function

salt\_correction\_PL 1.0

salt\_correction\_PS 1.0

salt\_correction\_DF 1.0

salt\_correction\_MA 1.0

salt\_correction\_MB 1.0

salt\_correction\_SG 1.0

salt\_correction\_ZG 1.0

salt\_correction\_ZL 1.0

salt\_correction\_ZM 1.0

salt\_correction\_ZS 1.0

salt\_correction\_FPS 1.0

salt\_correction\_FPL 1.0

salt\_correction\_FPO 1.0

salt\_correction\_FVD 1.0

salt\_correction\_FVV 1.0

salt\_correction\_FVS 1.0

salt\_correction\_FVT 1.0

salt\_correction\_FVO 1.0

salt\_correction\_FVB 1.0

salt\_correction\_FMM 1.0

salt\_correction\_FMN 1.0

salt\_correction\_FBP 1.0

salt\_correction\_FDD 1.0

salt\_correction\_FDS 1.0

salt\_correction\_FDB 1.0

salt\_correction\_FDC 1.0

salt\_correction\_FDO 1.0

salt\_correction\_FDE 1.0

salt\_correction\_FDF 1.0

salt\_correction\_FDP 1.0

salt\_correction\_FDM 1.0

salt\_correction\_SHD 1.0

salt\_correction\_SHC 1.0

salt\_correction\_SHP 1.0

salt\_correction\_SHB 1.0

salt\_correction\_SHR 1.0

salt\_correction\_SSK 1.0

salt\_correction\_SB 1.0

salt\_correction\_SP 1.0

salt\_correction\_REP 1.0

salt\_correction\_PIN 1.0

salt\_correction\_WDG 1.0

salt\_correction\_WHB 1.0

salt\_correction\_WHT 1.0

salt\_correction\_WHS 1.0

salt\_correction\_PB 1.0

salt\_correction\_BB 1.0

salt\_correction\_BO 1.0

salt\_correction\_BD 1.0

salt\_correction\_BC 1.0

salt\_correction\_BFS 1.0

salt\_correction\_BFD 1.0

salt\_correction\_BFF 1.0

salt\_correction\_BG 1.0

salt\_correction\_BMS 1.0

salt\_correction\_BMD 1.0

salt\_correction\_BML 1.0

salt\_correction\_CEP 1.0

salt\_correction\_PWN 1.0

## Tolerances and boundaries

RelTol 0.1 Relative tolerance of the adaptive differentiation scheme 0.1

Flux\_tol 0.2 Tolerance of mass balance assumption per cell mg N m-3 0.1

min\_pool 0.00000001 Minimum pool size 0.00000001

min\_dens 0.0001 Minimum density of top predators and fish 0.0001

min\_channel\_depth 0.001 Minimum depth of estuarine channels

## Biological parameters

# Primary producer growth

mum\_PL\_T15 1.0 Maximum growth rate, large phytoplankton d-1 1 - 1.7

mum\_PS\_T15 0.2 Maximum growth rate, small (pico) phytoplankton d-1 1 - 1.24

mum\_MA\_T15 2.9 Maximum growth rate, macroalgae d-1 0.1

mum\_DF\_T15 0.0001 Maximum growth rate, dinoflagellates d-1 0.3 - 0.8

mum\_SG\_T15 3.75 Maximum growth rate, seagrass d-1 -0.07 0.05

mum\_MB\_T15 0.35 Maximum growth rate, microphytobenthos d-1 0.35

MB\_wc 0.01 Scalar for microphytoben. growth in wc (reduced as not on substrate) 0.1

# Primary producer light requirements

KI\_PL\_T15 10 Light saturation, large phytoplankton W m-2 10 - 20

KI\_PS\_T15 10 Light saturation, small phytoplankton W m-2 10 - 20

KI\_DF\_T15 10 Light saturation, dinoflagellates W m-2 10 - 20

KI\_MA\_T15 3 Light saturation, macroalgae W m-2 5

KI\_SG\_T15 20 Light saturation, seagrass W m-2 65

KI\_MB\_T15 3 Light saturation, microphytobenthos W m-2 3

eddy\_scale 1 Coefficient scaling eddy strength impact on phytoplankton growth 1

# Primary producer nutrient requirements

KN\_PL 10 Half-sat const for PL growth on DIN mg N m-3 10

KN\_PS 8 Half-sat const for PS growth on DIN mg N m-3 4

KN\_DF 30 Half-sat const for DF growth on DIN mg N m-3 30

KN\_MA 10 Half-sat const for MA growth on DIN mg N m-3 20

KN\_SG 5 Half-sat const for SG growth on DIN mg N m-3 5

KN\_MB 200 Half-sat const for MB growth on DIN mg N m-3 200

KS\_PL 1 Half-sat const for PL growth on Si mg Si m-3 20

KS\_PS 0 Half-sat const for PS growth on Si mg Si m-3 0

KS\_DF 0 Half-sat const for DF growth on Si mg Si m-3 0

KS\_MB 80 Half-sat const for MB growth on Si mg Si m-3 100

KS\_MA 0 Half-sat const for MA growth on Si mg Si m-3 0

KS\_SG 0 Half-sat const for SG growth on Si mg Si m-3 0

KF\_PL 0 Half-sat const for PL growth on Micro-nutrient mg Fe m-3 20

KF\_PS 0 Half-sat const for PS growth on Micro-nutrient mg Fe m-3 0

KF\_DF 0 Half-sat const for DF growth on Micro-nutrient mg Fe m-3 0

KF\_MB 0 Half-sat const for MB growth on Micro-nutrient mg Fe m-3 100

KF\_MA 0 Half-sat const for MA growth on Micro-nutrient mg Fe m-3 0

KF\_SG 0 Half-sat const for SG growth on Micro-nutrient mg Fe m-3 0

# Bacterial nutrient requirements

KN\_BB 0 Half-sat const for sediment bacteria NH uptake mg N m-3 0 - 10

# Bacterial population parameters (how much bacterial biomass detritus can support)

XPB\_DL 0.27 Maximum ratio of PB to DL biomass 0.3 - 0.4

XBB\_DL 0.18 Maximum ratio of BB to DL biomass 0.15 - 0.2

XPB\_DR 0.012 Maximum ratio of PB to DR biomass 0.01 - 0.015

XBB\_DR 0.008 Maximum ratio of BB to DR biomass 0.005 - 0.01

k\_PB 3 Shape of PB growth eq'n, 1 = linear, 3 = drop before max, 5 = drop at max 3

k\_BB 3 Shape of BB growth eq'n, 1 = linear, 3 = drop before max, 5 = drop at max 3

BBthresh 10 Threshold BB flux level where damping starts mg N m-2 s-1 0.1

BBdamp 0.85 Damping coefficient for BB fluxes 0.75

# Space restrictions for basal (epibenthic and some infauna) groups

MAmax 4000 Maximum macroalgal biomass mg N m-2 10000

SGmax 3000 Maximum seagrass biomass mg N m-2 2000

MBmax 30000 Maximum microphytobenthos biomass on sediment mg N m-2 1000

# These MBmax is used only as a relative measure for habitat calculations it does not constrain MB

# growth for now

BGmax 1000 Maximum benthic grazer biomass mg N m-2 1000

BDmax 400000 Maximum deposit feeder biomass mg N m-2 500000

BCmax 1000000000 Maximum infauna carnivore biomass mg N m-2 Unlimited

BOmax 40000 Maximum meiobenthos biomass mg N m-2 50600

BFSmax 2000 Maximum shallow filter feeder biomass mg N m-2 2000

BFFmax 3000 Maximum other filter feeder biomass mg N m-2 3000

BFDmax 1000 Maximum deep filter feeder biomass mg N m-2 1000

BCmax 0

BMDmax 0

BMLmax 0

BMSmax 0

# Threshold spatial factors for filter feeders if using ERSEM formulation

BFS\_low 500 Little space limitation (pop too small) mg.N.m-2 2500

BFS\_sat 3000 Interference to uptake due to shading mg.N.m-2 3000

BFSthresh 5000 mg.N.m-2 1000

BFD\_low 200 Little space limitation (pop too small) mg.N.m-2 2000

BFD\_sat 3000 Interference to uptake due to shading mg.N.m-2 2500

BFDthresh 5000 mg.N.m-2 1000

BFF\_low 200 Little space limitation (pop too small) mg.N.m-2 2000

BFF\_sat 3000 Interference to uptake due to shading mg.N.m-2 2500

BFFthresh 5000 mg.N.m-2 1000

# Habitat dependency parameters

# Vectors indicating which habitats each group prefers. 1=group lives on the habitat, 0=not present.

# The list of habitats are BFS, BFF, BFD, MA, SG, MB, reef, flat, soft, canyon

# from h1 Groups not included in model

habitat\_BFS 10

1 1 1 0 0 0 1 1 1 1

habitat\_BFF 10

1 1 1 0 0 0 1 1 1 1

habitat\_BFD 10

1 1 1 0 0 0 1 1 1 1

habitat\_BG 10

1 1 1 0 0 0 1 1 1 1

habitat\_BMS 10

1 1 1 1 1 1 1 1 1 1

habitat\_BML 10

1 1 1 1 1 1 1 1 1 1

habitat\_BMD 10

1 1 1 1 1 1 1 1 1 1

habitat\_ZL 10

1 1 1 1 1 1 1 1 1 1

habitat\_ZG 10

1 1 1 1 1 1 1 1 1 1

habitat\_BC 10

1 1 1 1 1 1 1 1 1 1

habitat\_BD 10

1 1 1 1 1 1 1 1 1 1

habitat\_MA 10

1 1 1 1 0 0 1 1 0 0

habitat\_SG 10

0 0 0 0 1 1 0 1 1 0

habitat\_MB 10

0 0 0 0 0 0 0 0 0 0

habitat\_BO 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_CEP 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_PWN 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_FPS 10

1 1 1 1 1 1 1 1 1 0

juv\_habitat\_FPL 10

1 1 1 1 1 1 1 1 1 0

juv\_habitat\_FPO 10

1 0 1 1 0 1 1 0 0 0

juv\_habitat\_FVD 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_FVV 10

1 0 1 1 0 1 1 0 0 0

juv\_habitat\_FVS 10

1 0 1 1 1 1 1 1 1 0

juv\_habitat\_FVT 10

1 1 1 1 1 1 1 1 1 0

juv\_habitat\_FVO 10

1 0 1 1 0 1 1 0 0 0

juv\_habitat\_FVB 10

0 0 0 1 0 1 1 0 0 0

juv\_habitat\_FMM 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_FMN 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_FBP 10

1 0 1 1 0 1 1 0 0 0

juv\_habitat\_FDD 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_FDS 10

1 1 1 1 1 1 1 1 1 0

juv\_habitat\_FDB 10

1 0 1 1 0 1 1 0 0 0

juv\_habitat\_FDC 10

1 0 1 1 0 1 1 0 0 0

juv\_habitat\_FDO 10

1 0 1 1 1 1 1 1 1 0

juv\_habitat\_FDE 10

1 0 0 1 0 1 1 0 0 0

juv\_habitat\_FDF 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_FDM 10

1 0 1 1 0 1 1 0 0 0

juv\_habitat\_FDP 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_SHD 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_SHC 10

0 0 0 0 0 0 0 1 1 0

juv\_habitat\_SHP 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_SHB 10

0 0 0 0 0 0 0 1 1 0

juv\_habitat\_SHR 10

0 0 0 0 0 0 0 0 1 1

juv\_habitat\_SSK 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_SB 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_SP 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_REP 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_PIN 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_WDG 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_WHB 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_WHS 10

1 1 1 1 1 1 1 1 1 1

juv\_habitat\_WHT 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_CEP 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_PWN 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_FPS 10

1 1 1 1 1 1 1 1 1 0

ad\_habitat\_FPL 10

1 1 1 1 1 1 1 1 1 0

ad\_habitat\_FPO 10

1 0 1 1 0 0 1 0 0 0

ad\_habitat\_FVD 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_FVV 10

1 0 1 1 0 0 1 0 0 0

ad\_habitat\_FVS 10

1 0 1 1 1 1 1 1 1 0

ad\_habitat\_FVT 10

1 1 1 1 1 1 1 1 1 0

ad\_habitat\_FVO 10

1 0 1 1 0 0 1 0 0 0

ad\_habitat\_FVB 10

0 0 0 1 0 1 1 0 0 0

ad\_habitat\_FMM 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_FMN 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_FBP 10

1 0 1 1 0 0 1 0 0 0

ad\_habitat\_FDD 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_FDS 10

1 1 1 1 1 1 1 1 1 0

ad\_habitat\_FDB 10

1 0 1 1 0 0 1 0 0 0

ad\_habitat\_FDC 10

1 0 1 1 0 0 1 0 0 0

ad\_habitat\_FDO 10

1 0 1 1 1 1 1 1 1 0

ad\_habitat\_FDE 10

0 0 0 1 0 1 1 0 0 0

ad\_habitat\_FDF 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_FDM 10

1 0 1 1 0 0 1 0 0 0

ad\_habitat\_FDP 10

0 0 0 1 0 1 1 0 1 0

ad\_habitat\_SHD 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_SHC 10

0 0 0 0 0 0 0 1 1 0

ad\_habitat\_SHP 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_SHB 10

0 0 0 0 0 0 0 1 1 0

ad\_habitat\_SHR 10

0 0 0 0 0 0 0 0 1 1

ad\_habitat\_SSK 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_SB 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_SP 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_REP 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_PIN 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_WDG 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_WHB 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_WHS 10

1 1 1 1 1 1 1 1 1 1

ad\_habitat\_WHT 10

1 1 1 1 1 1 1 1 1 1

Kcov\_juv\_FPS 3 Exponent of refuge relationship with biogenic habitat for juv FPS 3

Kcov\_juv\_FPL 3 Exponent of refuge relationship with biogenic habitat for juv FPL 3

Kcov\_juv\_FPO 3 Exponent of refuge relationship with biogenic habitat for juv FPO 3

Kcov\_juv\_FVS 3 Exponent of refuge relationship with biogenic habitat for juv FVS 3

Kcov\_juv\_FVD 3 Exponent of refuge relationship with biogenic habitat for juv FVD 3

Kcov\_juv\_FVV 3 Exponent of refuge relationship with biogenic habitat for juv FVV 3

Kcov\_juv\_FVT 3 Exponent of refuge relationship with biogenic habitat for juv FVT 3

Kcov\_juv\_FVO 3 Exponent of refuge relationship with biogenic habitat for juv FVO 3

Kcov\_juv\_FVB 3 Exponent of refuge relationship with biogenic habitat for juv FVB 3

Kcov\_juv\_FMM 3 Exponent of refuge relationship with biogenic habitat for juv FMM 3

Kcov\_juv\_FMN 3 Exponent of refuge relationship with biogenic habitat for juv FMN 3

Kcov\_juv\_FBP 3 Exponent of refuge relationship with biogenic habitat for juv FBP 3

Kcov\_juv\_FDS 3 Exponent of refuge relationship with biogenic habitat for juv FDS 3

Kcov\_juv\_FDD 3 Exponent of refuge relationship with biogenic habitat for juv FDD 3

Kcov\_juv\_FDB 3 Exponent of refuge relationship with biogenic habitat for juv FDB 3

Kcov\_juv\_FDC 3 Exponent of refuge relationship with biogenic habitat for juv FDC 3

Kcov\_juv\_FDO 3 Exponent of refuge relationship with biogenic habitat for juv FDO 3

Kcov\_juv\_FDE 3 Exponent of refuge relationship with biogenic habitat for juv FDE 3

Kcov\_juv\_FDF 3 Exponent of refuge relationship with biogenic habitat for juv FDF 3

Kcov\_juv\_FDM 3 Exponent of refuge relationship with biogenic habitat for juv FDM 3

Kcov\_juv\_FDP 3 Exponent of refuge relationship with biogenic habitat for juv FDP 3

Kcov\_juv\_SHD 3.5 Exponent of refuge relationship with biogenic habitat for juv SHD 3

Kcov\_juv\_SHC 3.5 Exponent of refuge relationship with biogenic habitat for juv SHC 3

Kcov\_juv\_SHP 3 Exponent of refuge relationship with biogenic habitat for juv SHP 3

Kcov\_juv\_SHB 3 Exponent of refuge relationship with biogenic habitat for juv SHB 3

Kcov\_juv\_SHR 3 Exponent of refuge relationship with biogenic habitat for juv SHR 3

Kcov\_juv\_SSK 3 Exponent of refuge relationship with biogenic habitat for juv SSK 3

Kcov\_juv\_SB 3 Exponent of refuge relationship with biogenic habitat for juv SB 3

Kcov\_juv\_SP 3 Exponent of refuge relationship with biogenic habitat for juv SP 3

Kcov\_juv\_REP 3 Exponent of refuge relationship with biogenic habitat for juv REP 3

Kcov\_juv\_PIN 3 Exponent of refuge relationship with biogenic habitat for juv PIN 3

Kcov\_juv\_WDG 3 Exponent of refuge relationship with biogenic habitat for juv WDG 3

Kcov\_juv\_WHB 3 Exponent of refuge relationship with biogenic habitat for juv WHB 3

Kcov\_juv\_WHS 3 Exponent of refuge relationship with biogenic habitat for juv WHS 3

Kcov\_juv\_WHT 3 Exponent of refuge relationship with biogenic habitat for juv WHT 3

Bcov\_juv\_FPS 0.6 Coefft of refuge relationship with biogenic habitat for juv FPS 0.6

Bcov\_juv\_FPL 0.6 Coefft of refuge relationship with biogenic habitat for juv FPL 0.6

Bcov\_juv\_FPO 0.6 Coefft of refuge relationship with biogenic habitat for juv FPO 0.6

Bcov\_juv\_FVS 0.6 Coefft of refuge relationship with biogenic habitat for juv FVS 0.6

Bcov\_juv\_FVD 0.6 Coefft of refuge relationship with biogenic habitat for juv FVD 0.6

Bcov\_juv\_FVV 0.6 Coefft of refuge relationship with biogenic habitat for juv FVV 0.6

Bcov\_juv\_FVT 0.6 Coefft of refuge relationship with biogenic habitat for juv FVT 0.6

Bcov\_juv\_FVO 0.6 Coefft of refuge relationship with biogenic habitat for juv FVO 0.6

Bcov\_juv\_FVB 0.6 Coefft of refuge relationship with biogenic habitat for juv FVB 0.6

Bcov\_juv\_FMM 0.6 Coefft of refuge relationship with biogenic habitat for juv FMM 0.6

Bcov\_juv\_FMN 0.6 Coefft of refuge relationship with biogenic habitat for juv FMN 0.6

Bcov\_juv\_FBP 0.6 Coefft of refuge relationship with biogenic habitat for juv FBP 0.6

Bcov\_juv\_FDS 0.6 Coefft of refuge relationship with biogenic habitat for juv FDS 0.6

Bcov\_juv\_FDD 0.6 Coefft of refuge relationship with biogenic habitat for juv FDD 0.6

Bcov\_juv\_FDB 0.6 Coefft of refuge relationship with biogenic habitat for juv FDB 0.6

Bcov\_juv\_FDC 0.6 Coefft of refuge relationship with biogenic habitat for juv FDC 0.6

Bcov\_juv\_FDO 0.6 Coefft of refuge relationship with biogenic habitat for juv FDO 0.6

Bcov\_juv\_FDE 0.6 Coefft of refuge relationship with biogenic habitat for juv FDE 0.6

Bcov\_juv\_FDF 0.6 Coefft of refuge relationship with biogenic habitat for juv FDF 0.6

Bcov\_juv\_FDM 0.6 Coefft of refuge relationship with biogenic habitat for juv FDM 0.6

Bcov\_juv\_FDP 0.6 Coefft of refuge relationship with biogenic habitat for juv FDP 0.6

Bcov\_juv\_SHD 0.5 Coefft of refuge relationship with biogenic habitat for juv SHD 0.5

Bcov\_juv\_SHC 0.5 Coefft of refuge relationship with biogenic habitat for juv SHC 0.5

Bcov\_juv\_SHP 0.5 Coefft of refuge relationship with biogenic habitat for juv SHP 0.5

Bcov\_juv\_SHB 0.5 Coefft of refuge relationship with biogenic habitat for juv SHB 0.5

Bcov\_juv\_SHR 0.5 Coefft of refuge relationship with biogenic habitat for juv SHR 0.5

Bcov\_juv\_SSK 0.5 Coefft of refuge relationship with biogenic habitat for juv SSK 0.5

Bcov\_juv\_SB 0.6 Coefft of refuge relationship with biogenic habitat for juv SB 0.6

Bcov\_juv\_SP 0.6 Coefft of refuge relationship with biogenic habitat for juv SP 0.6

Bcov\_juv\_REP 0.5 Coefft of refuge relationship with biogenic habitat for juv REP 0.6

Bcov\_juv\_PIN 0.6 Coefft of refuge relationship with biogenic habitat for juv PIN 0.6

Bcov\_juv\_WDG 0.6 Coefft of refuge relationship with biogenic habitat for juv WDG 0.6

Bcov\_juv\_WHB 0.6 Coefft of refuge relationship with biogenic habitat for juv WHB 0.6

Bcov\_juv\_WHS 0.6 Coefft of refuge relationship with biogenic habitat for juv WHS 0.6

Bcov\_juv\_WHT 0.6 Coefft of refuge relationship with biogenic habitat for juv WHT 0.6

Acov\_juv\_FPS 1.0 Scalar of refuge relationship with biogenic habitat for juv FPS 1.0

Acov\_juv\_FPL 1.0 Scalar of refuge relationship with biogenic habitat for juv FPL 1.0

Acov\_juv\_FPO 1.0 Scalar of refuge relationship with biogenic habitat for juv FPO 1.0

Acov\_juv\_FVS 1.0 Scalar of refuge relationship with biogenic habitat for juv FVS 1.0

Acov\_juv\_FVD 1.0 Scalar of refuge relationship with biogenic habitat for juv FVD 1.0

Acov\_juv\_FVV 1.0 Scalar of refuge relationship with biogenic habitat for juv FVV 1.0

Acov\_juv\_FVT 1.0 Scalar of refuge relationship with biogenic habitat for juv FVT 1.0

Acov\_juv\_FVO 1.0 Scalar of refuge relationship with biogenic habitat for juv FVO 1.0

Acov\_juv\_FVB 1.0 Scalar of refuge relationship with biogenic habitat for juv FVB 1.0

Acov\_juv\_FMM 1.0 Scalar of refuge relationship with biogenic habitat for juv FMM 1.0

Acov\_juv\_FMN 1.0 Scalar of refuge relationship with biogenic habitat for juv FMN 1.0

Acov\_juv\_FBP 1.0 Scalar of refuge relationship with biogenic habitat for juv FBP 1.0

Acov\_juv\_FDS 1.0 Scalar of refuge relationship with biogenic habitat for juv FDS 1.0

Acov\_juv\_FDD 1.0 Scalar of refuge relationship with biogenic habitat for juv FDD 1.0

Acov\_juv\_FDB 1.0 Scalar of refuge relationship with biogenic habitat for juv FDB 1.0

Acov\_juv\_FDC 1.0 Scalar of refuge relationship with biogenic habitat for juv FDC 1.0

Acov\_juv\_FDO 1.0 Scalar of refuge relationship with biogenic habitat for juv FDO 1.0

Acov\_juv\_FDE 1.0 Scalar of refuge relationship with biogenic habitat for juv FDE 1.0

Acov\_juv\_FDF 1.0 Scalar of refuge relationship with biogenic habitat for juv FDF 1.0

Acov\_juv\_FDM 1.0 Scalar of refuge relationship with biogenic habitat for juv FDM 1.0

Acov\_juv\_FDP 1.0 Scalar of refuge relationship with biogenic habitat for juv FDP 1.0

Acov\_juv\_SHD 1.0 Scalar of refuge relationship with biogenic habitat for juv SHD 1.0

Acov\_juv\_SHC 1.0 Scalar of refuge relationship with biogenic habitat for juv SHC 1.0

Acov\_juv\_SHP 1.0 Scalar of refuge relationship with biogenic habitat for juv SHP 1.0

Acov\_juv\_SHB 1.0 Scalar of refuge relationship with biogenic habitat for juv SHB 1.0

Acov\_juv\_SHR 1.0 Scalar of refuge relationship with biogenic habitat for juv SHR 1.0

Acov\_juv\_SSK 1.0 Scalar of refuge relationship with biogenic habitat for juv SSK 1.0

Acov\_juv\_SB 1.0 Scalar of refuge relationship with biogenic habitat for juv SB 1.0

Acov\_juv\_SP 1.0 Scalar of refuge relationship with biogenic habitat for juv SP 1.0

Acov\_juv\_REP 1.0 Scalar of refuge relationship with biogenic habitat for juv REP 1.0

Acov\_juv\_PIN 1.0 Scalar of refuge relationship with biogenic habitat for juv PIN 1.0

Acov\_juv\_WDG 1.0 Scalar of refuge relationship with biogenic habitat for juv WDG 1.0

Acov\_juv\_WHB 1.0 Scalar of refuge relationship with biogenic habitat for juv WHB 1.0

Acov\_juv\_WHS 1.0 Scalar of refuge relationship with biogenic habitat for juv WHS 1.0

Acov\_juv\_WHT 1.0 Scalar of refuge relationship with biogenic habitat for juv WHT 1.0

# Orange are groups with transferred species, but no new species (ASK BETH WHAT THESE' Kcov and Bcov' PARAMETER MEANS)

Kcov\_ad\_FPS 3 Exponent of refuge relationship with biogenic habitat for adult FPS 3

Kcov\_ad\_FPL 3 Exponent of refuge relationship with biogenic habitat for adult FPL 3

Kcov\_ad\_FPO 3 Exponent of refuge relationship with biogenic habitat for adult FPO 3

Kcov\_ad\_FVS 3 Exponent of refuge relationship with biogenic habitat for adult FVS 3

Kcov\_ad\_FVD 3 Exponent of refuge relationship with biogenic habitat for adult FVD 3

Kcov\_ad\_FVV 3 Exponent of refuge relationship with biogenic habitat for adult FVV 3

Kcov\_ad\_FVT 3 Exponent of refuge relationship with biogenic habitat for adult FVT 3

Kcov\_ad\_FVO 3 Exponent of refuge relationship with biogenic habitat for adult FVO 3

Kcov\_ad\_FVB 3 Exponent of refuge relationship with biogenic habitat for adult FVB 3

Kcov\_ad\_FMM 3 Exponent of refuge relationship with biogenic habitat for adult FMM 3

Kcov\_ad\_FMN 3 Exponent of refuge relationship with biogenic habitat for adult FMN 3

Kcov\_ad\_FBP 3 Exponent of refuge relationship with biogenic habitat for adult FBP 3

Kcov\_ad\_FDS 3 Exponent of refuge relationship with biogenic habitat for adult FDS 3

Kcov\_ad\_FDD 2.5 Exponent of refuge relationship with biogenic habitat for adult FDD 2.5

Kcov\_ad\_FDB 3 Exponent of refuge relationship with biogenic habitat for adult FDB 3

Kcov\_ad\_FDC 3 Exponent of refuge relationship with biogenic habitat for adult FDC 2.5

Kcov\_ad\_FDO 3 Exponent of refuge relationship with biogenic habitat for adult FDO 3

Kcov\_ad\_FDE 3 Exponent of refuge relationship with biogenic habitat for adult FDE 3

Kcov\_ad\_FDF 3 Exponent of refuge relationship with biogenic habitat for adult FDF 3

Kcov\_ad\_FDM 3 Exponent of refuge relationship with biogenic habitat for adult FDM 3

Kcov\_ad\_FDP 2.5 Exponent of refuge relationship with biogenic habitat for adult FDP 3

Kcov\_ad\_SHD 2.1 Exponent of refuge relationship with biogenic habitat for adult SHD 2.1

Kcov\_ad\_SHC 2.1 Exponent of refuge relationship with biogenic habitat for adult SHC 2.1

Kcov\_ad\_SHP 2.1 Exponent of refuge relationship with biogenic habitat for adult SHP 2.1

Kcov\_ad\_SHB 2.1 Exponent of refuge relationship with biogenic habitat for adult SHB 2.1

Kcov\_ad\_SHR 2.1 Exponent of refuge relationship with biogenic habitat for adult SHR 2.1

Kcov\_ad\_SSK 2.1 Exponent of refuge relationship with biogenic habitat for adult SSK 2.1

Kcov\_ad\_SB 3 Exponent of refuge relationship with biogenic habitat for adult SB 3

Kcov\_ad\_SP 3 Exponent of refuge relationship with biogenic habitat for adult SP 3

Kcov\_ad\_REP 2.1 Exponent of refuge relationship with biogenic habitat for adult REP 3

Kcov\_ad\_PIN 3 Exponent of refuge relationship with biogenic habitat for adult PIN 3

Kcov\_ad\_WDG 3 Exponent of refuge relationship with biogenic habitat for adult WDG 3

Kcov\_ad\_WHB 3 Exponent of refuge relationship with biogenic habitat for adult WHB 3

Kcov\_ad\_WHS 3 Exponent of refuge relationship with biogenic habitat for adult WHS 3

Kcov\_ad\_WHT 3 Exponent of refuge relationship with biogenic habitat for adult WHT 3

Bcov\_ad\_FPS 0.6 Coefft of refuge relationship with biogenic habitat for adult FPS 0.6

Bcov\_ad\_FPL 0.6 Coefft of refuge relationship with biogenic habitat for adult FPL 0.6

Bcov\_ad\_FPO 0.6 Coefft of refuge relationship with biogenic habitat for adult FPO 0.6

Bcov\_ad\_FVS 0.6 Coefft of refuge relationship with biogenic habitat for adult FVS 0.6

Bcov\_ad\_FVD 0.6 Coefft of refuge relationship with biogenic habitat for adult FVD 0.6

Bcov\_ad\_FVV 0.6 Coefft of refuge relationship with biogenic habitat for adult FVV 0.6

Bcov\_ad\_FVT 0.6 Coefft of refuge relationship with biogenic habitat for adult FVT 0.6

Bcov\_ad\_FVO 0.6 Coefft of refuge relationship with biogenic habitat for adult FVO 0.6

Bcov\_ad\_FVB 0.6 Coefft of refuge relationship with biogenic habitat for adult FVB 0.6

Bcov\_ad\_FMM 0.6 Coefft of refuge relationship with biogenic habitat for adult FMM 0.6

Bcov\_ad\_FMN 0.6 Coefft of refuge relationship with biogenic habitat for adult FMN 0.6

Bcov\_ad\_FBP 0.6 Coefft of refuge relationship with biogenic habitat for adult FBP 0.6

Bcov\_ad\_FDS 0.6 Coefft of refuge relationship with biogenic habitat for adult FDS 0.6

Bcov\_ad\_FDD 0.1 Coefft of refuge relationship with biogenic habitat for adult FDD 0.1

Bcov\_ad\_FDB 0.6 Coefft of refuge relationship with biogenic habitat for adult FDB 0.6

Bcov\_ad\_FDC 0.6 Coefft of refuge relationship with biogenic habitat for adult FDC 0.6

Bcov\_ad\_FDO 0.6 Coefft of refuge relationship with biogenic habitat for adult FDO 0.6

Bcov\_ad\_FDE 0.1 Coefft of refuge relationship with biogenic habitat for adult FDE 0.6

Bcov\_ad\_FDF 0.6 Coefft of refuge relationship with biogenic habitat for adult FDF 0.6

Bcov\_ad\_FDM 0.6 Coefft of refuge relationship with biogenic habitat for adult FDM 0.6

Bcov\_ad\_FDP 0.1 Coefft of refuge relationship with biogenic habitat for adult FDP 0.6

Bcov\_ad\_SHD 0.01 Coefft of refuge relationship with biogenic habitat for adult SHD 0.01

Bcov\_ad\_SHC 0.01 Coefft of refuge relationship with biogenic habitat for adult SHC 0.01

Bcov\_ad\_SHP 0.01 Coefft of refuge relationship with biogenic habitat for adult SHP 0.01

Bcov\_ad\_SHB 0.01 Coefft of refuge relationship with biogenic habitat for adult SHB 0.01

Bcov\_ad\_SHR 0.01 Coefft of refuge relationship with biogenic habitat for adult SHR 0.01

Bcov\_ad\_SSK 0.01 Coefft of refuge relationship with biogenic habitat for adult SSK 0.01

Bcov\_ad\_SB 0.6 Coefft of refuge relationship with biogenic habitat for adult SB 0.6

Bcov\_ad\_SP 0.6 Coefft of refuge relationship with biogenic habitat for adult SP 0.6

Bcov\_ad\_REP 0.01 Coefft of refuge relationship with biogenic habitat for adult REP 0.6

Bcov\_ad\_PIN 0.6 Coefft of refuge relationship with biogenic habitat for adult PIN 0.6

Bcov\_ad\_WDG 0.6 Coefft of refuge relationship with biogenic habitat for adult WDG 0.6

Bcov\_ad\_WHB 0.6 Coefft of refuge relationship with biogenic habitat for adult WHB 0.6

Bcov\_ad\_WHS 0.6 Coefft of refuge relationship with biogenic habitat for adult WHS 0.6

Bcov\_ad\_WHT 0.6 Coefft of refuge relationship with biogenic habitat for adult WHT 0.6

Acov\_ad\_FPS 1.0 Scalar of refuge relationship with biogenic habitat for ad FPS 1.0

Acov\_ad\_FPL 1.0 Scalar of refuge relationship with biogenic habitat for ad FPL 1.0

Acov\_ad\_FPO 1.0 Scalar of refuge relationship with biogenic habitat for ad FPO 1.0

Acov\_ad\_FVS 1.0 Scalar of refuge relationship with biogenic habitat for ad FVS 1.0

Acov\_ad\_FVD 1.0 Scalar of refuge relationship with biogenic habitat for ad FVD 1.0

Acov\_ad\_FVV 1.0 Scalar of refuge relationship with biogenic habitat for ad FVV 1.0

Acov\_ad\_FVT 1.0 Scalar of refuge relationship with biogenic habitat for ad FVT 1.0

Acov\_ad\_FVO 1.0 Scalar of refuge relationship with biogenic habitat for ad FVO 1.0

Acov\_ad\_FVB 1.0 Scalar of refuge relationship with biogenic habitat for ad FVB 1.0

Acov\_ad\_FMM 1.0 Scalar of refuge relationship with biogenic habitat for ad FMM 1.0

Acov\_ad\_FMN 1.0 Scalar of refuge relationship with biogenic habitat for ad FMN 1.0

Acov\_ad\_FBP 1.0 Scalar of refuge relationship with biogenic habitat for ad FBP 1.0

Acov\_ad\_FDS 1.0 Scalar of refuge relationship with biogenic habitat for ad FDS 1.0

Acov\_ad\_FDD 1.0 Scalar of refuge relationship with biogenic habitat for ad FDD 1.0

Acov\_ad\_FDB 1.0 Scalar of refuge relationship with biogenic habitat for ad FDB 1.0

Acov\_ad\_FDC 1.0 Scalar of refuge relationship with biogenic habitat for ad FDC 1.0

Acov\_ad\_FDO 1.0 Scalar of refuge relationship with biogenic habitat for ad FDO 1.0

Acov\_ad\_FDE 1.0 Scalar of refuge relationship with biogenic habitat for ad FDE 1.0

Acov\_ad\_FDF 1.0 Scalar of refuge relationship with biogenic habitat for ad FDF 1.0

Acov\_ad\_FDM 1.0 Scalar of refuge relationship with biogenic habitat for ad FDM 1.0

Acov\_ad\_FDP 1.0 Scalar of refuge relationship with biogenic habitat for ad FDP 1.0

Acov\_ad\_SHD 1.0 Scalar of refuge relationship with biogenic habitat for ad SHD 1.0

Acov\_ad\_SHC 1.0 Scalar of refuge relationship with biogenic habitat for ad SHC 1.0

Acov\_ad\_SHP 1.0 Scalar of refuge relationship with biogenic habitat for ad SHP 1.0

Acov\_ad\_SHB 1.0 Scalar of refuge relationship with biogenic habitat for ad SHB 1.0

Acov\_ad\_SHR 1.0 Scalar of refuge relationship with biogenic habitat for ad SHR 1.0

Acov\_ad\_SSK 1.0 Scalar of refuge relationship with biogenic habitat for ad SSK 1.0

Acov\_ad\_SB 1.0 Scalar of refuge relationship with biogenic habitat for ad SB 1.0

Acov\_ad\_SP 1.0 Scalar of refuge relationship with biogenic habitat for ad SP 1.0

Acov\_ad\_REP 1.0 Scalar of refuge relationship with biogenic habitat for ad REP 1.0

Acov\_ad\_PIN 1.0 Scalar of refuge relationship with biogenic habitat for ad PIN 1.0

Acov\_ad\_WDG 1.0 Scalar of refuge relationship with biogenic habitat for ad WDG 1.0

Acov\_ad\_WHB 1.0 Scalar of refuge relationship with biogenic habitat for ad WHB 1.0

Acov\_ad\_WHS 1.0 Scalar of refuge relationship with biogenic habitat for ad WHS 1.0

Acov\_ad\_WHT 1.0 Scalar of refuge relationship with biogenic habitat for ad WHT 1.0

# Benthic depth stratification markers

## Parameters to use with home range movement

# Minimum depth (m) for each group

FPS\_mindepth 0

FPL\_mindepth 0

FPO\_mindepth 0

FVD\_mindepth 0

FVV\_mindepth 0

FVS\_mindepth 0

FVT\_mindepth 0

FVO\_mindepth 0

FVB\_mindepth 0

FMM\_mindepth 0

FMN\_mindepth 0

FBP\_mindepth 0

FDD\_mindepth 0

FDS\_mindepth 0

FDB\_mindepth 0

FDC\_mindepth 0

FDO\_mindepth 300

FDE\_mindepth 300

FDF\_mindepth 300

FDM\_mindepth 0

FDP\_mindepth 0

SHD\_mindepth 0

SHC\_mindepth 300

SHP\_mindepth 0

SHB\_mindepth 0

SHR\_mindepth 0

SSK\_mindepth 0

SB\_mindepth 0

SP\_mindepth 0

PIN\_mindepth 0

REP\_mindepth 300

WDG\_mindepth 0

WHB\_mindepth 0

WHS\_mindepth 0

WHT\_mindepth 0

CEP\_mindepth 0

PWN\_mindepth 0

BML\_mindepth 0

BMS\_mindepth 0

BMD\_mindepth 50

ZL\_mindepth 0

ZM\_mindepth 0

ZS\_mindepth 0

DF\_mindepth 0

BD\_mindepth 0

BO\_mindepth 0

BC\_mindepth 0

BFF\_mindepth 50

BFS\_mindepth 0

BFD\_mindepth 50

BG\_mindepth 0

MA\_mindepth 0

SG\_mindepth 0

ZG\_mindepth 0

PL\_mindepth 0

PS\_mindepth 0

PB\_mindepth 0

BB\_mindepth 0

# Maximum depth (m) for each group

FPS\_maxdepth 5000

FPL\_maxdepth 5000

FPO\_maxdepth 1900

FVD\_maxdepth 5000

FVV\_maxdepth 5000

FVS\_maxdepth 1900

FVT\_maxdepth 5000

FVO\_maxdepth 255

FVB\_maxdepth 1900

FMM\_maxdepth 5000

FMN\_maxdepth 5000

FBP\_maxdepth 5000

FDD\_maxdepth 5000

FDS\_maxdepth 1900

FDB\_maxdepth 1900

FDC\_maxdepth 1900

FDO\_maxdepth 5000

FDE\_maxdepth 1900

FDF\_maxdepth 1900

FDM\_maxdepth 1900

FDP\_maxdepth 5000

SHD\_maxdepth 1900

SHC\_maxdepth 1900

SHP\_maxdepth 5000

SHB\_maxdepth 5000

SHR\_maxdepth 5000

SSK\_maxdepth 1900

SB\_maxdepth 5000

SP\_maxdepth 1900

PIN\_maxdepth 255

REP\_maxdepth 1900

WDG\_maxdepth 255

WHB\_maxdepth 5000

WHS\_maxdepth 5000

WHT\_maxdepth 5000

CEP\_maxdepth 5000

PWN\_maxdepth 1900

BML\_maxdepth 200

BMS\_maxdepth 200

BMD\_maxdepth 5000

ZL\_maxdepth 5000

ZM\_maxdepth 5000

ZS\_maxdepth 5000

DF\_maxdepth 5000

BD\_maxdepth 5000

BO\_maxdepth 5000

BC\_maxdepth 5000

BFF\_maxdepth 5000

BFS\_maxdepth 200

BFD\_maxdepth 5000

BG\_maxdepth 5000

MA\_maxdepth 5000

SG\_maxdepth 5000

ZG\_maxdepth 5000

PL\_maxdepth 5000

PS\_maxdepth 5000

PB\_maxdepth 5000

BB\_maxdepth 5000

# Home range radius (m) for each group

FPS\_homerangerad 1

FPL\_homerangerad 1

FPO\_homerangerad 1

FVD\_homerangerad 1

FVV\_homerangerad 1

FVS\_homerangerad 1

FVT\_homerangerad 1

FVO\_homerangerad 1

FVB\_homerangerad 1

FMM\_homerangerad 1

FMN\_homerangerad 1

FBP\_homerangerad 1

FDD\_homerangerad 1

FDS\_homerangerad 1

FDB\_homerangerad 1

FDC\_homerangerad 1

FDO\_homerangerad 1

FDE\_homerangerad 1

FDF\_homerangerad 1

FDM\_homerangerad 1

FDP\_homerangerad 1

SHD\_homerangerad 1

SHC\_homerangerad 1

SHP\_homerangerad 1

SHB\_homerangerad 1

SHR\_homerangerad 1

SSK\_homerangerad 1

SB\_homerangerad 1

SP\_homerangerad 1

PIN\_homerangerad 1

REP\_homerangerad 600000

WDG\_homerangerad 1

WHB\_homerangerad 1

WHS\_homerangerad 1

WHT\_homerangerad 1

CEP\_homerangerad 1

PWN\_homerangerad 1

BML\_homerangerad 1

BMS\_homerangerad 1

BMD\_homerangerad 1

ZL\_homerangerad 1

ZM\_homerangerad 1

ZS\_homerangerad 1

DF\_homerangerad 1

BD\_homerangerad 1

BO\_homerangerad 1

BC\_homerangerad 1

BFF\_homerangerad 1

BFS\_homerangerad 1

BFD\_homerangerad 1

BG\_homerangerad 1

# Whether home ranges overlap for each group

FPS\_overlap 0

FPL\_overlap 0

FPO\_overlap 0

FVD\_overlap 0

FVV\_overlap 0

FVS\_overlap 0

FVT\_overlap 0

FVO\_overlap 0

FVB\_overlap 0

FMM\_overlap 0

FMN\_overlap 0

FBP\_overlap 0

FDD\_overlap 0

FDS\_overlap 0

FDB\_overlap 0

FDC\_overlap 0

FDO\_overlap 0

FDE\_overlap 0

FDF\_overlap 0

FDM\_overlap 0

FDP\_overlap 0

SHD\_overlap 0

SHC\_overlap 0

SHP\_overlap 0

SHB\_overlap 0

SHR\_overlap 0

SSK\_overlap 0

SB\_overlap 0

SP\_overlap 0

PIN\_overlap 0

REP\_overlap 0

WDG\_overlap 0

WHB\_overlap 0

WHS\_overlap 0

WHT\_overlap 0

CEP\_overlap 0

PWN\_overlap 0

BML\_overlap 0

BMS\_overlap 0

BMD\_overlap 0

ZL\_overlap 0

ZM\_overlap 0

ZS\_overlap 0

DF\_overlap 0

BD\_overlap 0

BO\_overlap 0

BC\_overlap 0

BFF\_overlap 0

BFS\_overlap 0

BFD\_overlap 0

BG\_overlap 0

## Habitat degradation parameters - this represents effects on suitable bottom types used by

# macroalgae, seagrass and benthic filter feeders due to human activities (e.g. reef removal, dredging)

REEFchange\_max\_num 1 Number of changes in area of available reef habitat per coastal cell

FLATchange\_max\_num 1 Number of changes in area of available flat bottom per coastal cell

SOFTchange\_max\_num 1 Number of changes in area of available soft bottom per coastal cell

# Arrays to indicate start of change in available habitat for each bed type.

# There must be as many entries in this array as there are number

# of changes in area for that bed type.

REEFchange\_start 1

0

FLATchange\_start 1

0

SOFTchange\_start 1

0

# Arrays to indicate period of change of available habitat for each bed type takes.

# There must be as many entries in this array as there are number

# of changes in area for that bed type.

REEFchange\_period 1

0

FLATchange\_period 1

0

SOFTchange\_period 1

0

# Arrays to indicate proportional change in available habitat for each bed type.

# There must be as many entries in this array as there are number

# of changes in area for that bed type.

REEFchange\_mult 1

0

FLATchange\_mult 1

0

SOFTchange\_mult 1

0

# Array indicating cells effected by coastal degradation

Box\_degraded 11

0 0 0 0 0 0 0 0 0 0 0

## Vertebrate movement options

roc\_wgt 10000 Wgt factor for density dependent fish move 10000

k\_roc\_food 0.5 Percent of body mass needed as food before disperse (ddepend move on) 0.5

# Distribution of adult stages of each vertebrate group

# Proportion of adult small planktivores in each box in each season

#from B1

FFPS\_S1 11

0 0.34 0.25 0.25 0.08 0.08 0 0 0 0 0

FFPS\_S2 11

0 0.34 0.25 0.25 0.08 0.08 0 0 0 0 0

FFPS\_S3 11

0 0.34 0.25 0.25 0.08 0.08 0 0 0 0 0

FFPS\_S4 11

0 0.34 0.25 0.25 0.08 0.08 0 0 0 0 0

FFPL\_S1 11

0 0.249195295 0.201180756 0.285021264 0.147290105 0.117312579 0 0 0 0 0

FFPL\_S2 11

0 0.249195295 0.201180756 0.285021264 0.147290105 0.117312579 0 0 0 0 0

FFPL\_S3 11

0 0.249195295 0.201180756 0.285021264 0.147290105 0.117312579 0 0 0 0 0

FFPL\_S4 11

0 0.249195295 0.201180756 0.285021264 0.147290105 0.117312579 0 0 0 0 0

FFPO\_S1 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFPO\_S2 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFPO\_S3 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFPO\_S4 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVD\_S1 11

0 0.028208604 0.032057644 0.037068169 0.42520304 0.477462543 0 0 0 0 0

FFVD\_S2 11

0 0.028208604 0.032057644 0.037068169 0.42520304 0.477462543 0 0 0 0 0

FFVD\_S3 11

0 0.028208604 0.032057644 0.037068169 0.42520304 0.477462543 0 0 0 0 0

FFVD\_S4 11

0 0.028208604 0.032057644 0.037068169 0.42520304 0.477462543 0 0 0 0 0

FFVV\_S1 11

0 0.302862515 0.40283912 0.294298365 0 0 0 0 0 0 0

FFVV\_S2 11

0 0.302862515 0.40283912 0.294298365 0 0 0 0 0 0 0

FFVV\_S3 11

0 0.302862515 0.40283912 0.294298365 0 0 0 0 0 0 0

FFVV\_S4 11

0 0.302862515 0.40283912 0.294298365 0 0 0 0 0 0 0

FFVS\_S1 11

0 0.469862145 0.212548049 0.314220965 0.002287077 0.001081763 0 0 0 0 0

FFVS\_S2 11

0 0.469862145 0.212548049 0.314220965 0.002287077 0.001081763 0 0 0 0 0

FFVS\_S3 11

0 0.469862145 0.212548049 0.314220965 0.002287077 0.001081763 0 0 0 0 0

FFVS\_S4 11

0 0.469862145 0.212548049 0.314220965 0.002287077 0.001081763 0 0 0 0 0

FFVT\_S1 11

0 0.059227567 0.042258567 0.056567614 0.570226475 0.271719777 0 0 0 0 0

FFVT\_S2 11

0 0.105162453 0.147173433 0.212324786 0.382535252 0.152804075 0 0 0 0 0

FFVT\_S3 11

0 0.102327647 0.101234101 0.138271388 0.34004924 0.318117624 0 0 0 0 0

FFVT\_S4 11

0 0.105162453 0.147173433 0.212324786 0.382535252 0.152804075 0 0 0 0 0

FFVO\_S1 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVO\_S2 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVO\_S3 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVO\_S4 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVB\_S1 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVB\_S2 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVB\_S3 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVB\_S4 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFMM\_S1 11

0 0.183756793 0.182048541 0.256202135 0.204194524 0.173798008 0 0 0 0 0

FFMM\_S2 11

0 0.183756793 0.182048541 0.256202135 0.204194524 0.173798008 0 0 0 0 0

FFMM\_S3 11

0 0.183756793 0.182048541 0.256202135 0.204194524 0.173798008 0 0 0 0 0

FFMM\_S4 11

0 0.183756793 0.182048541 0.256202135 0.204194524 0.173798008 0 0 0 0 0

FFMN\_S1 11

0 0.423226665 0.222241234 0.324832067 0.020163112 0.009536922 0 0 0 0 0

FFMN\_S2 11

0 0.423226665 0.222241234 0.324832067 0.020163112 0.009536922 0 0 0 0 0

FFMN\_S3 11

0 0.423226665 0.222241234 0.324832067 0.020163112 0.009536922 0 0 0 0 0

FFMN\_S4 11

0 0.423226665 0.222241234 0.324832067 0.020163112 0.009536922 0 0 0 0 0

FFBP\_S1 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFBP\_S2 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFBP\_S3 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFBP\_S4 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDD\_S1 11

0 0.226718497 0.189717569 0.266771291 0.161417778 0.155374865 0 0 0 0 0

FFDD\_S2 11

0 0.193001295 0.195129184 0.272219941 0.155966036 0.183683544 0 0 0 0 0

FFDD\_S3 11

0 0.170426417 0.185739314 0.25846006 0.206636225 0.178737984 0 0 0 0 0

FFDD\_S4 11

0 0.150296548 0.202942146 0.280780729 0.17220002 0.193780558 0 0 0 0 0

FFDS\_S1 11

0 0.283027662 0.231628972 0.330985247 0.071627855 0.082730263 0 0 0 0 0

FFDS\_S2 11

0 0.283514072 0.231474435 0.330758922 0.071578878 0.082673693 0 0 0 0 0

FFDS\_S3 11

0 0.283514072 0.231474435 0.330758922 0.071578878 0.082673693 0 0 0 0 0

FFDS\_S4 11

0 0.283514072 0.231474435 0.330758922 0.071578878 0.082673693 0 0 0 0 0

FFDB\_S1 11

0 0.302862517 0.402839115 0.294298369 0 0 0 0 0 0 0

FFDB\_S2 11

0 0.302862517 0.402839115 0.294298369 0 0 0 0 0 0 0

FFDB\_S3 11

0 0.302862517 0.402839115 0.294298369 0 0 0 0 0 0 0

FFDB\_S4 11

0 0.302862517 0.402839115 0.294298369 0 0 0 0 0 0 0

FFDC\_S1 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDC\_S2 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDC\_S3 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDC\_S4 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDO\_S1 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FFDO\_S2 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FFDO\_S3 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FFDO\_S4 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FFDE\_S1 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDE\_S2 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDE\_S3 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDE\_S4 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDF\_S1 11

0 0.31951287 0.192866322 0.275032604 0.038029437 0.174558767 0 0 0 0 0

FFDF\_S2 11

0 0.31951287 0.192866322 0.275032604 0.038029437 0.174558767 0 0 0 0 0

FFDF\_S3 11

0 0.31951287 0.192866322 0.275032604 0.038029437 0.174558767 0 0 0 0 0

FFDF\_S4 11

0 0.31951287 0.192866322 0.275032604 0.038029437 0.174558767 0 0 0 0 0

FFDP\_S1 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDP\_S2 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDP\_S3 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDP\_S4 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDM\_S1 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDM\_S2 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDM\_S3 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDM\_S4 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FSHD\_S1 11

0 0.34 0.33 0.33 0 0 0 0 0 0 0

FSHD\_S2 11

0 0.34 0.33 0.33 0 0 0 0 0 0 0

FSHD\_S3 11

0 0.34 0.33 0.33 0 0 0 0 0 0 0

FSHD\_S4 11

0 0.34 0.33 0.33 0 0 0 0 0 0 0

FSHP\_S1 11

0 0.198179447 0.142133434 0.197544607 0.24176641 0.220376102 0 0 0 0 0

FSHP\_S2 11

0 0.181563232 0.146392598 0.203716308 0.246598444 0.221729418 0 0 0 0 0

FSHP\_S3 11

0 0.181563232 0.146392598 0.203716308 0.246598444 0.221729418 0 0 0 0 0

FSHP\_S4 11

0 0.181563232 0.146392598 0.203716308 0.246598444 0.221729418 0 0 0 0 0

FSHB\_S1 11

0 0.306762133 0.317606888 0.375630979 0 0 0 0 0 0 0

FSHB\_S2 11

0 0.306762133 0.317606888 0.375630979 0 0 0 0 0 0 0

FSHB\_S3 11

0 0.306762133 0.317606888 0.375630979 0 0 0 0 0 0 0

FSHB\_S4 11

0 0.306762133 0.317606888 0.375630979 0 0 0 0 0 0 0

FSHC\_S1 11

0 0.038297493 0.153395953 0.203583437 0.078444099 0.526279018 0 0 0 0 0

FSHC\_S2 11

0 0.038297493 0.153395953 0.203583437 0.078444099 0.526279018 0 0 0 0 0

FSHC\_S3 11

0 0.038297493 0.153395953 0.203583437 0.078444099 0.526279018 0 0 0 0 0

FSHC\_S4 11

0 0.038297493 0.153395953 0.203583437 0.078444099 0.526279018 0 0 0 0 0

FSHR\_S1 11

0 0.038433666 0.15390601 0.204307307 0.078714757 0.52463826 0 0 0 0 0

FSHR\_S2 11

0 0.038433666 0.15390601 0.204307307 0.078714757 0.52463826 0 0 0 0 0

FSHR\_S3 11

0 0.038433666 0.15390601 0.204307307 0.078714757 0.52463826 0 0 0 0 0

FSHR\_S4 11

0 0.038433666 0.15390601 0.204307307 0.078714757 0.52463826 0 0 0 0 0

FSSK\_S1 11

0 0.499361394 0.200965129 0.296657294 0.002047661 0.000968522 0 0 0 0 0

FSSK\_S2 11

0 0.499361394 0.200965129 0.296657294 0.002047661 0.000968522 0 0 0 0 0

FSSK\_S3 11

0 0.499361394 0.200965129 0.296657294 0.002047661 0.000968522 0 0 0 0 0

FSSK\_S4 11

0 0.499361394 0.200965129 0.296657294 0.002047661 0.000968522 0 0 0 0 0

FSB\_S1 11

0 0.15589468 0.122863329 0.169211609 0.238319388 0.313710993 0 0 0 0 0

FSB\_S2 11

0 0.15589468 0.122863329 0.169211609 0.238319388 0.313710993 0 0 0 0 0

FSB\_S3 11

0 0.15589468 0.122863329 0.169211609 0.238319388 0.313710993 0 0 0 0 0

FSB\_S4 11

0 0.15589468 0.122863329 0.169211609 0.238319388 0.313710993 0 0 0 0 0

FSP\_S1 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FSP\_S2 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FSP\_S3 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FSP\_S4 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FREP\_S1 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FREP\_S2 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FREP\_S3 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FREP\_S4 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FWDG\_S1 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FWDG\_S2 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FWDG\_S3 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FWDG\_S4 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FPIN\_S1 11

0 0.716228615 0.115704535 0.16806685 0 0 0 0 0 0 0

FPIN\_S2 11

0 0.338133876 0.265458131 0.396407993 0 0 0 0 0 0 0

FPIN\_S3 11

0 0.338133876 0.265458131 0.396407993 0 0 0 0 0 0 0

FPIN\_S4 11

0 0.338133876 0.265458131 0.396407993 0 0 0 0 0 0 0

FWHB\_S1 11

0 0.086041079 0.126689088 0.174877121 0.319289646 0.293103066 0 0 0 0 0

FWHB\_S2 11

0 0.104090068 0.168908362 0.23183375 0.268170813 0.226997007 0 0 0 0 0

FWHB\_S3 11

0 0.469883045 0.191304342 0.280788325 0.031097302 0.026926986 0 0 0 0 0

FWHB\_S4 11

0 0.104090068 0.168908362 0.23183375 0.268170813 0.226997007 0 0 0 0 0

FWHS\_S1 11

0 0.322013468 0.2263127 0.322556083 0.087238726 0.041879023 0 0 0 0 0

FWHS\_S2 11

0 0.322013468 0.2263127 0.322556083 0.087238726 0.041879023 0 0 0 0 0

FWHS\_S3 11

0 0.322013468 0.2263127 0.322556083 0.087238726 0.041879023 0 0 0 0 0

FWHS\_S4 11

0 0.322013468 0.2263127 0.322556083 0.087238726 0.041879023 0 0 0 0 0

FWHT\_S1 11

0 0.229334808 0.162132266 0.229721261 0.254190521 0.124621144 0 0 0 0 0

FWHT\_S2 11

0 0.229334808 0.162132266 0.229721261 0.254190521 0.124621144 0 0 0 0 0

FWHT\_S3 11

0 0.229334808 0.162132266 0.229721261 0.254190521 0.124621144 0 0 0 0 0

FWHT\_S4 11

0 0.229334808 0.162132266 0.229721261 0.254190521 0.124621144 0 0 0 0 0

FCEP\_S1 11

0 0.27 0.27 0.27 0.09 0.1 0 0 0 0 0

FCEP\_S2 11

0 0.27 0.27 0.27 0.09 0.1 0 0 0 0 0

FCEP\_S3 11

0 0.27 0.27 0.27 0.09 0.1 0 0 0 0 0

FCEP\_S4 11

0 0.27 0.27 0.27 0.09 0.1 0 0 0 0 0

FPWN\_S1 11

0 0.474497106 0.211125247 0.312539955 0.000234979 0.001602713 0 0 0 0 0

FPWN\_S2 11

0 0.474497106 0.211125247 0.312539955 0.000234979 0.001602713 0 0 0 0 0

FPWN\_S3 11

0 0.474497106 0.211125247 0.312539955 0.000234979 0.001602713 0 0 0 0 0

FPWN\_S4 11

0 0.474497106 0.211125247 0.312539955 0.000234979 0.001602713 0 0 0 0 0

FBML\_S1 11

0 0.505087769 0.199697116 0.295215115 0 0 0 0 0 0 0

FBML\_S2 11

0 0.505087769 0.199697116 0.295215115 0 0 0 0 0 0 0

FBML\_S3 11

0 0.505087769 0.199697116 0.295215115 0 0 0 0 0 0 0

FBML\_S4 11

0 0.505087769 0.199697116 0.295215115 0 0 0 0 0 0 0

FZL\_S1 11

0 0.334536116 0.164758415 0.23808106 0.136927258 0.125697151 0 0 0 0 0

FZL\_S2 11

0 0.334536116 0.164758415 0.23808106 0.136927258 0.125697151 0 0 0 0 0

FZL\_S3 11

0 0.334536116 0.164758415 0.23808106 0.136927258 0.125697151 0 0 0 0 0

FZL\_S4 11

0 0.334536116 0.164758415 0.23808106 0.136927258 0.125697151 0 0 0 0 0

# Distribution of juvenile stages of each vertebrate group

# Proportion of juvenile small planktivores in each box in each

FFPS\_S1juv 11

0 0.335531164 0.191622582 0.277343824 0.049076134 0.146426296 0 0 0 0 0

FFPS\_S2juv 11

0 0.335531164 0.191622582 0.277343824 0.049076134 0.146426296 0 0 0 0 0

FFPS\_S3juv 11

0 0.335531164 0.191622582 0.277343824 0.049076134 0.146426296 0 0 0 0 0

FFPS\_S4juv 11

0 0.335531164 0.191622582 0.277343824 0.049076134 0.146426296 0 0 0 0 0

FFPL\_S1juv 11

0 0.32884578 0.184072151 0.267860244 0.114588508 0.104633317 0 0 0 0 0

FFPL\_S2juv 11

0 0.32884578 0.184072151 0.267860244 0.114588508 0.104633317 0 0 0 0 0

FFPL\_S3juv 11

0 0.32884578 0.184072151 0.267860244 0.114588508 0.104633317 0 0 0 0 0

FFPL\_S4juv 11

0 0.32884578 0.184072151 0.267860244 0.114588508 0.104633317 0 0 0 0 0

FFPO\_S1juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFPO\_S2juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFPO\_S3juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFPO\_S4juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVD\_S1juv 11

0 0.028208604 0.032057644 0.037068169 0.42520304 0.477462543 0 0 0 0 0

FFVD\_S2juv 11

0 0.028208604 0.032057644 0.037068169 0.42520304 0.477462543 0 0 0 0 0

FFVD\_S3juv 11

0 0.028208604 0.032057644 0.037068169 0.42520304 0.477462543 0 0 0 0 0

FFVD\_S4juv 11

0 0.028208604 0.032057644 0.037068169 0.42520304 0.477462543 0 0 0 0 0

FFVV\_S1juv 11

0 0.302862515 0.40283912 0.294298365 0 0 0 0 0 0 0

FFVV\_S2juv 11

0 0.302862515 0.40283912 0.294298365 0 0 0 0 0 0 0

FFVV\_S3juv 11

0 0.302862515 0.40283912 0.294298365 0 0 0 0 0 0 0

FFVV\_S4juv 11

0 0.302862515 0.40283912 0.294298365 0 0 0 0 0 0 0

FFVS\_S1juv 11

0 0.50509973 0.19970185 0.29519842 0 0 0 0 0 0 0

FFVS\_S2juv 11

0 0.50509973 0.19970185 0.29519842 0 0 0 0 0 0 0

FFVS\_S3juv 11

0 0.50509973 0.19970185 0.29519842 0 0 0 0 0 0 0

FFVS\_S4juv 11

0 0.50509973 0.19970185 0.29519842 0 0 0 0 0 0 0

FFVT\_S1juv 11

0 0.060070892 0.043055273 0.057373066 0.544547971 0.294952798 0 0 0 0 0

FFVT\_S2juv 11

0 0.322859708 0.163982866 0.236402912 0.144609159 0.132145355 0 0 0 0 0

FFVT\_S3juv 11

0 0.322859708 0.163982866 0.236402912 0.144609159 0.132145355 0 0 0 0 0

FFVT\_S4juv 11

0 0.347482849 0.176109741 0.254432361 0.1174272 0.104547849 0 0 0 0 0

FFVO\_S1juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVO\_S2juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVO\_S3juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVO\_S4juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVB\_S1juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVB\_S2juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVB\_S3juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFVB\_S4juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFMM\_S1juv 11

0 0.183756793 0.182048541 0.256202135 0.204194524 0.173798008 0 0 0 0 0

FFMM\_S2juv 11

0 0.183756793 0.182048541 0.256202135 0.204194524 0.173798008 0 0 0 0 0

FFMM\_S3juv 11

0 0.183756793 0.182048541 0.256202135 0.204194524 0.173798008 0 0 0 0 0

FFMM\_S4juv 11

0 0.183756793 0.182048541 0.256202135 0.204194524 0.173798008 0 0 0 0 0

FFMN\_S1juv 11

0 0.35460755 0.103411334 0.142564179 0.380852566 0.018564372 0 0 0 0 0

FFMN\_S2juv 11

0 0.35460755 0.103411334 0.142564179 0.380852566 0.018564372 0 0 0 0 0

FFMN\_S3juv 11

0 0.35460755 0.103411334 0.142564179 0.380852566 0.018564372 0 0 0 0 0

FFMN\_S4juv 11

0 0.35460755 0.103411334 0.142564179 0.380852566 0.018564372 0 0 0 0 0

FFBP\_S1juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFBP\_S2juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFBP\_S3juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFBP\_S4juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDD\_S1juv 11

0 0.185559928 0.1525608 0.210481661 0.259456882 0.191940729 0 0 0 0 0

FFDD\_S2juv 11

0 0.185559928 0.1525608 0.210481661 0.259456882 0.191940729 0 0 0 0 0

FFDD\_S3juv 11

0 0.185559928 0.1525608 0.210481661 0.259456882 0.191940729 0 0 0 0 0

FFDD\_S4juv 11

0 0.185559928 0.1525608 0.210481661 0.259456882 0.191940729 0 0 0 0 0

FFDS\_S1juv 11

0 0.35 0.3 0.35 0.0 0.0 0 0 0 0 0

FFDS\_S2juv 11

0 0.35 0.3 0.35 0.0 0.0 0 0 0 0 0

FFDS\_S3juv 11

0 0.35 0.3 0.35 0.0 0.0 0 0 0 0 0

FFDS\_S4juv 11

0 0.35 0.3 0.35 0.0 0.0 0 0 0 0 0

FFDB\_S1juv 11

0 0.302862517 0.402839115 0.294298369 0 0 0 0 0 0 0

FFDB\_S2juv 11

0 0.302862517 0.402839115 0.294298369 0 0 0 0 0 0 0

FFDB\_S3juv 11

0 0.302862517 0.402839115 0.294298369 0 0 0 0 0 0 0

FFDB\_S4juv 11

0 0.302862517 0.402839115 0.294298369 0 0 0 0 0 0 0

FFDC\_S1juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDC\_S2juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDC\_S3juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDC\_S4juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDO\_S1juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FFDO\_S2juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FFDO\_S3juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FFDO\_S4juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FFDE\_S1juv 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDE\_S2juv 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDE\_S3juv 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDE\_S4juv 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDF\_S1juv 11

0 0.280604023 0.204632307 0.289842587 0.083011019 0.141910063 0 0 0 0 0

FFDF\_S2juv 11

0 0.280604023 0.204632307 0.289842587 0.083011019 0.141910063 0 0 0 0 0

FFDF\_S3juv 11

0 0.280604023 0.204632307 0.289842587 0.083011019 0.141910063 0 0 0 0 0

FFDF\_S4juv 11

0 0.280604023 0.204632307 0.289842587 0.083011019 0.141910063 0 0 0 0 0

FFDP\_S1juv 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDP\_S2juv 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDP\_S3juv 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDP\_S4juv 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FFDM\_S1juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDM\_S2juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDM\_S3juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FFDM\_S4juv 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FSHD\_S1juv 11

0 0.34 0.33 0.33 0 0 0 0 0 0 0

FSHD\_S2juv 11

0 0.34 0.33 0.33 0 0 0 0 0 0 0

FSHD\_S3juv 11

0 0.34 0.33 0.33 0 0 0 0 0 0 0

FSHD\_S4juv 11

0 0.34 0.33 0.33 0 0 0 0 0 0 0

FSHP\_S1juv 11

0 0.443159221 0.207324259 0.297230386 0.030688114 0.021598021 0 0 0 0 0

FSHP\_S2juv 11

0 0.422003264 0.204312871 0.292247485 0.046171577 0.035264803 0 0 0 0 0

FSHP\_S3juv 11

0 0.422003264 0.204312871 0.292247485 0.046171577 0.035264803 0 0 0 0 0

FSHP\_S4juv 11

0 0.443159221 0.207324259 0.297230386 0.030688114 0.021598021 0 0 0 0 0

FSHB\_S1juv 11

0 0.306762133 0.317606888 0.375630979 0 0 0 0 0 0 0

FSHB\_S2juv 11

0 0.306762133 0.317606888 0.375630979 0 0 0 0 0 0 0

FSHB\_S3juv 11

0 0.306762133 0.317606888 0.375630979 0 0 0 0 0 0 0

FSHB\_S4juv 11

0 0.306762133 0.317606888 0.375630979 0 0 0 0 0 0 0

FSHC\_S1juv 11

0 0.038297495 0.153395954 0.203583433 0.078444099 0.526279019 0 0 0 0 0

FSHC\_S2juv 11

0 0.038297495 0.153395954 0.203583433 0.078444099 0.526279019 0 0 0 0 0

FSHC\_S3juv 11

0 0.038297495 0.153395954 0.203583433 0.078444099 0.526279019 0 0 0 0 0

FSHC\_S4juv 11

0 0.038297495 0.153395954 0.203583433 0.078444099 0.526279019 0 0 0 0 0

FSHR\_S1juv 11

0 0.038433666 0.15390601 0.204307307 0.078714757 0.52463826 0 0 0 0 0

FSHR\_S2juv 11

0 0.038433666 0.15390601 0.204307307 0.078714757 0.52463826 0 0 0 0 0

FSHR\_S3juv 11

0 0.038433666 0.15390601 0.204307307 0.078714757 0.52463826 0 0 0 0 0

FSHR\_S4juv 11

0 0.038433666 0.15390601 0.204307307 0.078714757 0.52463826 0 0 0 0 0

FSSK\_S1juv 11

0 0.505093541 0.199699399 0.29520706 0 0 0 0 0 0 0

FSSK\_S2juv 11

0 0.505093541 0.199699399 0.29520706 0 0 0 0 0 0 0

FSSK\_S3juv 11

0 0.505093541 0.199699399 0.29520706 0 0 0 0 0 0 0

FSSK\_S4juv 11

0 0.505093541 0.199699399 0.29520706 0 0 0 0 0 0 0

FSB\_S1juv 11

0 0.150295965 0.124017762 0.170759797 0.254388456 0.30053802 0 0 0 0 0

FSB\_S2juv 11

0 0.150295965 0.124017762 0.170759797 0.254388456 0.30053802 0 0 0 0 0

FSB\_S3juv 11

0 0.150295965 0.124017762 0.170759797 0.254388456 0.30053802 0 0 0 0 0

FSB\_S4juv 11

0 0.150295965 0.124017762 0.170759797 0.254388456 0.30053802 0 0 0 0 0

FSP\_S1juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FSP\_S2juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FSP\_S3juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FSP\_S4juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FREP\_S1juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FREP\_S2juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FREP\_S3juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FREP\_S4juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FWDG\_S1juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FWDG\_S2juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FWDG\_S3juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FWDG\_S4juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FPIN\_S1juv 11

0 0.832987685 0.069641388 0.097370927 0 0 0 0 0 0 0

FPIN\_S2juv 11

0 0.338133876 0.265458131 0.396407993 0 0 0 0 0 0 0

FPIN\_S3juv 11

0 0.338133876 0.265458131 0.396407993 0 0 0 0 0 0 0

FPIN\_S4juv 11

0 0.338133876 0.265458131 0.396407993 0 0 0 0 0 0 0

FWHB\_S1juv 11

0 0.086041079 0.126689088 0.174877121 0.319289646 0.293103066 0 0 0 0 0

FWHB\_S2juv 11

0 0.104090068 0.168908362 0.23183375 0.268170813 0.226997007 0 0 0 0 0

FWHB\_S3juv 11

0 0.469883045 0.191304342 0.280788325 0.031097302 0.026926986 0 0 0 0 0

FWHB\_S4juv 11

0 0.104090068 0.168908362 0.23183375 0.268170813 0.226997007 0 0 0 0 0

FWHS\_S1juv 11

0 0.322013468 0.2263127 0.322556083 0.087238726 0.041879023 0 0 0 0 0

FWHS\_S2juv 11

0 0.322013468 0.2263127 0.322556083 0.087238726 0.041879023 0 0 0 0 0

FWHS\_S3juv 11

0 0.322013468 0.2263127 0.322556083 0.087238726 0.041879023 0 0 0 0 0

FWHS\_S4juv 11

0 0.322013468 0.2263127 0.322556083 0.087238726 0.041879023 0 0 0 0 0

FWHT\_S1juv 11

0 0.229334808 0.162132266 0.229721261 0.254190521 0.124621144 0 0 0 0 0

FWHT\_S2juv 11

0 0.229334808 0.162132266 0.229721261 0.254190521 0.124621144 0 0 0 0 0

FWHT\_S3juv 11

0 0.229334808 0.162132266 0.229721261 0.254190521 0.124621144 0 0 0 0 0

FWHT\_S4juv 11

0 0.229334808 0.162132266 0.229721261 0.254190521 0.124621144 0 0 0 0 0

FCEP\_S1juv 11

0 0.27 0.27 0.27 0.09 0.1 0 0 0 0 0

FCEP\_S2juv 11

0 0.27 0.27 0.27 0.09 0.1 0 0 0 0 0

FCEP\_S3juv 11

0 0.27 0.27 0.27 0.09 0.1 0 0 0 0 0

FCEP\_S4juv 11

0 0.27 0.27 0.27 0.09 0.1 0 0 0 0 0

FPWN\_S1juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FPWN\_S2juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FPWN\_S3juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

FPWN\_S4juv 11

0 0.5 0.5 0 0 0 0 0 0 0 0

# Vertical distribution for invertebrate consumers (proportion in each

# water column layer in day and night). First entry for each vector refers to water

# column layer closest to the sediment and then up through the watercolumn to

# surface most layer on the extreme right

VERTday\_CEP 6

0.5 0.3 0.1 0.1 0.0 0.0

VERTnight\_CEP 6

0.1 0.1 0.2 0.2 0.2 0.2

VERTday\_PWN 6

0.5 0.5 0 0 0 0

VERTnight\_PWN 6

0.5 0.5 0 0 0 0

VERTday\_ZG 6

0.1 0.1 0.1 0.1 0.1 0.5

VERTnight\_ZG 6

0.1 0.5 0.1 0.1 0.1 0.1

VERTday\_ZL 6

0.1 0.1 0.1 0.1 0.4 0.2

VERTnight\_ZL 6

0.1 0.1 0.1 0.1 0.4 0.2

VERTday\_ZM 6

0.1 0.1 0.1 0.1 0.4 0.2

VERTnight\_ZM 6

0.1 0.1 0.1 0.1 0.4 0.2

VERTday\_ZS 6

0.1 0.1 0.1 0.1 0.4 0.2

VERTnight\_ZS 6

0.1 0.1 0.1 0.1 0.4 0.2

# Vertical distribution for vertebrates (proportion in each water column layer in day and night).

# First entry for each group is for the juveniles, second for the adults.

# First entry for each vector refers to water column layer closest to the sediment

# and then up through the watercolumn to surface most layer on the extreme right

VERTday\_FPS1 6

0 0 0 0.2 0.4 0.4

VERTnight\_FPS1 6

0 0 0 0.2 0.4 0.4

VERTday\_FPS2 6

0 0 0 0.2 0.4 0.4

VERTnight\_FPS2 6

0 0 0 0.2 0.4 0.4

VERTday\_FPL1 6

0 0 0 0.2 0.4 0.4

VERTnight\_FPL1 6

0 0 0 0 0.5 0.5

VERTday\_FPL2 6

0 0 0.1 0.2 0.3 0.4

VERTnight\_FPL2 6

0 0 0 0.2 0.4 0.4

VERTday\_FPO1 6

0.75 0.25 0 0 0 0

VERTnight\_FPO1 6

0.75 0.25 0 0 0 0

VERTday\_FPO2 6

0.75 0.25 0 0 0 0

VERTnight\_FPO2 6

0.75 0.25 0 0 0 0

VERTday\_FVD1 6

0 0 0 0 0.5 0.5

VERTnight\_FVD1 6

0 0 0 0 0.5 0.5

VERTday\_FVD2 6

0 0 0 0 0.5 0.5

VERTnight\_FVD2 6

0 0 0 0 0.5 0.5

VERTday\_FVV1 6

0.75 0.25 0 0 0 0

VERTnight\_FVV1 6

0.75 0.25 0 0 0 0

VERTday\_FVV2 6

0.75 0.25 0 0 0 0

VERTnight\_FVV2 6

0.75 0.25 0 0 0 0

VERTday\_FVS1 6

0 0 0 0 0.5 0.5

VERTnight\_FVS1 6

0 0 0 0 0.5 0.5

VERTday\_FVS2 6

0 0 0 0 0.5 0.5

VERTnight\_FVS2 6

0 0 0 0 0.5 0.5

VERTday\_FVT1 6

0 0 0 0.4 0.4 0.2

VERTnight\_FVT1 6

0 0 0 0.4 0.4 0.2

VERTday\_FVT2 6

0 0 0 0.4 0.4 0.2

VERTnight\_FVT2 6

0 0 0 0.4 0.4 0.2

VERTday\_FVO1 6

0.5 0.5 0 0 0 0

VERTnight\_FVO1 6

0.5 0.5 0 0 0 0

VERTday\_FVO2 6

0.5 0.5 0 0 0 0

VERTnight\_FVO2 6

0.5 0.5 0 0 0 0

VERTday\_FVB1 6

0.75 0.25 0 0 0 0

VERTnight\_FVB1 6

0.75 0.25 0 0 0 0

VERTday\_FVB2 6

0.75 0.25 0 0 0 0

VERTnight\_FVB2 6

0.75 0.25 0 0 0 0

VERTday\_FMM1 6

0 0.7 0.2 0.1 0 0

VERTnight\_FMM1 6

0 0 0.1 0.1 0.5 0.3

VERTday\_FMM2 6

0 0.7 0.2 0.1 0 0

VERTnight\_FMM2 6

0 0 0.1 0.1 0.5 0.3

VERTday\_FMN1 6

0.1 0.7 0.2 0 0 0

VERTnight\_FMN1 6

0.1 0.7 0.2 0 0 0

VERTday\_FMN2 6

0.1 0.7 0.2 0 0 0

VERTnight\_FMN2 6

0.1 0.7 0.2 0 0 0

VERTday\_FBP1 6

0.75 0.25 0 0 0 0

VERTnight\_FBP1 6

0.75 0.25 0 0 0 0

VERTday\_FBP2 6

0.75 0.25 0 0 0 0

VERTnight\_FBP2 6

0.75 0.25 0 0 0 0

VERTday\_FDD1 6

0.5 0.5 0 0 0 0

VERTnight\_FDD1 6

0.3 0.3 0.2 0.2 0 0

VERTday\_FDD2 6

0.5 0.3 0.2 0 0 0

VERTnight\_FDD2 6

0.3 0.3 0.2 0.2 0 0

VERTday\_FDS1 6

0 0.56 0.41 0.01 0.01 0.01

VERTnight\_FDS1 6

0 0.43 0.45 0.05 0.04 0.03

VERTday\_FDS2 6

0 0.43 0.45 0.05 0.04 0.03

VERTnight\_FDS2 6

0 0.43 0.45 0.05 0.04 0.03

VERTday\_FDB1 6

0.75 0.25 0 0 0 0

VERTnight\_FDB1 6

0.75 0.25 0 0 0 0

VERTday\_FDB2 6

0.75 0.25 0 0 0 0

VERTnight\_FDB2 6

0.75 0.25 0 0 0 0

VERTday\_FDC1 6

0.75 0.25 0 0 0 0

VERTnight\_FDC1 6

0.75 0.25 0 0 0 0

VERTday\_FDC2 6

0.75 0.25 0 0 0 0

VERTnight\_FDC2 6

0.75 0.25 0 0 0 0

VERTday\_FDO1 6

0.7 0.3 0 0 0 0

VERTnight\_FDO1 6

0.7 0.3 0 0 0 0

VERTday\_FDO2 6

0.7 0.3 0 0 0 0

VERTnight\_FDO2 6

0.7 0.3 0 0 0 0

VERTday\_FDE1 6

0.75 0.25 0 0 0 0

VERTnight\_FDE1 6

0.75 0.25 0 0 0 0

VERTday\_FDE2 6

0.75 0.25 0 0 0 0

VERTnight\_FDE2 6

0.75 0.25 0 0 0 0

VERTday\_FDF1 6

0 0 0 0 0.3 0.7

VERTnight\_FDF1 6

0 0 0 0 0.5 0.5

VERTday\_FDF2 6

0.4 0.5 0.1 0 0 0

VERTnight\_FDF2 6

0 0.3 0.3 0.2 0.1 0.1

VERTday\_FDP1 6

0 0 0 0 0 1

VERTnight\_FDP1 6

0 0 0 0 0 1

VERTday\_FDP2 6

1 0 0 0 0 0

VERTnight\_FDP2 6

1 0 0 0 0 0

VERTday\_FDM1 6

0.75 0.25 0 0 0 0

VERTnight\_FDM1 6

0.75 0.25 0 0 0 0

VERTday\_FDM2 6

0.75 0.25 0 0 0 0

VERTnight\_FDM2 6

0.75 0.25 0 0 0 0

VERTday\_SHD1 6

1 0 0 0 0 0

VERTnight\_SHD1 6

1 0 0 0 0 0

VERTday\_SHD2 6

1 0 0 0 0 0

VERTnight\_SHD2 6

1 0 0 0 0 0

VERTday\_SHC1 6

1 0 0 0 0 0

VERTnight\_SHC1 6

1 0 0 0 0 0

VERTday\_SHC2 6

1 0 0 0 0 0

VERTnight\_SHC2 6

1 0 0 0 0 0

VERTday\_SHP1 6

0 0 0 0.2 0.4 0.4

VERTnight\_SHP1 6

0 0 0 0.2 0.4 0.4

VERTday\_SHP2 6

0 0 0 0.2 0.4 0.4

VERTnight\_SHP2 6

0 0 0 0.2 0.4 0.4

VERTday\_SHB1 6

1 0 0 0 0 0

VERTnight\_SHB1 6

1 0 0 0 0 0

VERTday\_SHB2 6

1 0 0 0 0 0

VERTnight\_SHB2 6

1 0 0 0 0 0

VERTday\_SHR1 6

1 0 0 0 0 0

VERTnight\_SHR1 6

1 0 0 0 0 0

VERTday\_SHR2 6

1 0 0 0 0 0

VERTnight\_SHR2 6

1 0 0 0 0 0

VERTday\_SSK1 6

1 0 0 0 0 0

VERTnight\_SSK1 6

1 0 0 0 0 0

VERTday\_SSK2 6

1 0 0 0 0 0

VERTnight\_SSK2 6

1 0 0 0 0 0

VERTday\_REP1 6

0.4 0.3 0 0.2 0.1 0

VERTnight\_REP1 6

0.4 0.3 0 0.2 0.1 0

VERTday\_REP2 6

0.4 0.3 0 0.2 0.1 0

VERTnight\_REP2 6

0.4 0.3 0 0.2 0.1 0

VERTday\_WDG1 6

0.1 0.1 0.1 0.1 0.1 0.5

VERTnight\_WDG1 6

0.1 0.1 0.1 0.1 0.1 0.5

VERTday\_WDG2 6

0.1 0.1 0.1 0.1 0.1 0.5

VERTnight\_WDG2 6

0.1 0.1 0.1 0.1 0.1 0.5

VERTday\_PIN1 6

0 0.1 0.1 0.1 0.2 0.5

VERTnight\_PIN1 6

0 0.1 0.1 0.1 0.2 0.5

VERTday\_PIN2 6

0 0.1 0.1 0.1 0.2 0.5

VERTnight\_PIN2 6

0 0.1 0.1 0.1 0.2 0.5

VERTday\_WHB1 6

0 0 0 0 0.2 0.8

VERTnight\_WHB1 6

0 0 0 0 0.2 0.8

VERTday\_WHB2 6

0 0 0 0 0.2 0.8

VERTnight\_WHB2 6

0 0 0 0 0.2 0.8

VERTday\_WHS1 6

0 0 0 0 0.2 0.8

VERTnight\_WHS1 6

0 0 0 0 0.2 0.8

VERTday\_WHS2 6

0 0 0 0 0.2 0.8

VERTnight\_WHS2 6

0 0 0 0 0.2 0.8

VERTday\_WHT1 6

0 0 0 0 0.2 0.8

VERTnight\_WHT1 6

0 0 0 0 0.2 0.8

VERTday\_WHT2 6

0 0 0 0 0.2 0.8

VERTnight\_WHT2 6

0 0 0 0 0.2 0.8

VERTnight\_SB1 6

0 0 0 0 0 1

VERTnight\_SB2 6

0 0 0 0 0 1

VERTday\_SB1 6

0 0 0 0 0 1

VERTday\_SB2 6

0 0 0 0 0 1

VERTday\_SP1 6

0 0 0 0.2 0.3 0.5

VERTday\_SP2 6

0 0 0 0.2 0.3 0.5

VERTnight\_SP1 6

0 0 0 0.2 0.3 0.5

VERTnight\_SP2 6

0 0 0 0.2 0.3 0.5

# Swimming speed weighted averages for VMPA are not that different from those in the NSW

Speed\_FPS 12500 Swimming speed of FPS m.hr-1 12500

Speed\_FPL 12500 Swimming speed of FPL m.hr-1 12500

Speed\_FPO 15000 Swimming speed of FPO m.hr-1 12500

Speed\_FVD 12500 Swimming speed of FVD m.hr-1 12500

Speed\_FVV 15000 Swimming speed of FVV m.hr-1 12500

Speed\_FVS 12500 Swimming speed of FVS m.hr-1 12500

Speed\_FVT 12500 Swimming speed of FVT m.hr-1 12500

Speed\_FVO 15000 Swimming speed of FVO m.hr-1 12500

Speed\_FVB 12500 Swimming speed of FVB m.hr-1 12500

Speed\_FMM 12500 Swimming speed of FMM m.hr-1 12500

Speed\_FMN 12500 Swimming speed of FMN m.hr-1 12500

Speed\_FBP 15000 Swimming speed of FBP m.hr-1 12500

Speed\_FDD 10000 Swimming speed of FDD m.hr-1 12500

Speed\_FDS 10000 Swimming speed of FDS m.hr-1 12500

Speed\_FDB 15000 Swimming speed of FDB m.hr-1 12500

Speed\_FDC 15000 Swimming speed of FDC m.hr-1 12500

Speed\_FDO 15000 Swimming speed of FDO m.hr-1 12500

Speed\_FDE 12500 Swimming speed of FDE m.hr-1 12500

Speed\_FDF 12500 Swimming speed of FDF m.hr-1 12500

Speed\_FDP 10 Swimming speed of FDP m.hr-1 12500

Speed\_FDM 15000 Swimming speed of FDM m.hr-1 12500

Speed\_SHD 10000 Swimming speed of SHD m.hr-1 12500

Speed\_SHC 12500 Swimming speed of SHC m.hr-1 12500

Speed\_SHP 15000 Swimming speed of SHP m.hr-1 12500

Speed\_SHB 10000 Swimming speed of SHB m.hr-1 12500

Speed\_SHR 10000 Swimming speed of SHR m.hr-1 12500

Speed\_SSK 12500 Swimming speed of SSK m.hr-1 12500

Speed\_SB 0.05 Swimming speed of SB m.hr-1 12500

Speed\_SP 12500 Swimming speed of SP m.hr-1 12500

Speed\_REP 12500 Swimming speed of REP m.hr-1 12500

Speed\_WDG 28000 Swimming speed of WDG m.hr-1 12500

Speed\_PIN 28000 Swimming speed of PIN m.hr-1 12500

Speed\_WHB 20000 Swimming speed of WHB m.hr-1 12500

Speed\_WHS 20000 Swimming speed of WHS m.hr-1 12500

Speed\_WHT 20000 Swimming speed of WHT m.hr-1 12500

# Minimum and maximum tolerated temperatures weighted averages for VMPA are not that different from those in the NSW

FPS\_min\_move\_temp 9

FPL\_min\_move\_temp 4

FPO\_min\_move\_temp 4

FVD\_min\_move\_temp 4

FVV\_min\_move\_temp 4

FVS\_min\_move\_temp 13

FVT\_min\_move\_temp 9.5

FVO\_min\_move\_temp 4

FVB\_min\_move\_temp 4

FMM\_min\_move\_temp 4

FMN\_min\_move\_temp 4

FBP\_min\_move\_temp 4

FDD\_min\_move\_temp 4

FDS\_min\_move\_temp 4

FDB\_min\_move\_temp 4

FDC\_min\_move\_temp 4

FDO\_min\_move\_temp 4

FDE\_min\_move\_temp 4

FDF\_min\_move\_temp 4

FDM\_min\_move\_temp 4

FDP\_min\_move\_temp 4

SHD\_min\_move\_temp 4

SHC\_min\_move\_temp 4

SHP\_min\_move\_temp 4

SHB\_min\_move\_temp 4

SHR\_min\_move\_temp 4

SSK\_min\_move\_temp 4

SB\_min\_move\_temp 4

SP\_min\_move\_temp 4

REP\_min\_move\_temp 4

PIN\_min\_move\_temp 4

WDG\_min\_move\_temp 4

WHB\_min\_move\_temp 4

WHS\_min\_move\_temp 4

WHT\_min\_move\_temp 4

FPS\_max\_move\_temp 21

FPL\_max\_move\_temp 30 Jack Mackeral would have max of 17

FPO\_max\_move\_temp 30

FVD\_max\_move\_temp 30

FVV\_max\_move\_temp 30

FVS\_max\_move\_temp 18

FVT\_max\_move\_temp 30

FVO\_max\_move\_temp 30

FVB\_max\_move\_temp 30

FMM\_max\_move\_temp 30

FMN\_max\_move\_temp 30

FBP\_max\_move\_temp 30

FDD\_max\_move\_temp 30

FDS\_max\_move\_temp 30

FDB\_max\_move\_temp 30

FDC\_max\_move\_temp 30

FDO\_max\_move\_temp 7

FDE\_max\_move\_temp 30

FDF\_max\_move\_temp 30

FDM\_max\_move\_temp 30

FDP\_max\_move\_temp 30

SHD\_max\_move\_temp 30

SHC\_max\_move\_temp 30

SHP\_max\_move\_temp 30

SHB\_max\_move\_temp 30

SHR\_max\_move\_temp 30

SSK\_max\_move\_temp 30

SB\_max\_move\_temp 30

SP\_max\_move\_temp 30

REP\_max\_move\_temp 30

PIN\_max\_move\_temp 30

WDG\_max\_move\_temp 30

WHB\_max\_move\_temp 30

WHS\_max\_move\_temp 30

WHT\_max\_move\_temp 30

# Minimum and maximum tolerated salinity

FPS\_min\_move\_salt 0.0

FPL\_min\_move\_salt 0.0

FPO\_min\_move\_salt 0.0

FVD\_min\_move\_salt 0.0

FVV\_min\_move\_salt 0.0

FVS\_min\_move\_salt 0.0

FVT\_min\_move\_salt 0.0

FVO\_min\_move\_salt 0.0

FVB\_min\_move\_salt 0.0

FMM\_min\_move\_salt 0.0

FMN\_min\_move\_salt 0.0

FBP\_min\_move\_salt 0.0

FDD\_min\_move\_salt 0.0

FDS\_min\_move\_salt 0.0

FDB\_min\_move\_salt 0.0

FDC\_min\_move\_salt 0.0

FDO\_min\_move\_salt 0.0

FDE\_min\_move\_salt 0.0

FDF\_min\_move\_salt 0.0

FDM\_min\_move\_salt 0.0

FDP\_min\_move\_salt 0.0

SHD\_min\_move\_salt 0.0

SHC\_min\_move\_salt 0.0

SHP\_min\_move\_salt 0.0

SHB\_min\_move\_salt 0.0

SHR\_min\_move\_salt 0.0

SSK\_min\_move\_salt 0.0

SB\_min\_move\_salt 0.0

SP\_min\_move\_salt 0.0

REP\_min\_move\_salt 0.0

PIN\_min\_move\_salt 0.0

WDG\_min\_move\_salt 0.0

WHB\_min\_move\_salt 0.0

WHS\_min\_move\_salt 0.0

WHT\_min\_move\_salt 0.0

FPS\_max\_move\_salt 40.0

FPL\_max\_move\_salt 40.0

FPO\_max\_move\_salt 40.0

FVD\_max\_move\_salt 40.0

FVV\_max\_move\_salt 40.0

FVS\_max\_move\_salt 40.0

FVT\_max\_move\_salt 40.0

FVO\_max\_move\_salt 40.0

FVB\_max\_move\_salt 40.0

FMM\_max\_move\_salt 40.0

FMN\_max\_move\_salt 40.0

FBP\_max\_move\_salt 40.0

FDD\_max\_move\_salt 40.0

FDS\_max\_move\_salt 40.0

FDB\_max\_move\_salt 40.0

FDC\_max\_move\_salt 40.0

FDO\_max\_move\_salt 40.0

FDE\_max\_move\_salt 40.0

FDF\_max\_move\_salt 40.0

FDM\_max\_move\_salt 40.0

FDP\_max\_move\_salt 40.0

SHD\_max\_move\_salt 40.0

SHC\_max\_move\_salt 40.0

SHP\_max\_move\_salt 40.0

SHB\_max\_move\_salt 40.0

SHR\_max\_move\_salt 40.0

SSK\_max\_move\_salt 40.0

SB\_max\_move\_salt 40.0

SP\_max\_move\_salt 40.0

REP\_max\_move\_salt 40.0

PIN\_max\_move\_salt 40.0

WDG\_max\_move\_salt 40.0

WHB\_max\_move\_salt 40.0

WHS\_max\_move\_salt 40.0

WHT\_max\_move\_salt 40.0

## Migration out of (or into) model domain parameters

# Migration dates for those groups moving out of model domain - must be

# as many entries in these arrays as there are in the flagjXXXMigrate entry

# for that group. Note an entry of 0 for the flag still requires a single

# entry for the array, along the lines of

# XX\_Migrate\_Time 1

# 0

# XX\_Migrate\_Return 1

# 364

# Day of year large zooplankton leave the model domain

ZL\_Migrate\_Time 1

0

# Day of year megazoobenthos leave the model domain

BML\_Migrate\_Time 1

0

# Juvenile migration times - days of the year juvenile stages of each group leave the model domain

jFPL\_Migrate\_Time 1

364

jFPS\_Migrate\_Time 1

364

jFPO\_Migrate\_Time 1

364

jFVD\_Migrate\_Time 1

364

jFVV\_Migrate\_Time 1

364

jFVS\_Migrate\_Time 1

364

jFVT\_Migrate\_Time 1

364

jFVO\_Migrate\_Time 1

364

jFVB\_Migrate\_Time 1

364

jFMM\_Migrate\_Time 1

364

jFMN\_Migrate\_Time 1

364

jFBP\_Migrate\_Time 1

364

jFDD\_Migrate\_Time 1

364

jFDS\_Migrate\_Time 1

364

jFDB\_Migrate\_Time 1

364

jFDC\_Migrate\_Time 1

364

jFDO\_Migrate\_Time 1

364

jFDE\_Migrate\_Time 1

364

jFDF\_Migrate\_Time 1

364

jFDM\_Migrate\_Time 1

364

jFDP\_Migrate\_Time 1

364

jSHD\_Migrate\_Time 1

364

jSHC\_Migrate\_Time 1

364

jSHP\_Migrate\_Time 1

364

jSHB\_Migrate\_Time 1

364

jSHR\_Migrate\_Time 1

364

jSSK\_Migrate\_Time 1

364

jSB\_Migrate\_Time 1

364

jSP\_Migrate\_Time 1

364

jREP\_Migrate\_Time 1

364

jPIN\_Migrate\_Time 1

364

jWDG\_Migrate\_Time 1

364

jWHB\_Migrate\_Time 1

285

jWHS\_Migrate\_Time 1

364

jWHT\_Migrate\_Time 1

364

jCEP\_Migrate\_Time 1

364

jPWN\_Migrate\_Time 1

364

# Adult migration times - days of the year adult stages of each group leave the model domain

FPL\_Migrate\_Time 1

364

FPS\_Migrate\_Time 1

364

FPO\_Migrate\_Time 1

364

FVD\_Migrate\_Time 1

364

FVV\_Migrate\_Time 1

364

FVS\_Migrate\_Time 1

364

FVT\_Migrate\_Time 1

364

FVO\_Migrate\_Time 1

364

FVB\_Migrate\_Time 1

364

FMM\_Migrate\_Time 1

364

FMN\_Migrate\_Time 1

364

FBP\_Migrate\_Time 1

364

FDD\_Migrate\_Time 1

364

FDS\_Migrate\_Time 1

364

FDB\_Migrate\_Time 1

364

FDC\_Migrate\_Time 1

364

FDO\_Migrate\_Time 1

364

FDE\_Migrate\_Time 1

364

FDF\_Migrate\_Time 1

364

FDM\_Migrate\_Time 1

364

FDP\_Migrate\_Time 1

364

SHD\_Migrate\_Time 1

364

SHC\_Migrate\_Time 1

364

SHP\_Migrate\_Time 1

364

SHB\_Migrate\_Time 1

364

SHR\_Migrate\_Time 1

364

SSK\_Migrate\_Time 1

364

SB\_Migrate\_Time 1

224

SP\_Migrate\_Time 1

364

REP\_Migrate\_Time 1

364

PIN\_Migrate\_Time 1

364

WDG\_Migrate\_Time 1

364

WHB\_Migrate\_Time 1

285

WHS\_Migrate\_Time 1

364

WHT\_Migrate\_Time 1

364

CEP\_Migrate\_Time 1

364

PWN\_Migrate\_Time 1

364

# Day of year large zooplankton return to the model domain

ZL\_Migrate\_Return 1

0

# Day of year megazoobenthos return to the model domain

BML\_Migrate\_Return 1

0

# Juvenile return times - days of the year juvenile stages of each group return to the model domain

jFPL\_Migrate\_Return 1

0

jFPS\_Migrate\_Return 1

0

jFPO\_Migrate\_Return 1

0

jFVD\_Migrate\_Return 1

0

jFVV\_Migrate\_Return 1

0

jFVS\_Migrate\_Return 1

0

jFVT\_Migrate\_Return 1

0

jFVO\_Migrate\_Return 1

0

jFVB\_Migrate\_Return 1

0

jFMM\_Migrate\_Return 1

0

jFMN\_Migrate\_Return 1

0

jFBP\_Migrate\_Return 1

0

jFDD\_Migrate\_Return 1

0

jFDS\_Migrate\_Return 1

0

jFDB\_Migrate\_Return 1

0

jFDC\_Migrate\_Return 1

0

jFDO\_Migrate\_Return 1

0

jFDE\_Migrate\_Return 1

0

jFDF\_Migrate\_Return 1

0

jFDM\_Migrate\_Return 1

0

jFDP\_Migrate\_Return 1

0

jSHD\_Migrate\_Return 1

0

jSHC\_Migrate\_Return 1

0

jSHP\_Migrate\_Return 1

0

jSHB\_Migrate\_Return 1

0

jSHR\_Migrate\_Return 1

0

jSSK\_Migrate\_Return 1

0

jSB\_Migrate\_Return 1

0

jSP\_Migrate\_Return 1

0

jREP\_Migrate\_Return 1

0

jPIN\_Migrate\_Return 1

0

jWDG\_Migrate\_Return 1

0

jWHB\_Migrate\_Return 1

174

jWHS\_Migrate\_Return 1

0

jWHT\_Migrate\_Return 1

0

jCEP\_Migrate\_Return 1

0

jPWN\_Migrate\_Return 1

0

# Adult migration return times - days of the year adult stages of each group return the model

domain

FPL\_Migrate\_Return 1

0

FPS\_Migrate\_Return 1

0

FPO\_Migrate\_Return 1

0

FVD\_Migrate\_Return 1

0

FVV\_Migrate\_Return 1

0

FVS\_Migrate\_Return 1

0

FVT\_Migrate\_Return 1

0

FVO\_Migrate\_Return 1

0

FVB\_Migrate\_Return 1

0

FMM\_Migrate\_Return 1

0

FMN\_Migrate\_Return 1

0

FBP\_Migrate\_Return 1

0

FDD\_Migrate\_Return 1

0

FDS\_Migrate\_Return 1

0

FDB\_Migrate\_Return 1

0

FDC\_Migrate\_Return 1

0

FDO\_Migrate\_Return 1

0

FDE\_Migrate\_Return 1

0

FDF\_Migrate\_Return 1

0

FDM\_Migrate\_Return 1

0

FDP\_Migrate\_Return 1

0

SHD\_Migrate\_Return 1

0

SHC\_Migrate\_Return 1

0

SHP\_Migrate\_Return 1

0

SHB\_Migrate\_Return 1

0

SHR\_Migrate\_Return 1

0

SSK\_Migrate\_Return 1

0

SB\_Migrate\_Return 1

120

SP\_Migrate\_Return 1

0

REP\_Migrate\_Return 1

0

PIN\_Migrate\_Return 1

0

WDG\_Migrate\_Return 1

0

WHB\_Migrate\_Return 1

174

WHS\_Migrate\_Return 1

0

WHT\_Migrate\_Return 1

0

CEP\_Migrate\_Return 1

0

PWN\_Migrate\_Return 1

0

# Please enter 0 for any group (or age group) you DO NOT want to migrate

# Period of time migrating large zooplankton exit/enter over

ZL\_Migrate\_Period 1

0

# Period of time migrating megazoobenthos exit/enter over

BML\_Migrate\_Period 1

0

# Juvenile migration periods - period of time migrating juvenile stages exit/enter over

jFPL\_Migrate\_Period 1

0

jFPS\_Migrate\_Period 1

0

jFPO\_Migrate\_Period 1

0

jFVD\_Migrate\_Period 1

0

jFVV\_Migrate\_Period 1

0

jFVS\_Migrate\_Period 1

0

jFVT\_Migrate\_Period 1

0

jFVO\_Migrate\_Period 1

0

jFVB\_Migrate\_Period 1

0

jFMM\_Migrate\_Period 1

0

jFMN\_Migrate\_Period 1

0

jFBP\_Migrate\_Period 1

0

jFDD\_Migrate\_Period 1

0

jFDS\_Migrate\_Period 1

0

jFDB\_Migrate\_Period 1

0

jFDC\_Migrate\_Period 1

0

jFDO\_Migrate\_Period 1

0

jFDE\_Migrate\_Period 1

0

jFDF\_Migrate\_Period 1

0

jFDM\_Migrate\_Period 1

0

jFDP\_Migrate\_Period 1

0

jSHD\_Migrate\_Period 1

0

jSHC\_Migrate\_Period 1

0

jSHP\_Migrate\_Period 1

0

jSHB\_Migrate\_Period 1

0

jSHR\_Migrate\_Period 1

0

jSSK\_Migrate\_Period 1

0

jSB\_Migrate\_Period 1

0

jSP\_Migrate\_Period 1

0

jREP\_Migrate\_Period 1

0

jPIN\_Migrate\_Period 1

0

jWDG\_Migrate\_Period 1

0

jWHB\_Migrate\_Period 1

14

jWHS\_Migrate\_Period 1

0

jWHT\_Migrate\_Period 1

0

jCEP\_Migrate\_Period 1

0

jPWN\_Migrate\_Period 1

0

# Adult migration periods - period of time migrating adult stages exit/enter over

FPL\_Migrate\_Period 1

0

FPS\_Migrate\_Period 1

0

FPO\_Migrate\_Period 1

0

FVD\_Migrate\_Period 1

0

FVV\_Migrate\_Period 1

0

FVS\_Migrate\_Period 1

0

FVT\_Migrate\_Period 1

0

FVO\_Migrate\_Period 1

0

FVB\_Migrate\_Period 1

0

FMM\_Migrate\_Period 1

0

FMN\_Migrate\_Period 1

0

FBP\_Migrate\_Period 1

0

FDD\_Migrate\_Period 1

0

FDS\_Migrate\_Period 1

0

FDB\_Migrate\_Period 1

0

FDC\_Migrate\_Period 1

0

FDO\_Migrate\_Period 1

0

FDE\_Migrate\_Period 1

0

FDF\_Migrate\_Period 1

0

FDM\_Migrate\_Period 1

0

FDP\_Migrate\_Period 1

0

SHD\_Migrate\_Period 1

0

SHC\_Migrate\_Period 1

0

SHP\_Migrate\_Period 1

0

SHB\_Migrate\_Period 1

0

SHR\_Migrate\_Period 1

0

SSK\_Migrate\_Period 1

0

SB\_Migrate\_Period 1

3

SP\_Migrate\_Period 1

0

REP\_Migrate\_Period 1

0

PIN\_Migrate\_Period 1

0

WDG\_Migrate\_Period 1

0

WHB\_Migrate\_Period 1

14

WHS\_Migrate\_Period 1

0

WHT\_Migrate\_Period 1

0

CEP\_Migrate\_Period 1

0

PWN\_Migrate\_Period 1

0

k\_migslow 1 0 = all migrators leave at once, 1 = migrators leave gradually 0

# Juvenile migration return stock - set value to the integer number identifiying the stock

# the immigrating individuals enter. If set to 0 then the returning individuals will be

# spread uniformly across all stocks.

jFPL\_ReturnStock 1

0

jFPS\_ReturnStock 1

0

jFPO\_ReturnStock 1

0

jFVD\_ReturnStock 1

0

jFVV\_ReturnStock 1

0

jFVS\_ReturnStock 1

0

jFVT\_ReturnStock 1

0

jFVO\_ReturnStock 1

0

jFVB\_ReturnStock 1

0

jFMM\_ReturnStock 1

0

jFMN\_ReturnStock 1

0

jFBP\_ReturnStock 1

0

jFDD\_ReturnStock 1

0

jFDS\_ReturnStock 1

0

jFDB\_ReturnStock 1

0

jFDC\_ReturnStock 1

0

jFDO\_ReturnStock 1

0

jFDE\_ReturnStock 1

0

jFDF\_ReturnStock 1

0

jFDM\_ReturnStock 1

0

jFDP\_ReturnStock 1

0

jSHD\_ReturnStock 1

0

jSHC\_ReturnStock 1

0

jSHP\_ReturnStock 1

0

jSHB\_ReturnStock 1

0

jSHR\_ReturnStock 1

0

jSSK\_ReturnStock 1

0

jSB\_ReturnStock 1

0

jSP\_ReturnStock 1

0

jREP\_ReturnStock 1

0

jPIN\_ReturnStock 1

0

jWDG\_ReturnStock 1

0

jWHB\_ReturnStock 1

0

jWHS\_ReturnStock 1

0

jWHT\_ReturnStock 1

0

# Adult migration return stock - set value to the integer number identifiying the stock

# the immigrating individuals enter. If set to 0 then the returning individuals will be

# spread uniformly across all stocks.

FPL\_ReturnStock 1

0

FPS\_ReturnStock 1

0

FPO\_ReturnStock 1

0

FVD\_ReturnStock 1

0

FVV\_ReturnStock 1

0

FVS\_ReturnStock 1

0

FVT\_ReturnStock 1

0

FVO\_ReturnStock 1

0

FVB\_ReturnStock 1

0

FMM\_ReturnStock 1

0

FMN\_ReturnStock 1

0

FBP\_ReturnStock 1

0

FDD\_ReturnStock 1

0

FDS\_ReturnStock 1

0

FDB\_ReturnStock 1

0

FDC\_ReturnStock 1

0

FDO\_ReturnStock 1

0

FDE\_ReturnStock 1

0

FDF\_ReturnStock 1

0

FDM\_ReturnStock 1

0

FDP\_ReturnStock 1

0

SHD\_ReturnStock 1

0

SHC\_ReturnStock 1

0

SHP\_ReturnStock 1

0

SHB\_ReturnStock 1

0

SHR\_ReturnStock 1

0

SSK\_ReturnStock 1

0

SB\_ReturnStock 1

0

SP\_ReturnStock 1

0

REP\_ReturnStock 1

0

PIN\_ReturnStock 1

0

WDG\_ReturnStock 1

0

WHB\_ReturnStock 1

0

WHS\_ReturnStock 1

0

WHT\_ReturnStock 1

0

# Large zooplankton external/migration survivorship - proportion of migrating biomass that return to the model domain

ZL\_FSM 1

1

# Megazoobenthos external/migration survivorship - proportion of migrating biomass that return to the model domain

BML\_FSM 1

1

# Juvenile external/migration survivorship - proportion of migrating juvenile stages that return to the model domain

jFPL\_FSM 1

1

jFPS\_FSM 1

1

jFPO\_FSM 1

1

jFVD\_FSM 1

1

jFVV\_FSM 1

1

jFVS\_FSM 1

1

jFVT\_FSM 1

1

jFVO\_FSM 1

1

jFVB\_FSM 1

1

jFMM\_FSM 1

1

jFMN\_FSM 1

1

jFBP\_FSM 1

1

jFDD\_FSM 1

1

jFDS\_FSM 1

1

jFDB\_FSM 1

1

jFDC\_FSM 1

1

jFDO\_FSM 1

1

jFDE\_FSM 1

1

jFDF\_FSM 1

1

jFDM\_FSM 1

1

jFDP\_FSM 1

1

jSHD\_FSM 1

1

jSHC\_FSM 1

1

jSHP\_FSM 1

1

jSHB\_FSM 1

1

jSHR\_FSM 1

1

jSSK\_FSM 1

1

jSB\_FSM 1

1

jSP\_FSM 1

1

jREP\_FSM 1

1

jPIN\_FSM 1

1

jWDG\_FSM 1

1

jWHB\_FSM 1

0.98

jWHS\_FSM 1

1

jWHT\_FSM 1

1

jCEP\_FSM 1

1

jPWN\_FSM 1

1

# Adult external/migration survivorship - proportion of migrating adult stages that return to the model domain

FPL\_FSM 1

1

FPS\_FSM 1

1

FPO\_FSM 1

1

FVD\_FSM 1

1

FVV\_FSM 1

1

FVS\_FSM 1

1

FVT\_FSM 1

1

FVO\_FSM 1

1

FVB\_FSM 1

1

FMM\_FSM 1

1

FMN\_FSM 1

1

FBP\_FSM 1

1

FDD\_FSM 1

1

FDS\_FSM 1

1

FDB\_FSM 1

1

FDC\_FSM 1

1

FDO\_FSM 1

1

FDE\_FSM 1

1

FDF\_FSM 1

1

FDM\_FSM 1

1

FDP\_FSM 1

1

SHD\_FSM 1

1

SHC\_FSM 1

1

SHP\_FSM 1

1

SHB\_FSM 1

1

SHR\_FSM 1

1

SSK\_FSM 1

1

SB\_FSM 1

0.9

SP\_FSM 1

1

REP\_FSM 1

1

PIN\_FSM 1

1

WDG\_FSM 1

1

WHB\_FSM 1

0.99

WHS\_FSM 1

1

WHT\_FSM 1

1

CEP\_FSM 1

1

PWN\_FSM 1

1

# Proportional increases in size while outside model domain - note that if on seasonal feeding

# grounds enter FSP value here as assume that reserves used in reproduction are recovered

# through the year (and thus FSMG = FSP for those groups)

# Proportional increase in biomass of large zooplankton while outside model domain

ZL\_FSMG 1

0

# Proportional increase in biomass of megazoobenthos while outside model domain

BML\_FSMG 1

0

# Proportional increase in size of juvenile stages while outside model domain

jFPL\_FSMG 1

0

jFPS\_FSMG 1

0

jFPO\_FSMG 1

0

jFVD\_FSMG 1

0

jFVV\_FSMG 1

0

jFVS\_FSMG 1

0

jFVT\_FSMG 1

0

jFVO\_FSMG 1

0

jFVB\_FSMG 1

0

jFMM\_FSMG 1

0

jFMN\_FSMG 1

0

jFBP\_FSMG 1

0

jFDD\_FSMG 1

0

jFDS\_FSMG 1

0

jFDB\_FSMG 1

0

jFDC\_FSMG 1

0

jFDO\_FSMG 1

0

jFDE\_FSMG 1

0

jFDF\_FSMG 1

0

jFDM\_FSMG 1

0

jFDP\_FSMG 1

0

jSHD\_FSMG 1

0

jSHC\_FSMG 1

0

jSHP\_FSMG 1

0

jSHB\_FSMG 1

0

jSHR\_FSMG 1

0

jSSK\_FSMG 1

0

jSB\_FSMG 1

0

jSP\_FSMG 1

0

jREP\_FSMG 1

0

jPIN\_FSMG 1

0

jWDG\_FSMG 1

0

jWHB\_FSMG 1

0

jWHS\_FSMG 1

0

jWHT\_FSMG 1

0

jCEP\_FSMG 1

0

jPWN\_FSMG 1

0

# Proportional increase in size of adults stages while outside model domain

FPL\_FSMG 1

0

FPS\_FSMG 1

0

FPO\_FSMG 1

0

FVD\_FSMG 1

0

FVV\_FSMG 1

0

FVS\_FSMG 1

0

FVT\_FSMG 1

0

FVO\_FSMG 1

0

FVB\_FSMG 1

0

FMM\_FSMG 1

0

FMN\_FSMG 1

0

FBP\_FSMG 1

0

FDD\_FSMG 1

0

FDS\_FSMG 1

0

FDB\_FSMG 1

0

FDC\_FSMG 1

0

FDO\_FSMG 1

0

FDE\_FSMG 1

0

FDF\_FSMG 1

0

FDM\_FSMG 1

0

FDP\_FSMG 1

0

SHD\_FSMG 1

0

SHC\_FSMG 1

0

SHP\_FSMG 1

0

SHB\_FSMG 1

0

SHR\_FSMG 1

0

SSK\_FSMG 1

0

SB\_FSMG 1

0.3

SP\_FSMG 1

0

REP\_FSMG 1

0

PIN\_FSMG 1

0

WDG\_FSMG 1

0

WHB\_FSMG 1

0

WHS\_FSMG 1

0

WHT\_FSMG 1

0

CEP\_FSMG 1

0

PWN\_FSMG 1

0

# Proportion from each box in the model that exit when group migrates out of the model domain (default value will be

# 0 except for the few cells along the boundary where the group can flow out of the model. Juv stands for

# juveniles and ad for adults (treated seperately in the model so separate entries for them are given here)

MigIOBox\_ZL 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_BML 11

0 0 0 0 0 0 0 0 0 0 0

# Juvenile migration

MigIOBox\_FPSjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FPLjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FPOjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVDjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVVjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVSjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVTjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVT2juv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVOjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVO2juv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVO3juv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVBjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVB2juv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FMMjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FMNjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FBPjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDDjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDSjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDBjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDCjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDOjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDEjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDFjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDMjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDPjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHDjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHCjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHPjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHP2juv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHBjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHRjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SSKjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SBjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SPjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_REPjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_REP2juv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_PINjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_PIN2juv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_WDGjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_WHBjuv 11

1 1 1 1 1 1 1 1 1 1 1

MigIOBox\_WHB2juv 11

1 1 1 1 1 1 1 1 1 1 1

MigIOBox\_WHSjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_WHTjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_WHT2juv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_CEPjuv 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_PWNjuv 11

0 0 0 0 0 0 0 0 0 0 0

# Adult migrations

MigIOBox\_FPSad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FPLad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FPOad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVDad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVVad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVSad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVTad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVT2ad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVOad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVO2ad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVO3ad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVBad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FVB2ad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FMMad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FMNad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FBPad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDDad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDSad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDBad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDCad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDOad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDEad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDFad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDMad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_FDPad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHDad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHCad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHPad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHP2ad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHBad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SHRad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SSKad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SBad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_SPad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_REPad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_REP2ad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_PINad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_PIN2ad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_WDGad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_WHBad 11

1 1 1 1 1 1 1 1 1 1 1

MigIOBox\_WHB2ad 11

1 1 1 1 1 1 1 1 1 1 1

MigIOBox\_WHSad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_WHTad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_WHT2ad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_CEPad 11

0 0 0 0 0 0 0 0 0 0 0

MigIOBox\_PWNad 11

0 0 0 0 0 0 0 0 0 0 0

# Numbers and weights of each group that begin outside the model domain and must migrate in during the first year.

# Treat it these as part of the initial conditions when setting up initial stock sizes (i.e. adjust numbers inside

# the model domain accordingly). There is one entry per cohort and the sn and rn entries are the structural and

# reserve weight values for those to migrate in.

# Invertebrate migration parameters - biomass beginning outside model domain

KMIGa\_INVERT\_ZG 1

0

KMIGa\_INVERT\_ZL 1

0

KMIGa\_INVERT\_ZM 1

0

KMIGa\_INVERT\_ZS 1

0

KMIGa\_INVERT\_CEP 2

0 0

KMIGa\_INVERT\_PWN 2

0 0

KMIGa\_INVERT\_BML 1

0

# from B1

# Numbers per age group

KMIGa\_FPL 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FPS 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FPO 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVD 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVV 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVS 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVB 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVT 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVO 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FMM 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FMN 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FBP 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDD 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDS 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDB 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDC 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDO 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDE 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDF 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDM 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDP 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHD 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHC 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHP 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHB 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHR 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SSK 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SB 10

2468.84 1109.41 498.48 223.99 100.69 45.23 20.45 9.29 4.34 1.86

KMIGa\_SP 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_REP 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_PIN 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_WDG 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_WHB 10

8.67 7.13 5.89 4.65 3.72 3.10 2.48 2.17 1.86 1.55

KMIGa\_WHS 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_WHT 10

0 0 0 0 0 0 0 0 0 0

# Reserve weights for each age group

KMIGa\_FPLrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FPSrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FPOrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVDrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVVrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVSrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVBrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVTrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVOrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FMMrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FMNrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FBPrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDDrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDSrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDBrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDCrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDOrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDErn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDFrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDMrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDPrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHDrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHCrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHPrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHBrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHRrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SSKrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SBrn 10

93400 198720 224480 229520 230460 230640 230670 230680 230685 230690

KMIGa\_SPrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_REPrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_PINrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_WDGrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_WHBrn 10

1.96E+08 2.18E+08 2.19E+08 2.19E+08 2.19E+08 2.19E+08 2.19E+08 2.19E+08 2.19E+08 2.19E+08

KMIGa\_WHSrn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_WHTrn 10

0 0 0 0 0 0 0 0 0 0

# Structural weights for each age group

KMIGa\_FPLsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FPSsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FPOsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVDsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVVsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVSsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVBsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVTsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FVOsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FMMsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FMNsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FBPsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDDsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDSsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDBsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDCsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDOsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDEsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDFsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDMsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_FDPsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHDsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHCsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHPsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHBsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SHRsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SSKsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_SBsn 10

14665 31205 35245 36040 36190 36215 36220 26225 36230 36235

KMIGa\_SPsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_REPsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_PINsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_WDGsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_WHBsn 10

7.38E+07 8.22E+07 8.26E+07 8.27E+07 8.27E+07 8.27E+07 8.27E+07 8.27E+07 8.27E+07 8.27E+07

KMIGa\_WHSsn 10

0 0 0 0 0 0 0 0 0 0

KMIGa\_WHTsn 10

0 0 0 0 0 0 0 0 0 0

# Vertebrate body form and aging details

X\_RS 2.65 Ratio reserve to structure tissue in well fed vertebrates 2.2 - 2.7

Kthresh1 0.99 Threshhold rel. reserve when handother deep demersal time is reduced 0.99

Kthresh2 0.92 Threshhold rel. reserve when costs reduce + handother deep demersal time inc 0.92

KHTD 0.5 Factor handother deep demersal time reduced by for thresh2<relres<thesh1 0.5

KHTI 1.5 Factor handother deep demersal time increased by for relres<thresh2 1.5

# Food availabilty (exploitable fractions) - note that a zero entry may signify a food group

# that is either unavailable or not a part of the diet.

# Note that explicit exploitable fractions are not generally given for PB and BB

# as they're consumed with DL and DR. All populations on the consumed DL or DR

# are considered grazed.

# pPREY1FY1 is the availability of juvenile prey groups to juvenile group FY, similarly

# pPREY1FY2 is the availability of juvenile prey groups to adult group FY and so on

# The order of the prey groups is defined by your functional group input file.

pPREY1FPL1 65

0 0 0.005 0 0 0 0 0 0 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.002 0 0 0 0 0 0 0 0 0.01 0 0 0 0 0 0 0 0 0 0 0

pPREY2FPL1 65

0 0 0 0 0 0 0 0 0 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.002 0 0 0 0 0 0 0 0 0.01 0 0 0 0 0 0 0 0 0 0 0

pPREY1FPL2 65

0 0 0.1 0 0 0 0 0 0 0.01 0.06 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0.002 0 0 0 0 0 0.01 0.02 0 0.01 0.025 0.01 0 0 0 0.002 0.001 0.01 0 0 0

pPREY2FPL2 65

0 0 0.001 0 0 0 0 0 0 0.01 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0.002 0 0 0 0 0 0.01 0.02 0 0.01 0.025 0.01 0 0 0 0.002 0.001 0.001 0 0 0

pPREY1FPS1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0 0.2 0 0.1 0.1 0.05 0 0 0 0.2 0.001 0 0 0 0

pPREY2FPS1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0 0.2 0 0.1 0.1 0.05 0 0 0 0.2 0.001 0 0 0 0

pPREY1FPS2 65

0 0 0.001 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.5 0.2 0 0 0 0 0 0 0.2 0.003 0.1 0.1 0.05 0 0 0 0.2 0.001 0 0 0 0

pPREY2FPS2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.5 0.2 0 0 0 0 0 0 0.2 0.003 0.1 0.1 0.05 0 0 0 0.2 0.001 0 0 0 0

pPREY1FPO1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.01 0 0 0 0 0 0.08 0.028 0.02 0 0.0000001 0 0 0.02 0 0.001 0.053333333 0.05 0 0 0.001 0.1 0.05 0 0.05 0.05 0

pPREY2FPO1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.01 0 0 0 0 0 0.08 0.028 0.02 0 0.0000001 0 0 0.02 0 0.001 0.053333333 0.05 0 0 0.001 0.1 0.05 0 0.05 0.05 0

pPREY1FPO2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.01 0 0 0 0 0.01 0.1 0.04 0.02 0 0.0000001 0 0 0.02 0 0.001 0.01 0.05 0 0 0.001 0.1 0.05 0 0.05 0.05 0

pPREY2FPO2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.01 0 0 0 0 0.01 0.1 0.04 0.02 0 0.0000001 0 0 0.02 0 0.001 0.01 0.05 0 0 0.001 0.1 0.05 0 0.05 0.05 0

pPREY1FVD1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0.002 0.2 0 0.05 0.09 0.01 0 0 0 0 0 0 0 0 0

pPREY2FVD1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0.002 0.2 0 0.05 0.09 0.01 0 0 0 0 0 0 0 0 0

pPREY1FVD2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0.009444444 0.2 0.003 0.05 0.09 0.01 0 0 0 0 0 0 0 0 0

pPREY2FVD2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0.009444444 0.2 0.003 0.05 0.09 0.01 0 0 0 0 0 0 0 0 0

pPREY1FVV1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.05 0.2 0.005 0.005 0.005 0.01 0 0.05 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0.02 0.01 0 0.01 0.01 0

pPREY2FVV1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.05 0.2 0.005 0.005 0.005 0.01 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0.02 0.01 0 0.01 0.01 0

pPREY1FVV2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.05 0.05 0.2 0.01 0.005 0.01 0.01 0 0.05 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0.02 0.01 0 0.01 0.01 0

pPREY2FVV2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.05 0.05 0.2 0.01 0.005 0.01 0.01 0 0.05 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0.02 0.01 0 0.01 0.01 0

pPREY1FVS1 65

0.1 0.001 0.02 0 0.02 0 0 0 0.002 0.01 0 0 0 0.002 0.01 0.015 0.015 0 0 0.1 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.0075 0.007 0.007 0.02 0.001 0 0.001 0.05 0.15 0.008 0 0 0 0.018 0.005 0.02 0 0.001 0.01 0 0 0 0 0 0 0 0 0 0

pPREY2FVS1 65

0.12 0.001 0.001 0 0.004 0 0.0001 0 0.004 0.01 0 0 0 0 0.002 0.05 0.075 0 0 0.1 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.0075 0.007 0.007 0.02 0.001 0 0.001 0.05 0.15 0.008 0 0 0 0.018 0.005 0.02 0 0.001 0.01 0 0 0 0 0 0 0 0 0 0

pPREY1FVS2 65

0.1 0.001 0.001 0 0.02 0.001 0 0 0.004 0.01 0 0 0 0.002 0.005 0.003 0.05 0 0 0.1 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.0075 0.007 0.007 0.02 0.001 0 0.001 0.05 0.15 0.008 0 0 0 0.018 0.005 0.02 0 0.001 0.01 0 0 0 0 0 0 0 0 0 0

pPREY2FVS2 65

0.12 0.001 0.0005 0 0.004 0 0.0001 0 0.008 0.01 0 0 0 0.002 0.001 0.01 0.03 0 0 0.1 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.0075 0.007 0.007 0.02 0.001 0 0.001 0.05 0 0.008 0 0 0 0.018 0.005 0.02 0 0.001 0.01 0 0 0 0 0 0 0 0 0 0

pPREY1FVT1 65

0.12 0 0.2 0.04 0.25 0.04 0 0 0.25 0.1 0.15 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.04 0 0 0 0 0.0015 0 0.0015 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2FVT1 65

0.275 0 0.2 0.2 0.08 0.003 0 0 0.3 0.02 0.25 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.04 0 0 0 0 0.0015 0 0.0015 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1FVT2 65

0.12 0 0.2 0.04 0.25 0.04 0 0.02 0.25 0.1 0.15 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.04 0 0 0 0 0.0015 0 0.0015 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2FVT2 65

0.275 0 0.2 0.2 0.08 0.003 0 0.02 0.3 0.02 0.25 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.04 0 0 0 0 0.0015 0 0.0015 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1FVO1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0 0.2 0 0.005 0.05 0 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY2FVO1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.02 0.3 0 0 0 0 0 0 0.2 0 0.005 0.05 0 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY1FVO2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0 0.2 0 0.005 0.05 0 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY2FVO2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0 0.2 0 0.005 0.05 0 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY1FVB1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0065 0.00025 0 0.00025 0 0.04875 0.05 0 0.01 0 0.0025 0 0 0 0 0 0 0 0 0.001 0.02 0.05 0 0.05 0.05 0

pPREY2FVB1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0065 0.00025 0 0.00025 0 0.04875 0.05 0 0.01 0 0.0025 0 0 0 0 0 0 0 0 0.001 0.02 0.05 0 0.05 0.05 0

pPREY1FVB2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.02 0.001 0 0.001 0 0.3 0.05 0 0.01 0 0.01 0 0 0 0 0 0 0 0 0.01 0.1 0.05 0 0.05 0.05 0

pPREY2FVB2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.02 0.001 0 0.001 0 0.3 0.05 0 0.01 0 0.01 0 0 0 0 0 0 0 0 0.01 0.1 0.05 0 0.05 0.05 0

pPREY1FMM1 65

0.1 0 0.2 0.2 0 0 0 0 0 0.005 0.275 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.2 0 0 0 0 0 0.15 0 0 0 0.1 0.2 0 0 0 0 0 0 0 0 0

pPREY2FMM1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.2 0 0 0 0 0 0.15 0 0 0 0.1 0.2 0 0 0 0 0 0 0 0 0

pPREY1FMM2 65

0.1 0 0.2 0.2 0 0 0 0 0.04 0.005 0.275 0.1 0 0 0 0.1 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.2 0 0 0 0 0 0.15 0 0 0 0.1 0.2 0 0 0 0 0 0 0 0 0

pPREY2FMM2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.2 0 0 0 0 0 0.15 0 0 0 0.1 0.2 0 0 0 0 0 0 0 0 0

pPREY1FMN1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0.005 0.02 0 0.01 0.005 0.01 0 0 0 0 0 0 0 0 0

pPREY2FMN1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0.005 0.02 0 0.01 0.005 0.01 0 0 0 0 0 0 0 0 0

pPREY1FMN2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0.005 0.02 0 0.01 0.005 0.01 0 0 0 0 0 0 0 0 0

pPREY2FMN2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0.005 0.02 0 0.01 0.005 0.01 0 0 0 0 0 0 0 0 0

pPREY1FBP1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0075 0.05 0 0.1 0.01 0.025 0 0.05 0 0.025 0 0.1 0 0.05 0 0 0 0 0 0 0 0 0.05 0.02 0.01 0 0.01 0.01 0

pPREY2FBP1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0075 0.05 0 0.1 0.01 0.025 0 0.05 0 0.025 0 0.1 0 0.05 0 0 0 0 0 0 0 0 0.05 0.02 0.01 0 0.01 0.01 0

pPREY1FBP2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0075 0.05 0 0.1 0.01 0.025 0.05 0.05 0 0.025 0 0.15 0 0.05 0 0 0 0 0 0 0 0 0 0.02 0.01 0 0.01 0.01 0

pPREY2FBP2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0075 0.05 0 0.1 0.01 0.025 0.05 0.05 0 0.025 0 0.15 0 0.05 0 0 0 0 0 0 0 0 0 0.02 0.01 0 0.01 0.01 0

pPREY1FDD1 65

0 0 0 0.002 0.01 0 0.0002 0 0.1 0.01 0.15 0.02 0.01 0 0 0 0 0.001 0.025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.04 0.000006 0.0001 0.0001 0.0002 0.000025 0 0.000025 0.05 0.1 0.0125 0 0 0 0.0018 0.00005 0 0 0 0.0002 0 0 0 0 0.002 0.001 0.001 0 0 0

pPREY2FDD1 65

0 0 0 0.002 0 0 0.0002 0 0.032 0.01 0.03 0 0.01 0 0 0 0 0.01 0.005 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.04 0.000006 0.0001 0.0001 0.0002 0.000025 0 0.000025 0.05 0.1 0.0125 0 0 0 0.0018 0.00005 0 0 0 0.0002 0 0 0 0 0.002 0.001 0.001 0 0 0

pPREY1FDD2 65

0 0 0 0.002 0.01 0 0.0002 0 0.1 0.02 0.15 0.02 0.01 0 0 0 0 0.001 0.025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.04 1.22222E-05 0.000576204 0.000576204 0.0004 6.44444E-05 0 6.44444E-05 0.05 0.1 0.019166667 0 0 0 0.000546667 1.33333E-05 0 0 0 0.000255556 0 0 0 0 0.002 0.001 0.001 0 0 0

pPREY2FDD2 65

0 0 0 0.002 0.01 0 0.0002 0 0.032 0.025 0.03 0 0.01 0 0 0 0 0.01 0.005 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.04 1.22222E-05 0.000576204 0.000576204 0.0004 6.44444E-05 0 6.44444E-05 0.05 0.1 0.019166667 0 0 0 0.000546667 1.33333E-05 0 0 0 0.000255556 0 0 0 0 0.002 0.001 0.001 0 0 0

pPREY1FDS1 65

0.005 0.001 0.05 0.001 0.1 0 0.001 0 0.1 0 0 0 0 0.003 0.025 0.1 0.003 0 0 0.07 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0.0001 0.007 0.007 0.002 0.01137931 0.000015 0.01137931 0.05 0.3 0.05 0.000001 0 0.0000001 0.007637931 0.001 0 0 0 0.0275 0 0 0 0 0.002 0.0005 0.0001 0 0 0

pPREY2FDS1 65

0.04 0.001 0.0005 0.001 0.004 0 0.001 0 0.004 0 0 0 0 0.003 0.005 0.1 0.0005 0 0 0.07 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0.0001 0.007 0.007 0.002 0.01137931 0.000015 0.01137931 0.05 0.3 0.05 0.000001 0 0.0000001 0.007637931 0.001 0 0 0.005 0.0275 0 0 0 0 0.002 0.0005 0.0001 0 0 0

pPREY1FDS2 65

0.02 0.015 0.1 0.001 0.1 0 0.004 0 0.02 0 0 0 0 0.045 0.025 0.1 0.03 0 0 0.07 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.00015 0.008 0.008 0.0016 0.013793103 0.0004625 0.013793103 0.05 0.1 0.005 0.00001 0 0.000001 0.009137931 0.001 0 0 0 0.0035 0 0 0 0 0.002 0.0005 0.0001 0 0 0

pPREY2FDS2 65

0.175 0.01 0.005 0.001 0.004 0 0.004 0 0.04 0 0 0 0 0.03 0.005 0.25 0.0075 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.00015 0.008 0.008 0.0016 0.013793103 0.0004625 0.013793103 0.05 0.1 0.005 0.00001 0 0.000001 0.009137931 0.001 0 0 0 0.0035 0 0 0 0 0.002 0.0005 0.0001 0 0 0

pPREY1FDM1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.00075 0.01 0 0.1 0.05 0.025 0 0.05 0 0.05 0.001 0.1 0 0.075 0 0 0 0 0 0 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY2FDM1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.00075 0.01 0 0.1 0.05 0 0 0.05 0 0.05 0.001 0.1 0 0.075 0 0 0 0 0 0 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY1FDM2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.00075 0.01 0 0.1 0.05 0.025 0.015 0.05 0 0.05 0.001 0.1 0 0.075 0 0 0 0 0 0 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY2FDM2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.00075 0.01 0 0.1 0.05 0 0.015 0.05 0 0.05 0.001 0.1 0 0.075 0 0 0 0 0 0 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY1FDP1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0.05 0.2 0 0 0.09 0.05 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY2FDP1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0.05 0.2 0 0 0.09 0.05 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY1FDP2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.15 0 0 0 0 0 0.05 0.2 0 0 0.09 0.075 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY2FDP2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.15 0 0 0 0 0 0.05 0.2 0 0 0.09 0.075 0 0 0 0.1 0.05 0 0.05 0.05 0

pPREY1FDB1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0.05 0.05 0.016666667 0.000833333 7.66667E-05 0.000833333 0 0.1 0.036666667 0.01 0.1 0 0.023333333 0 0.04 0 0.01 0.053333333 0 0 0 0.01 0.1 0.05 0 0.01 0.01 0

pPREY2FDB1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0.05 0.05 0.016666667 0.000833333 7.66667E-05 0.000833333 0.05 0.1 0.036666667 0.01 0.05 0 0.023333333 0 0.04 0 0.01 0.053333333 0 0 0 0.01 0.1 0.05 0 0.01 0.01 0

pPREY1FDB2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0075 0.05 0.05 0.02 0.001 0.0005 0.001 0 0.1 0.04 0.01 0.15 0 0.05 0 0.04 0 0.01 0.02 0 0 0 0.01 0.1 0.05 0 0.01 0.01 0

pPREY2FDB2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0075 0.05 0.05 0.02 0.001 0.0005 0.001 0 0.1 0.04 0.01 0.1 0 0.05 0 0.04 0 0.01 0.02 0 0 0 0.01 0.1 0.05 0 0.01 0.01 0

pPREY1FDC1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.05 0.1 0.005 0.0001 0.005 0.05 0.1 0.07 0 0.1 0 0.05 0 0.04 0 0 0.01 0 0 0 0.005 0.02 0.01 0 0.01 0.01 0

pPREY2FDC1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.05 0.1 0.005 0.0001 0.005 0.05 0.1 0.07 0 0.1 0 0.05 0 0.04 0 0 0.01 0 0 0 0.005 0.02 0.01 0 0.01 0.01 0

pPREY1FDC2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.0075 0.05 0.05 0.1 0.05 0.0009 0.05 0.05 0.011111111 0.07 0 0.15 0 0.05 0 0.04 0 0 0 0 0 0 0 0.02 0.01 0 0.01 0.01 0

pPREY2FDC2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.0075 0.05 0.05 0.1 0.05 0.0009 0.05 0.05 0.011111111 0.07 0 0.15 0 0.05 0 0.04 0 0 0 0 0 0 0 0.02 0.01 0 0.01 0.01 0

pPREY1FDO1 65

0 0.1 0.1 0 0 0 0 0 0 0 0 0 0 0 0.1 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.1 0.0075 0.005 0.005 0.05 0.05 0 0.05 0.1 0.1 0.02 0.1 0.05 0 0.01 0 0 0 0.15 0 0 0 0 0.05 0.02 0.01 0 0.01 0.01 0

pPREY2FDO1 65

0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.1 0.0075 0.005 0.005 0.05 0.05 0 0.05 0.1 0.1 0.02 0.1 0.05 0 0.01 0 0 0 0.15 0 0 0 0 0.05 0.02 0.01 0 0.01 0.01 0

pPREY1FDO2 65

0 0.1 0.1 0 0 0.05 0 0 0 0 0 0 0 0 0.1 0 0.05 0.1 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.1 0.04 0.01 0.01 0.1 0.1 0.008444444 0.1 0.1 0 0.05 0 0.1 0 0.05 0 0 0 0.15 0 0 0 0 0 0.02 0.01 0 0.01 0.01 0

pPREY2FDO2 65

0 0.1 0.1 0 0 0.05 0 0 0 0 0 0 0 0 0.1 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.1 0.04 0.01 0.01 0.1 0.1 0.008444444 0.1 0.1 0 0.05 0 0.1 0 0.05 0 0 0 0.15 0 0 0 0 0 0.02 0.01 0 0.01 0.01 0

pPREY1FDE1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0.035 0.05 0 0.02 0.03 0 0 0 0.05 0.07 0.05 0 0 0.001 0.1 0.05 0 0.05 0.05 0

pPREY2FDE1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.3 0.035 0.05 0 0.02 0.03 0 0 0 0.05 0.07 0.05 0 0 0.001 0.1 0.05 0 0.05 0.05 0

pPREY1FDE2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.00875 0.00875 0 0.00875 0.01 0.3 0.05 0.05 0 0.01 0.05 0 0 0 0 0.07 0.05 0 0 0.001 0.1 0.05 0 0.05 0.05 0

pPREY2FDE2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.00875 0.00875 0 0.00875 0.01 0.3 0.05 0.05 0 0.01 0.05 0 0 0 0 0.07 0.05 0 0 0.001 0.1 0.05 0 0.05 0.05 0

pPREY1FDF1 65

0.005 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.025 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0.000005 0 0 0 0 0 0 0 0 0 0

pPREY2FDF1 65

0.01 0 0 0 0 0 0 0 0 0.005 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.025 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0.000005 0 0 0 0 0 0 0 0 0 0

pPREY1FDF2 65

0 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.025 0 0 0 0 0 0 0 0 0.3 0 0 0 0 0 0 0 0 0 0.0005 0 0 0 0 0 0 0 0 0 0

pPREY2FDF2 65

0.04 0 0 0 0 0 0 0 0 0.005 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0005 0 0 0 0 0 0 0 0 0 0

pPREY1SHD1 65

0.1 0.05 0.05 0.075 0 0.05 0 0 0.02 0.005 0 0 0.1 0.05 0.05 0.025 0.075 0.05 0 0.083333333 0.1 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0.05 0.004 0.0015 0.0015 0.1 0.00013 0.0005 0.00013 0.083333333 0 0.05 0 0.033333333 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SHD1 65

0.12 0 0.005 0.075 0.04 0.005 0.01 0 0.004 0.01 0 0 0.1 0.05 0.01 0.1 0.04 0.05 0 0.083333333 0.2 0 0 0 0 0.001 0.02 0 0 0 0 0 0 0 0 0.05 0.004 0.0015 0.0015 0.1 0.00013 0.0005 0.00013 0.083333333 0 0.05 0 0.033333333 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SHD2 65

0.075 0.05 0.005 0.05 0.02 0.001 0.002 0 0.002 0.001 0 0.002 0.75 0.05 0.05 0.025 0.075 0.05 0.01 0.083333333 0.1 0 0 0 0.05 0.05 0.01 0 0 0 0 0 0 0 0 0.05 0.004 0.0015 0.0015 0.1 0.00013 0.0005 0.00013 0.083333333 0 0.05 0 0.033333333 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SHD2 65

0.12 0.05 0.005 0.05 0.04 0.005 0.002 0 0.004 0.001 0 0.05 0.75 0.05 0.01 0.1 0.04 0.05 0 0.083333333 0.2 0 0 0 0 0.001 0.02 0 0 0 0 0 0 0 0 0.05 0.004 0.0015 0.0015 0.1 0.00013 0.0005 0.00013 0.083333333 0 0.05 0 0.033333333 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SHC1 65

0 0 0 0 0.01 0 0 0 0.002 0.001 0 0.0002 0.05 0 0 0.0025 0 0 0.01 0.1 0 0.001 0 0 0 0 0.002 0 0 0 0 0 0 0 0 0.001 0.022 0.005 0.005 0.055 0.005 0.005 0.005 0.05 0 0.015 0 0 0 0.005 0.01 0 0 0 0 0 0 0 0 0.002 0.001 0.001 0 0 0

pPREY2SHC1 65

0 0 0 0 0.12 0 0 0 0.004 0.001 0 0 0.05 0 0 0.025 0 0 0.0001 0.1 0 0.001 0 0 0 0 0.002 0 0 0 0 0 0 0 0 0.001 0.022 0.005 0.005 0.055 0.005 0.005 0.005 0.05 0 0.015 0 0 0 0.005 0.01 0 0 0 0 0 0 0 0 0.002 0.001 0.001 0 0 0

pPREY1SHC2 65

0 0 0 0 0.01 0 0 0 0.002 0.001 0 0.0002 0.02 0 0 0.005 0 0 0.01 0.1 0 0.001 0 0.001 0 0 0.01 0 0 0 0 0 0 0 0 0.005 0.004 0.05 0.05 0.01 0.05 0.005 0.05 0.05 0 0.005 0 0 0 0.05 0.01 0 0 0 0 0 0 0 0 0.002 0.001 0.001 0 0 0

pPREY2SHC2 65

0 0 0 0 0.12 0 0 0 0.004 0.001 0 0.001 0.02 0 0 0.1 0 0 0.0001 0.2 0 0.001 0 0.001 0 0 0.002 0 0 0 0 0 0 0 0 0.005 0.004 0.05 0.05 0.01 0.05 0.005 0.05 0.05 0 0.005 0 0 0 0.05 0.01 0 0 0 0 0 0 0 0 0.002 0.001 0.001 0 0 0

pPREY1SHP1 65

0.05 0.01 0.03 0.05 0.1 0.05 0.01 0.05 0.1 0.001 0 0 0.02 0.05 0.05 0.015 0.04 0.015 0 0.2 0.2 0.01 0.05 0.005 0.05 0.01 0.06 0.05 0 0.02 0 0 0.01 0.01 0 0.05 0 0 0 0 0.00013 0.0001 0.00013 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SHP1 65

0.12 0.01 0.003 0.05 0.12 0.001 0.01 0.05 0.12 0.001 0 0 0.02 0.05 0.01 0.03 0.015 0.015 0 0.2 0.2 0.01 0.05 0.005 0.05 0.1 0.01 0.05 0 0.02 0 0 0.01 0.01 0 0.05 0 0 0 0 0.00013 0.0001 0.00013 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SHP2 65

0.05 0.01 0.001 0.05 0.1 0.05 0.01 0.05 0.1 0.001 0 0 0.02 0.05 0.05 0.015 0.04 0.015 0 0.2 0.2 0.01 0.05 0.005 0.05 0.05 0.06 0.05 0 0.02 0 0.05 0.01 0.01 0 0.05 0 0 0 0 0.00013 0.0001 0.00013 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SHP2 65

0.12 0.01 0.0015 0.05 0.12 0.001 0.01 0.05 0.12 0.001 0 0 0.02 0.05 0.01 0.03 0.015 0.015 0 0.2 0.2 0.01 0.05 0.005 0.05 0.05 0.01 0.05 0 0.02 0 0.05 0.01 0.01 0 0.05 0 0 0 0 0.00013 0.0001 0.00013 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SHB1 65

0 0 0 0 0.002 0 0 0 0.01 0.05 0.15 0 0.05 0 0 0 0 0 0 0 0.2 0.05 0 0 0 0 0.02 0 0 0 0 0 0 0 0 0.05 0.01 0.000533333 0.000533333 0.007666667 0.003833333 0.003833333 0.003833333 0.1 0 0.015333333 0 0.1 0 0.038333333 0.0005 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SHB1 65

0 0 0 0 0.004 0 0.0002 0 0.004 0.05 0.15 0 0 0 0 0 0 0 0 0 0.2 0.05 0 0 0 0 0.01 0 0 0 0 0 0 0 0 0.05 0.01 0.000533333 0.000533333 0.007666667 0.007666667 0.003833333 0.003833333 0.1 0 0.015333333 0 0.1 0 0.038333333 0.0005 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SHB2 65

0 0 0 0 0.01 0 0 0 0.01 0.05 0.15 0 0.05 0 0 0 0 0 0 0 0.2 0.05 0 0 0 0 0.02 0 0 0 0 0 0 0 0 0.05 0.005 0.0005 0.0005 0.001 0 0.0005 0.0005 0.1 0 0.002 0 0.1 0 0.005 0.0005 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SHB2 65

0 0 0 0 0.004 0 0.0002 0 0.004 0.05 0.15 0 0.1 0 0 0 0 0 0 0 0.2 0.05 0 0 0 0 0.01 0 0 0 0 0 0 0 0 0.05 0.005 0.0005 0.0005 0.001 0.001 0.0005 0.0005 0.1 0 0.002 0 0.1 0 0.005 0.0005 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SHR1 65

0.015 0.01 0 0 0.1 0 0 0 0.1 0.05 0.25 0 0.25 0 0 0.15 0 0 0 0 0.2 0.05 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0.05 0.00075 0.001 0.001 0.02 0.001 0.001 0.001 0.1 0 0.025 0 0.1 0 0.025 0.0005 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SHR1 65

0.12 0.05 0 0 0.04 0 0.01 0 0.04 0.05 0.25 0 0.5 0 0 0.3 0 0 0 0 0.2 0.05 0 0 0 0 0.02 0 0 0 0 0 0 0 0 0.05 0.00075 0.001 0.001 0.02 0.001 0.001 0.001 0.1 0 0.025 0 0.1 0 0.01 0.0005 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SHR2 65

0.015 0.01 0 0 0.1 0 0 0 0.02 0.05 0.25 0 0.25 0 0 0.15 0 0 0 0 0.2 0.05 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0.05 0.004388889 0.005 0.005 0.011111111 0.004555556 0.000555556 0.004555556 0.1 0 0.025 0 0.1 0 0.005555556 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SHR2 65

0.12 0.05 0 0 0.04 0 0.01 0 0.04 0.05 0.25 0 0.5 0 0 0.3 0 0 0 0 0.2 0.05 0 0 0 0 0.02 0 0 0 0 0 0 0 0 0.05 0.004388889 0.005 0.005 0 0.004555556 0.000555556 0.004555556 0.1 0 0.025 0 0.1 0 0.005555556 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SSK1 65

0 0.005 0 0 0 0 0.01 0 0.2 0 0 0.05 0.1 0.05 0.2 0 0.075 0.05 0.05 0.1 0 0.01 0 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0.0075 0.01 0.01 0.02 0.005 0 0.005 0.05 0.1 0.025 0 0 0 0.02 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SSK1 65

0 0 0 0 0 0 0.01 0 0.12 0 0 0.05 0.1 0 0.05 0 0.04 0.05 0.01 0.1 0 0.01 0 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0.0075 0.01 0.01 0.02 0.005 0 0.005 0.05 0.1 0.025 0 0 0 0.02 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SSK2 65

0 0.005 0 0 0 0 0.01 0 0.1 0 0 0.05 0.1 0.05 0.2 0 0.075 0.05 0.05 0.1 0 0.01 0 0.001 0 0.2 0 0 0 0 0 0 0 0 0 0 0.0075 0.01 0.01 0.02 0.005 0 0.005 0.05 0.1 0.025 0 0 0 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SSK2 65

0 0.001 0 0 0 0 0.01 0 0.12 0 0 0.05 0.1 0.01 0.05 0 0.04 0.05 0.01 0.1 0 0.01 0 0.001 0 0 0 0 0 0 0 0 0 0 0 0 0.0075 0.01 0.01 0.02 0.005 0 0.005 0.05 0.1 0.025 0 0 0 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SB1 65

0.075 0 0.05 0.05 0 0.05 0 0 0.1 0.01 0 0 0 0 0.2 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.0075 0.01 0 0 0.005 0 0.005 0 0.1 0 0 0 0 0.01 0 0 0 0 0 0 0 0 0.0001 0.02 0.01 0.05 0 0 0.05

pPREY2SB1 65

0.12 0 0.05 0.05 0 0.005 0 0 0.12 0.01 0 0 0 0 0.05 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.0075 0.01 0 0 0.005 0 0.005 0 0.1 0 0 0 0 0.01 0 0 0 0 0 0 0 0 0.0001 0.02 0.01 0.05 0 0 0.05

pPREY1SB2 65

0.075 0 0.05 0.05 0 0.05 0 0 0.1 0.01 0 0 0 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0.005 0 0.005 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.02 0.01 0.05 0 0 0.05

pPREY2SB2 65

0.12 0 0.05 0.05 0 0.005 0 0 0.12 0.01 0 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0 0 0 0 0.005 0 0.005 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.02 0.01 0.05 0 0 0.05

pPREY1SP1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SP1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1SP2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2SP2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1REP1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2REP1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1REP2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2REP2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1PIN1 65

0.075 0 0.1 0.025 0.02 0.001 0 0.05 0.1 0.05 0.15 0.1 0.005 0 0.025 0.008 0 0.001 0.01 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.0075 0.01 0 0.02 0.0025 0 0.0025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0 0.001

pPREY2PIN1 65

0.12 0 0.01 0.025 0.04 0.0001 0 0.05 0.12 0.05 0.05 0.1 0.04 0 0.005 0.1 0 0.001 0.001 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.0075 0.01 0 0.02 0.0025 0 0.0025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0 0.001

pPREY1PIN2 65

0.075 0 0.1 0.05 0.02 0.002 0 0.05 0.1 0.05 0.15 0.1 0.005 0 0.05 0.008 0 0.001 0.01 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.0075 0.01 0 0.02 0.005 0 0.005 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0 0.001

pPREY2PIN2 65

0.12 0 0.005 0.05 0.04 0.0001 0 0.05 0.12 0.05 0.1 0.1 0.04 0 0.01 0.1 0 0.001 0.001 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.0075 0.01 0 0.02 0.005 0 0.005 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0 0.001

pPREY1WHB1 65

0 0 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0.05 0.05 0 0 0 0 0 0 0 0 0

pPREY2WHB1 65

0 0 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0.05 0.05 0 0 0 0 0 0 0 0 0

pPREY1WHB2 65

0 0 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0.05 0.05 0 0 0 0 0 0 0 0 0

pPREY2WHB2 65

0 0 0.011 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0 0 0 0 0 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0.05 0.05 0 0 0 0 0 0 0 0 0

pPREY1WHS1 65

0.075 0 0.02 0.05 0 0.04 0 0.05 0.06 0.01 0 0 0 0 0.05 0 0 0.04 0 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.0004 0.0005 0 0.001 0.0005 0 0.0005 0 0 0.0025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0 0.0005

pPREY2WHS1 65

0.12 0 0.001 0.05 0 0.0004 0 0.02 0.12 0.01 0 0 0 0 0.01 0 0 0.04 0 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.0004 0.0005 0 0.001 0.0005 0 0.0005 0 0 0.0025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0 0.0005

pPREY1WHS2 65

0.075 0 0.02 0.05 0 0.04 0 0.05 0.06 0.01 0 0 0 0 0.15 0 0 0.04 0 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.0004 0.0005 0 0.001 0.0005 0 0.0005 0 0 0.0025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0 0.0005

pPREY2WHS2 65

0.12 0 0.001 0.05 0 0.0004 0 0.02 0.12 0.01 0 0 0 0 0.03 0 0 0.04 0 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0.0004 0.0005 0 0.001 0.0005 0 0.0005 0 0 0.0025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0 0.0005

pPREY1WHT1 65

0.01 0 0.01 0.05 0 0.04 0 0.05 0.04 0.05 0 0 0 0 0.025 0 0 0.04 0 0 0.2 0.02 0.025 0.01 0.03 0.1 0 0.05 0 0.01 0 0.05 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0 0 0.01

pPREY2WHT1 65

0.02 0 0.01 0.05 0 0.0008 0 0.05 0.08 0.05 0 0 0 0 0.005 0 0 0.04 0 0 0.2 0.02 0.025 0.01 0.02 0.075 0 0.05 0 0.01 0 0.05 0 0 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0 0 0.01

pPREY1WHT2 65

0.01 0 0.01 0.05 0 0.035 0 0.05 0.02 0.05 0 0 0 0 0.05 0 0 0.04 0 0 0.1 0.02 0.025 0.01 0.01 0.15 0 0.05 0 0.01 0 0.05 0.01 0 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0 0 0.01

pPREY2WHT2 65

0.02 0 0.01 0.05 0 0.0008 0 0.05 0.04 0.05 0 0 0 0 0.01 0 0 0.04 0 0 0.2 0.02 0.025 0.01 0.04 0.1 0 0.05 0 0.01 0 0.05 0.01 0 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.01 0 0 0.01

pPREY1WDG1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.01 0.05 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2WDG1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.01 0.05 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY1WDG2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0 0.05 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREY2WDG2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0 0.05 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREYZG 65

0 0 0.005 0 0 0 0 0 0 0.001 0.003 0 0.005 0 0.001 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0 0 0 0 0.001 0.0004 0 0.0001 0.025 0.0001 0 0 0 0.002 0.001 0.001 0 0 0

pPREYZL 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0 0 0 0 0 0 0 0.00002 0.002 0.001 0 0 0 0.002 0.0001 0 0 0 0

pPREYZM 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0001 0.0025 0.001 0 0 0 0.002 0.001 0 0 0 0

pPREYZS 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0001 0 0.0001 0 0 0 0.002 0.001 0 0 0 0

pPREYDF 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pPREYBD 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.00006 0.004 0.002 0.002 0.002 0.002 0.002

pPREYBO 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.00003 0.000015 0 0.000015 0.000015 0

pPREYBC 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0005 0 0 0 0 0 0 0 0 0 0 0 0 0.0001 0 0 0.0001 0 0 0.0001

pPREYBFS 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0001 0 0 0 0 0.02 0 0.0001 0 0 0 0 0 0.00001 0.00001 0 0 0 0

pPREYBFF 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.02 0 0.0001 0.0025 0.001 0 0 0 0.02 0.01 0 0 0 0

pPREYBFD 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0004 0 0.0001 0.00025 0.0001 0 0 0 0.02 0.01 0 0 0 0

pPREYBMS 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0075 0.01 0 0.02 0.001 0.0001 0.01 0 0 0.01 0 0 0 0.01 0 0.004 0 0.001 0 0 0 0 0 0.002 0.0001 0.05 0.001 0.0001 0.05

pPREYBML 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.003 0.004 0 0.008 0.0005 0 0.005 0 0 0.001 0 0 0 0.005 0 0 0 0 0 0 0 0 0 0.02 0.01 0.05 0.01 0.01 0.05

pPREYBMD 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.00075 0.001 0.0002 0.01 0.0005 0 0.001 0 0 0.0001 0 0 0 0.001 0 0 0 0 0 0 0 0 0 0.002 0.001 0.05 0.001 0.001 0.05

pPREYBG 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.001 0 0.0001 0 0 0 0 0 0 0 0 0 0 0.02 0.01 0 0 0 0

pPREY1CEP1 65

0.0002 0 0.0025 0.02 0.032 0.0004 0.0001 0.0001 0 0.05 0.025 0.00001 0 0 0.00016 0 0 0.0002 0 0 0 0 0 0 0 0 0 0 0.00005 0 0 0 0 0 0 0.0001 0 0 0 0 0 0 0 0 0.04 0 0 0 0 0 0 0 0 0 0.01 0 0 0 0 0 0 0 0 0 0

pPREY2CEP1 65

0.0002 0 0.0025 0.02 0.032 0.0004 0.0001 0.0001 0 0.05 0.025 0.00001 0 0 0.00016 0 0 0.0002 0 0 0 0 0 0 0 0 0 0 0.00005 0 0 0 0 0 0 0.0001 0 0 0 0 0 0 0 0 0.04 0 0 0 0 0 0 0 0 0 0.01 0 0 0 0 0 0 0 0 0 0

pPREY1CEP2 65

0.0004 0.0012 0.03 0.02 0.032 0.0001 0.0006 0.001 0 0.05 0.06 0.00005 0 0 0.0005 0 0 0.00075 0 0 0 0 0 0 0 0 0 0 0.0005 0 0 0 0 0 0 0.00025 0 0 0 0 0 0 0 0 0.03 0 0 0 0 0 0 0 0 0.001 0.008 0 0 0 0 0 0 0 0 0 0

pPREY2CEP2 65

0.0004 0.0012 0.03 0.02 0.032 0.0001 0.0006 0.001 0 0.05 0.06 0.00005 0 0 0.0005 0 0 0.00075 0 0 0 0 0 0 0 0 0 0 0.0005 0 0 0 0 0 0 0.00025 0 0 0 0 0 0 0 0 0.03 0 0 0 0 0 0 0 0 0.001 0.008 0 0 0 0 0 0 0 0 0 0

pPREY1PWN1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0.005 0.005 0.005 0.005 0 0.005 0 0.07 0.005 0 0 0 0.005 0 0.4 0 0.2 0.05 0 0 0 0.001 0.1 0.01 0.05 0.05 0 0

pPREY2PWN1 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0.005 0.005 0.005 0.005 0 0.005 0 0.07 0.005 0 0 0 0.005 0 0.4 0 0.2 0.05 0 0 0 0.001 0.1 0.01 0.05 0.05 0 0

pPREY1PWN2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0.005 0.005 0.005 0.005 0 0.005 0 0.07 0.005 0 0 0 0.005 0 0.18 0 0.09 0.05 0 0 0 0.001 0.1 0.01 0.05 0.05 0 0

pPREY2PWN2 65

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.005 0.005 0.005 0.005 0.005 0 0.005 0 0.07 0.005 0 0 0 0.005 0 0.18 0 0.09 0.05 0 0 0 0.001 0.1 0.01 0.05 0.05 0 0

## Ontogenetic diet preferences - one entry per age class. 1=use explicit interactions above, 0=use ontogenetic values below .

# For each group where the p\_split value is set to 0 there will be a value for each cohort of the groups tagged below as age\_structured\_pred.

p\_split\_BFD 0

p\_split\_BFF 0

p\_split\_BFS 0

p\_split\_BMD 0

p\_split\_BMS 0

p\_split\_BML 0

p\_split\_BG 0

p\_split\_ZG 0

p\_split\_ZL 0

p\_split\_ZM 0

p\_split\_ZS 0

p\_split\_BD 0

p\_split\_BC 0

#Flag to indicate that the group uses age structured prey.

age\_structured\_prey\_FVD 1

age\_structured\_prey\_FVV 1

age\_structured\_prey\_FVS 1

age\_structured\_prey\_FVB 1

age\_structured\_prey\_FVT 1

age\_structured\_prey\_FVO 1

age\_structured\_prey\_FMM 1

age\_structured\_prey\_FDD 1

age\_structured\_prey\_FDS 1

age\_structured\_prey\_FDB 1

age\_structured\_prey\_FDC 1

age\_structured\_prey\_FDO 1

age\_structured\_prey\_FDE 1

age\_structured\_prey\_FDF 1

age\_structured\_prey\_SHB 1

age\_structured\_prey\_SHD 1

age\_structured\_prey\_SHC 1

age\_structured\_prey\_SHP 1

age\_structured\_prey\_SHR 1

age\_structured\_prey\_FPL 0

age\_structured\_prey\_FPO 0

age\_structured\_prey\_FPS 0

age\_structured\_prey\_FBP 0

age\_structured\_prey\_FMN 0

age\_structured\_prey\_FDM 0

age\_structured\_prey\_FDP 0

age\_structured\_prey\_SSK 0

age\_structured\_prey\_SB 0

age\_structured\_prey\_SP 0

age\_structured\_prey\_PIN 0

age\_structured\_prey\_REP 0

age\_structured\_prey\_WHB 0

age\_structured\_prey\_WHS 0

age\_structured\_prey\_WHT 0

age\_structured\_prey\_WDG 0

# These replace the juvenile/adult values defined in the pPREY entries above

p\_ZGFPO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of deep piscivore

p\_ZLFPO 10

0.04 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

# Fraction of mesozooplankton exploitable by each age class of deep piscivore

p\_ZMFPO 10

0.1 0.05 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of carnivorous infauna exploitable by each age class of deep piscivore

p\_BCFPO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of benthic deposit feeders exploitable by each age class of deep piscivore

p\_BDFPO 10

0.004 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04

# Fraction of filter feeding benthic invertebrates exploitable by each age class of deep piscivore

p\_BFFPO 10

0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of scallops exploitable by each age class of deep piscivore

p\_BFSFPO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of deep piscivore

p\_BGFPO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of deep piscivore

p\_BMFPO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of megazoobenthos exploitable by each age class of deep piscivore

p\_BMLFPO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of gelatinous zooplankton exploitable by each age class of deep piscivore

p\_ZGFVD 10

0.002 0.005 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of large zooplankton exploitable by each age class of deep piscivore

p\_ZLFVD 10

0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3

# Fraction of mesozooplankton exploitable by each age class of deep piscivore

p\_ZMFVD 10

0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09

# Fraction of carnivorous infauna exploitable by each age class of deep piscivore

p\_BCFVD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of benthic deposit feeders exploitable by each age class of deep piscivore

p\_BDFVD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of deep piscivore

p\_BFFFVD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of deep piscivore

p\_BFDFVD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of scallops exploitable by each age class of deep piscivore

p\_BFSFVD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of deep piscivore

p\_BGFVD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of deep piscivore

p\_BMSFVD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of deep piscivore

p\_BMDFVD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of megazoobenthos exploitable by each age class of deep piscivore

p\_BMLFVD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of gelatinous zooplankton exploitable by each age class of vulnerable piscivore

p\_ZGFVV 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of vulnerable piscivore

p\_ZLFVV 10

0 0 0 0 0 0 0 0 0 0

# Fraction of mesozooplankton exploitable by each age class of vulnerable piscivore

p\_ZMFVV 10

0 0 0 0 0 0 0 0 0 0

# Fraction of carnivorous infauna exploitable by each age class of vulnerable piscivore

p\_BCFVV 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of benthic deposit feeders exploitable by each age class of vulnerable piscivore

p\_BDFVV 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of filter feeding benthic invertebrates exploitable by each age class of vulnerable piscivore

p\_BFFFVV 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of filter feeding benthic invertebrates exploitable by each age class of vulnerable piscivore

p\_BFDFVV 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of scallops exploitable by each age class of vulnerable piscivore

p\_BFSFVV 10

0 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of macrozoobenthos exploitable by each age class of vulnerable piscivore

p\_BGFVV 10

0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2

# Fraction of macrozoobenthos exploitable by each age class of vulnerable piscivore

p\_BMSFVV 10

0.005 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of macrozoobenthos exploitable by each age class of vulnerable piscivore

p\_BMDFVV 10

0.005 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of megazoobenthos exploitable by each age class of vulnerable piscivore

p\_BMLFVV 10

0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of gelatinous zooplankton exploitable by each age class of shallow piscivore

p\_ZGFVS 10

0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of large zooplankton exploitable by each age class of shallow piscivore

p\_ZLFVS 10

0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15

# Fraction of mesozooplankton exploitable by each age class of shallow piscivore

p\_ZMFVS 10

0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of carnivorous infauna exploitable by each age class of shallow piscivore

p\_BCFVS 10

0.018 0.018 0.018 0.018 0.018 0.018 0.018 0.018 0.018 0.018

# Fraction of benthic deposit feeders exploitable by each age class of shallow piscivore

p\_BDFVS 10

0.008 0.008 0.008 0.008 0.008 0.008 0.008 0.008 0.008 0.008

# Fraction of filter feeding benthic invertebrates exploitable by each age class of shallow piscivore

p\_BFFFVS 10

0.007 0.007 0.007 0.007 0.007 0.007 0.007 0.007 0.007 0.007

# Fraction of filter feeding benthic invertebrates exploitable by each age class of shallow piscivore

p\_BFDFVS 10

0.007 0.007 0.007 0.007 0.007 0.007 0.007 0.007 0.007 0.007

# Fraction of scallops exploitable by each age class of shallow piscivore

p\_BFSFVS 10

0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075

# Fraction of macrozoobenthos exploitable by each age class of shallow piscivore

p\_BGFVS 10

0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02

# Fraction of macrozoobenthos exploitable by each age class of shallow piscivore

p\_BMSFVS 10

0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001

# Fraction of macrozoobenthos exploitable by each age class of shallow piscivore

p\_BMDFVS 10

0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001

# Fraction of megazoobenthos exploitable by each age class of shallow piscivore

p\_BMLFVS 10

0 0 0 0 0 0 0 0 0 0

# Fraction of gelatinous zooplankton exploitable by each age class of other piscivore

p\_ZGFVB 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of other piscivore

p\_ZLFVB 10

0.015 0.015 0.015 0.15 0.3 0.3 0.3 0.3 0.3 0.3

# Fraction of mesozooplankton exploitable by each age class of other piscivore

p\_ZMFVB 10

0 0 0 0 0 0 0 0 0 0

# Fraction of carnivorous infauna exploitable by each age class of other piscivore

p\_BCFVB 10

0 0 0 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of benthic deposit feeders exploitable by each age class of other piscivore

p\_BDFVB 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of filter feeding benthic invertebrates exploitable by each age class of other piscivore

p\_BFFFVB 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of other piscivore

p\_BFDFVB 10

0 0 0 0 0 0 0 0 0 0

# Fraction of scallops exploitable by each age class of other piscivore

p\_BFSFVB 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of other piscivore

p\_BGFVB 10

0.002 0.002 0.002 0.02 0.02 0.02 0.02 0.02 0.02 0.02

# Fraction of macrozoobenthos exploitable by each age class of other piscivore

p\_BMSFVB 10

0 0 0 0.001 0.001 0.001 0.001 0.001 0.001 0.001

# Fraction of macrozoobenthos exploitable by each age class of other piscivore

p\_BMDFVB 10

0 0 0 0.001 0.001 0.001 0.001 0.001 0.001 0.001

# Fraction of megazoobenthos exploitable by each age class of other piscivore

p\_BMLFVB 10

0 0 0 0 0 0 0 0 0 0

# Fraction of gelatinous zooplankton exploitable by each age class of large piscivore

p\_ZGFVT 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of large piscivore

p\_ZLFVT 10

0 0 0 0 0 0 0 0 0 0

# Fraction of mesozooplankton exploitable by each age class of large piscivore

p\_ZMFVT 10

0 0 0 0 0 0 0 0 0 0

# Fraction of carnivorous infauna exploitable by each age class of large piscivore

p\_BCFVT 10

0 0 0 0 0 0 0 0 0 0

# Fraction of benthic deposit feeders exploitable by each age class of large piscivore

p\_BDFVT 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of large piscivore

p\_BFFFVT 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of large piscivore

p\_BFDFVT 10

0 0 0 0 0 0 0 0 0 0

# Fraction of scallops exploitable by each age class of large piscivore

p\_BFSFVT 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of large piscivore

p\_BGFVT 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of large piscivore

p\_BMSFVT 10

0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015

# Fraction of macrozoobenthos exploitable by each age class of large piscivore

p\_BMDFVT 10

0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015

# Fraction of megazoobenthos exploitable by each age class of large piscivore

p\_BMLFVT 10

0 0 0 0 0 0 0 0 0 0

# Fraction of gelatinous zooplankton exploitable by each age class of large tuna

p\_ZGFVO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of large tuna

p\_ZLFVO 10

0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3

# Fraction of mesozooplankton exploitable by each age class of large tuna

p\_ZMFVO 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of carnivorous infauna exploitable by each age class of large tuna

p\_BCFVO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of benthic deposit feeders exploitable by each age class of large tuna

p\_BDFVO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of large tuna

p\_BFFFVO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of large tuna

p\_BFDFVO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of scallops exploitable by each age class of large tuna

p\_BFSFVO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of large tuna

p\_BGFVO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of large tuna

p\_BMSFVO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of large tuna

p\_BMDFVO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of megazoobenthos exploitable by each age class of large tuna

p\_BMLFVO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of gelatinous zooplankton exploitable by each age class of migratory mesopelagics

p\_ZGFMM 10

0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15

# Fraction of large zooplankton exploitable by each age class of migratory mesopelagics

p\_ZLFMM 10

0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2

# Fraction of mesozooplankton exploitable by each age class of migratory mesopelagics

p\_ZMFMM 10

0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

# Fraction of carnivorous infauna exploitable by each age class of migratory mesopelagics

p\_BCFMM 10

0 0 0 0 0 0 0 0 0 0

# Fraction of benthic deposit feeders exploitable by each age class of migratory mesopelagics

p\_BDFMM 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of migratory mesopelagics

p\_BFFFMM 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of migratory mesopelagics

p\_BFDFMM 10

0 0 0 0 0 0 0 0 0 0

# Fraction of scallops exploitable by each age class of migratory mesopelagics

p\_BFSFMM 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of migratory mesopelagics

p\_BGFMM 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of migratory mesopelagics

p\_BMSFMM 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of migratory mesopelagics

p\_BMDFMM 10

0 0 0 0 0 0 0 0 0 0

# Fraction of megazoobenthos exploitable by each age class of migratory mesopelagics

p\_BMLFMM 10

0 0 0 0 0 0 0 0 0 0

# Fraction of gelatinous zooplankton exploitable by each age class of deep demersals

p\_ZGFDD 10

0.00005 0.00004 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001

# Fraction of large zooplankton exploitable by each age class of deep demersals

p\_ZLFDD 10

0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

# Fraction of mesozooplankton exploitable by each age class of deep demersals

p\_ZMFDD 10

0.0002 0.0003 0.00025 0.00025 0.00025 0.00025 0.00025 0.00025 0.00025 0.00025

# Fraction of carnivorous infauna exploitable by each age class of deep demersals

p\_BCFDD 10

0.0018 0.0012 0.0005 0.00046 0.00046 0.00046 0.00046 0.00046 0.00046 0.00046

# Fraction of benthic deposit feeders exploitable by each age class of deep demersals

p\_BDFDD 10

0.0125 0.0125 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02

# Fraction of filter feeding benthic invertebrates exploitable by each age class of deep demersals

p\_BFFFDD 10

0.0001 0.000845833 0.0005425 0.0005425 0.0005425 0.0005425 0.0005425 0.0005425 0.0005425 0.0005425

# Fraction of filter feeding benthic invertebrates exploitable by each age class of deep demersals

p\_BFDFDD 10

0.0001 0.000845833 0.0005425 0.0005425 0.0005425 0.0005425 0.0005425 0.0005425 0.0005425 0.0005425

# Fraction of scallops exploitable by each age class of deep demersals

p\_BFSFDD 10

0.000006 0.00003 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001

# Fraction of macrozoobenthos exploitable by each age class of deep demersals

p\_BGFDD 10

0.0002 0.0012 0.0003 0.0003 0.0003 0.0003 0.0003 0.0003 0.0003 0.0003

# Fraction of macrozoobenthos exploitable by each age class of deep demersals

p\_BMSFDD 10

0.000025 0.0001 0.00006 0.00006 0.00006 0.00006 0.00006 0.00006 0.00006 0.00006

# Fraction of macrozoobenthos exploitable by each age class of deep demersals

p\_BMDFDD 10

0.000025 0.0001 0.00006 0.00006 0.00006 0.00006 0.00006 0.00006 0.00006 0.00006

# Fraction of megazoobenthos exploitable by each age class of deep demersals

p\_BMLFDD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of gelatinous zooplankton exploitable by each age class of shallow demersals

p\_ZGFDS 10

0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001

# Fraction of large zooplankton exploitable by each age class of shallow demersals

p\_ZLFDS 10

0.3 0.3 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

# Fraction of mesozooplankton exploitable by each age class 0.001 shallow demersals

p\_ZMFDS 10

0.035 0.02 0.0035 0.0035 0.0035 0.0035 0.0035 0.0035 0.0035 0.0035

# Fraction of carnivorous infauna exploitable by each age class of shallow demersals

p\_BCFDS 10

0.006948276 0.008327586 0.009017241 0.009155172 0.009155172 0.009155172 0.009155172 0.009155172 0.009155172 0.009155172

# Fraction of benthic deposit feeders exploitable by each age class of shallow demersals

p\_BDFDS 10

0.05 0.05 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of filter feeding benthic invertebrates exploitable by each age class of shallow demersals

p\_BFFFDS 10

0.006 0.008 0.008 0.008 0.008 0.008 0.008 0.008 0.008 0.008

# Fraction of filter feeding benthic invertebrates exploitable by each age class of shallow demersals

p\_BFDFDS 10

0.006 0.008 0.008 0.008 0.008 0.008 0.008 0.008 0.008 0.008

# Fraction of scallops exploitable by each age class of shallow demersals

p\_BFSFDS 10

0.00005 0.00015 0.00015 0.00015 0.00015 0.00015 0.00015 0.00015 0.00015 0.00015

# Fraction of macrozoobenthos exploitable by each age class of shallow demersals

p\_BGFDS 10

0.002 0.002 0.0016 0.0016 0.0016 0.0016 0.0016 0.0016 0.0016 0.0016

# Fraction of macrozoobenthos exploitable by each age class of shallow demersals

p\_BMSFDS 10

0.008965517 0.013793103 0.013793103 0.013793103 0.013793103 0.013793103 0.013793103 0.013793103 0.013793103 0.013793103

# Fraction of macrozoobenthos exploitable by each age class of shallow demersals

p\_BMDFDS 10

0.008965517 0.013793103 0.013793103 0.013793103 0.013793103 0.013793103 0.013793103 0.013793103 0.013793103 0.013793103

# Fraction of megazoobenthos exploitable by each age class of shallow demersals

p\_BMLFDS 10

0 0.00003 0.0002 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Fraction of gelatinous zooplankton exploitable by each age class of other shallow demersals

p\_ZGFDB 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of other shallow demersals

p\_ZLFDB 10

0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

# Fraction of mesozooplankton exploitable by each age class of other shallow demersals

p\_ZMFDB 10

0.1 0.05 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.02

# Fraction of carnivorous infauna exploitable by each age class of other shallow demersals

p\_BCFDB 10

0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of benthic deposit feeders exploitable by each age class of other shallow demersals

p\_BDFDB 10

0.03 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04

# Fraction of filter feeding benthic invertebrates exploitable by each age class of other shallow demersals

p\_BFFFDB 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of filter feeding benthic invertebrates exploitable by each age class of other shallow demersals

p\_BFDFDB 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of scallops exploitable by each age class of other shallow demersals

p\_BFSFDB 10

0 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075

# Fraction of macrozoobenthos exploitable by each age class of other shallow demersals

p\_BGFDB 10

0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02

# Fraction of macrozoobenthos exploitable by each age class of other shallow demersals

p\_BMSFDB 10

0.0005 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001

# Fraction of macrozoobenthos exploitable by each age class of other shallow demersals

p\_BMDFDB 10

0.0005 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001

# Fraction of megazoobenthos exploitable by each age class of other shallow demersals

p\_BMLFDB 10

0 0.00003 0.0002 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Fraction of gelatinous zooplankton exploitable by each age class of other deep demersals

p\_ZGFDC 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of other deep demersals

p\_ZLFDC 10

0.1 0.1 0 0 0 0 0 0 0 0

# Fraction of mesozooplankton exploitable by each age class of other deep demersals

p\_ZMFDC 10

0.01 0 0 0 0 0 0 0 0 0

# Fraction of carnivorous infauna exploitable by each age class of other deep demersals

p\_BCFDC 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of benthic deposit feeders exploitable by each age class of other deep demersals

p\_BDFDC 10

0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07

# Fraction of filter feeding benthic invertebrates exploitable by each age class of other deep demersals

p\_BFFFDC 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of filter feeding benthic invertebrates exploitable by each age class of other deep demersals

p\_BFDFDC 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of scallops exploitable by each age class of other deep demersals

p\_BFSFDC 10

0 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075

# Fraction of macrozoobenthos exploitable by each age class of other deep demersals

p\_BGFDC 10

0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

# Fraction of macrozoobenthos exploitable by each age class of other deep demersals

p\_BMSFDC 10

0.005 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of macrozoobenthos exploitable by each age class of other deep demersals

p\_BMDFDC 10

0.005 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of megazoobenthos exploitable by each age class of other deep demersals

p\_BMLFDC 10

0.0001 0.0001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001

# Fraction of gelatinous zooplankton exploitable by each age class of long-lived demersals

p\_ZGFDO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of long-lived demersals

p\_ZLFDO 10

0.1 0 0 0 0 0 0 0 0 0

# Fraction of mesozooplankton exploitable by each age class of long-lived demersals

p\_ZMFDO 10

0 0 0 0 0 0 0 0 0 0

# Fraction of carnivorous infauna exploitable by each age class of long-lived demersals

p\_BCFDO 10

0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of benthic deposit feeders exploitable by each age class of long-lived demersals

p\_BDFDO 10

0.02 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of filter feeding benthic invertebrates exploitable by each age class of long-lived demersals

p\_BFFFDO 10

0.005 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of filter feeding benthic invertebrates exploitable by each age class of long-lived demersals

p\_BFDFDO 10

0.005 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of scallops exploitable by each age class of long-lived demersals

p\_BFSFDO 10

0.0075 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04

# Fraction of macrozoobenthos exploitable by each age class of long-lived demersals

p\_BGFDO 10

0.05 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

# Fraction of macrozoobenthos exploitable by each age class of long-lived demersals

p\_BMSFDO 10

0.05 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

# Fraction of macrozoobenthos exploitable by each age class of long-lived demersals

p\_BMDFDO 10

0.05 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

# Fraction of megazoobenthos exploitable by each age class of long-lived demersals

p\_BMLFDO 10

0 0.001 0.005 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of gelatinous zooplankton exploitable by each age class of estuarine demersals

p\_ZGFDE 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of estuarine demersals

p\_ZLFDE 10

0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3

# Fraction of mesozooplankton exploitable by each age class of estuarine demersals

p\_ZMFDE 10

0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07

# Fraction of carnivorous infauna exploitable by each age class of estuarine demersals

p\_BCFDE 10

0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of benthic deposit feeders exploitable by each age class of estuarine demersals

p\_BDFDE 10

0.02 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of filter feeding benthic invertebrates exploitable by each age class of estuarine demersals

p\_BFFFDE 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of estuarine demersals

p\_BFDFDE 10

0 0 0 0 0 0 0 0 0 0

# Fraction of scallops exploitable by each age class of estuarine demersals

p\_BFSFDE 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of estuarine demersals

p\_BGFDE 10

0 0 0 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of macrozoobenthos exploitable by each age class of estuarine demersals

p\_BMSFDE 10

0 0 0 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of macrozoobenthos exploitable by each age class of estuarine demersals

p\_BMDFDE 10

0 0 0 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of megazoobenthos exploitable by each age class of estuarine demersals

p\_BMLFDE 10

0 0 0 0 0 0 0 0 0 0

# Fraction of gelatinous zooplankton exploitable by each age class of flat deep demersal demersals

p\_ZGFDF 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of flat deep demersal demersals

p\_ZLFDF 10

0.05 0.05 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3

# Fraction of mesozooplankton exploitable by each age class of flat deep demersal demersals

p\_ZMFDF 10

0.000005 0.000005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Fraction of carnivorous infauna exploitable by each age class of flat deep demersal demersals

p\_BCFDF 10

0 0 0 0 0 0 0 0 0 0

# Fraction of benthic deposit feeders exploitable by each age class of flat deep demersal demersals

p\_BDFDF 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of flat deep demersal

p\_BFFFDF 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of flat deep demersal

p\_BFDFDF 10

0 0 0 0 0 0 0 0 0 0

# Fraction of scallops exploitable by each age class of flat deep demersal demersals

p\_BFSFDF 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of flat deep demersal demersals

p\_BGFDF 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of flat deep demersal demersals

p\_BMSFDF 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of flat deep demersal demersals

p\_BMDFDF 10

0 0 0 0 0 0 0 0 0 0

# Fraction of megazoobenthos exploitable by each age class of flat deep demersal demersals

p\_BMLFDF 10

0 0 0 0 0 0 0 0 0 0

# Fraction of gelatinous zooplankton exploitable by each age class of demersal sharks

p\_ZGSHD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of demersal sharks

p\_ZLSHD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of mesozooplankton exploitable by each age class of demersal sharks

p\_ZMSHD 10

0 0 0 0 0 0 0 0 0 0

# Fraction of carnivorous infauna exploitable by each age class of demersal sharks

p\_BCSHD 10

0.1 0.1 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of benthic deposit feeders exploitable by each age class of demersal sharks

p\_BDSHD 10

0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of filter feeding benthic invertebrates exploitable by each age class of demersal sharks

p\_BFFSHD 10

0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015

# Fraction of filter feeding benthic invertebrates exploitable by each age class of demersal sharks

p\_BFDSHD 10

0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015 0.0015

# Fraction of scallops exploitable by each age class of demersal sharks

p\_BFSSHD 10

0.004 0.004 0.004 0.004 0.004 0.004 0.004 0.004 0.004 0.004

# Fraction of macrozoobenthos exploitable by each age class of demersal sharks

p\_BGSHD 10

0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

# Fraction of macrozoobenthos exploitable by each age class of demersal sharks

p\_BMSSHD 10

0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013

# Fraction of macrozoobenthos exploitable by each age class of demersal sharks

p\_BMDSHD 10

0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013

# Fraction of megazoobenthos exploitable by each age class of demersal sharks

p\_BMLSHD 10

0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Fraction of gelatinous zooplankton exploitable by each age class of dogfish

p\_ZGSHC 10

0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of large zooplankton exploitable by each age class of dogfish

p\_ZLSHC 10

0 0 0 0 0 0 0 0 0 0

# Fraction of mesozooplankton exploitable by each age class of dogfish

p\_ZMSHC 10

0 0 0 0 0 0 0 0 0 0

# Fraction of carnivorous infauna exploitable by each age class of dogfish

p\_BCSHC 10

0.005 0.005 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of benthic deposit feeders exploitable by each age class of dogfish

p\_BDSHC 10

0.025 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of filter feeding benthic invertebrates exploitable by each age class of dogfish

p\_BFFSHC 10

0.005 0.005 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of filter feeding benthic invertebrates exploitable by each age class of dogfish

p\_BFDSHC 10

0.005 0.005 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of scallops exploitable by each age class of dogfish

p\_BFSSHC 10

0.04 0.004 0.004 0.004 0.004 0.004 0.004 0.004 0.004 0.004

# Fraction of macrozoobenthos exploitable by each age class of dogfish

p\_BGSHC 10

0.1 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of macrozoobenthos exploitable by each age class of dogfish

p\_BMSSHC 10

0.005 0.005 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of macrozoobenthos exploitable by each age class of dogfish

p\_BMDSHC 10

0.005 0.005 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of megazoobenthos exploitable by each age class of dogfish

p\_BMLSHC 10

0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of gelatinous zooplankton exploitable by each age class of other demersal sharks

p\_ZGSHB 10

0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Fraction of large zooplankton exploitable by each age class of other demersal sharks

p\_ZLSHB 10

0 0 0 0 0 0 0 0 0 0

# Fraction of mesozooplankton exploitable by each age class of other demersal sharks

p\_ZMSHB 10

0 0 0 0 0 0 0 0 0 0

# Fraction of carnivorous infauna exploitable by each age class of other demersal sharks

p\_BCSHB 10

0.1 0.01 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of benthic deposit feeders exploitable by each age class of other demersal sharks

p\_BDSHB 10

0.04 0.004 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002

# Fraction of filter feeding benthic invertebrates exploitable by each age class of other demersal sharks

p\_BFFSHB 10

0.001 0.0001 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Fraction of filter feeding benthic invertebrates exploitable by each age class of other demersal sharks

p\_BFDSHB 10

0.001 0.0001 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Fraction of scallops exploitable by each age class of other demersal sharks

p\_BFSSHB 10

0.01 0.01 0.01 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of macrozoobenthos exploitable by each age class of other demersal sharks

p\_BGSHB 10

0.02 0.002 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001

# Fraction of macrozoobenthos exploitable by each age class of other demersal sharks

p\_BMSSHB 10

0.01 0.001 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Fraction of macrozoobenthos exploitable by each age class of other demersal sharks

p\_BMDSHB 10

0.01 0.001 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Fraction of megazoobenthos exploitable by each age class of other demersal sharks

p\_BMLSHB 10

0.01 0.001 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Fraction of gelatinous zooplankton exploitable by each age class of pelagic sharks

p\_ZGSHP 10

0 0 0 0 0 0 0 0 0 0

# Fraction of large zooplankton exploitable by each age class of pelagic sharks

p\_ZLSHP 10

0 0 0 0 0 0 0 0 0 0

# Fraction of mesozooplankton exploitable by each age class of pelagic sharks

p\_ZMSHP 10

0 0 0 0 0 0 0 0 0 0

# Fraction of carnivorous infauna exploitable by each age class of pelagic sharks

p\_BCSHP 10

0 0 0 0 0 0 0 0 0 0

# Fraction of benthic deposit feeders exploitable by each age class of pelagic sharks

p\_BDSHP 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of pelagic sharks

p\_BFFSHP 10

0 0 0 0 0 0 0 0 0 0

# Fraction of filter feeding benthic invertebrates exploitable by each age class of pelagic sharks

p\_BFDSHP 10

0 0 0 0 0 0 0 0 0 0

# Fraction of scallops exploitable by each age class of pelagic sharks

p\_BFSSHP 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of pelagic sharks

p\_BGSHP 10

0 0 0 0 0 0 0 0 0 0

# Fraction of macrozoobenthos exploitable by each age class of pelagic sharks

p\_BMSSHP 10

0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013

# Fraction of macrozoobenthos exploitable by each age class of pelagic sharks

p\_BMDSHP 10

0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013 0.00013

# Fraction of megazoobenthos exploitable by each age class of pelagic sharks

p\_BMLSHP 10

0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001

# Fraction of gelatinous zooplankton exploitable by each age class of reef sharks

p\_ZGSHR 10

0.0005 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

# Fraction of large zooplankton exploitable by each age class of reef sharks

p\_ZLSHR 10

0 0 0 0 0 0 0 0 0 0

# Fraction of mesozooplankton exploitable by each age class of reef sharks

p\_ZMSHR 10

0 0 0 0 0 0 0 0 0 0

# Fraction of carnivorous infauna exploitable by each age class of reef sharks

p\_BCSHR 10

0.01 0.01 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of benthic deposit feeders exploitable by each age class of reef sharks

p\_BDSHR 10

0.025 0.025 0.025 0.025 0.025 0.025 0.025 0.025 0.025 0.025

# Fraction of filter feeding benthic invertebrates exploitable by each age class of reef sharks

p\_BFFSHR 10

0.001 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of filter feeding benthic invertebrates exploitable by each age class of reef sharks

p\_BFDSHR 10

0.001 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of scallops exploitable by each age class of reef sharks

p\_BFSSHR 10

0.00075 0.0075 0.004 0.004 0.004 0.004 0.004 0.004 0.004 0.004

# Fraction of macrozoobenthos exploitable by each age class of reef sharks

p\_BGSHR 10

0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

# Fraction of macrozoobenthos exploitable by each age class of reef sharks

p\_BMSSHR 10

0.001 0.001 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of macrozoobenthos exploitable by each age class of reef sharks

p\_BMDSHR 10

0.001 0.001 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005

# Fraction of megazoobenthos exploitable by each age class of reef sharks

p\_BMLSHR 10

0.001 0.001 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005

# Stock specific availability scalars - to represent differential access for different

# stocks. There must be as many entries in the vector here as there are stocks for that

# group. Maybe contributing factor for regional differences in diet, but required in

# calibration occassionally. If don't believe there is stock specific differences set

# array cell contents to 1

pSTOCK\_FPL 1

1

pSTOCK\_FPS 1

1

pSTOCK\_FPO 1

1

pSTOCK\_FVD 1

1

pSTOCK\_FVV 1

1

pSTOCK\_FVS 1

1

pSTOCK\_FVT 1

1

pSTOCK\_FVB 1

1

pSTOCK\_FVO 1

1

pSTOCK\_FMM 1

1

pSTOCK\_FMN 1

1

pSTOCK\_FBP 1

1

pSTOCK\_FDD 1

1

pSTOCK\_FDS 1

1

pSTOCK\_FDB 1

1

pSTOCK\_FDC 1

1

pSTOCK\_FDO 1

1

pSTOCK\_FDE 1

1

pSTOCK\_FDF 1

1

pSTOCK\_FDM 1

1

pSTOCK\_FDP 1

1

pSTOCK\_SHD 1

1

pSTOCK\_SHB 1

1

pSTOCK\_SHC 1

1

pSTOCK\_SHP 1

1

pSTOCK\_SHR 1

1

pSTOCK\_SSK 1

1

pSTOCK\_SB 1

1

pSTOCK\_SP 1

1

pSTOCK\_REP 1

1

pSTOCK\_WDG 1

1

pSTOCK\_PIN 1

1

pSTOCK\_WHB 1

1

pSTOCK\_WHS 1

1

pSTOCK\_WHT 1

1

# Variable availability per stock for juveniles

pSTOCK\_jFPL 1

1

pSTOCK\_jFPS 1

1

pSTOCK\_jFPO 1

1

pSTOCK\_jFVD 1

1

pSTOCK\_jFVV 1

1

pSTOCK\_jFVS 1

1

pSTOCK\_jFVT 1

1

pSTOCK\_jFVB 1

1

pSTOCK\_jFVO 1

1

pSTOCK\_jFMM 1

1

pSTOCK\_jFMN 1

1

pSTOCK\_jFBP 1

1

pSTOCK\_jFDD 1

1

pSTOCK\_jFDS 1

1

pSTOCK\_jFDB 1

1

pSTOCK\_jFDC 1

1

pSTOCK\_jFDO 1

1

pSTOCK\_jFDE 1

1

pSTOCK\_jFDF 1

1

pSTOCK\_jFDM 1

1

pSTOCK\_jFDP 1

1

pSTOCK\_jSHD 1

1

pSTOCK\_jSHB 1

1

pSTOCK\_jSHC 1

1

pSTOCK\_jSHP 1

1

pSTOCK\_jSHR 1

1

pSTOCK\_jSSK 1

1

pSTOCK\_jSB 1

1

pSTOCK\_jSP 1

1

pSTOCK\_jREP 1

1

pSTOCK\_jWDG 1

1

pSTOCK\_jPIN 1

1

pSTOCK\_jWHB 1

1

pSTOCK\_jWHS 1

1

pSTOCK\_jWHT 1

1

#from f1

# Availabilty of catch to opportunistic catch grazers (thieves). There should be an entry for each group that has 'IsCatchGrazer' set to true in the functional group definition file.

pFCPIN 62

0.9 0.35 0.35 0 0 0.001 0 0.01 0.01 0 0 0 0 0 0.4 0 0 0.4 0 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pFCWHT 62

0 0 0 0.1 0.05 0.005 0 0.001 0.02 0 0 0 0 0 0 0 0 0 0.4 0 0 0 0 0.01 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

pFCWHS 62

0 0 0 0.1 0.05 0.005 0 0.001 0.02 0 0 0 0 0 0 0 0 0 0.4 0 0 0 0 0.01 0.01 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

# Proportion of the catch in each fishery that can be exploited by the isCatchGrazer groups. Will be read in for groups

# that have the isCatchGrazer set to 1 in the functional group input file.

PropCatch\_PIN 33

0 0 0.2 0 0.1 0.1 0.9 0 0 0 0 0 0 0.2 0.2 0 0.2 0 0.9 0.9 0.9 0 0 0 0 0 0 0 0 0 0 0 0

PropCatch\_WHT 33

0 0 0 0 0 0 0.9 0 0 0 0 0 0 0 0 0 0 0 0.9 0.9 0.9 0 0 0 0 0 0 0 0 0 0 0 0

PropCatch\_WHS 33

0 0 0 0 0 0 0.9 0 0 0 0 0 0 0 0 0 0 0 0.9 0.9 0.9 0 0 0 0 0 0 0 0 0 0 0 0

# Availability of bacteria being cleaned from ingested detritus #

p\_BBfish 0.3 Prop. of sed. bacteria taken when detrit eaten by verts. 0.3 - 1

p\_BBben 0.6 Prop. of sed. bacteria taken when detrit eaten by benthos 0.6 - 1

p\_PBwc 0.9 Prop. of pelag. bacteria taken when detrit eaten in wc 0.6 - 1

p\_PBben 0.95 Prop. of pelag. bact. taken when detrit eaten by benthos 0.6 - 1

# Gape size for predators, to determine available prey fish groups. Should be an entry per group that is tagged as a predator in the functional group input file.

KLP\_FPS 0.0001

KLP\_FPO 0.0001

KLP\_FPL 0.0001

KLP\_FVD 0.0001

KLP\_FVS 0.0001

KLP\_FVT 0.0001

KLP\_FVO 0.0001

KLP\_FVB 0.0001

KLP\_FVV 0.0001

KLP\_FMM 0.00001

KLP\_FMN 0.00001

KLP\_FBP 0.0001

KLP\_FDD 0.00001

KLP\_FDS 0.0001

KLP\_FDB 0.0001

KLP\_FDC 0.0001

KLP\_FDO 0.0001

KLP\_FDE 0.0001

KLP\_FDF 0.0001

KLP\_FDM 0.0001

KLP\_FDP 0.0001

KLP\_SHD 0.0001

KLP\_SHP 0.0001

KLP\_SHB 0.0001

KLP\_SHC 0.0001

KLP\_SHR 0.0001

KLP\_SSK 0.0001

KLP\_SB 0.0001

KLP\_SP 0.0001

KLP\_REP 0.0001

KLP\_PIN 0.0001

KLP\_WDG 0.0001

KLP\_WHB 1.0e-10

KLP\_WHT 0.00001

KLP\_WHS 0.00001

KLP\_CEP 0.0001 Lower prey selection size limit for cephalopods 0.005

KLP\_ZG 0.0001 Lower prey selection size limit for gelatinous zooplankton 0.001

KLP\_PWN 0.0000001 Lower prey selection size limit for prawns 0.001

KLP\_BMS 0.0000001 Lower prey selection size limit for macrozoobenthos 0.001

KLP\_BML 0.0000001 Lower prey selection size limit for megazoobenthos 0.005

KLP\_BMD 0.0000001 Lower prey selection size limit for deep macrobenthos 0.005

KLP\_DF 0

KLP\_ZG 0

KLP\_ZL 0

KLP\_ZM 0

KLP\_ZS 0

KLP\_BO 0

KLP\_BD 0

KLP\_BC 0

KLP\_BFS 0

KLP\_BFD 0

KLP\_BFF 0

KLP\_BG 0

# Upper gape size for predators. Should be a value for each group that is tagged as a predator in the functional group definition file.

KUP\_FPS 0.42

KUP\_FPO 0.42

KUP\_FPL 0.42

KUP\_FVD 0.6

KUP\_FVS 0.42

KUP\_FVT 0.42

KUP\_FVO 0.25

KUP\_FVB 0.42

KUP\_FVV 0.42

KUP\_FMM 0.9

KUP\_FMN 0.9

KUP\_FBP 0.42

KUP\_FDD 0.95

KUP\_FDS 0.42

KUP\_FDB 0.42

KUP\_FDC 0.42

KUP\_FDO 0.6

KUP\_FDE 0.42

KUP\_FDF 0.42

KUP\_FDM 0.42

KUP\_FDP 0.42

KUP\_SHD 0.4

KUP\_SHP 0.4

KUP\_SHB 0.4

KUP\_SHR 0.4

KUP\_SHC 0.4

KUP\_SSK 0.4

KUP\_SB 0.25

KUP\_SP 0.25

KUP\_REP 0.4

KUP\_PIN 0.4

KUP\_WDG 0.4

KUP\_WHB 0.000002

KUP\_WHT 10.5

KUP\_WHS 0.6

KUP\_CEP 0.4 Upper prey selection size limit for cephalopods 0.2 - 0.4

KUP\_ZG 0.5 Upper prey selection size limit for gelatinous zooplankton 0.2 - 0.7

KUP\_PWN 0.1 Upper prey selection size limit for prawns 0.2 - 0.7

KUP\_BML 0.1 Upper prey selection size limit for megazoobenthos 0.2 - 0.7

KUP\_BMS 0.1 Upper prey selection size limit for shallow macrozoobenthos 0.2 - 0.7

KUP\_BMD 0.1 Upper prey selection size limit for deep macrozoobenthos 0.2 - 0.7

KUP\_DF 0

KUP\_ZG 0.5

KUP\_ZL 0

KUP\_ZM 0

KUP\_ZS 0

KUP\_BO 0

KUP\_BD 0

KUP\_BC 0

KUP\_BFS 0

KUP\_BFD 0

KUP\_BFF 0

KUP\_BG 0

CEP\_sn 2375.0 Ref. AFDW for adult cephal. so can determine avail fish groups (=20cm squid)

jCEP\_sn 375.0 Ref. AFDW for juv cephal. so can determine avail fish groups (=10cm, squid)

ZG\_sn 2375.0 Ref. AFDW for gelatin. zoopl. so can determine avail fish groups (=20cm medusa)

BML\_sn 20263.0 Ref. AFDW for megazoobenthos so can determine avail fish groups (=20cm lobster, 3.5kg)

BMS\_sn 13290.0 Ref. AFDW for shallow macrozoobenthos so can determine avail fish groups (=10cm crab, 500g)

BMD\_sn 13290.0 Ref. AFDW for deep macrozoobenthos so can determine avail fish groups (=10cm crab, 500g)

jPWN\_sn 10.0 Ref. AFDW for deep macrozoobenthos so can determine avail fish groups (=1cm prawn)

PWN\_sn 90.0 Ref. AFDW for deep macrozoobenthos so can determine avail fish groups (=10cm prawn)

# Following parameters required for read-in, but as these species don't eat age-structured groups, not used as yet

ZL\_sn 1.0 Ref. AFDW for large zooplankton so can determine avail fish groups (=10cm prawn)

ZM\_sn 1.0 Ref. AFDW for mesozooplankton so can determine avail fish groups (=10cm prawn)

ZS\_sn 1.0 Ref. AFDW for small zooplankton so can determine avail fish groups (=10cm prawn)

DF\_sn 1.0 Ref. AFDW for dinoflagellates so can determine avail fish groups (=10cm prawn)

BFS\_sn 90.0 Ref. AFDW for shallow filter feeders so can determine avail fish groups (=10cm prawn)

BFF\_sn 90.0 Ref. AFDW for other filter feeders so can determine avail fish groups (=10cm prawn)

BFD\_sn 90.0 Ref. AFDW for deep filter feeders so can determine avail fish groups (=10cm prawn)

BG\_sn 50.0 Ref. AFDW for benthic grazers so can determine avail fish groups (=10cm prawn)

BO\_sn 1.0 Ref. AFDW for meiobenthos so can determine avail fish groups (=10cm prawn)

BD\_sn 10.0 Ref. AFDW for deposit feeders so can determine avail fish groups (=10cm prawn)

BC\_sn 5.0 Ref. AFDW for benthic canrivores so can determine avail fish groups (=10cm prawn)

# Detritus handother deep demersal parameters

k\_trans\_BFS 0.001

k\_trans\_BFF 1.0

k\_trans\_BFD 1.0

k\_refDL 10 Reference labile detrit. level in water column (if higher availability to omnivores reduced)

k\_refDR 20 Reference refract. detrit. level in water column (if higher availability to omnivores reduced)

k\_refsDL 10000 Reference labile detrit. level in sediments (if higher availability to omnivores reduced)

# Clearance rates for consumers - this is used by Holling type feeding (predcase 0, 1, 2)

C\_ZG\_T15 0.008 Clearance rate of gelatinous zooplankton -0.008 mg3(mg N)-1 d-1 0.02 - 0.08

C\_ZL\_T15 0.02 Clearance rate of large zooplankton -0.01 mg3(mg N)-1 d-1 0.02 - 0.08

C\_ZM\_T15 0.04 Clearance rate of meso-zooplankton -0.045 mg3(mg N)-1 d-1 0.05 - 0.1

C\_ZS\_T15 0.18 Clearance rate of small zooplankton mg3(mg N)-1 d-1 0.2 - 0.4

C\_DF\_T15 0.2 Clearance rate of dinoflagellates mg3(mg N)-1 d-1 0.2 - 0.4

C\_BFS\_T15 0.02 Clearance rate of shallow filter feeders mg3(mg N)-1 d-1 0.0005 - 0.015

C\_BFD\_T15 0.02 Clearance rate of deep filter feeders mg3(mg N)-1 d-1 0.0005 - 0.015

C\_BFF\_T15 0.02 Clearance rate of other filter feeders mg3(mg N)-1 d-1 0.0005 - 0.015

C\_BD\_T15 0.01 Clearance rate of benth deposit feeders mg3(mg N)-1 d-1 0.00055 - 0.02

C\_BC\_T15 0.008 Clearance rate of benth inf carniv -0.001 mg3(mg N)-1 d-1 0.0004 - 0.012

C\_BG\_T15 0.004 Clearance rate of benthic grazers -0.00004 mg3(mg N)-1 d-1 0.00005 - 0.003

C\_BMS\_T15 0.003 Clearance rate of shallow macrozoobenthos mg3(mg N)-1 d-1 0.0002 - 0.004

C\_BML\_T15 0.016 Clearance rate of megazoobenthos mg3(mg N)-1 d-1 0.0002 - 0.004

C\_BMD\_T15 0.004 Clearance rate of deep macrozoobenthos mg3(mg N)-1 d-1 0.0002 - 0.004

C\_BO\_T15 0.01 Clearance rate of meiobenthos mg3(mg N)-1 d-1 0.001 - 0.05

C\_CEP\_T15 0.0019 Clearance rate of cephalopods mg3(mg N)-1 d-1 0.1 - 0.2

C\_jCEP\_T15 0.0015 Clearance rate of juvenile cephalopods mg3(mg N)-1d-1 0.1 - 0.2

C\_PWN\_T15 0.01 Clearance rate of prawns mg3(mg N)-1d-1 0.0002 - 0.004

C\_jPWN\_T15 0.007 Clearance rate of juvenile prawns mg3(mg N)-1d-1 0.0002 - 0.004

# Bacteria need C\_ param for read-in but not used - see bacteria colonistation and uptake params above

C\_PB\_T15 0.0 Clearance rate of pelagic bacteria mg3(mg N)-1 d-1 0.001 - 0.05

C\_BB\_T15 0.0 Clearance rate of benthic bacteria mg3(mg N)-1 d-1 0.001 - 0.05

# Clearance rate of each vertebrate group, per age class mg3(mg N)-1 d-1

flagfishrates 0 Switch to show whether clearance and growth rates are absolute=0, or as proportion of body mass=1

C\_FPL 10

0.15 3.0 7.0 8.0 15.0 25.0 20.0 20.0 20.0 20.0

C\_FPS 10

0.0002 0.3 0.6 0.6 0.6 0.6 0.5 0.5 0.4 0.4

C\_FPO 10

0.830998464 1.007442396 1.816966206 15.9122043 16.19791859 16.9122043 17.62649002 17.62649002 17.62649002 17.62649002

C\_FVD 10

2.0 2.5 3.5 4.0 5.0 7.0 7.0 7.0 7.0 7.0

C\_FVV 10

0.8 1.25 2.25 19.0 20.0 20.5 21.0 21.0 21.0 21.0

C\_FVS 10

40.0 40.0 40.0 120.0 150.0 250.0 250.0 300.0 300.0 300.0

C\_FVT 10

400.0 2000.0 3000.0 3000.0 5000.0 6000.0 6000.0 6000.0 6000.0 8000.0

C\_FVO 10

2 3 5 10 10 10 10 10 10 10

C\_FVB 10

2 3 5 10 10 10 10 10 10 10

C\_FMM 10

3.0 15.0 48.0 56.0 56.0 56.0 56.0 56.0 56.0 28.0

C\_FMN 10

2.6 4.1 3.0 1.8 1.3 0.8 0.8 0.8 0.8 0.8

C\_FBP 10

0.830998464 1.007442396 1.816966206 15.9122043 16.19791859 16.9122043 17.62649002 17.62649002 17.62649002 17.62649002

C\_FDD 10

48.75 160 217.5 420 380 412.5 432.5 457.5 482.5 482.5

C\_FDS 10

4 20 40 60 60 60 60 60 60 60

C\_FDB 10

2 3 5 10 10 10 10 10 10 10

C\_FDC 10

0.830998464 1.007442396 1.816966206 15.9122043 16.19791859 16.9122043 17.62649002 17.62649002 17.62649002 17.62649002

C\_FDO 10

0.830998464 1.007442396 1.816966206 15.9122043 16.19791859 16.9122043 17.62649002 17.62649002 17.62649002 17.62649002

C\_FDE 10

4.0 2.5 2.5 5.0 6.0 8.0 8.0 7.0 7.0 7.0

C\_FDF 10

4.0 32.0 32.0 48.0 120.0 300.0 300.0 300.0 300.0 300.0

C\_FDM 10

0.83 1.0 1.81 15.91 16.2 16.91 17.63 34.0 34.0 34.0

C\_FDP 10

0.5 1.5 1.5 0.8 0.8 0.4 0.4 0.2 0.2 0.2

C\_SHD 10

933.3333333 566.6666667 766.6666667 1350 3133.333333 3666.666667 3666.666667 3666.666667 3666.666667 3666.666667

C\_SHC 10

30.0 30.0 60.0 90.0 120.0 130.0 90.0 30.0 30.0 30.0

C\_SHB 10

30.0 30.0 60.0 90.0 120.0 130.0 90.0 30.0 30.0 30.0

C\_SHP 10

1000.0 7000.0 7000.0 7000.0 7000.0 15000.0 20000.0 30000.0 30000.0 30000.0

C\_SHR 10

30 45 50 60 70 70 70 70 70 70

C\_SSK 10

15.0 150.0 300.0 600.0 800.0 800.0 1000.0 1000.0 1000.0 1000.0

C\_SB 10

200.0 70.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0

C\_SP 10

2.0 4.0 6.0 8.0 10.0 15.0 20.0 20.0 20.0 20.0

C\_REP 10

3.0 0.5 15.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0

C\_WDG 10

200.0 200.0 200.0 300.0 300.0 300.0 300.0 300.0 300.0 300.0

C\_PIN 10

1000.0 10000.0 6000.0 4000.0 2000.0 2000.0 700.0 700.0 600.0 600.0

C\_WHB 10

1500.0 80.0 270.0 500.0 1000.0 1000.0 2000.0 3000.0 3000.0 3000.0

C\_WHS 10

9000.0 14000.0 4000.0 2000.0 8000.0 8000.0 600.0 500.0 350.0 300.0

C\_WHT 10

100000.0 80000.0 50000.0 10000.0 3000.0 2000.0 2000.0 1500.0 1500.0 1500.0

# Consumer growth - this is used by Holling type feeding (predcase 0, 1, 2)

mum\_ZG\_T15 0.02 Growth rate of gelatinous zooplankton mg N d-1 0.02 - 0.35

mum\_ZL\_T15 0.01 Growth rate of largezooplankton (0.04) mg N d-1 0.02 - 0.35

mum\_ZM\_T15 0.05 Growth rate of meso-zooplankton mg N d-1 0.3 - 1.4

mum\_ZS\_T15 0.9 Growth rate of microzooplankton mg N d-1 0.5 - 2.5

mum\_BFS\_T15 0.025 Growth rate of shallow filter feeders mg N d-1 0.01

mum\_BFF\_T15 0.08 Growth rate of other filter feeders mg N d-1 0.01

mum\_BFD\_T15 0.075 Growth rate of deep filter feeders mg N d-1 0.01

mum\_BD\_T15 0.02 Growth rate of deposit feeders mg N d-1 0.005 - 0.07

mum\_BC\_T15 0.0125 Growth rate of infaunal carnivores (0.005) mg N d-1 0.005 - 0.06

mum\_BG\_T15 0.02 Growth rate of benthic grazers mg N d-1 0.001 - 0.01

mum\_BMS\_T15 0.05 Growth rate of shallow macrozoobenthos mg N d-1 0.0015 - 0.015

mum\_BMD\_T15 0.05 Growth rate of deep macrozoobenthos mg N d-1 0.0015 - 0.015

mum\_BML\_T15 0.016 Growth rate of megazoobenthos mg N d-1 0.0015 - 0.015

mum\_BO\_T15 0.03 Growth rate of meiobenthos mg N d-1 0.3

mum\_PB\_T15 1.2 Growth rate of pelagic bacteria mg N d-1 1.0 - 2.0

mum\_BB\_T15 1.5 Growth rate of sediment bacteria mg N d-1 1.0 - 2.0

mum\_CEP\_T15 0.0014 Growth rate of cephalopods (from AMS was 0.05 in NSW) mg N d-1 0.02 - 0.35

mum\_jCEP\_T15 0.001 Growth rate of juvenile cephalopods (from AMS was 0.05 in NSW) mg N d-1 0.02 - 0.35

mum\_PWN\_T15 0.0000001 Growth rate of prawns (from AMS was 0.004 in NSW) mg N d-1 0.0015 - 0.015

mum\_jPWN\_T15 0.0000001 Growth rate of juvenile prawns (From AMS was 0.004 in NSW) mg N d-1 0.0015 - 0.015

# Vertebrate growth rates for each group, per age class mg N d-1

mum\_FPL 10

2.0 9.0 30.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0

mum\_FPS 10

0.003 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

mum\_FPO 10

0.418285127 1.246523551 2.069271654 2.67801458 3.035477156 3.172197908 3.140384589 2.992594809 2.773276786 2.516598583

mum\_FVD 10

1.7 12.0 25.0 25.0 25.0 25.0 20.0 20.0 20.0 20.0

mum\_FVV 10

4.0 8.0 7.0 5.0 3.75 3.0 2.0 1.8 1.0 0.8

mum\_FVS 10

150 150 150 250 250 250 250 250 250 250

mum\_FVT 10

1000.0 7000.0 7000.0 7000.0 7000.0 7000.0 7000.0 7000.0 7000.0 7000.0

mum\_FVO 10

1.322269862 2.091654976 2.762792352 3.077038359 3.105631604 2.943649066 2.673592716 2.35603034 2.030907742 1.722103169

mum\_FVB 10

1.322269862 2.091654976 2.762792352 3.077038359 3.105631604 2.943649066 2.673592716 2.35603034 2.030907742 1.722103169

mum\_FMM 10

15.0 24.0 24.0 24.0 24.0 24.0 24.0 24.0 24.0 12.0

mum\_FMN 10

6.0 10.0 10.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0

mum\_FBP 10

1.353221791 1.791206405 2.419165043 2.839497375 3.057148201 3.106836224 3.031115252 2.869911118 2.65639063 2.416080844

mum\_FDD 10

80.0 250.0 260.0 270.0 280.0 280.0 280.0 280.0 280.0 280.0

mum\_FDS 10

30 100 150 150 99.03225806 83.38709677 83.38709677 83.38709677 83.38709677 83.38709677

mum\_FDB 10

4.309497958 4.311134946 5.054565136 5.248896298 5.054363045 4.62801544 4.091142203 3.525919845 2.982383937 2.487396013

mum\_FDC 10

2.542680758 2.165998814 2.847089473 3.457241652 3.973383069 4.386304755 4.696038851 4.908446226 5.032767475 5.07991216

mum\_FDO 10

7.887707419 40.65260389 56.22578195 50.65774674 38.39317132 26.72193186 17.75572704 11.48764367 7.315758456 4.614698272

mum\_FDE 10

2.0 8.0 14.0 16.0 18.0 28.0 32.0 40.0 40.0 40.0

mum\_FDF 10

0.4 3.25 20.0 90.0 200.0 250.0 250.0 250.0 250.0 250.0

mum\_FDM 10

4.0 6.12 5.42 4.14 3.07 2.26 1.65 2.4 1.7 1.2

mum\_FDP 10

0.08 0.2 0.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3

mum\_SHD 10

300.0 500.0 1500.0 1500.0 2000.0 4000.0 4000.0 4000.0 4000.0 4000.0

mum\_SHC 10

30.0 90.0 95.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0

mum\_SHB 10

20.0 200.0 250.0 250.0 250.0 300.0 300.0 300.0 300.0 300.0

mum\_SHP 10

500.0 8000.0 8000.0 15000.0 30000.0 40000.0 40000.0 40000.0 40000.0 40000.0

mum\_SHR 10

20.0 200.0 250.0 250.0 250.0 300.0 300.0 300.0 300.0 300.0

mum\_SSK 10

10.0 250.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0

mum\_SB 10

5000 1000 200 100 100 100 100 300 300 300

mum\_SP 10

9 45 100 100 100 100 100 100 100 100

mum\_REP 10

40 12 12 12 12 12 12 17 17 17

mum\_WDG 10

200 45 55 65 80 85 90 90 90 90

mum\_PIN 10

3000.0 3000.0 3000.0 2000.0 2000.0 2000.0 2000.0 2000.0 2000.0 2000.0

mum\_WHB 10

7000000.0 1500000.0 2200000.0 2200000.0 2200000.0 2200000.0 2200000.0 2200000.0 2200000.0 2200000.0

mum\_WHS 10

2000.0 1500.0 1500.0 1500.0 1500.0 1500.0 1500.0 1500.0 1500.0 1500.0

mum\_WHT 10

1500000.0 600000.0 500000.0 250000.0 100000.0 80000.0 80000.0 80000.0 80000.0 80000.0

# Seed bank/population refuge based on consumer intake, if available food below this feeding

# slows/stops so can't eat out all food. This is used by min-max feeding (predcase 4)

KL\_DF 5 Lower threshold for feeding by dinoflagellates mg N m-3 1 - 6

KL\_ZG 20 Lower threshold for feeding by gelatinous zoopl mg N m-3 15 - 25

KL\_ZL 20 Lower threshold for feeding by large zooplankton mg N m-3 15 - 25

KL\_ZM 18 Lower threshold for feeding by meso-zooplankton mg N m-3 15 - 20

KL\_ZS 5 Lower threshold for feeding by microzooplankton mg N m-3 1 - 6

KL\_BO 0.18 Lower threshold for feeding by meiobenthos mg N m-3 0.1 - 0.5

KL\_BD 0.88 Lower threshold for feeding by deposit feeders mg N m-3 0.5 - 1.5

KL\_BC 0.88 Lower threshold for feeding by infaunal carniv mg N m-3 0.5 - 1.5

KL\_BFS 0.08 Lower thresh. for feeding by shallow filt. feeders mg N m-3 0.05 - 0.2

KL\_BFF 0.08 Lower thresh. for feeding by other filt. feeders mg N m-3 0.05 - 0.2

KL\_BFD 0.08 Lower threshold for feeding by deep filter feeders mg N m-3 0.05 - 0.2

KL\_BG 900 Lower threshold for feeding by bethic grazers mg N m-3 870 - 900

KL\_BMS 4000 Lower threshold for feeding by shallow macrozooben mg N m-3 3000 - 4000

KL\_BMD 4000 Lower threshold for feeding by deep macrozooben mg N m-3 3000 - 4000

KL\_BML 4000 Lower threshold for feeding by megazoobenthos mg N m-3 3000 - 4000

KL\_CEP 20 Lower threshold for feeding by cephalopods mg N m-3 15 - 25

KL\_PWN 4000 Lower threshold for feeding by prawns mg N m-3 3000 - 4000

KL\_FPL 5 Lower threshold for feeding by large planktivores mg N m-3 1 - 10

KL\_FPS 5 Lower threshold for feeding by small planktivores mg N m-3 1 - 10

KL\_FPO 2000 Lower threshold for feeding by other planktivores mg N m-3 1 - 10

KL\_FVD 0.2 Lower threshold for feeding by deep piscivores mg N m-3 0.05 - 5

KL\_FVS 0.2 Lower threshold for feeding by shallow piscivores mg N m-3 0.05 - 5

KL\_FVV 0.2 Lower threshold for feeding by vul. piscivores mg N m-3 0.05 - 5

KL\_FVT 0.2 Lower threshold for feeding by tropical piscivores mg N m-3 0.05 - 5

KL\_FVB 0.2 Lower threshold for feeding by other piscivores mg N m-3 0.05 - 5

KL\_FVO 2000 Lower threshold for feeding by other tuna mg N m-3 1500 - 2500

KL\_FMM 5 Lower threshold for feeding by mig. mesopelagics mg N m-3 1 - 10

KL\_FMN 5 Lower threshold for feeding by non-mig. mesopelag. mg N m-3 1 - 10

KL\_FBP 5 Lower threshold for feeding by benthopelagics mg N m-3 1 - 10

KL\_FDD 800 Lower threshold for feeding by deep demersals mg N m-3 1500 - 2500

KL\_FDS 2000 Lower threshold for feeding by shallow demersals mg N m-3 1500 - 2500

KL\_FDB 2000 Lower threshold for feeding by other shallow dem. mg N m-3 1500 - 2500

KL\_FDC 2000 Lower threshold for feeding by other deep demersal mg N m-3 1500 - 2500

KL\_FDO 2000 Lower threshold for feeding by longlived demersal mg N m-3 1500 - 2500

KL\_FDE 800 Lower threshold for feeding by herbiv. demersals mg N m-3 1500 - 2500

KL\_FDF 0.2 Lower threshold for feeding by flat deep pisciv. mg N m-3 0.05 - 5

KL\_FDM 2000 Lower threshold for feeding by misc. demersals mg N m-3 1500 - 2500

KL\_FDP 800 Lower threshold for feeding by protect. demersals mg N m-3 1500 - 2500

KL\_SHD 2000 Lower threshold for feeding by demersal sharks mg N m-3 1500 - 2500

KL\_SHC 2000 Lower threshold for feeding by dogfish mg N m-3 1500 - 2500

KL\_SHB 2000 Lower threshold for feeding by other sharks mg N m-3 1500 - 2500

KL\_SHP 2000 Lower threshold for feeding by pelagic sharks mg N m-3 1500 - 2500

KL\_SHR 2000 Lower threshold for feeding by reef sharks mg N m-3 1500 - 2500

KL\_SSK 2000 Lower threshold for feeding by skates and rays mg N m-3 1500 - 2500

KL\_SB 2000 Lower threshold for feeding by seabirds mg N m-3 1 - 10

KL\_SP 5 Lower threshold for feeding by penguins mg N m-3 1 - 10

KL\_REP 2000 Lower threshold for feeding by reptiles mg N m-3 1500 - 2500

KL\_PIN 3000 Lower threshold for feeding by pinnipeds mg N m-3 500 - 1000

KL\_WDG 3000 Lower threshold for feeding by dugongs mg N m-3 500 - 1000

KL\_WHB 50 Lower threshold for feeding by baleen whales mg N m-3 500 - 1000

KL\_WHS 3000 Lower threshold for feeding by sm. toothed whales mg N m-3 500 - 1000

KL\_WHT 3000 Lower threshold for feeding by toothed whales mg N m-3 500 - 1000

# Saturation levels for consumer food intake. This is used by min-max feeding (predcase 4)

KU\_DF 35 Half saturation for uptake by dinoflagellates mg N m-3 10 - 40

KU\_ZG 65 Half saturation for uptake by gelatinous zoopl mg N m-3 30 - 65

KU\_ZL 65 Half saturation for uptake by large zooplankton mg N m-3 30 - 65

KU\_ZM 50 Half saturation for uptake by meso-zooplankton mg N m-3 30 - 55

KU\_ZS 35 Half saturation for uptake by microzooplankton mg N m-3 10 - 40

KU\_BO 18.8 Half saturation for uptake by meiobenthos mg N m-3 8 - 20

KU\_BD 17.5 Half saturation for uptake by deposit feeders mg N m-3 15 - 25

KU\_BC 8.8 Half saturation for uptake by infaunal carniv mg N m-3 8 - 10

KU\_BFS 5.7 Half sat. for uptake by shallow filter feeders mg N m-3 4.5 - 6

KU\_BFF 7000 Half sat. for uptake by other filter feeders mg N m-3 4.5 - 6

KU\_BFD 5.7 Half saturation for uptake by deep filter feeders mg N m-3 4.5 - 6

KU\_BG 7000 Half saturation for uptake by benthic grazers mg N m-3 8700 - 9000

KU\_BMS 70000 Half saturation for uptake by shallow macrozooben mg N m-3 87000 - 90000

KU\_BMD 70000 Half saturation for uptake by deep macrozooben mg N m-3 87000 - 90000

KU\_BML 70000 Half saturation for uptake by megazoobenthos mg N m-3 87000 - 90000

KU\_CEP 60 Half saturation for uptake by cephalopods mg N m-3 30 - 65

KU\_PWN 70000 Half saturation for uptake by prawns mg N m-3 87000 - 90000

KU\_FPL 50 Half saturation for uptake by large planktivores mg N m-3 25 - 60

KU\_FPS 50 Half saturation for uptake by small planktivores mg N m-3 25 - 60

KU\_FPO 15000 Half saturation for uptake by other planktivores mg N m-3 25 - 60

KU\_FVD 20 Half saturation for uptake by deep piscivores mg N m-3 5 - 15

KU\_FVV 150000 Half saturation for uptake by vul. piscivores mg N m-3 5 - 15

KU\_FVS 20 Half saturation for uptake by shallow piscivores mg N m-3 5 - 15

KU\_FVT 20 Half saturation for uptake by tropical piscivores mg N m-3 5 - 15

KU\_FVB 15000 Half saturation for uptake by other planktivores mg N m-3 25 - 60

KU\_FVO 150000 Half saturation for uptake by other tuna mg N m-3 100000 - 150000

KU\_FMM 50 Half saturation for uptake by mig. mesopelagics mg N m-3 25 - 60

KU\_FMN 50 Half saturation for uptake by non-mig. mesopelag. mg N m-3 25 - 60

KU\_FBP 150000 Half saturation for uptake by benthopelagics mg N m-3 25 - 60

KU\_FDD 15000 Half saturation for uptake by deep demersals mg N m-3 100000 - 150000

KU\_FDS 150000 Half saturation for uptake by shallow demersals mg N m-3 100000 - 150000

KU\_FDB 150000 Half saturation for uptake by other shallow dem. mg N m-3 100000 - 150000

KU\_FDC 150000 Half saturation for uptake by other deep demersal mg N m-3 100000 - 150000

KU\_FDO 150000 Half saturation for uptake by longlived demersal mg N m-3 100000 - 150000

KU\_FDE 15000 Half saturation for uptake by herbiv. demersals mg N m-3 100000 - 150000

KU\_FDF 20 Half saturation for uptake by flat deep demersals mg N m-3 5 - 15

KU\_FDM 15000 Half saturation for uptake by misc. demersals mg N m-3 100000 - 150000

KU\_FDP 15000 Half saturation for uptake by protected demersals mg N m-3 100000 - 150000

KU\_SHD 8000 Half saturation for uptake by demersal sharks mg N m-3 100000 - 150000

KU\_SHC 8000 Half saturation for uptake by dogfish mg N m-3 100000 - 150000

KU\_SHB 8000 Half saturation for uptake by other sharks mg N m-3 100000 - 150000

KU\_SHR 8000 Half saturation for uptake by reef sharks mg N m-3 100000 - 150000

KU\_SHP 8000 Half saturation for uptake by pelagic sharks mg N m-3 100000 - 150000

KU\_SSK 8000 Half saturation for uptake by skates and rays mg N m-3 100000 - 150000

KU\_SB 5000 Half saturation for uptake by seabirds mg N m-3 25 - 60

KU\_SP 50 Half saturation for uptake by penguins mg N m-3 25 - 60

KU\_REP 8000 Half saturation for uptake by reptiles mg N m-3 100000 - 150000

KU\_PIN 15000 Half saturation for uptake by pinnipeds mg N m-3 10000 - 15000

KU\_WDG 15000 Half saturation for uptake by dugongs mg N m-3 10000 - 15000

KU\_WHB 5000 Half saturation for uptake by baleen whales mg N m-3 10000 - 15000

KU\_WHS 15000 Half saturation for uptake by sm. toothed whales mg N m-3 10000 - 15000

KU\_WHT 15000 Half saturation for uptake by toothed whales mg N m-3 10000 - 15000

# Search volume - used by size specific Holling type III (predcase 5)

vl\_DF 0.4 Search volume for dinoflagellates m3 d-1 0.4

vl\_ZG 0.04 Search volume for gelatinous zooplankton m3 d-1 0.04

vl\_ZL 0.04 Search volume for large zooplankton m3 d-1 0.04

vl\_ZM 0.08 Search volume for meso-zooplankton m3 d-1 0.08

vl\_ZS 0.4 Search volume for microzooplankton m3 d-1 0.4

vl\_BFS 0.0005 Search volume for shallow filter feeders m3 d-1 0.0005

vl\_BFF 0.0005 Search volume for other filter feeders m3 d-1 0.0005

vl\_BFD 0.0005 Search volume for deep filter feeders m3 d-1 0.0005

vl\_BO 0.002 Search volume for meiobenthos m3 d-1 0.002

vl\_BD 0.00055 Search volume for deposit feeders m3 d-1 0.00055

vl\_BC 0.0004 Search volume for infaunal carnivores m3 d-1 0.0004

vl\_BG 0.00005 Search volume for benthic grazers m3 d-1 0.00005

vl\_BMS 0.0002 Search volume for shallow macrozoobenthos m3 d-1 0.0002

vl\_BMD 0.0002 Search volume for deep macrozoobenthos m3 d-1 0.0002

vl\_BML 0.0002 Search volume for megazoobenthos m3 d-1 0.0002

vl\_CEP 0.04 Search volume for cephalpods m3 d-1 0.04

vl\_PWN 0.0002 Search volume for prawns m3 d-1 0.0002

vla\_FPL\_T15 2 Coefficient of search volume for large planktivores 2

vla\_FPS\_T15 2 Coefficient of search volume for small planktivores 2

vla\_FPO\_T15 1 Coefficient of search volume for other planktivores 2

vla\_FVD\_T15 5 Coefficient of search volume for deep piscivores 5

vla\_FVV\_T15 1 Coefficient of search volume for vulnerable piscivores 5

vla\_FVS\_T15 5 Coefficient of search volume for shallow piscivores 5

vla\_FVT\_T15 5 Coefficient of search volume for tropical piscivores 5

vla\_FVO\_T15 1 Coefficient of search volume for other tuna 5

vla\_FVB\_T15 1 Coefficient of search volume for other piscivores 2

vla\_FMM\_T15 2 Coefficient of search volume for migratory mesopelagics 2

vla\_FMN\_T15 2 Coefficient of search volume for non-migratory mesopelagics 2

vla\_FBP\_T15 1 Coefficient of search volume for benthopelagics 2

vla\_FDD\_T15 1.2 Coefficient of search volume for deep demersals 1

vla\_FDS\_T15 1 Coefficient of search volume for shallow demersals 1

vla\_FDB\_T15 1 Coefficient of search volume for other shallow demersal 1

vla\_FDC\_T15 1 Coefficient of search volume for other deep demersal 1

vla\_FDO\_T15 1.2 Coefficient of search volume for longlived demersal 1

vla\_FDE\_T15 1.2 Coefficient of search volume for herbivorous demersals 1

vla\_FDF\_T15 5 Coefficient of search volume for flat deep demersals 5

vla\_FDM\_T15 1 Coefficient of search volume for miscellaneous demersals 1

vla\_FDP\_T15 1.2 Coefficient of search volume for protected demersals 1

vla\_SHD\_T15 1 Coefficient of search volume for demersal sharks 1

vla\_SHC\_T15 1 Coefficient of search volume for dogfish 1

vla\_SHB\_T15 1 Coefficient of search volume for other sharks 1

vla\_SHR\_T15 1 Coefficient of search volume for reef sharks 1

vla\_SHP\_T15 1 Coefficient of search volume for pelagic sharks 1

vla\_SSK\_T15 1 Coefficient of search volume for skates and rays 1

vla\_SB\_T15 2 Coefficient of search volume for seabirds 2

vla\_SP\_T15 2 Coefficient of search volume for penguins 2

vla\_REP\_T15 1 Coefficient of search volume for reptiles 1

vla\_PIN\_T15 1.2 Coefficient of search volume for pinnipeds 1

vla\_WDG\_T15 1.2 Coefficient of search volume for dugongs 1

vla\_WHB\_T15 1.2 Coefficient of search volume for baleen whales 1

vla\_WHS\_T15 1.2 Coefficient of search volume for small toothed whales 1

vla\_WHT\_T15 1.2 Coefficient of search volume for toothed whales 1

vlb\_FPL 0.4 Exponent for search volume relation for large planktivores 0.4

vlb\_FPS 0.4 Exponent for search volume relation for small planktivores 0.4

vlb\_FPO 0.2 Exponent for search volume relation for other planktivores 0.4

vlb\_FVD 0.35 Exponent for search volume relation for deep piscivore 0.35

vlb\_FVV 0.2 Exponent for search volume relation for vulnerable piscivore 0.35

vlb\_FVS 0.35 Exponent for search volume relation for shallow piscivore 0.35

vlb\_FVT 0.35 Exponent for search volume relation for tropical piscivore 0.35

vlb\_FVB 0.2 Exponent for search volume relation for other piscivores 0.4

vlb\_FVO 0.2 Exponent for search volume relation for other tuna 0.35

vlb\_FMM 0.4 Exponent for search volume relation for migratory mesopelagics 0.4

vlb\_FMN 0.4 Exponent for search volume relation for non-migratory mesopelagics 0.4

vlb\_FBP 0.2 Exponent for search volume relation for benthopelagics 0.4

vlb\_FDD 0.25 Exponent for search volume relation for deep demersals 0.3 - 0.55

vlb\_FDS 0.2 Exponent for search volume relation for shallow demersals 0.25 - 0.55

vlb\_FDB 0.2 Exponent for search volume relation for other shallow demersal 0.25 - 0.55

vlb\_FDC 0.2 Exponent for search volume relation for other deep demersal 0.25 - 0.55

vlb\_FDO 0.25 Exponent for search volume relation for longlived demersal 0.3 - 0.55

vlb\_FDE 0.25 Exponent for search volume relation for deep demersals 0.3 - 0.55

vlb\_FDF 0.35 Exponent for search volume relation for flat deep demersals 0.35

vlb\_FDM 0.2 Exponent for search volume relation for deep demersals 0.3 - 0.55

vlb\_FDP 0.25 Exponent for search volume relation for deep demersals 0.3 - 0.55

vlb\_SHD 0.2 Exponent for search volume relation for demersal sharks 0.25 - 0.55

vlb\_SHC 0.2 Exponent for search volume relation for dogfish 0.25 - 0.55

vlb\_SHB 0.2 Exponent for search volume relation for other sharks 0.25 - 0.55

vlb\_SHR 0.2 Exponent for search volume relation for reef sharks 0.25 - 0.55

vlb\_SHP 0.2 Exponent for search volume relation for pelagic sharks 0.25 - 0.55

vlb\_SSK 0.2 Exponent for search volume relation for skates and rays 0.25 - 0.55

vlb\_SB 0.4 Exponent for search volume relation for seabirds 0.4

vlb\_SP 0.4 Exponent for search volume relation for penguins 0.4

vlb\_REP 0.2 Exponent for search volume relation for reptiles 0.25 - 0.55

vlb\_PIN 0.25 Exponent for search volume relation for pinnipeds 0.3 - 0.55

vlb\_WDG 0.25 Exponent for search volume relation for dugongs 0.3 - 0.55

vlb\_WHB 0.25 Exponent for search volume relation for baleen whales 0.3 - 0.55

vlb\_WHS 0.25 Exponent for search volume relation for small toothed whales 0.3 - 0.55

vlb\_WHT 0.25 Exponent for search volume relation for toothed whales 0.3 - 0.55

# Handother deep demersal time - used by size specific Holling type III (predcase 5)

ht\_DF 0.14 Handling deep demersal time for dinoflagellates d 0.14

ht\_ZG 4.5 Handling deep demersal time for gelatinous zooplankton d 4.5

ht\_ZL 4.5 Handling deep demersal time for large zooplankton d 4.5

ht\_ZM 1.2 Handling deep demersal time for meso-zooplankton d 1.2

ht\_ZS 0.14 Handling deep demersal time for microzooplankton d 0.14

ht\_BFS 40 Handling deep demersal time for shallow filter feeders d 40

ht\_BFF 40 Handling deep demersal time for other filter feeders d 40

ht\_BFD 40 Handling deep demersal time for deep filter feeders d 40

ht\_BO 0.27 Handling deep demersal time for meiobenthos d 0.27

ht\_BD 20 Handling deep demersal time for deposit feeders d 20

ht\_BC 50 Handling deep demersal time for infaunal carnivores d 50

ht\_BG 71.43 Handling deep demersal time for benthic grazers d 71.43

ht\_BMS 100 Handling deep demersal time for shallow macrozoobenthos d 100

ht\_BMD 100 Handling deep demersal time for deep macrozoobenthos d 100

ht\_BML 100 Handling deep demersal time for megazoobenthos d 100

ht\_CEP 4.5 Handling deep demersal time for cephalopods d 4.5

ht\_PWN 100 Handling deep demersal time for prawns d 100

hta\_FPL 100 Coefficient of handling deep demersal time for large planktivores 100

hta\_FPS 100 Coefficient of handling deep demersal time for small planktivores 100

hta\_FPO 150 Coefficient of handling deep demersal time for other planktivores 100

hta\_FVD 10 Coefficient of handling deep demersal time for deep piscivores 10

hta\_FVV 150 Coefficient of handling deep demersal time for vulnerable piscivores 10

hta\_FVS 10 Coefficient of handling deep demersal time for shallow piscivores 10

hta\_FVT 10 Coefficient of handling deep demersal time for tropical piscivores 10

hta\_FVB 250 Coefficient of handling deep demersal time for other piscivores 100

hta\_FVO 150 Coefficient of handling deep demersal time for other tuna 10

hta\_FMM 100 Coefficient of handling deep demersal time for migratory mesopelagics 100

hta\_FMN 100 Coefficient of handling deep demersal time for non-migratory mesopelagics 100

hta\_FBP 150 Coefficient of handling deep demersal time for benthopelagics 100

hta\_FDD 250 Coefficient of handling deep demersal time for deep demersals 250

hta\_FDS 150 Coefficient of handling deep demersal time for shallow demersals 150

hta\_FDB 150 Coefficient of handling deep demersal time for other shallow demersal 150

hta\_FDC 150 Coefficient of handling deep demersal time for other deep demersal 150

hta\_FDO 150 Coefficient of handling deep demersal time for longlived demersal 250

hta\_FDE 250 Coefficient of handling deep demersal time for herbivorous demersals 250

hta\_FDF 10 Coefficient of handling deep demersal time for flat deep demersals 10

hta\_FDM 150 Coefficient of handling deep demersal time for miscellaneous demersals 250

hta\_FDP 250 Coefficient of handling deep demersal time for protected demersals 250

hta\_SHD 150 Coefficient of handling deep demersal time for demersal sharks 150

hta\_SHC 150 Coefficient of handling deep demersal time for dogfish 150

hta\_SHB 150 Coefficient of handling deep demersal time for other sharks 150

hta\_SHR 150 Coefficient of handling deep demersal time for reef sharks 150

hta\_SHP 150 Coefficient of handling deep demersal time for pelagic sharks 150

hta\_SSK 150 Coefficient of handling deep demersal time for skates and rays 150

hta\_SB 100 Coefficient of handling deep demersal time for seabirds 100

hta\_SP 100 Coefficient of handling deep demersal time for penguins 100

hta\_REP 150 Coefficient of handling deep demersal time for reptiles 150

hta\_WDG 250 Coefficient of handling deep demersal time for dugongs 250

hta\_PIN 250 Coefficient of handling deep demersal time for pinnipeds 250

hta\_WHB 50 Coefficient of handling deep demersal time for baleen whales 50

hta\_WHS 250 Coefficient of handling deep demersal time for small toothed whales 250

hta\_WHT 250 Coefficient of handling deep demersal time for toothed whales 250

htb\_FPL 0.2 Exponent for handling time relation for large planktivores 0.2

htb\_FPS 0.2 Exponent for handling time relation for small planktivores 0.2

htb\_FPO 0.15 Exponent for handling time relation for other planktivores 0.2

htb\_FVD 0.2 Exponent for handling time relation for deep piscivore 0.2

htb\_FVV 0.5 Exponent for handling time relation for vulnerable piscivore 0.2

htb\_FVS 0.2 Exponent for handling time relation for shallow piscivore 0.2

htb\_FVT 0.2 Exponent for handling time relation for tropical piscivore 0.2

htb\_FVB 0.3 Exponent for handling time relation for other piscivores 0.2

htb\_FVO 0.15 Exponent for handling time relation for other tuna 0.2

htb\_FMM 0.2 Exponent for handling time relation for migratory mesopelagics 0.2

htb\_FMN 0.2 Exponent for handling time relation for non-migratory mesopelagics 0.2

htb\_FBP 0.15 Exponent for handling time relation for benthopelagics 0.2

htb\_FDD 0.3 Exponent for handling time relation for deep demersal 0.15 - 0.63

htb\_FDS 0.15 Exponent for handling time relation for shallow demersal 0.1 - 0.6

htb\_FDB 0.15 Exponent for handling time relation for other shallow demersal 0.1 - 0.6

htb\_FDC 0.15 Exponent for handling time relation for other deep demersal 0.1 - 0.6

htb\_FDO 0.15 Exponent for handling time relation for longlived demersal 0.15 - 0.63

htb\_FDE 0.3 Exponent for handling time relation for herbivorous demersal 0.15 - 0.63

htb\_FDF 0.2 Exponent for handling time relation for flat deep demersals 0.2

htb\_FDM 0.15 Exponent for handling time relation for miscellaneous demersal 0.15 - 0.63

htb\_FDP 0.3 Exponent for handling time relation for protected demersal 0.15 - 0.63

htb\_SHD 0.15 Exponent for handling time relation for demersal sharks 0.1 - 0.6

htb\_SHC 0.15 Exponent for handling time relation for dogfish 0.1 - 0.6

htb\_SHB 0.15 Exponent for handling time relation for other sharks 0.1 - 0.6

htb\_SHR 0.15 Exponent for handling time relation for reef sharks 0.1 - 0.6

htb\_SHP 0.15 Exponent for handling time relation for pelagic sharks 0.1 - 0.6

htb\_SSK 0.15 Exponent for handling time relation for skates and rays 0.1 - 0.6

htb\_SB 0.2 Exponent for handling time relation for seabirds 0.52

htb\_SP 0.2 Exponent for handling time relation for penguins 0.2

htb\_REP 0.15 Exponent for handling time relation for reptiles 0.1 - 0.6

htb\_PIN 0.3 Exponent for handling time relation for pinnipeds 0.15 - 0.63

htb\_WDG 0.3 Exponent for handling time relation for dugongs 0.15 - 0.63

htb\_WHB 0.3 Exponent for handling time relation for baleen whales 0.15 - 0.63

htb\_WHS 0.3 Exponent for handling time relation for small toothed whales 0.15 - 0.63

htb\_WHT 0.3 Exponent for handling time relation for toothed whales 0.15 - 0.63

# Vertebrate preference for rebuilding reserves over structure

pR\_FPL 7 Large planktivore preference for reserve building 5

pR\_FPS 5 Small planktivore preference for reserve building 5

pR\_FPO 2 Other planktivore preference for reserve building 5

pR\_FVD 2.5 Deep piscivore preference for reserve building 2.5

pR\_FVV 2.5 Vulnerable piscivore preference for reserve building 2.5

pR\_FVS 4.5 Shallow piscivore preference for reserve building 2.5

pR\_FVT 2.5 Tropical piscivore preference for reserve building 2.5

pR\_FVO 2 Other tuna preference for reserve building 2.5

pR\_FVB 6 Other piscivore preference for reserve building 2

pR\_FMM 7 Migratory mesopelagic preference for reserve building 5

pR\_FMN 6 Non-migratory mesopelagic preference for reserve building 5

pR\_FBP 2 Benthopelagics preference for reserve building 5

pR\_FDD 2.3 Deep demersal preference for reserve building 2.3

pR\_FDS 2 Shallow demersal preference for reserve building 2

pR\_FDB 2 Other shallow demersal preference for reserve building 2

pR\_FDC 2 Other deep demersal preference for reserve building 2

pR\_FDO 2 Longlived demersal preference for reserve building 2.3

pR\_FDE 2.3 Herbivorous demersal preference for reserve building 2.3

pR\_FDF 5 Flat deep demersal preference for reserve building 2.5

pR\_FDM 2 Miscellaneous demersal preference for reserve building 2.3

pR\_FDP 2.3 Protected demersal preference for reserve building 2.3

pR\_SHD 2 Shark preference for reserve building 2

pR\_SHC 2 Dogfish preference for reserve building 2

pR\_SHB 3 Other shark preference for reserve building 2

pR\_SHR 2 Reef shark preference for reserve building 2

pR\_SHP 2 Shark preference for reserve building 2

pR\_SSK 2 Skates and rays preference for reserve building 2

pR\_SB 5 Seabird preference for reserve building 5

pR\_SP 5 Penguin preference for reserve building 5

pR\_REP 2 Reptile preference for reserve building 2

pR\_WDG 3.5 Dugong preference for reserve building 3.5

pR\_PIN 3.5 Pinniped preference for reserve building 3.5

pR\_WHB 3.5 Baleen whale preference for reserve building 3.5

pR\_WHS 3.5 Small toothed whale preference for reserve building 3.5

pR\_WHT 3.5 Toothed whale preference for reserve building 3.5

# Length - weight parameters

li\_a\_FPS 0.0076 Coefficient of allometic length-weight relation for small planktiv. 0.008

li\_a\_FPL 0.0065 Coefficient of allometic length-weight relation for large planktiv. 0.008

li\_a\_FPO 0.0163 Coefficient of allometic length-weight relation for other planktiv. 0.008

li\_a\_FVD 0.0333 Coefficient of allometic length-weight relation for deep piscivores 0.0178

li\_a\_FVV 0.016 Coefficient of allometic length-weight relation for vul. pisciv. 0.0178

li\_a\_FVS 0.0094 Coefficient of allometic length-weight relation for shallow pisciv. 0.0178

li\_a\_FVT 0.0214 Coefficient of allometic length-weight relation for tropical pisciv 0.0178

li\_a\_FVB 0.0061 Coefficient of allometic length-weight relation for other pisciv. 0.008

li\_a\_FVO 0.014 Coefficient of allometic length-weight relation for other tuna 0.0178

li\_a\_FMM 0.068 Coefficient of allometic length-weight relation for mig mesopelag. 0.0048

li\_a\_FMN 0.0475 Coefficient of allometic length-weight relation for nonmig mesopel. 0.0048

li\_a\_FBP 0.0125 Coefficient of allometic length-weight relation for benthopelagics 0.008

li\_a\_FDD 0.008 Coefficient of allometic length-weight relation for deep demersals 0.0101

li\_a\_FDS 0.0085 Coefficient of allometic length-weight relation for shallow demers. 0.0037

li\_a\_FDB 0.014 Coefficient of allometic length-weight relation for other sh. dem. 0.0037

li\_a\_FDC 0.0125 Coefficient of allometic length-weight relation for other deep dem. 0.0037

li\_a\_FDO 0.0458 Coefficient of allometic length-weight relation for longlived dem. 0.0101

li\_a\_FDE 0.085 Coefficient of allometic length-weight relation for herbiv. dem. 0.0101

li\_a\_FDF 0.0056 Coefficient of allometic length-weight relation for flat deep dem. 0.0178

li\_a\_FDM 0.016 Coefficient of allometic length-weight relation for misc. dem. 0.0101

li\_a\_FDP 0.0333 Coefficient of allometic length-weight relation for protect. dem. 0.0101

li\_a\_SHD 0.0065 Coefficient of allometic length-weight relation for demersal sharks 0.0061

li\_a\_SHB 0.007 Coefficient of allometic length-weight relation for other sharks 0.0061

li\_a\_SHC 0.007 Coefficient of allometic length-weight relation for dogfish 0.0061

li\_a\_SHR 0.007 Coefficient of allometic length-weight relation for reef sharks 0.0061

li\_a\_SHP 0.008254 Coefficient of allometic length-weight relation for pelagic sharks 0.0061

li\_a\_SSK 0.0053335 Coefficient of allometic length-weight relation for skates and rays 0.0061

li\_a\_SB 0.02 Coefficient of allometic length-weight relation for seabirds 0.0061

li\_a\_SP 0.0065 Coefficient of allometic length-weight relation for penguins 0.008

li\_a\_REP 0.008 Coefficient of allometic length-weight relation for reptiles 0.0061

li\_a\_WDG 0.035 Coefficient of allometic length-weight relation for dugongs 0.0061

li\_a\_PIN 0.035 Coefficient of allometic length-weight relation for pinnipeds 0.0061

li\_a\_WHB 0.2 Coefficient of allometic length-weight relation for baleen whales 0.0061

li\_a\_WHS 0.01 Coefficient of allometic length-weight relation for sm tooth whales 0.0061

li\_a\_WHT 0.01 Coefficient of allometic length-weight relation for toothed whales 0.0061

li\_b\_FPS 3 Exponent in allometic length-weight relation for large planktivores 3

li\_b\_FPL 3.25 Exponent in allometic length-weight relation for small planktivores 3

li\_b\_FPO 3.022 Exponent in allometic length-weight relation for other planktivores 3

li\_b\_FVD 2.921 Exponent in allometic length-weight relation for deep piscivores 3

li\_b\_FVV 2.989 Exponent in allometic length-weight relation for vulner. piscivores 3

li\_b\_FVS 2.875 Exponent in allometic length-weight relation for shallow piscivores 3

li\_b\_FVT 2.96 Exponent in allometic length-weight relation for tropical pisciv. 3

li\_b\_FVB 3.239 Exponent in allometic length-weight relation for other piscivores 3

li\_b\_FVO 3.08 Exponent in allometic length-weight relation for other tuna 3

li\_b\_FMM 3.3 Exponent in allometic length-weight relation for mig. mesopelagics 3

li\_b\_FMN 3 Exponent in allometic length-weight relation for non-mig. mesopel. 3

li\_b\_FBP 3.115 Exponent in allometic length-weight relation for benthopelagics 3

li\_b\_FDD 3.28 Exponent in allometic length-weight relation for deep demersals 3

li\_b\_FDS 3.13 Exponent in allometic length-weight relation for shallow demersals 3

li\_b\_FDB 3.08 Exponent in allometic length-weight relation for other shallow dem. 3

li\_b\_FDC 3.115 Exponent in allometic length-weight relation for other deep dem. 3

li\_b\_FDO 2.788 Exponent in allometic length-weight relation for longlived demersal 3

li\_b\_FDE 2.9 Exponent in allometic length-weight relation for herbiv. demersals 3

li\_b\_FDF 3.16 Exponent in allometic length-weight relation for flat deep dem. 3

li\_b\_FDM 2.989 Exponent in allometic length-weight relation for misc. demersals 3

li\_b\_FDP 2.921 Exponent in allometic length-weight relation for protected demersal 3

li\_b\_SHD 3 Exponent in allometic length-weight relation for demersal sharks 3

li\_b\_SHC 2.94 Exponent in allometic length-weight relation for dogfish 3

li\_b\_SHB 2.94 Exponent in allometic length-weight relation for other sharks 3

li\_b\_SHR 2.94 Exponent in allometic length-weight relation for reef sharks 3

li\_b\_SHP 3.11 Exponent in allometic length-weight relation for pelagic sharks 3

li\_b\_SSK 3.0308 Exponent in allometic length-weight relation for skates and rays 3

li\_b\_SB 3 Exponent in allometic length-weight relation for seabirds 3

li\_b\_SP 3.25 Exponent in allometic length-weight relation for penguins 3

li\_b\_REP 3.004 Exponent in allometic length-weight relation for reptiles 3

li\_b\_WDG 2.9 Exponent in allometic length-weight relation for dugongs 3

li\_b\_PIN 2.9 Exponent in allometic length-weight relation for pinnipeds 3

li\_b\_WHB 3 Exponent in allometic length-weight relation for baleen whales 3

li\_b\_WHS 3 Exponent in allometic length-weight relation for sm. toothed whales 3

li\_b\_WHT 3 Exponent in allometic length-weight relation for toothed whales 3

min\_li\_mat\_FPS 0

min\_li\_mat\_FPL 0

min\_li\_mat\_FPO 0

min\_li\_mat\_FVD 0

min\_li\_mat\_FVV 0

min\_li\_mat\_FVS 0

min\_li\_mat\_FVT 0

min\_li\_mat\_FVB 0

min\_li\_mat\_FVO 0

min\_li\_mat\_FMM 0

min\_li\_mat\_FMN 0

min\_li\_mat\_FBP 0

min\_li\_mat\_FDD 0

min\_li\_mat\_FDS 0

min\_li\_mat\_FDB 0

min\_li\_mat\_FDC 0

min\_li\_mat\_FDO 0

min\_li\_mat\_FDE 0

min\_li\_mat\_FDF 0

min\_li\_mat\_FDM 0

min\_li\_mat\_FDP 0

min\_li\_mat\_SHD 0

min\_li\_mat\_SHC 0

min\_li\_mat\_SHB 0

min\_li\_mat\_SHR 0

min\_li\_mat\_SHP 0

min\_li\_mat\_SSK 0

min\_li\_mat\_SB 0

min\_li\_mat\_SP 0

min\_li\_mat\_REP 0

min\_li\_mat\_WDG 0

min\_li\_mat\_PIN 0

min\_li\_mat\_WHB 0

min\_li\_mat\_WHS 0

min\_li\_mat\_WHT 0

min\_li\_mat\_FPS 0 minimum length at maturity for small planktivores 0

min\_li\_mat\_FPL 0 minimum length at maturity for large planktivores 0

min\_li\_mat\_FPO 0 minimum length at maturity for other planktivores 0

min\_li\_mat\_FVD 0 minimum length at maturity for deep piscivores 0

min\_li\_mat\_FVV 0 minimum length at maturity for vulner. piscivores 0

min\_li\_mat\_FVS 0 minimum length at maturity for shallow piscivores 0

min\_li\_mat\_FVT 0 minimum length at maturity for tropical pisciv. 0

min\_li\_mat\_FVB 0 minimum length at maturity for other piscivores 0

min\_li\_mat\_FVO 0 minimum length at maturity for other tuna 0

min\_li\_mat\_FMM 0 minimum length at maturity for mig. mesopelagics 0

min\_li\_mat\_FMN 0 minimum length at maturity for non-mig. mesopel. 0

min\_li\_mat\_FBP 0 minimum length at maturity for benthopelagics 0

min\_li\_mat\_FDD 0 minimum length at maturity for deep demersals 0

min\_li\_mat\_FDS 0 minimum length at maturity for shallow demersals 0

min\_li\_mat\_FDB 0 minimum length at maturity for other shallow dem. 0

min\_li\_mat\_FDC 0 minimum length at maturity for other deep dem. 0

min\_li\_mat\_FDO 0 minimum length at maturity for longlived demersal 0

min\_li\_mat\_FDE 0 minimum length at maturity for herbiv. demersals 0

min\_li\_mat\_FDF 0 minimum length at maturity for flat deep dem. 0

min\_li\_mat\_FDM 0 minimum length at maturity for misc. demersals 0

min\_li\_mat\_FDP 0 minimum length at maturity for protected demersal 0

min\_li\_mat\_SHD 0 minimum length at maturity for demersal sharks 0

min\_li\_mat\_SHC 0 minimum length at maturity for dogfish 0

min\_li\_mat\_SHB 0 minimum length at maturity for other sharks 0

min\_li\_mat\_SHR 0 minimum length at maturity for reef sharks 0

min\_li\_mat\_SHP 0 minimum length at maturity for pelagic sharks 0

min\_li\_mat\_SSK 0 minimum length at maturity for skates and rays 0

min\_li\_mat\_SB 0 minimum length at maturity for seabirds 0

min\_li\_mat\_SP 0 minimum length at maturity for penguins 0

min\_li\_mat\_REP 0 minimum length at maturity for reptiles 0

min\_li\_mat\_WDG 0 minimum length at maturity for dugongs 0

min\_li\_mat\_PIN 0 minimum length at maturity for pinnipeds 0

min\_li\_mat\_WHB 0 minimum length at maturity for baleen whales 0

min\_li\_mat\_WHS 0 minimum length at maturity for sm. toothed whales 0

min\_li\_mat\_WHT 0 minimum length at maturity for toothed whales 0

# Depth consumers can dig into, are found down to in the sediment

KDEP\_BFS 0.003 Sediment penetration depth of shallow filter feeders m 0.003

KDEP\_BFF 0.003 Sediment penetration depth of other filter feeders m 0.003

KDEP\_BFD 0.003 Sediment penetration depth of deep filter feeders m 0.003

KDEP\_BO 0.03 Sediment penetration depth of meiobenthos m 0.03

KDEP\_BD 0.1 Sediment penetration depth of deposit feeder m 0.01 - 0.3

KDEP\_BC 0.1 Sediment penetration depth of infaunal carniv m 0.01 - 0.3

KDEP\_BG 0.005 Sediment penetration depth of benth grazers m 0.001 - 0.01

KDEP\_BMS 0.001 Sediment penetration depth of shallow macrozoobenthos m 0.00001 - 0.002

KDEP\_BMD 0.001 Sediment penetration depth of deep macrozoobenthos m 0.00001 - 0.002

KDEP\_BML 0.001 Sediment penetration depth of megazoobenthos m 0.00001 - 0.002

KDEP\_CEP 0.003 Sediment penetration depth of cephalopods m 0.003

KDEP\_PWN 0.001 Sediment penetration depth of prawns m 0.00001 - 0.002

# Sediment penetration depth for predators (m). Value read in for groups that are tagged as predators in the functionL group definition file.

KDEP\_FPS 1

KDEP\_FPL 1

KDEP\_FPO 1

KDEP\_FVD 1

KDEP\_FVV 1

KDEP\_FVS 1

KDEP\_FVT 1

KDEP\_FVO 1

KDEP\_FVB 1

KDEP\_FMM 1

KDEP\_FMN 1

KDEP\_FBP 1

KDEP\_FDD 1

KDEP\_FDS 1

KDEP\_FDB 1

KDEP\_FDC 1

KDEP\_FDO 1

KDEP\_FDE 1

KDEP\_FDF 1

KDEP\_FDP 1

KDEP\_FDM 1

KDEP\_SHD 0.01

KDEP\_SHC 0.01

KDEP\_SHP 0.01

KDEP\_SHB 0.01

KDEP\_SHR 0.01

KDEP\_SSK 0.01

KDEP\_SB 0.05

KDEP\_SP 0.05

KDEP\_REP 1

KDEP\_PIN 0.001

KDEP\_WDG 1

KDEP\_WHB 0.001

KDEP\_WHT 1

KDEP\_WHS 0.01

KDEP\_DF 0

KDEP\_ZG 0

KDEP\_ZL 0

KDEP\_ZM 0

KDEP\_ZS 0

# Assimilation efficiency of invertebrate consumers on live food and carrion

E\_ZG 0.45 Assimilation efficiency of gelatinous zooplankton -0.4 0.25 - 0.5

E\_ZL 0.45 Assimilation efficiency of large zooplankton -0.4 0.25 - 0.5

E\_ZM 0.45 Assimilation efficiency of meso-zooplankton 0.3 - 0.5

E\_ZS 0.55 Assimilation efficiency of microzooplankton 0.5 - 0.6

E\_DF 0.1 Assimilation efficiency of dinoflagellates 0.01 - 0.1

E\_BFS 0.5 Assimilation efficiency of shallow filter feeders 0.3 - 0.9

E\_BFF 0.4 Assimilation efficiency of other filter feeders 0.3 - 0.9

E\_BFD 0.4 Assimilation efficiency of deep filter feeders 0.3 - 0.9

E\_BO 0.35 Assimilation efficiency of meiobenthos 0.01 - 0.6

E\_BD 0.3 Assimilation efficiency of deposit feeder 0.01 - 0.6

E\_BC 0.5 Assimilation efficiency of infaunal carniv 0.5

E\_BG 0.5 Assimilation efficiency of benthic grazer 0.5

E\_BMS 0.5 Assimilation efficiency of shallow macrozoobenthos 0.5

E\_BMD 0.5 Assimilation efficiency of deeo macrozoobenthos 0.5

E\_BML 0.5 Assimilation efficiency of megazoobenthos 0.5

E\_CEP 0.4 Assimilation efficiency of cephalopods 0.25 - 0.5

E\_PWN 0.5 Assimilation efficiency of prawns 0.5

# Assimilation efficiency of invertebrate consumers on plants

EPlant\_ZG 0.45 Assimilation efficiency of gelatinous zooplankton (0.4) 0.25 - 0.5

EPlant\_ZL 0.45 Assimilation efficiency of large zooplankton (0.4) 0.25 - 0.5

EPlant\_ZM 0.45 Assimilation efficiency of meso-zooplankton 0.3 - 0.5

EPlant\_ZS 0.55 Assimilation efficiency of microzooplankton 0.5 - 0.6

EPlant\_DF 0.1 Assimilation efficiency of dinoflagellates 0.01 - 0.1

EPlant\_BFS 0.4 Assimilation efficiency of shallow filter feeders 0.3 - 0.9

EPlant\_BFF 0.4 Assimilation efficiency of other filter feeders 0.3 - 0.9

EPlant\_BFD 0.4 Assimilation efficiency of deep filter feeders 0.3 - 0.9

EPlant\_BO 0 Assimilation efficiency of meiobenthos 0.01 - 0.6

EPlant\_BD 0 Assimilation efficiency of deposit feeder 0.01 - 0.6

EPlant\_BC 0 Assimilation efficiency of infaunal carniv 0.5

EPlant\_BG 0.5 Assimilation efficiency of benthic grazer 0.5

EPlant\_BMS 0.5 Assimilation efficiency of shallow macrozoobenthos 0.5

EPlant\_BMD 0.5 Assimilation efficiency of deeo macrozoobenthos 0.5

EPlant\_BML 0 Assimilation efficiency of megazoobenthos 0.5

EPlant\_CEP 0.4 Assimilation efficiency of cephalopods 0.25 - 0.5

EPlant\_PWN 0.5 Assimilation efficiency of prawns 0.5

# Assimilation efficiency of invertebrate consumers on labile detritus

EDL\_BB 0.5 Assim efficiency of sediment bacteria on labile detritus 0.5

EDL\_BD 0.15 Assim efficiency of deposit feeder on labile detritus 0.002 - 0.3

EDL\_BC 0 Assim efficiency of benthic carnivores on labile detritus 0 - 0.1

EDL\_BO 0.3 Assim efficiency of meiobenthos on labile detritus 0.002 - 0.3

EDL\_BG 0.2 Assim efficiency of benthic grazer on labile detritus 0.12 - 0.25

EDL\_BMS 0.12 Assim efficiency of shallow macrozoobenthos on labile detritus 0.1 - 0.2

EDL\_BML 0.12 Assim efficiency of megazoobenthos on labile detritus 0.1 - 0.2

EDL\_BMD 0.12 Assim efficiency of deep macrozoobenthos on labile detritus 0.1 - 0.2

EDL\_BFS 0.2 Assim efficiency of shallow filter feeder on labile detritus 0.1 - 0.45

EDL\_BFF 0.2 Assim efficiency of other filter feeder on labile detritus 0.1 - 0.45

EDL\_BFD 0.2 Assim efficiency of deep filter feeder on labile detritus 0.1 - 0.45

EDL\_ZS 0 Assim efficiency of microzooplankton on labile detritus 0 - 0.2

EDL\_ZM 0.12 Assim efficiency of large zooplankton on labile detritus 0.12 - 0.25

EDL\_ZL 0 Assim efficiency of large zooplankton on labile detritus 0 - 0.2

EDL\_ZG 0.1 Assim efficiency of getlatinous zooplankton on labile detritus 0.1 - 0.25

EDL\_PB 0.5 Assim efficiency of pelagic bacteria on labile detritus 0.5

EDL\_CEP 0 Assim efficiency of cephalopods on labile detritus 0 - 0.2

EDL\_PWN 0.1 Assim efficiency of prawns on labile detritus 0 - 0.2

EDL\_DF 0.0

EDL\_MA 0.0

EDL\_MB 0.0

EDL\_SG 0.0

EDL\_PL 0.0

EDL\_PS 0.0

# Assimilation efficiency of invertebrate consumers on refractory detritus

EDR\_ZS 0.05 Assim efficiency of microzooplankton on refractory detritus 0.001 - 0.1

EDR\_ZM 0.03 Assim efficiency of meso-zooplankton on refractory detritus 0.001 - 0.1

EDR\_ZL 0.02 Assim efficiency of large zooplankton on refractory detritus 0.001 - 0.1

EDR\_ZG 0.02 Assim efficiency of gelatinous zooplank on refractory detritus 0.001 - 0.1

EDR\_PB 0.25 Assim efficiency of pelagic bacteria on refractory detritus 0.25

EDR\_BB 0.25 Assim efficiency of sediemnt bacteria on refractory detritus 0.25

EDR\_BD 0.08 Assim efficiency of deposit feeder on refractory detritus 0.001 - 0.15

EDR\_BO 0.08 Assim efficiency of meiobenth on refractory detritus 0.001 - 0.15

EDR\_BC 0 Assim efficiency of carnivorous infauna on refractory detritus 0 - 0.1

EDR\_CEP 0 Assim efficiency of cephalopods on refractory detritus 0 - 0.1

EDR\_PWN 0 Assim efficiency of prawns on refractory detritus 0 - 0.1

EDR\_DF 0.0

EDR\_MA 0.0

EDR\_MB 0.0

EDR\_SG 0.0

EDR\_PL 0.0

EDR\_PS 0.0

EDR\_BFS 0 Assim efficiency of shallow filter feeders on refractory det. 0 - 0.1

EDR\_BFD 0 Assim efficiency of deep filter feeders on refractory detritus 0 - 0.1

EDR\_BFF 0 Assim efficiency of other filter feeders on refractory detritus 0 - 0.1

EDR\_BML 0 Assim efficiency of megazoobenthos on refractory detritus 0 - 0.1

EDR\_BMD 0 Assim efficiency of deep macrozoobenthos on refractory detritus 0 - 0.1

EDR\_BMS 0 Assim efficiency of shallow macrozoobenthos on refractory det. 0 - 0.1

EDR\_BG 0 Assim efficiency of benthic grazers on refractory detritus 0 - 0.1

# Assimilation efficiencies of vertebrate consumers

E\_FPL 0.5 Assimilation efficiency of large planktivores 0.08 - 0.55

E\_FPS 0.3 Assimilation efficiency of small planktivores 0.08 - 0.55

E\_FPO 0.2 Assimilation efficiency of other planktivores 0.08 - 0.55

E\_FVD 0.5 Assimilation efficiency of deep piscivores 0.08 - 0.55

E\_FVV 0.2 Assimilation efficiency of vulnerable piscivores 0.08 - 0.55

E\_FVS 0.5 Assimilation efficiency of shallow piscivores 0.08 - 0.55

E\_FVT 0.5 Assimilation efficiency of tropical piscivores 0.08 - 0.55

E\_FVB 0.2 Assimilation efficiency of other piscivores 0.08 - 0.55

E\_FVO 0.2 Assimilation efficiency of other tuna 0.06 - 0.5

E\_FMM 0.5 Assimilation efficiency of migratory mesopelagics 0.08 - 0.55

E\_FMN 0.5 Assimilation efficiency of non-migratory mesopelagics 0.08 - 0.55

E\_FBP 0.2 Assimilation efficiency of benthopelagics 0.08 - 0.55

E\_FDD 0.2 Assimilation efficiency of deep demersals 0.06 - 0.5

E\_FDS 0.2 Assimilation efficiency of shallow demersals 0.06 - 0.5

E\_FDB 0.2 Assimilation efficiency of other shallow demersal 0.06 - 0.5

E\_FDC 0.2 Assimilation efficiency of other deep demersal 0.06 - 0.5

E\_FDO 0.2 Assimilation efficiency of longlived demersal 0.06 - 0.5

E\_FDE 0.2 Assimilation efficiency of herbivorous demersals 0.06 - 0.5

E\_FDF 0.35 Assimilation efficiency of flat deep demersals 0.08 - 0.55

E\_FDM 0.2 Assimilation efficiency of miscellaneous demersals 0.06 - 0.5

E\_FDP 0.2 Assimilation efficiency of protected demersals 0.06 - 0.5

E\_SHB 0.3 Assimilation efficiency of other sharks 0.06 - 0.5

E\_SHD 0.3 Assimilation efficiency of demersal sharks 0.07 - 0.5

E\_SHC 0.3 Assimilation efficiency of dogfish 0.07 - 0.5

E\_SHP 0.4 Assimilation efficiency of pelagic sharks 0.07 - 0.5

E\_SHR 0.4 Assimilation efficiency of reef sharks 0.06 - 0.5

E\_SSK 0.3 Assimilation efficiency of skates and rays 0.06 - 0.5

E\_SB 0.25 Assimilation efficiency of seabirds 0.05 - 0.4

E\_SP 0.5 Assimilation efficiency of penguins 0.08 - 0.55

E\_REP 0.3 Assimilation efficiency of reptiles 0.07 - 0.5

E\_PIN 0.35 Assimilation efficiency of pinnipeds 0.07 - 0.5

E\_WDG 0.35 Assimilation efficiency of dugongs 0.07 - 0.5

E\_WHB 0.35 Assimilation efficiency of baleen whales 0.07 - 0.5

E\_WHT 0.45 Assimilation efficiency of toothed whales 0.07 - 0.5

E\_WHS 0.35 Assimilation efficiency of small toothed whales 0.07 - 0.5

EPlant\_FPL 0.2 Assimilation efficiency of large planktivores on plants 0.001 - 0.1

EPlant\_FPS 0.05 Assimilation efficiency of small planktivores on plants 0.001 - 0.1

EPlant\_FPO 0.5 Assimilation efficiency of other planktivores on plants 0.001 - 0.1

EPlant\_FVD 0 Assimilation efficiency of deep piscivores on plants 0.001 - 0.1

EPlant\_FVV 0 Assimilation efficiency of vulnerable piscivores on plants 0.001 - 0.1

EPlant\_FVS 0 Assimilation efficiency of shallow piscivores on plants 0.001 - 0.1

EPlant\_FVT 0 Assimilation efficiency of tropical piscivores on plants 0.001 - 0.1

EPlant\_FVB 0.5 Assimilation efficiency of other piscivores on plants 0.001 - 0.1

EPlant\_FVO 0 Assimilation efficiency of other tuna on plants 0.001 - 0.2

EPlant\_FMM 0 Assimilation efficiency of migratory mesopelagics on plants 0.001 - 0.1

EPlant\_FMN 0 Assimilation efficiency of non-migratory mesopelagics on plants 0.001 - 0.1

EPlant\_FBP 0 Assimilation efficiency of benthopelagics on plants 0.001 - 0.1

EPlant\_FDD 0 Assimilation efficiency of deep demersals on plants 0.001 - 0.2

EPlant\_FDS 0.08 Assimilation efficiency of shallow demersals on plants 0.001 - 0.2

EPlant\_FDB 0 Assimilation efficiency of other shallow demersal on plants 0.001 - 0.2

EPlant\_FDC 0 Assimilation efficiency of other deep demersal on plants 0.001 - 0.2

EPlant\_FDO 0 Assimilation efficiency of longlived demersal on plants 0.001 - 0.2

EPlant\_FDE 0.5 Assimilation efficiency of herbivorous demersals on plants 0.001 - 0.2

EPlant\_FDF 0 Assimilation efficiency of flat deep demersals on plants 0.001 - 0.1

EPlant\_FDM 0 Assimilation efficiency of miscellaneous demersals on plants 0.001 - 0.2

EPlant\_FDP 0.2 Assimilation efficiency of protected demersals on plants 0.001 - 0.2

EPlant\_SHB 0 Assimilation efficiency of other sharks on plants 0.001 - 0.2

EPlant\_SHD 0 Assimilation efficiency of demersal sharks on plants 0.001 - 0.2

EPlant\_SHC 0 Assimilation efficiency of dogfish on plants 0.001 - 0.2

EPlant\_SHP 0 Assimilation efficiency of pelagic sharks on plants 0.001 - 0.2

EPlant\_SHR 0 Assimilation efficiency of reef sharks on plants 0.001 - 0.2

EPlant\_SSK 0 Assimilation efficiency of skates and rays on plants 0.001 - 0.2

EPlant\_SB 0 Assimilation efficiency of seabirds on plants 0.001 - 0.1

EPlant\_SP 0 Assimilation efficiency of penguins on plants 0.001 - 0.1

EPlant\_REP 0 Assimilation efficiency of reptiles on plants 0.001 - 0.2

EPlant\_PIN 0 Assimilation efficiency of pinnipeds on plants 0.001 - 0.2

EPlant\_WDG 0 Assimilation efficiency of dugongs on plants 0.001 - 0.2

EPlant\_WHB 0 Assimilation efficiency of baleen whales on plants 0.001 - 0.2

EPlant\_WHT 0 Assimilation efficiency of toothed whales on plants 0.001 - 0.2

EPlant\_WHS 0 Assimilation efficiency of small toothed whales on plants 0.001 - 0.2

EDL\_FPL 0 Assimilation efficiency of large planktivores on labile det. 0 - 0.1

EDL\_FPS 0 Assimilation efficiency of small planktivores on labile det. 0 - 0.1

EDL\_FPO 0.2 Assimilation efficiency of other planktivores on labile det. 0 - 0.1

EDL\_FVD 0.1 Assimilation efficiency of deep piscivores on labile det. 0 - 0.1

EDL\_FVV 0.04 Assimilation efficiency of vulnerable piscivores on labile det. 0 - 0.1

EDL\_FVS 0 Assimilation efficiency of shallow piscivores on labile det. 0 - 0.1

EDL\_FVT 0 Assimilation efficiency of tropical piscivores on labile det. 0 - 0.1

EDL\_FVB 0.2 Assimilation efficiency of other piscivores on labile det. 0 - 0.1

EDL\_FVO 0.04 Assimilation efficiency of other tuna on labile det. 0 - 0.2

EDL\_FMM 0 Assimilation efficiency of migratory mesopelagics on labile det. 0 - 0.1

EDL\_FMN 0 Assimilation efficiency of non-migratory mesopel. on labile det. 0 - 0.1

EDL\_FBP 0.04 Assimilation efficiency of benthopelagics on labile det. 0 - 0.1

EDL\_FDD 0.05 Assimilation efficiency of deep demersals on labile det. 0 - 0.2

EDL\_FDS 0.04 Assimilation efficiency of shallow demersals on labile det. 0 - 0.2

EDL\_FDB 0.04 Assimilation efficiency of other shallow demersal on labile det. 0 - 0.2

EDL\_FDC 0.04 Assimilation efficiency of other deep demersal on labile det. 0 - 0.2

EDL\_FDO 0.04 Assimilation efficiency of longlived demersal on labile det. 0 - 0.2

EDL\_FDE 0.2 Assimilation efficiency of herbivorous demersals on labile det. 0 - 0.2

EDL\_FDF 0 Assimilation efficiency of flat deep demersals on labile det. 0 - 0.1

EDL\_FDM 0.04 Assimilation efficiency of miscellaneous demersals on labile det 0 - 0.2

EDL\_FDP 0.2 Assimilation efficiency of protected demersals on labile det. 0 - 0.2

EDL\_SHB 0 Assimilation efficiency of other sharks on labile det. 0 - 0.2

EDL\_SHD 0 Assimilation efficiency of demersal sharks on labile det. 0 - 0.2

EDL\_SHC 0 Assimilation efficiency of dogfish on labile det. 0 - 0.2

EDL\_SHP 0 Assimilation efficiency of pelagic sharks on labile det. 0 - 0.2

EDL\_SHR 0 Assimilation efficiency of reef sharks on labile det. 0 - 0.2

EDL\_SSK 0 Assimilation efficiency of skates and rays on labile det. 0 - 0.2

EDL\_SB 0 Assimilation efficiency of seabirds on labile det. 0 - 0.1

EDL\_SP 0 Assimilation efficiency of penguins on labile det. 0 - 0.1

EDL\_REP 0 Assimilation efficiency of reptiles on labile det. 0 - 0.2

EDL\_PIN 0 Assimilation efficiency of pinnipeds on labile det. 0 - 0.2

EDL\_WDG 0 Assimilation efficiency of dugongs on labile det. 0 - 0.2

EDL\_WHB 0 Assimilation efficiency of baleen whales on labile det. 0 - 0.2

EDL\_WHT 0 Assimilation efficiency of toothed whales on labile det. 0 - 0.2

EDL\_WHS 0 Assimilation efficiency of small toothed whales on labile det. 0 - 0.2

EDR\_FPL 0 Assimilation efficiency of large planktivores on refract. det. 0 - 0.1

EDR\_FPS 0 Assimilation efficiency of small planktivores on refract. det. 0 - 0.1

EDR\_FPO 0.05 Assimilation efficiency of other planktivores on refract. det. 0 - 0.1

EDR\_FVD 0 Assimilation efficiency of deep piscivores on refract. det. 0 - 0.1

EDR\_FVV 0 Assimilation efficiency of vulnerable piscivores on refract. det 0 - 0.1

EDR\_FVS 0 Assimilation efficiency of shallow piscivores on refract. det. 0 - 0.1

EDR\_FVT 0 Assimilation efficiency of tropical piscivores on refract. det. 0 - 0.1

EDR\_FVB 0.05 Assimilation efficiency of other piscivores on refract. det. 0 - 0.1

EDR\_FVO 0 Assimilation efficiency of other tuna on refract. det. 0 - 0.2

EDR\_FMM 0 Assimilation efficiency of migratory mesopelagics on refract det 0 - 0.1

EDR\_FMN 0 Assimilation efficiency of non-migratory mesopel. on refract det 0 - 0.1

EDR\_FBP 0 Assimilation efficiency of benthopelagics on refract. det. 0 - 0.1

EDR\_FDD 0 Assimilation efficiency of deep demersals on refract. det. 0 - 0.2

EDR\_FDS 0 Assimilation efficiency of shallow demersals on refract. det. 0 - 0.2

EDR\_FDB 0 Assimilation efficiency of other shallow dem. on refract. det. 0 - 0.2

EDR\_FDC 0 Assimilation efficiency of other deep demersal on refract. det. 0 - 0.2

EDR\_FDO 0 Assimilation efficiency of longlived demersal on refract. det. 0 - 0.2

EDR\_FDE 0.05 Assimilation efficiency of herbivorous demersals on refract. det 0 - 0.2

EDR\_FDF 0 Assimilation efficiency of flat deep demersals on refract. det. 0 - 0.1

EDR\_FDM 0 Assimilation efficiency of miscellaneous dem. on refract. det. 0 - 0.2

EDR\_FDP 0.05 Assimilation efficiency of protected demersals on refract. det. 0 - 0.2

EDR\_SHB 0 Assimilation efficiency of other sharks on refract. det. 0 - 0.2

EDR\_SHD 0 Assimilation efficiency of demersal sharks on refract. det. 0 - 0.2

EDR\_SHC 0 Assimilation efficiency of dogfish on refract. det. 0 - 0.2

EDR\_SHP 0 Assimilation efficiency of pelagic sharks on refract. det. 0 - 0.2

EDR\_SHR 0 Assimilation efficiency of reef sharks on refract. det. 0 - 0.2

EDR\_SSK 0 Assimilation efficiency of skates and rays on refract. det. 0 - 0.2

EDR\_SB 0 Assimilation efficiency of seabirds on refract. det. 0 - 0.1

EDR\_SP 0 Assimilation efficiency of penguins on refract. det. 0 - 0.1

EDR\_REP 0 Assimilation efficiency of reptiles on refract. det. 0 - 0.2

EDR\_PIN 0 Assimilation efficiency of pinnipeds on refract. det. 0 - 0.2

EDR\_WDG 0 Assimilation efficiency of dugongs on refract. det. 0 - 0.2

EDR\_WHB 0 Assimilation efficiency of baleen whales on refract. det. 0 - 0.2

EDR\_WHT 0 Assimilation efficiency of toothed whales on refract. det. 0 - 0.2

EDR\_WHS 0 Assimilation efficiency of small toothed whales on refract. det. 0 - 0.2

# Fish respiration

KA\_FPL 0.024 Scaling coefft in allometry of resp vs weight for large planktiv. 0.024

KA\_FPS 0.024 Scaling coefft in allometry of resp vs weight for small planktiv. 0.024

KA\_FPO 0.014 Scaling coefft in allometry of resp vs weight for other planktiv. 0.024

KA\_FVD 0.025 Scaling coefft in allometry of resp vs weight for deep piscivores 0.025

KA\_FVV 0.014 Scaling coefft in allometry of resp vs weight for vulnerable pisciv 0.025

KA\_FVS 0.025 Scaling coefft in allometry of resp vs weight for shallow pisciv. 0.025

KA\_FVT 0.025 Scaling coefft in allometry of resp vs weight for tropical pisciv. 0.025

KA\_FVB 0.014 Scaling coefft in allometry of resp vs weight for other piscivores 0.024

KA\_FVO 0.014 Scaling coefft in allometry of resp vs weight for other tuna 0.025

KA\_FMM 0.024 Scaling coefft in allometry of resp vs weight for mig mesopelagics 0.024

KA\_FMN 0.024 Scaling coefft in allometry of resp vs weight for non-mig mesopel 0.024

KA\_FBP 0.014 Scaling coefft in allometry of resp vs weight for benthopelagics 0.024

KA\_FDD 0.018 Scaling coefft in allometry of resp vs weight for deep demersals 0.018

KA\_FDS 0.014 Scaling coefft in allometry of resp vs weight for shallow demersals 0.014

KA\_FDB 0.014 Scaling coefft in allometry of resp vs weight for other shallow dem 0.014

KA\_FDC 0.014 Scaling coefft in allometry of resp vs weight for other deep dem 0.014

KA\_FDO 0.014 Scaling coefft in allometry of resp vs weight for longlived dem 0.018

KA\_FDE 0.018 Scaling coefft in allometry of resp vs weight for herbiv. demersals 0.018

KA\_FDF 0.024 Scaling coefft in allometry of resp vs weight for flat deep dem. 0.025

KA\_FDM 0.014 Scaling coefft in allometry of resp vs weight for misc. demersals 0.018

KA\_FDP 0.018 Scaling coefft in allometry of resp vs weight for protect demersals 0.018

KA\_SHD 0.01 Scaling coefft in allometry of resp vs weight for demersal sharks 0.01

KA\_SHB 0.01 Scaling coefft in allometry of resp vs weight for other sharks 0.01

KA\_SHR 0.01 Scaling coefft in allometry of resp vs weight for reef sharks 0.01

KA\_SHC 0.01 Scaling coefft in allometry of resp vs weight for dogfish 0.01

KA\_SHP 0.01 Scaling coefft in allometry of resp vs weight for pelagic sharks 0.01

KA\_SSK 0.01 Scaling coefft in allometry of resp vs weight for skates and rays 0.01

KA\_SB 0.024 Scaling coefft in allometry of resp vs weight for seabirds 0.024

KA\_SP 0.024 Scaling coefft in allometry of resp vs weight for penguins 0.024

KA\_REP 0.01 Scaling coefft in allometry of resp vs weight for reptiles 0.01

KA\_PIN 0.021 Scaling coefft in allometry of resp vs weight for pinnipeds 0.021

KA\_WDG 0.021 Scaling coefft in allometry of resp vs weight for dugongs 0.021

KA\_WHB 0.021 Scaling coefft in allometry of resp vs weight for baleen whales 0.021

KA\_WHS 0.021 Scaling coefft in allometry of resp vs weight for sm toothed whales 0.021

KA\_WHT 0.021 Scaling coefft in allometry of resp vs weight for toothed whales 0.021

KB\_FPL 0.85 Exponent in respiration vs weight for large planktivores 0.85

KB\_FPS 0.85 Exponent in respiration vs weight for small planktivores 0.85

KB\_FPO 0.8 Exponent in respiration vs weight for other planktivores 0.85

KB\_FVD 0.8 Exponent in respiration vs weight for deep piscivores 0.8

KB\_FVV 0.8 Exponent in respiration vs weight for vulnerable piscivores 0.8

KB\_FVS 0.8 Exponent in respiration vs weight for shallow piscivores 0.8

KB\_FVT 0.8 Exponent in respiration vs weight for tropical piscivores 0.8

KB\_FVO 0.8 Exponent in respiration vs weight for other tuna 0.8

KB\_FVB 0.8 Exponent in respiration vs weight for other piscivores 0.85

KB\_FMM 0.85 Exponent in respiration vs weight for migratory mesopelagics 0.85

KB\_FMN 0.85 Exponent in respiration vs weight for non-migratory mesopelagics 0.85

KB\_FBP 0.8 Exponent in respiration vs weight for benthopelagics 0.85

KB\_FDD 0.8 Exponent in respiration vs weight for deep demersals 0.8

KB\_FDS 0.8 Exponent in respiration vs weight for shallow demersals 0.8

KB\_FDB 0.8 Exponent in respiration vs weight for other shallow demersal 0.8

KB\_FDC 0.8 Exponent in respiration vs weight for other deep demersal 0.8

KB\_FDO 0.8 Exponent in respiration vs weight for longlived demersal 0.8

KB\_FDE 0.8 Exponent in respiration vs weight for herbivorous demersals 0.8

KB\_FDF 0.85 Exponent in respiration vs weight for flat deep demersals 0.8

KB\_FDM 0.8 Exponent in respiration vs weight for miscellaneous demersals 0.8

KB\_FDP 0.8 Exponent in respiration vs weight for protected demersals 0.8

KB\_SHD 0.8 Exponent in respiration vs weight for demersal sharks 0.8

KB\_SHB 0.8 Exponent in respiration vs weight for other sharks 0.8

KB\_SHC 0.8 Exponent in respiration vs weight for dogfish 0.8

KB\_SHR 0.8 Exponent in respiration vs weight for reef sharks 0.8

KB\_SHP 0.8 Exponent in respiration vs weight for pelagic sharks 0.8

KB\_SSK 0.8 Exponent in respiration vs weight for skates and rays 0.8

KB\_SB 0.85 Exponent in respiration vs weight for seabirds 0.85

KB\_SP 0.85 Exponent in respiration vs weight for penguins 0.85

KB\_REP 0.8 Exponent in respiration vs weight for reptiles 0.8

KB\_WDG 0.8 Exponent in respiration vs weight for dugongs 0.8

KB\_PIN 0.8 Exponent in respiration vs weight for pinnipeds 0.8

KB\_WHB 0.8 Exponent in respiration vs weight for baleen whales 0.8

KB\_WHS 0.8 Exponent in respiration vs weight for small toothed whales 0.8

KB\_WHT 0.8 Exponent in respiration vs weight for toothed whales 0.8

# Value used depends on the group type in the functional definition input file

KST\_fish 0.3 Factor respiration reduced by when fish are starved 0.3

KST\_shark 0.3 Factor respiration reduced by when sharks are starved 0.3

KST\_bird 0.3 Factor respiration reduced by when seabirds are starved 0.3

KST\_mammal 0.3 Factor respiration reduced by when mammals are starved 0.3

Ktmp\_fish 0.08 Factor relating temperature to respiration for fish 0.08

Ktmp\_shark 0.075 Factor relating temperature to respiration for sharks 0.075

Ktmp\_bird 0.08 Factor relating temperature to respiration for seabirds 0.08

Ktmp\_mammal 0.08 Factor relating temperature to respiration for mammals 0.08

# Lysis rate of microalgaes. Read in for primary producer groups only.

KLYS\_PL 0.00001 Lysis rate of diatoms d-1 0.0001

KLYS\_PS 0.00002 Lysis rate of picophytoplankton d-1 -0.01 0.01

KLYS\_MB 0 Lysis rate of microphytobenthos d-1 -0.01 0.01

KLYS\_DF 0 Lysis rate of dinoflagellates d-1 -0.01 0.01

KLYS\_MA 1.0 Lysis rate of macroalgaes d-1 (0.01) 0.01

KLYS\_SG 1.0 Lysis rate of seagrass d-1 (0.01) 0.01

# Linear mortality

PL\_mL 0.00002 Linear mortality rate of lg phytopl, 15 deg C d-1 0.14

PS\_mL 0.00001 Linear mortality rate of picophytopl, 15 deg C d-1 0.14

MB\_mL 0.0 Linear mortality rate of microphytoben, 15 deg C d-1 0.14

DF\_mL 0.0 Linear mortality rate of dinoflag, 15 deg C d-1 0.14

MA\_mL 0.0000001 Linear mortality rate of macroalgae, 15 deg C d-1 0.002 - 0.04

SG\_mL 0 Linear mortality rate of seagrass, 15 deg C d-1 0.001 - 0.01

ZG\_mL 0.000001 Linear mortality rate of gelatin zoopl, 15 deg C d-1 (0.0008) 0.0 - 0.04

ZL\_mL 0.0002 Linear mortality rate of large zoopl, 15 deg C d-1 (0.001) 0.0 - 0.04

ZM\_mL 0.0001 Linear mortality rate of meso-zoopl, 15 deg C d-1 (0.001) 0.0 - 0.09

ZS\_mL 0.000009 Linear mortality rate of microzoopl, 15 deg C d-1 (0.0015) 0.0 - 1.0

BFS\_mL 0.0 Linear mortality rate of shallow ff, 15 deg C d-1 (0.000001) 0.0 - 0.001

BFF\_mL 0.0 Linear mortality rate of other ff, 15 deg C d-1 (0.000001) 0.0 - 0.001

BFD\_mL 0.0 Linear mortality rate of deep filt feed, 15 deg C d-1 (0.000001) 0.0 - 0.001

BD\_mL 0.001 Linear mortality rate of deposit feeder, 15 deg C d-1 (0.0005) 0.0 - 0.001

BC\_mL 0.00005 Linear mortality rate of inf carniv, 15 deg C d-1 (0.0001) 0.0 - 0.003

BG\_mL 0.0001 Linear mortality rate of herbiv grazer, 15 deg C d-1 (0.0005) 0.0 - 0.001

BMS\_mL 0.00006 Linear mort rate of shallow macrozooben, 15 deg C d-1 (0.00037) 0.0 - 0.002

BML\_mL 0.00007 Linear mortality rate of megazoobenthos, 15 deg C d-1 (0.00037) 0.0 - 0.002

BMD\_mL 0.000002 Linear mort. rate of deep macrozooben., 15 deg C d-1 (0.0001) 0.0 - 0.002

BO\_mL 0.00000001 Linear mortality rate of meiobenthos, 15 deg C d-1 (0.0082) 0.0 - 0.01

PB\_mL 0.00001 Linear mortality rate of pelagic bact, 15 deg C d-1 0.0 - 0.1

BB\_mL 0.00001 Linear mortality rate of sediment bact, 15 deg C d-1 (0.0001) 0.0 - 0.1

FPL\_mL 2

9.00E-007 2.00E-006

FPS\_mL 2

1.00E-008 2.00E-008

FPO\_mL 2

1.25E-011 1.25E-011

FVD\_mL 2

1.00E-009 1.00E-011

FVV\_mL 2

1.00E-011 1.00E-011

FVS\_mL 2

1.00E-015 2.50E-010

FVT\_mL 2

9.00E-016 9.00E-014

FVB\_mL 2

1.00E-017 1.00E-013

FVO\_mL 2

1.00E-016 0

FMM\_mL 2

1.00E-018 5.00E-010

FMN\_mL 2

2.00E-016 8.00E-009

FBP\_mL 2

1.00E-011 1.00E-009

FDD\_mL 2

1.00E-009 1.00E-009

FDS\_mL 2

4.00E-011 1.00E-009

FDB\_mL 2

2.00E-013 7.50E-013

FDC\_mL 2

1.00E-009 4.00E-009

FDO\_mL 2

0 0

FDE\_mL 2

1.00E-009 1.00E-009

FDF\_mL 2

3.00E-007 1.00E-009

FDM\_mL 2

1.00E-009 4.00E-008

FDP\_mL 2

1.00E-010 1.00E-012

SHD\_mL 2

1.00E-008 1.00E-013

SHB\_mL 2

1.00E-009 1.00E-013

SHC\_mL 2

1.00E-010 1.00E-013

SHR\_mL 2

1.00E-008 6.00E-013

SHP\_mL 2

5.00E-008 2.00E-013

SSK\_mL 2

3.00E-010 5.00E-011

SB\_mL 2

8.00E-008 8.00E-006

SP\_mL 2

9.00E-007 9.00E-007

REP\_mL 2

0 0

WDG\_mL 2

0 0

PIN\_mL 2

1.00E-008 5.00E-013

WHB\_mL 2

1.00E-008 1.00E-013

WHT\_mL 2

1.00E-008 1.00E-013

WHS\_mL 2

1.00E-008 1.00E-013

#Linear mortality rate of cephalopods, 15 deg C d-1 (0.002) 0.0 - 0.01

CEP\_mL 2

0.00001 0.0000001

PWN\_mL 2

0.00001 0.0000001

# Quadratic mortality

# Invertebrates

ZG\_mQ 0.000005 Quad. mortality rate of gelatin. zoopl, 15 deg C d-1 (0.00001) 0.0 - 0.01

ZL\_mQ 0.000001 Quad. mortality rate of large zoopl, 15 deg C d-1 0.0 - 0.01

ZM\_mQ 0.0 Quad. mortality rate of meso-zoopl, 15 deg C d-1 0.0 - 0.02

ZS\_mQ 0.0 Quad. mortality rate of microzoopl, 15 deg C d-1 0.0 - 0.2

BC\_mQ 0.0000001 Quad. mortality rate of inf carniv, 15 deg C d-1 0.0 - 0.00001

BD\_mQ 0.0000003 Quad. mortality rate of deposit feeder, 15 deg C d-1 0.0

BO\_mQ 0.0 Quad. mortality rate of meiobenthos, 15 deg C d-1 0.0

BFS\_mQ 1.0e-7 Quad. mortality rate of shallow ff, 15 deg C d-1 0.0 - 0.000002

BFF\_mQ 1.0e-7 Quad. mortality rate of other ff, 15 deg C d-1 0.0 - 0.000002

BFD\_mQ 1.0e-6 Quad. mortality rate of deep filt feed, 15 deg C d-1 0.0 - 0.000002

BMS\_mQ 0.0000001 Quad. mort. rate of shallow macrozooben, 15 deg C d-1 0.0 - 0.000002

BML\_mQ 0.0000001 Quad. mortality rate of megazoobenthos, 15 deg C d-1 0.0 - 0.000002

BMD\_mQ 0.0000001 Quad. mort. rate of deep macrozooben., 15 deg C d-1 0.0 - 0.000002

BG\_mQ 0.0 Quad. mortality rate of benthic grazer, 15 deg C d-1 0.0

CEP\_mQ 2

1.0e-10 1.0e-10

PWN\_mQ 2

1.0e-10 1.0e-10

FPL\_mQ 2

1.00E-015 5.00E-011

FPS\_mQ 2

1.00E-015 1.00E-013

FPO\_mQ 2

1.00E-015 1.00E-014

FVD\_mQ 2

1.00E-015 4.00E-012

FVV\_mQ 2

6.00E-013 1.00E-010

FVS\_mQ 2

2.00E-016 1.00E-007

FVT\_mQ 2

2.50E-011 5.00E-007

FVO\_mQ 2

5.00E-011 1.00E-006

FVB\_mQ 2

1.00E-017 1.60E-013

FMM\_mQ 2

1.00E-018 2.00E-009

FMN\_mQ 2

2.00E-016 9.25E-014

FBP\_mQ 2

1.00E-013 3.00E-009

FDD\_mQ 2

5.00E-016 6.40E-010

FDS\_mQ 2

1.00E-013 4.00E-010

FDB\_mQ 2

1.00E-013 9.00E-010

FDC\_mQ 2

3.50E-010 5.00E-008

FDO\_mQ 2

8.50E-014 1.00E-013

FDE\_mQ 2

9.50E-012 4.00E-011

FDF\_mQ 2

9.00E-013 4.00E-008

FDM\_mQ 2

5.00E-016 1.00E-006

FDP\_mQ 2

8.00E-013 8.00E-012

SHD\_mQ 2

1.20E-010 1.00E-008

SHB\_mQ 2

1.00E-011 1.00E-011

SHC\_mQ 2

1.00E-010 3.00E-009

SHR\_mQ 2

5.00E-009 2.00E-006

SHP\_mQ 2

1.60E-008 4.00E-006

SSK\_mQ 2

3.00E-010 5.00E-006

SB\_mQ 2

1.00E-006 1.00E-005

SP\_mQ 2

1.00E-009 2.25E-009

REP\_mQ 2

9.50E-008 6.50E-008

WDG\_mQ 2

3.00E-006 9.50E-007

PIN\_mQ 2

1.50E-007 2.00E-007

WHB\_mQ 2

1.00E-007 5.00E-008

WHS\_mQ 2

2.00E-007 2.00E-007

WHT\_mQ 2

1.00E-006 1.00E-005

# Extra macrophyte mortality (based on physical environment)

mS\_MA\_T15 100 Scour (bottom stress) macroalgae mortality d-1 120 - 180

mS\_SG\_T15 0.0000002 Excessive DIN seagrass mortality d-1 0 - 0.0002

# Terminal (senescence mortality) for biomass pools (proportion of terminal age group dying)

mT\_CEP 1.0 0.0

# Starvation mortality for fish (based on condition)

mStarve\_FPL 0.0001

mStarve\_FPO 0.0001

mStarve\_FPS 0.0001

mStarve\_FVD 0.0001

mStarve\_FVV 0.0001

mStarve\_FVS 0.0001

mStarve\_FVB 0.0001

mStarve\_FVT 0.0001

mStarve\_FVO 0.0001

mStarve\_FMM 0.0001

mStarve\_FMN 0.0001

mStarve\_FBP 0.0001

mStarve\_FDD 0.0001

mStarve\_FDE 0.0001

mStarve\_FDS 0.0001

mStarve\_FDM 0.0001

mStarve\_FDP 0.0001

mStarve\_FDB 0.0001

mStarve\_FDC 0.0001

mStarve\_FDO 0.0001

mStarve\_FDF 0.0001

mStarve\_SHB 0.0001

mStarve\_SHD 0.0001

mStarve\_SHC 0.0001

mStarve\_SHP 0.0001

mStarve\_SHR 0.0001

mStarve\_SSK 0.0001

mStarve\_SB 0.0001

mStarve\_SP 0.0001

mStarve\_PIN 0.0001

mStarve\_REP 0.0001

mStarve\_WHB 0.0001

mStarve\_WHS 0.0001

mStarve\_WHT 0.0001

mStarve\_WDG 0.0001

Kthreshm 0.5 Threshold starvation level when mort starts 0.7

# Oxygen mortality (based on depth and the oxygen horizon)

mD\_PL 1.0 Half oxygen mortality depth for settled phytoplankton m 0.001 - 0.005

mD\_DF 1.0 Half oxygen mortality depth for settled dinoflagellate m 0.001 - 0.005

mD\_PS 1.0 Half oxygen mortality depth for settled picophytoplank m 0.001 - 0.005

mD\_PB 1.0 Half oxygen mortality depth for pelagic bacteria m 0.001 - 0.005

mD\_PB 0

mD\_BB 0.005 Half oxygen mortality depth for sediment bacteria m 0.001 - 0.005

mD\_BO 0.005 Half oxygen mortality depth for meiobenthos m 0.001 - 0.005

mD\_BD 0.005 Half oxygen mortality depth for deposit feeder m 0.001 - 0.005

mD\_BC 0.005 Half oxygen mortality depth for inf. carniv m 0.001 - 0.005

mD\_BMS 0.001 Half oxygen mort. depth for shallow macrozoobenth m 0.0 - 0.001

mD\_BML 0.001 Half oxygen mortality depth for megazoobenthos m 0.0 - 0.001

mD\_BMD 0.001 Half oxygen mort. depth for deep macrozoobenth m 0.0 - 0.001

mD\_BG 0.001 Half oxygen mortality depth for benth grazer m 0.0 - 0.001

mD\_BFS 0.001 Half oxygen mortality depth for shallow filt feed m 0.0 - 0.001

mD\_BFF 0.001 Half oxygen mortality depth for other filter feed m 0.0 - 0.001

mD\_BFD 0.001 Half oxygen mortality depth for deep filter feed m 0.0 - 0.001

# Oxygen mortality based on ambient oxygen

mO\_PL 0.0 Oxygen dependent mortality for settled phytoplankton d-1 0.1

mO\_DF 0.0 Oxygen dependent mortality for settled dinoflagellate d-1 0.1

mO\_PS 0.0 Oxygen dependent mortality for settled picophytoplank d-1 0.1

mO\_PB 0.001 Oxygen dependent mortality for pelagic bacteria d-1 0.1

mO\_BB 0.001 Oxygen dependent mortality for sediment bacteria d-1 0.3

mO\_BO 0.0001 Oxygen dependent mortality for meiobenthos d-1 0.1

mO\_BD 0.0001 Oxygen dependent mortality for deposit feeder d-1 0.1

mO\_BC 0.0001 Oxygen dependent mortality for infaunal carnivore d-1 0.1

mO\_BMS 0.001 Oxygen dependent mort. for shallow macrozooben d-1 0.1

mO\_BML 0.001 Oxygen dependent mortality for megazoobenthos d-1 0.1

mO\_BMD 0.001 Oxygen dependent mort. for deep macrozooben d-1 0.1

mO\_BG 0.001 Oxygen dependent mortality for benthic grazer d-1 0.1

mO\_BFS 0.00001 Oxygen dependent mort. for shallow filter feeder d-1 0.1

mO\_BFF 0.00001 Oxygen dependent mort. for other filter feeder d-1 0.1

mO\_BFD 0.0001 Oxygen dependent mort. for deep filter feeder d-1 0.1

KO2\_PL 1.0 Lethal oxygen level for settled phytoplankton mg O2 m-3 0.0

KO2\_DF 1.0 Lethal oxygen level for settled dinoflagellates mg O2 m-3 0.0

KO2\_PS 1.0 Lethal oxygen level for settled picophytoplankton mg O2 m-3 0.0

KO2\_BB 0

KO2\_PB 1.0 Lethal oxygen level for pelagic bact mg O2 m-3 0.0

KO2\_BB 1.0 Lethal oxygen level for benthic bact mg O2 m-3 0.0

KO2\_BO 1.0 Lethal oxygen level for meiobenthos mg O2 m-3 0.0

KO2\_BD 1.0 Lethal oxygen level for deposit feeder mg O2 m-3 0.0

KO2\_BC 1.0 Lethal oxygen level for infaunal carnivore mg O2 m-3 0.0

KO2\_BMS 5.0 Lethal oxygen level for shallow macrozoobenthos mg O2 m-3 0.0

KO2\_BML 5.0 Lethal oxygen level for megazoobenthos mg O2 m-3 0.0

KO2\_BMD 3.0 Lethal oxygen level for deep macrozoobenthos mg O2 m-3 0.0

KO2\_BG 5.0 Lethal oxygen level for benthic grazer mg O2 m-3 0.0

KO2\_BFS 3.0 Lethal oxygen level for shallow filter feeder mg O2 m-3 0.0

KO2\_BFF 3.0 Lethal oxygen level for other filter feeder mg O2 m-3 0.0

KO2\_BFD 3.0 Lethal oxygen level for deep filter feeder mg O2 m-3 0.0

KO2LIM\_PL 10.0 Limiting oxygen level for settled phytoplankton mg O2 m-3 0.0

KO2LIM\_DF 10.0 Limiting oxygen level for settled dinoflagellate mg O2 m-3 0.0

KO2LIM\_PS 10.0 Limiting oxygen level for settled picophytoplank mg O2 m-3 0.0

KO2LIM\_PB 10.0 Limiting oxygen level for pelagic bacteria mg O2 m-3 0.0

KO2LIM\_BB 10.0 Limiting oxygen level for benthic bacteria mg O2 m-3 0.0

KO2LIM\_PB 0

KO2LIM\_BB 0

KO2LIM\_BO 10.0 Limiting oxygen level for meiobenthos mg O2 m-3 0.0

KO2LIM\_BD 10.0 Limiting oxygen level for deposit feeder mg O2 m-3 0.0

KO2LIM\_BC 10.0 Limiting oxygen level for infaunal carnivore mg O2 m-3 0.0

KO2LIM\_BMS 50.0 Limiting oxygen level for shallow macrozoobenthos mg O2 m-3 0.0

KO2LIM\_BML 50.0 Limiting oxygen level for megazoobenthos mg O2 m-3 0.0

KO2LIM\_BMD 50.0 Limiting oxygen level for deep macrozoobenthos mg O2 m-3 0.0

KO2LIM\_BG 50.0 Limiting oxygen level for benth grazer mg O2 m-3 0.0

KO2LIM\_BFS 50.0 Limiting oxygen level for shallow filter feeder mg O2 m-3 0.0

KO2LIM\_BFF 50.0 Limiting oxygen level for other filter feeder mg O2 m-3 0.0

KO2LIM\_BFD 50.0 Limiting oxygen level for deep filter feeder mg O2 m-3 0.0

# Minimum tolerated oxygen level for age structured groups (typically vertebrates)

FPS\_min\_O2 0.0

FPL\_min\_O2 0.0

FPO\_min\_O2 0.0

FVD\_min\_O2 0.0

FVV\_min\_O2 0.0

FVS\_min\_O2 0.0

FVT\_min\_O2 0.0

FVO\_min\_O2 0.0

FVB\_min\_O2 0.0

FMM\_min\_O2 0.0

FMN\_min\_O2 0.0

FBP\_min\_O2 0.0

FDD\_min\_O2 0.0

FDS\_min\_O2 0.0

FDB\_min\_O2 0.0

FDC\_min\_O2 0.0

FDO\_min\_O2 0.0

FDE\_min\_O2 0.0

FDF\_min\_O2 0.0

FDM\_min\_O2 0.0

FDP\_min\_O2 0.0

SHD\_min\_O2 0.0

SHC\_min\_O2 0.0

SHP\_min\_O2 0.0

SHB\_min\_O2 0.0

SHR\_min\_O2 0.0

SSK\_min\_O2 0.0

SB\_min\_O2 0.0

SP\_min\_O2 0.0

REP\_min\_O2 0.0

PIN\_min\_O2 0.0

WDG\_min\_O2 0.0

WHB\_min\_O2 0.0

WHS\_min\_O2 0.0

WHT\_min\_O2 0.0

# Mortality rate of each fish group due to the implicit fish, per quarter d-1

# This represents mortality due to fish not explicitly included in the model.

mS\_FDFPL 4

0 0 0 0

mS\_FDFPS 4

0 0 0 0

mS\_FDFPO 4

0 0 0 0

mS\_FDFVD 4

0 0 0 0

mS\_FDFVV 4

0 0 0 0

mS\_FDFVS 4

0 0 0 0

mS\_FDFVT 4

0 0 0 0

mS\_FDFVO 4

0 0 0 0

mS\_FDFVB 4

0 0 0 0

mS\_FDFMM 4

0 0 0 0

mS\_FDFMN 4

0 0 0 0

mS\_FDFBP 4

0 0 0 0

mS\_FDFDD 4

0 0 0 0

mS\_FDFDS 4

0 0 0 0

mS\_FDFDB 4

0 0 0 0

mS\_FDFDC 4

0 0 0 0

mS\_FDFDO 4

0 0 0 0

mS\_FDFDF 4

0 0 0 0

mS\_FDFDE 4

0 0 0 0

mS\_FDFDM 4

0 0 0 0

mS\_FDFDP 4

0 0 0 0

mS\_FDSHB 4

0 0 0 0

# Static seabird and mammal induced mortality of each fish group, per quarter d-1

mS\_SBFPS 4

0 0 0 0

mS\_SBFPL 4

0 0 0 0

mS\_SBFPO 4

0 0 0 0

mS\_SBFBP 4

0 0 0 0

mS\_SBFVS 4

0 0 0 0

mS\_SBFVT 4

0 0 0 0

mS\_SBFVB 4

0 0 0 0

mS\_SBFDS 4

0 0 0 0

mS\_SBFDE 4

0 0 0 0

mS\_SBFDB 4

0 0 0 0

# Seabird sloppy feeding

FSBDR\_FPS 0.2 Proportion of seabird catch of small planktivores lost 0.2

FSBDR\_FPL 0.2 Proportion of seabird catch of large planktivores lost 0.2

FSBDR\_FPO 0.05 Proportion of seabird catch of other planktivores lost 0.2

FSBDR\_FVS 0.05 Proportion of seabird catch of shallow piscivores lost 0.05

FSBDR\_FVT 0.05 Proportion of seabird catch of tropical piscivores lost 0.05

FSBDR\_FVB 0.05 Proportion of seabird catch of other piscivores lost 0.05

FSBDR\_FDS 0.05 Proportion of seabird catch of shallow demersals lost 0.05

FSBDR\_FDB 0.05 Proportion of seabird catch of other shallow demersal lost 0.15

FSBDR\_FDE 0.15 Proportion of seabird catch of herbivorous demersal lost 0.15

FSBDR\_FVD 0

FSBDR\_FVV 0

FSBDR\_FVO 0

FSBDR\_FMM 0

FSBDR\_FMN 0

FSBDR\_FBP 0

FSBDR\_FDD 0

FSBDR\_FDM 0

FSBDR\_FDB 0

FSBDR\_FDP 0

FSBDR\_FDC 0

FSBDR\_FDO 0

FSBDR\_FDF 0

FSBDR\_SB 0

FSBDR\_SP 0

FSBDR\_SHB 0

FSBDR\_SHP 0

FSBDR\_SHD 0

FSBDR\_SHC 0

FSBDR\_SHR 0

FSBDR\_SSK 0

FSBDR\_REP 0

FSBDR\_WDG 0

FSBDR\_PIN 0

FSBDR\_WHT 0

FSBDR\_WHS 0

FSBDR\_WHB 0

# Demersal fish sloppy feeding

FFDDR 0.95 Proportion of static demersal fish's planktivore prey that's lost

# Fraction of non-assimilate lost to detritus

FDG\_DF 0

FDG\_ZG 0.3 Detrit contrib from unassim material ingested by gelatinous zoopl 0.25 - 0.5

FDG\_ZL 0.3 Detrit contrib from unassim material ingested by large zooplankton 0.25 - 0.5

FDG\_ZM 0.25 Detrit contrib from unassim material ingested by meso-zooplankton 0.25 - 0.5

FDG\_ZS 0.25 Detrit contrib from unassim material ingested by microzoopl 0.25 - 0.5

FDG\_BFS 0.35 Detrit contrib from unassim material ingested by shallow filt feed 0.25 - 0.5

FDG\_BFF 0.35 Detrit contrib from unassim material ingested by other filt feed 0.25 - 0.5

FDG\_BFD 0.35 Detrit contrib from unassim material ingested by deep filt feed 0.25 - 0.5

FDG\_BD 0.35 Detrit contrib from unassim material ingested by deposit feeder 0.25 - 0.5

FDG\_BC 0.3 Detrit contrib from unassim material ingested by infaunal carniv 0.25 - 0.5

FDG\_BG 0.35 Detrit contrib from unassim material ingested by benthic grazer 0.25 - 0.5

FDG\_BMS 0.3 Detrit contrib from unassim mat ingested by shallow macrozoobenthos 0.25 - 0.5

FDG\_BML 0.3 Detrit contrib from unassim material ingested by megazoobenthos 0.25 - 0.5

FDG\_BMD 0.3 Detrit contrib from unassim mat. ingested by deep macrozoobenthos 0.25 - 0.5

FDG\_BO 0.25 Detrit contrib from unassim material ingested by meiobenthos 0.25 - 0.5

FDG\_CEP 0.3 Detrit contrib from unassim material ingested by cephalopods 0.25 - 0.5

FDG\_PWN 0.3 Detrit contrib from unassim material ingested by prawns 0.25 - 0.5

FDG\_FPL 0.3 Detrit contrib from unassim material ingested by large planktivores 0.1 - 0.3

FDG\_FPS 0.3 Detrit contrib from unassim material ingested by small planktivores 0.1 - 0.3

FDG\_FPO 0.2 Detrit contrib from unassim material ingested by other planktivores 0.1 - 0.3

FDG\_FVD 0.2 Detrit contrib from unassim material ingested by deep piscivores 0.1 - 0.3

FDG\_FVV 0.2 Detrit contrib from unassim material ingested by vulnerable pisciv 0.1 - 0.3

FDG\_FVS 0.2 Detrit contrib from unassim material ingested by shallow piscivores 0.1 - 0.3

FDG\_FVT 0.2 Detrit contrib from unassim mat. ingested by tropical piscivores 0.1 - 0.3

FDG\_FVO 0.2 Detrit contrib from unassim material ingested by other tuna 0.1 - 0.3

FDG\_FVB 0.2 Detrit contrib from unassim material ingested by other piscivores 0.1 - 0.3

FDG\_FMM 0.3 Detrit contrib from unassim material ingested by mig. mesopelagics 0.1 - 0.3

FDG\_FMN 0.3 Detrit contrib from unassim material ingested by non-mig mesopelag. 0.1 - 0.3

FDG\_FBP 0.2 Detrit contrib from unassim material ingested by benthopelagics 0.1 - 0.3

FDG\_FDD 0.2 Detrit contrib from unassim material ingested by deep demersals 0.1 - 0.3

FDG\_FDS 0.2 Detrit contrib from unassim material ingested by shallow demersals 0.1 - 0.3

FDG\_FDB 0.2 Detrit contrib from unassim material ingested by other shallow dem= 0.1 - 0.3

FDG\_FDC 0.2 Detrit contrib from unassim material ingested by other deep dem 0.1 - 0.3

FDG\_FDO 0.2 Detrit contrib from unassim material ingested by longlived demersal 0.1 - 0.3

FDG\_FDE 0.2 Detrit contrib from unassim material ingested by herbiv demersals 0.1 - 0.3

FDG\_FDF 0.3 Detrit contrib from unassim material ingested by flat deep demersal 0.1 - 0.3

FDG\_FDM 0.2 Detrit contrib from unassim material ingested by misc demersals 0.1 - 0.3

FDG\_FDP 0.2 Detrit contrib from unassim material ingested by protected demersal 0.1 - 0.3

FDG\_SHD 0.2 Detrit contrib from unassim material ingested by demersal sharks 0.1 - 0.3

FDG\_SHB 0.2 Detrit contrib from unassim material ingested by other sharks 0.1 - 0.3

FDG\_SHC 0.2 Detrit contrib from unassim material ingested by dogfish 0.1 - 0.3

FDG\_SHR 0.2 Detrit contrib from unassim material ingested by reef sharks 0.1 - 0.3

FDG\_SHP 0.2 Detrit contrib from unassim material ingested by pelagic sharks 0.1 - 0.3

FDG\_SSK 0.2 Detrit contrib from unassim material ingested by skates and rays 0.1 - 0.3

FDG\_SB 0.3 Detrit contrib from unassim material ingested by seabirds 0.1 - 0.3

FDG\_SP 0.3 Detrit contrib from unassim material ingested by penguins 0.1 - 0.3

FDG\_REP 0.2 Detrit contrib from unassim material ingested by reptiles 0.1 - 0.3

FDG\_WDG 0.2 Detrit contrib from unassim material ingested by dugongs 0.1 - 0.3

FDG\_PIN 0.2 Detrit contrib from unassim material ingested by pinnipeds 0.1 - 0.3

FDG\_WHB 0.2 Detrit contrib from unassim material ingested by baleen whales 0.1 - 0.3

FDG\_WHS 0.2 Detrit contrib from unassim material ingested by sm toothed whales 0.1 - 0.3

FDG\_WHT 0.2 Detrit contrib from unassim material ingested by toothed whales 0.1 - 0.3

# Fraction of non-assimilate from labile detrital food lost to detritus

FDGDL\_ZS 0 Detrit contrib from unassim lab detrit ingested by small zooplankton 0 - 0.9

FDGDL\_ZM 0.5 Detrit contrib from unassim lab detrit ingested by mesozooplankton 0.4 - 0.9

FDGDL\_ZL 0 Detrit contrib from unassim lab detrit ingested by large zooplankton 0 - 0.9

FDGDL\_ZG 0.5 Detrit contrib from unassim lab detrit ingested by gelatinous zoopl 0.4 - 0.9

FDGDL\_CEP 0 Detrit contrib from unassim lab detrit ingested by cephalopods 0 - 0.9

FDGDL\_PWN 0 Detrit contrib from unassim lab detrit ingested by prawns 0 - 0.9

FDGDL\_BFS 0.5 Detrit contrib from unassim lab detrit ingested by shallow filt feed 0.4 - 0.9

FDGDL\_BFF 0.5 Detrit contrib from unassim lab detrit ingested by other filt feed 0.4 - 0.9

FDGDL\_BFD 0.5 Detrit contrib from unassim lab detrit ingested by deep filter feed 0.4 - 0.9

FDGDL\_BD 0.5 Detrit contrib from unassim lab detrit ingested by deposit feeder 0.4 - 0.9

FDGDL\_BO 0.4 Detrit contrib from unassim lab detrit ingested by meiobenthos 0.4 - 0.9

FDGDL\_BC 0 Detrit contrib from unassim lab detrit ingested by benthic infauna 0 - 0.9

FDGDL\_BG 0.4 Detrit contrib from unassim lab detrit ingested by benthic grazer 0.4 - 0.9

FDGDL\_BMS 0.8 Detrit contrib from unassim lab det. ingested by shallow macrozooben 0.4 - 0.9

FDGDL\_BML 0.8 Detrit contrib from unassim lab detrit. ingested by megazoobenthos 0 - 0.9

FDGDL\_BMD 0.8 Detrit contrib from unassim lab detrit ingested by deep macrozooben 0.4 - 0.9

FDGDL\_FDS 0.8 Detrit contrib from unassim lab detrit ingested by shallow demersals 0.4 - 0.9

FDGDL\_DF 0

FDGDL\_FPL 0

FDGDL\_FPS 0

FDGDL\_FPO 0

FDGDL\_FVD 0

FDGDL\_FVV 0

FDGDL\_FVS 0

FDGDL\_FVT 0

FDGDL\_FVO 0

FDGDL\_FVB 0

FDGDL\_FMM 0

FDGDL\_FMN 0

FDGDL\_FBP 0

FDGDL\_FDD 0

FDGDL\_FDB 0

FDGDL\_FDC 0

FDGDL\_FDO 0

FDGDL\_FDE 0

FDGDL\_FDF 0

FDGDL\_FDM 0

FDGDL\_FDP 0

FDGDL\_SHD 0

FDGDL\_SHB 0

FDGDL\_SHC 0

FDGDL\_SHR 0

FDGDL\_SHP 0

FDGDL\_SSK 0

FDGDL\_SB 0

FDGDL\_SP 0

FDGDL\_REP 0

FDGDL\_WDG 0

FDGDL\_PIN 0

FDGDL\_WHB 0

FDGDL\_WHS 0

FDGDL\_WHT 0

FDGDL\_FPL 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FPO 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FPS 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FVD 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FVV 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FVS 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FVT 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FVO 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FVB 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FMM 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FMN 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FBP 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FDD 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FDE 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FDP 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FDB 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FDC 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FDO 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FDF 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_FDM 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_SHB 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_SHD 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_SHR 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_SHC 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_SHP 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_SSK 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_SB 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_SP 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_REP 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_PIN 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_WHB 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_WHS 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_WHT 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

FDGDL\_WDG 0.0 Detrit contrib from unassim lab detrit 0.0 - 0.9

# Fraction of non-assimilate from refractory detrital food lost to detritus

FDGDR\_ZS 0.5 Detrit contrib from unassim ref detrit ingested by microzooplankton 0.5 - 0.95

FDGDR\_ZM 0.8 Detrit contrib from unassim ref detrit ingested by meso-zooplankton 0.5 - 0.95

FDGDR\_ZL 0.9 Detrit contrib from unassim ref detrit ingested by large zooplank. 0.5 - 0.95

FDGDR\_ZG 0.9 Detrit contrib from unassim ref detrit ingested by gelatin zooplank. 0.5 - 0.95

FDGDR\_CEP 0 Detrit contrib from unassim ref detrit ingested by cephalopods 0.5 - 0.95

FDGDR\_PWN 0 Detrit contrib from unassim ref detrit ingested by prawns 0.5 - 0.95

FDGDR\_BC 0 Detrit contrib from unassim ref detrit ingested by benthic infauna 0.5 - 0.95

FDGDR\_BD 0.8 Detrit contrib from unassim ref detrit ingested by deposit feeder 0.5 - 0.95

FDGDR\_BO 0.5 Detrit contrib from unassim ref detrit ingested by meiobenthos 0.5 - 0.95

FDGDR\_BFS 0 Detrit contrib from unassim ref detrit ingested by shallow filter f 0.5 - 0.95

FDGDR\_BFD 0 Detrit contrib from unassim ref detrit ingested by deep filter feed 0.5 - 0.95

FDGDR\_BFF 0 Detrit contrib from unassim ref detrit ingested by other filter feed 0.5 - 0.95

FDGDR\_BML 0 Detrit contrib from unassim ref detrit ingested by megazoobenthos 0.5 - 0.95

FDGDR\_BMS 0 Detrit contrib from unassim ref detrit ingested by shallow macrozoo. 0.5 - 0.95

FDGDR\_BMD 0 Detrit contrib from unassim ref detrit ingested by deep macrozooben. 0.5 - 0.95

FDGDR\_BG 0 Detrit contrib from unassim ref detrit ingested by benthic grazers 0.5 - 0.95

FDGDR\_DF 0

FDGDR\_FDS 0.0 Detrit contrib from unassim ref detrit ingested by shallow demersals 0.4 - 0.9

FDGDR\_FPL 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FPO 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FPS 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FVD 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FVV 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FVS 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FVT 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FVO 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FVB 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FMM 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FMN 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FBP 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FDD 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FDE 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FDP 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FDB 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FDC 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FDO 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FDF 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_FDM 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_SHB 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_SHD 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_SHR 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_SHC 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_SHP 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_SSK 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_SB 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_SP 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_REP 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_PIN 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_WHB 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_WHS 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_WHT 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

FDGDR\_WDG 0.0 Detrit contrib from unassim ref detrit 0.0 - 0.9

# Fraction of mortality products lost to detritus

FDM\_ZG 0.3 Detrit contrib from mortality of gelatinous zooplankton 0.3

FDM\_ZL 0.3 Detrit contrib from mortality of large zooplankton 0.3

FDM\_ZM 0.25 Detrit contrib from mortality of meso-zooplankton 0.25

FDM\_ZS 0.25 Detrit contrib from mortality of microzooplankton 0.25

FDM\_BFS 0.25 Detrit contrib from mortality of shallow filter feeders 0.25

FDM\_BFF 0.25 Detrit contrib from mortality of other filter feeders 0.25

FDM\_BFD 0.25 Detrit contrib from mortality of deep filter feeders 0.25

FDM\_BD 0.35 Detrit contrib from mortality of deposit feeder 0.35

FDM\_BC 0.2 Detrit contrib from mortality of infaunal carniv 0.2

FDM\_BG 0.25 Detrit contrib from mortality of benth grazer 0.25

FDM\_BMS 0.35 Detrit contrib from mortality of shallow macrozoobenthos 0.35

FDM\_BML 0.35 Detrit contrib from mortality of megazoobenthos 0.35

FDM\_BMD 0.35 Detrit contrib from mortality of deep macrozoobenthos 0.35

FDM\_BO 0.25 Detrit contrib from mortality of meiobenthos 0.25

FDM\_PB 0.6 Detrit contrib from mortality of pelagic bacteria 0.6

FDM\_BB 0.6 Detrit contrib from mortality of sediment bacteria 0.6

FDM\_CEP 0.3 Detrit contrib from mortality of cephalopods 0.3

FDM\_PWN 0.35 Detrit contrib from mortality of prawns 0.3

FDM\_FPL 0.3 Detrit contrib from mortality of large planktivores 0.3

FDM\_FPS 0.3 Detrit contrib from mortality of small planktivores 0.3

FDM\_FPO 0.35 Detrit contrib from mortality of other planktivores 0.3

FDM\_FVD 0.375 Detrit contrib from mortality of deep piscivores 0.375

FDM\_FVV 0.35 Detrit contrib from mortality of vulnerable piscivores 0.375

FDM\_FVS 0.375 Detrit contrib from mortality of shallow piscivores 0.375

FDM\_FVT 0.375 Detrit contrib from mortality of tropical piscivores 0.375

FDM\_FVO 0.35 Detrit contrib from mortality of other tuna 0.375

FDM\_FVB 0.35 Detrit contrib from mortality of other piscivores 0.3

FDM\_FMM 0.3 Detrit contrib from mortality of migratory mesopelagics 0.3

FDM\_FMN 0.3 Detrit contrib from mortality of non-migratory mesopelagics 0.3

FDM\_FBP 0.35 Detrit contrib from mortality of benthopelagics 0.3

FDM\_FDD 0.35 Detrit contrib from mortality of deep demersals 0.35

FDM\_FDS 0.35 Detrit contrib from mortality of shallow demersals 0.35

FDM\_FDB 0.35 Detrit contrib from mortality of other shallow demersals 0.35

FDM\_FDC 0.35 Detrit contrib from mortality of other deep demersal 0.35

FDM\_FDO 0.35 Detrit contrib from mortality of longlived demersal 0.35

FDM\_FDE 0.35 Detrit contrib from mortality of herbivorous demersals 0.35

FDM\_FDF 0.325 Detrit contrib from mortality of flat deep demersals 0.375

FDM\_FDM 0.35 Detrit contrib from mortality of miscellaneous demersals 0.35

FDM\_FDP 0.35 Detrit contrib from mortality of protected demersals 0.35

FDM\_SHD 0.35 Detrit contrib from mortality of demersal sharks 0.35

FDM\_SHB 0.35 Detrit contrib from mortality of other sharks 0.35

FDM\_SHC 0.35 Detrit contrib from mortality of demersal sharks 0.35

FDM\_SHR 0.35 Detrit contrib from mortality of reef sharks 0.35

FDM\_SHP 0.35 Detrit contrib from mortality of pelagic sharks 0.35

FDM\_SSK 0.35 Detrit contrib from mortality of skates and rays 0.35

FDM\_SB 0.3 Detrit contrib from mortality of seabirds 0.3

FDM\_SP 0.3 Detrit contrib from mortality of penguins 0.3

FDM\_REP 0.35 Detrit contrib from mortality of reptiles 0.35

FDM\_WDG 0.35 Detrit contrib from mortality of dugongs 0.35

FDM\_PIN 0.35 Detrit contrib from mortality of pinnipeds 0.35

FDM\_WHB 0.35 Detrit contrib from mortality of baleen whales 0.35

FDM\_WHS 0.35 Detrit contrib from mortality of small toothed whales 0.35

FDM\_WHT 0.35 Detrit contrib from mortality of toothed whales 0.35

# Split up of losses to detritus between labile and refractory detritus

FDL\_fish 0.1 Split between DL and DR for fish 0 - 1

FDL\_benth 0.1 Split between DL and DR for benthos 0 - 1

FDL\_top 0.1 Split between DL and DR for top predators 0 - 1

FDL\_wc 0.9 Split between DL and DR for pelagic invertebrates 0 - 1

# Fraction of bacterial losses sent to detritus

FPB\_DR 0.2 Detrit contrib from pelagic bacteria 0.2

FBB\_DR 0.2 Detrit contrib from sediment bacteria 0.2

# Fraction of bacterial losses sent to DON

FPB\_DON 0.05 DON contrib from pelagic bacteria 0.05

FBB\_DON 0.05 DON contrib from sediment bacteria 0.05

# Fraction of infaunal NH involved in denitrificatio

Fben\_den 0.95 Fraction of NH release from OB and BD used in nitrif etc calcs 0.5 - 0.7

#from m1

## Vertebrate age structure parameters

FPL\_AgeClassSize 3 Number of years represented in each age class of large planktivore 1

FPS\_AgeClassSize 1 Number of years represented in each age class of small planktivore 1

FPO\_AgeClassSize 1 Number of years represented in each age class of other planktivore 1

FVD\_AgeClassSize 1 Number of years represented in each age class of deep piscivore 2

FVV\_AgeClassSize 3 Number of years represented in each age class of vulnerable pisciv. 2

FVS\_AgeClassSize 1 Number of years represented in each age class of shallow piscivore 2

FVT\_AgeClassSize 1 Number of years represented in each age class of tropical piscivore 2

FVO\_AgeClassSize 1 Number of years represented in each age class of other tuna 2

FVB\_AgeClassSize 1 Number of years represented in each age class of other piscivore 1

FMM\_AgeClassSize 1 Number of years represented in each age class of migratory mesopel 1

FMN\_AgeClassSize 1 Number of years represented in each age class of non-mig. mesopelag 1

FBP\_AgeClassSize 1 Number of years represented in each age class of benthopelagics 1

FDD\_AgeClassSize 4 Number of years represented in each age class of deep demersals 2

FDS\_AgeClassSize 3 Number of years represented in each age class of shallow demersals 2

FDB\_AgeClassSize 1 Number of years represented in each age class of other shallow dem. 2

FDC\_AgeClassSize 1 Number of years represented in each age class of other deep dem. 2

FDO\_AgeClassSize 2 Number of years represented in each age class of longlived demersal 10

FDE\_AgeClassSize 1 Number of years represented in each age class of herbiv demersals 2

FDF\_AgeClassSize 2 Number of years represented in each age class of flat deep demersal 2

FDM\_AgeClassSize 1 Number of years represented in each age class of misc demersals 2

FDP\_AgeClassSize 1 Number of years represented in each age class of protected demersal 2

SHD\_AgeClassSize 3 Number of years represented in each age class of demersal sharks 9

SHB\_AgeClassSize 6 Number of years represented in each age class of other sharks 3

SHC\_AgeClassSize 6 Number of years represented in each age class of dogfish 10

SHR\_AgeClassSize 6 Number of years represented in each age class of reef sharks 2

SHP\_AgeClassSize 4 Number of years represented in each age class of pelagic sharks 10

SSK\_AgeClassSize 3 Number of years represented in each age class of skates and rays 10

SB\_AgeClassSize 4 Number of years represented in each age class of seabirds 2

SP\_AgeClassSize 2 Number of years represented in each age class of penguins 1

REP\_AgeClassSize 2 Number of years represented in each age class of reptiles 2

WDG\_AgeClassSize 2 Number of years represented in each age class of dugongs 5

PIN\_AgeClassSize 2 Number of years represented in each age class of pinnipeds 5

WHB\_AgeClassSize 6 Number of years represented in each age class of baleen whales 10

WHS\_AgeClassSize 5 Number of years represented in each age class of sm toothed whales 10

WHT\_AgeClassSize 8 Number of years represented in each age class of toothed whales 10

CEP\_AgeClassSize 1 Number of years represented in each age class of cephalopods 1

# Age class of maturity

FPL\_age\_mat 2 First mature age class of large planktivores 1

FPS\_age\_mat 3 First mature age class of small planktivores 1

FPO\_age\_mat 2 First mature age class of other planktivores 1

FVD\_age\_mat 2 First mature age class of deep piscivores 2

FVV\_age\_mat 2 First mature age class of vulnerable piscivores 2

FVS\_age\_mat 2 First mature age class of shallow piscivores 2

FVT\_age\_mat 4 First mature age class of tropical piscivores 2

FVO\_age\_mat 2 First mature age class of other tuna 4

FVB\_age\_mat 2 First mature age class of other piscivores 1

FMM\_age\_mat 2 First mature age class of migratory mesopelagics 1

FMN\_age\_mat 2 First mature age class of non-migratory mesopelagics 2

FBP\_age\_mat 2 First mature age class of benthopelagics 1

FDD\_age\_mat 2 First mature age class of deep demersals 2

FDS\_age\_mat 3 First mature age class of shallow demersals 2

FDB\_age\_mat 2 First mature age class of other shallow demersal 2

FDC\_age\_mat 2 First mature age class of other deep demersal 3

FDO\_age\_mat 2 First mature age class of longlived demersal 4

FDE\_age\_mat 2 First mature age class of herbivorous demersals 2

FDF\_age\_mat 3 First mature age class of flat deep demersals 2

FDM\_age\_mat 2 First mature age class of miscellaneous demersals 2

FDP\_age\_mat 2 First mature age class of protected demersals 2

SHD\_age\_mat 3 First mature age class of demersal sharks 2

SHB\_age\_mat 4 First mature age class of other sharks 2

SHC\_age\_mat 4 First mature age class of dogfish 2

SHR\_age\_mat 4 First mature age class of reef sharks 2

SHP\_age\_mat 5 First mature age class of pelagic sharks 2

SSK\_age\_mat 2 First mature age class of skates and rays 2

SB\_age\_mat 2 First mature age class of seabirds 2

SP\_age\_mat 3 First mature age class of penguins 1

REP\_age\_mat 2 First mature age class of reptiles 2

WDG\_age\_mat 3 First mature age class of dugongs 3

PIN\_age\_mat 3 First mature age class of pinnipeds 3

WHB\_age\_mat 2 First mature age class of baleen whales 3

WHS\_age\_mat 2 First mature age class of small toothed whales 2

WHT\_age\_mat 2 First mature age class of toothed whales 2

#interpreted as the time of year that each cohort becomes mature (this is 226 + 'Time\_Spawn')

#Time\_Age\_CEP 2

#90 231

Time\_Age\_CEP 2

90 366

# Spawning season

FPL\_Time\_Spawn 210 Time of year large planktivores spawn d 210 - 330

FPS\_Time\_Spawn 150 Time of year small planktivores spawn d 240 - 150

FPO\_Time\_Spawn 240 Time of year other planktivores spawn d 240 - 120

FVD\_Time\_Spawn 10 Time of year deep piscivores spawn d 40 - 270

FVV\_Time\_Spawn 58 Time of year vulnerable piscivores spawn d 40 - 270

FVS\_Time\_Spawn 10 Time of year shallow piscivores spawn d 180 - 60

FVT\_Time\_Spawn 10 Time of year tropical piscivores spawn d 270 - 90

FVB\_Time\_Spawn 243 Time of year other piscivores spawn d 210 - 330

FVO\_Time\_Spawn 180 Time of year other tuna spawn d 240 - 60

FMM\_Time\_Spawn 180 Time of year migratory mesopelagics spawn d 0 - 360

FMN\_Time\_Spawn 180 Time of year non-migratory mesopelagics spawn d 90 - 330

FBP\_Time\_Spawn 212 Time of year benthopelagics spawn d 210 - 330

FDD\_Time\_Spawn 212 Time of year deep demersals spawn d 180 - 360

FDS\_Time\_Spawn 95 Time of year shallow demersals spawn d 240 - 120

FDB\_Time\_Spawn 212 Time of year other shallow demersal spawn d 240 - 120

FDC\_Time\_Spawn 212 Time of year other deep demersal spawn d 120 - 270

FDO\_Time\_Spawn 300 Time of year longlived demersal spawn d 120 - 240

FDE\_Time\_Spawn 133 Time of year herbivorous demersals spawn d 180 - 360

FDF\_Time\_Spawn 250 Time of year flat deep demersals spawn d 40 - 270

FDM\_Time\_Spawn 58 Time of year miscellaneous demersals spawn d 180 - 360

FDP\_Time\_Spawn 363 Time of year protected demersals spawn d 180 - 360

SHD\_Time\_Spawn 227 Time of year demersal sharks spawn d 180 - 240

SHC\_Time\_Spawn 182 Time of year dogfish spawn d 180 - 240

SHB\_Time\_Spawn 182 Time of year other sharks spawn d 300 - 60

SHP\_Time\_Spawn 45 Time of year pelagic sharks spawn d 240 - 360

SHR\_Time\_Spawn 182 Time of year reef sharks spawn d 300 - 60

SSK\_Time\_Spawn 210 Time of year skates and rays spawn d 180 - 240

SB\_Time\_Spawn 290 Time of year seabirds nest d 280 - 300

SP\_Time\_Spawn 250 Time of year penguins nest d 210 - 330

REP\_Time\_Spawn 210 Time of year reptiles spawn d 180 - 240

WDG\_Time\_Spawn 300 Time of year dugongs mate d 290 - 350

PIN\_Time\_Spawn 300 Time of year pinnipeds mate d 290 - 350

WHB\_Time\_Spawn 220 Time of year baleen whales mate d 180 - 270

WHS\_Time\_Spawn 280 Time of year small toothed whales mate d 0 - 360

WHT\_Time\_Spawn 280 Time of year toothed whales mate d 0 - 360

#date of spawning, first entry is the autumn cohort, second is the spring

CEP\_Time\_Spawn 90

#CEP\_Time\_Spawn 2

#90 231

FPL\_spawn\_period 14 Period of spawning for large planktivores d 1 - 365

FPS\_spawn\_period 14 Period of spawning for small planktivores d 1 - 365

FPO\_spawn\_period 180 Period of spawning for other planktivores d 1 - 365

FVD\_spawn\_period 30 Period of spawning for deep piscivores d 1 - 365

FVV\_spawn\_period 90 Period of spawning for vulnerable piscivores d 1 - 365

FVS\_spawn\_period 30 Period of spawning for shallow piscivores d 1 - 365

FVT\_spawn\_period 14 Period of spawning for tropical piscivores d 1 - 365

FVB\_spawn\_period 120 Period of spawning for other piscivores d 1 - 365

FVO\_spawn\_period 120 Period of spawning for other tuna d 1 - 365

FMM\_spawn\_period 30 Period of spawning for migratory mesopelagics d 1 - 365

FMN\_spawn\_period 30 Period of spawning for non-migratory mesopelagics d 1 - 365

FBP\_spawn\_period 120 Period of spawning for benthopelagics d 1 - 365

FDD\_spawn\_period 30 Period of spawning for deep demersals d 1 - 365

FDS\_spawn\_period 20 Period of spawning for shallow demersals d 1 - 365

FDB\_spawn\_period 120 Period of spawning for other shallow demersal d 1 - 365

FDC\_spawn\_period 120 Period of spawning for other deep demersal d 1 - 365

FDO\_spawn\_period 150 Period of spawning for longlived demersal d 1 - 365

FDE\_spawn\_period 120 Period of spawning for herbivorous demersals d 1 - 365

FDF\_spawn\_period 25 Period of spawning for flat deep demersals d 1 - 365

FDM\_spawn\_period 90 Period of spawning for miscellaneous demersals d 1 - 365

FDP\_spawn\_period 27 Period of spawning for protected demersals d 1 - 365

SHD\_spawn\_period 18 Period of spawning for demersal sharks d 1 - 365

SHC\_spawn\_period 31 Period of spawning for piked dogfish d 1 - 365

SHB\_spawn\_period 365 Period of spawning for other sharks d 1 - 365

SHP\_spawn\_period 14 Period of spawning for pelagic sharks d 1 - 365

SHR\_spawn\_period 365 Period of spawning for reef sharks d 1 - 365

SSK\_spawn\_period 21 Period of spawning for skates and rays d 1 - 365

SB\_spawn\_period 29 Period of nesting for seabirds d 1 - 365

SP\_spawn\_period 25 Period of nesting for penguins d 1 - 365

REP\_spawn\_period 21 Period of nesting for reptiles d 1 - 365

WDG\_spawn\_period 33 Period of mating for dugongs d 1 - 365

PIN\_spawn\_period 33 Period of mating for pinnipeds d 1 - 365

WHB\_spawn\_period 22 Period of mating for baleen whales d 1 - 365

WHS\_spawn\_period 28 Period of mating for small toothed whales d 1 - 365

WHT\_spawn\_period 28 Period of mating for toothed whales d 1 - 365

CEP\_spawn\_period 70 Period of mating for cephalopods d 1 - 365

PWN\_spawn\_period 7 Period of mating for prawns d 1 - 365

# Age of recruitment recalculated as a weighted average as usual

FPL\_Recruit\_Time 35 Length of larval period for large planktivores d 20 - 70

FPS\_Recruit\_Time 35 Length of larval period for small planktivores d 20 - 70

FPO\_Recruit\_Time 30 Length of larval period for other planktivores d 70 - 720

FVD\_Recruit\_Time 30 Length of larval period for deep piscivores d 20 - 70

FVV\_Recruit\_Time 30 Length of larval period for vulnerable piscivores d 20 - 70

FVS\_Recruit\_Time 30 Length of larval period for shallow piscivores d 60 - 720

FVT\_Recruit\_Time 30 Length of larval period for tropical piscivores d 120 - 360

FVB\_Recruit\_Time 40 Length of larval period for other piscivores d 20 - 70

FVO\_Recruit\_Time 30 Length of larval period for other tuna d 300 - 400

FMM\_Recruit\_Time 35 Length of larval period for migratory mesopelagic d 20 - 70

FMN\_Recruit\_Time 35 Length of larval period for non-mig. mesopelagics d 20 - 70

FBP\_Recruit\_Time 45 Length of larval period for benthopelagics d 20 - 70

FDD\_Recruit\_Time 37 Length of larval period for deep demersals d 20 - 70

FDS\_Recruit\_Time 30 Length of larval period for shallow demersals d 70 - 720

FDB\_Recruit\_Time 60 Length of larval period for other shallow dem. d 20 - 70

FDC\_Recruit\_Time 45 Length of larval period for other deep demersal d 20 - 70

FDO\_Recruit\_Time 30 Length of larval period for longlived demersal d 210 - 300

FDE\_Recruit\_Time 40 Length of larval period for herbivorous demersals d 20 - 70

FDF\_Recruit\_Time 35 Length of larval period for flat deep demersals d 20 - 70

FDM\_Recruit\_Time 30 Length of larval period for miscellaneous dem. d 20 - 70

FDP\_Recruit\_Time 25 Length of larval period for protected dem. d 20 - 70

SHD\_Recruit\_Time 350 Length of period until hatching for dem. sharks d 360 - 720

SHC\_Recruit\_Time 350 Length of period until hatching for piked dogfish d 360 - 720

SHP\_Recruit\_Time 318 Length of period until birth for pelagic sharks d 360 - 720

SHB\_Recruit\_Time 350 Length of period until birth for other sharks d 340 - 380

SHR\_Recruit\_Time 350 Length of period until birth for reef sharks d 340 - 380

SSK\_Recruit\_Time 180 Length of period until hatching for skates & rays d 360 - 720

SB\_Recruit\_Time 200 Length of nestling period for seabirds d 180 - 230

SP\_Recruit\_Time 35 Length of larval period for penguins d 20 - 70

REP\_Recruit\_Time 350 Length of period until hatching for reptiles d 360 - 720

WDG\_Recruit\_Time 330 Length of gestation period for dugongs d 300 - 360

PIN\_Recruit\_Time 330 Length of gestation period for pinnipeds d 300 - 360

WHB\_Recruit\_Time 300 Length of gestation period for baleen whales d 290 - 330

WHS\_Recruit\_Time 350 Length of gestation period for sm toothed whales d 360 - 390

WHT\_Recruit\_Time 350 Length of gestation period for toothed whales d 360 - 390

CEP\_Recruit\_Time 0 Length of gestation period for cephalopods d 0 - 30 (At present use 30 so instantaneous like in old code)

# Recruitment window

Recruit\_Period\_FPL 30 Length of time recruits arrive over for large planktiv d 15 - 90

Recruit\_Period\_FPS 30 Length of time recruits arrive over for small planktiv d 15 - 90

Recruit\_Period\_FPO 30 Length of time recruits arrive over for other planktiv d 15 - 90

Recruit\_Period\_FVD 60 Length of time recruits arrive over for deep piscivore d 15 - 90

Recruit\_Period\_FVV 30 Length of time recruits arrive over for vul. piscivore d 15 - 90

Recruit\_Period\_FVS 30 Length of time recruits arrive over for shallow pisciv d 15 - 90

Recruit\_Period\_FVT 30 Length of time recruits arrive over for tropical pisciv d 15 - 90

Recruit\_Period\_FVB 30 Length of time recruits arrive over for other piscivore d 15 - 90

Recruit\_Period\_FVO 30 Length of time recruits arrive over for other tuna d 15 - 90

Recruit\_Period\_FMM 30 Length of time recruits arrive over for mig mesopelagic d 15 - 90

Recruit\_Period\_FMN 30 Length of time recruits arrive over for nonmig mesopel d 15 - 90

Recruit\_Period\_FBP 30 Length of time recruits arrive over for benthopelagics d 15 - 90

Recruit\_Period\_FDD 30 Length of time recruits arrive over for deep demersals d 15 - 90

Recruit\_Period\_FDS 40 Length of time recruits arrive over for shallow dem. d 15 - 90

Recruit\_Period\_FDB 30 Length of time recruits arrive over for other shall dem d 15 - 90

Recruit\_Period\_FDC 30 Length of time recruits arrive over for other deep dem d 15 - 90

Recruit\_Period\_FDO 30 Length of time recruits arrive over for longlived dem d 15 - 90

Recruit\_Period\_FDE 30 Length of time recruits arrive over for herbiv demersal d 15 - 90

Recruit\_Period\_FDF 30 Length of time recruits arrive over for flat deep dem. d 15 - 90

Recruit\_Period\_FDM 90 Length of time recruits arrive over for misc demersals d 15 - 90

Recruit\_Period\_FDP 60 Length of time recruits arrive over for protected dem. d 15 - 90

Recruit\_Period\_SHD 105 Length of time recruits arrive over for demersal sharks d 15 - 90

Recruit\_Period\_SHP 90 Length of time recruits arrive over for pelagic sharks d 15 - 90

Recruit\_Period\_SHB 5 Length of time recruits arrive over for other sharks d 15 - 90

Recruit\_Period\_SHC 2 Length of time recruits arrive over for dogfish d 15 - 90

Recruit\_Period\_SHR 100 Length of time recruits arrive over for reef sharks d 15 - 90

Recruit\_Period\_SSK 90 Length of time recruits arrive over for skates and rays d 15 - 90

Recruit\_Period\_SB 30 Length of time recruits arrive over for seabirds d 15 - 90

Recruit\_Period\_SP 30 Length of time recruits arrive over for penguins d 15 - 90

Recruit\_Period\_REP 40 Length of time recruits arrive over for reptiles d 15 - 90

Recruit\_Period\_WDG 10 Length of time recruits arrive over for dugongs d 15 - 90

Recruit\_Period\_PIN 10 Length of time recruits arrive over for pinnipeds d 15 - 90

Recruit\_Period\_WHB 30 Length of time recruits arrive over for baleen whales d 15 - 90

Recruit\_Period\_WHS 10 Length of time recruits arrive over for sm tooth whales d 15 - 90

Recruit\_Period\_WHT 10 Length of time recruits arrive over for toothed whales d 15 - 90

Recruit\_Period\_CEP 0 Length of time recruits arrive over for cephalopods d 0 - 1 (At present use 30 so instantaneous like in old code)

KSPA\_FPL 31.93 Constant in spawning formulation for large planktivores 31.93

KSPA\_FPS 5.3 Constant in spawning formulation for small planktivores 5.3

KSPA\_FPO 31.93 Constant in spawning formulation for other planktivores 438.60

KSPA\_FVD 50.93 Constant in spawning formulation for deep piscivores 5.3

KSPA\_FVV 158.25 Constant in spawning formulation for vulnerable piscivores 158.25

KSPA\_FVS 569.65 Constant in spawning formulation for shallow piscivores 569.65

KSPA\_FVT 569.65 Constant in spawning formulation for tropical piscivores 569.65

KSPA\_FVB 31.93 Constant in spawning formulation for other piscivores 438.60

KSPA\_FVO 158.25 Constant in spawning formulation for other tuna 158.25

KSPA\_FMM 31.93 Constant in spawning formulation for migratoey mesopelagics 31.93

KSPA\_FMN 31.93 Constant in spawning formulation for non-migratory mesopelagics 31.93

KSPA\_FBP 31.93 Constant in spawning formulation for benthopelagics 158.25

KSPA\_FDD 438.6 Constant in spawning formulation for deep demersals 438.6

KSPA\_FDS 158.25 Constant in spawning formulation for shallow demersals 158.25

KSPA\_FDB 158.25 Constant in spawning formulation for other shallow demersal 158.25

KSPA\_FDC 31.93 Constant in spawning formulation for other deep demersal 158.25

KSPA\_FDO 31.93 Constant in spawning formulation for longlived demersal 158.25

KSPA\_FDE 50 Constant in spawning formulation for herbivorous demersals 438.6

KSPA\_FDF 25.93 Constant in spawning formulation for flat deep demersals 31.93

KSPA\_FDM 31.93 Constant in spawning formulation for miscellaneous deep demersals 158.25

KSPA\_FDP 30.0 Constant in spawning formulation for protected deep demersals 30.0

KSPA\_SHD 2763.3 Constant in spawning formulation for demersal sharks 2763.3

KSPA\_SHB 2763.3 Constant in spawning formulation for other sharks 2763.3

KSPA\_SHC 2763.3 Constant in spawning formulation for dogfish 2763.3

KSPA\_SHP 2763.3 Constant in spawning formulation for pelagic sharks 2763.3

KSPA\_SHR 2763.3 Constant in spawning formulation for reef sharks 2763.3

KSPA\_SSK 2763.3 Constant in spawning formulation for skates and rays 2763.3

KSPA\_SB 193.9 Constant in spawning formulation for seabirds 193.9

KSPA\_SP 31.93 Constant in spawning formulation for penguins 31.93

KSPA\_REP 2763.3 Constant in spawning formulation for reptiles 2763.3

KSPA\_WDG 38376.9 Constant in spawning formulation for dugongs 38376.9

KSPA\_PIN 38376.9 Constant in spawning formulation for pinnipeds 38376.9

KSPA\_WHB 38376.9 Constant in spawning formulation for baleen whales 38376.9

KSPA\_WHS 38376.9 Constant in spawning formulation for small toothed whales 38376.9

KSPA\_WHT 38376.9 Constant in spawning formulation for toothed whales 38376.9

FSP\_FPL 0.296 Fraction used in spawning formulation for large planktivores 0.246

FSP\_FPS 0.246 Fraction used in spawning formulation for small planktivores 0.246

FSP\_FPO 0.276 Fraction used in spawning formulation for other planktivores 0.276

FSP\_FVD 0.246 Fraction used in spawning formulation for deep piscivores 0.246

FSP\_FVV 0.276 Fraction used in spawning formulation for vulnerable piscivores 0.276

FSP\_FVS 0.425 Fraction used in spawning formulation for shallow piscivores 0.425

FSP\_FVT 0.425 Fraction used in spawning formulation for tropical piscivores 0.425

FSP\_FVB 0.276 Fraction used in spawning formulation for other planktivores 0.246

FSP\_FVO 0.276 Fraction used in spawning formulation for other tuna 0.276

FSP\_FMM 0.246 Fraction used in spawning formulation for migratory mesopelagics 0.246

FSP\_FMN 0.246 Fraction used in spawning formulation for non-migratory mesopelag 0.246

FSP\_FBP 0.276 Fraction used in spawning formulation for benthopelagics 0.246

FSP\_FDD 0.276 Fraction used in spawning formulation for deep demersals 0.276

FSP\_FDS 0.276 Fraction used in spawning formulation for shallow demersals 0.276

FSP\_FDB 0.276 Fraction used in spawning formulation for other shallow demersal 0.276

FSP\_FDC 0.276 Fraction used in spawning formulation for other deep demersal 0.276

FSP\_FDO 0.276 Fraction used in spawning formulation for longlived demersal 0.276

FSP\_FDE 0.276 Fraction used in spawning formulation for herbivorous demersals 0.276

FSP\_FDF 0.246 Fraction used in spawning formulation for flat deep demersals 0.425

FSP\_FDM 0.276 Fraction used in spawning formulation for miscellaneous demersals 0.276

FSP\_FDP 0.276 Fraction used in spawning formulation for protected demersals 0.276

FSP\_SHB 0.27 Fraction used in spawning formulation for other sharks 0.27

FSP\_SHD 0.27 Fraction used in spawning formulation for demersal sharks 0.27

FSP\_SHR 0.27 Fraction used in spawning formulation for reef sharks 0.27

FSP\_SHC 0.27 Fraction used in spawning formulation for dogfish 0.27

FSP\_SHP 0.27 Fraction used in spawning formulation for pelagic sharks 0.27

FSP\_SSK 0.27 Fraction used in spawning formulation for skates and rays 0.27

FSP\_SB 0.2 Fraction used in spawning formulation for seabirds 0.2

FSP\_SP 0.246 Fraction used in spawning formulation for penguins 0.246

FSP\_REP 0.27 Fraction used in spawning formulation for reptiles 0.27

FSP\_WDG 0.16 Fraction used in spawning formulation for dugongs 0.16

FSP\_PIN 0.16 Fraction used in spawning formulation for pinnipeds 0.16

FSP\_WHB 0.16 Fraction used in spawning formulation for baleen whales 0.16

FSP\_WHS 0.16 Fraction used in spawning formulation for small toothed whales 0.16

FSP\_WHT 0.16 Fraction used in spawning formulation for toothed whales 0.16

FSP\_CEP 1.0 Fraction of biomass contributing to spawn for cephalopods 1.0

## Proportion of the biomass of age structured biomass pool lost to spawning (i.e. what proportion of the spawning adult biomass is lost via gamete release)

## Simplest case is to set to 0.0, this is effectively what it was in the original Atlantis code

prop\_spawn\_lost\_CEP 0.0

## Proportion of the population (per age) spawning. One value per cohort, number of cohorts defined in your functional group definition file.

FSPB\_FPL 10

0 0.2 0.8 1 1 1 1 1 1 1

FSPB\_FPS 10

0 0.6 1 1 1 1 1 1 1 1

FSPB\_FPO 10

0 0 0.5 1 1 1 1 1 1 1

FSPB\_FVD 10

0 0.3 0.6 1 1 1 1 1 1 1

FSPB\_FVV 10

0.2 0.9 1 1 1 1 1 1 1 1

FSPB\_FVS 10

0.0 0.0 0.0 0.5 1.0 1.0 1.0 1.0 1.0 1.0

FSPB\_FVT 10

0 0.8 1 1 1 1 1 1 1 1

FSPB\_FVB 10

0 0 0.2 0.9 1 1 1 1 1 1

FSPB\_FVO 10

0 0 0.2 0.5 0.8 1 1 1 1 1

FSPB\_FMM 10

0 0.9 1 1 1 1 1 1 1 1

FSPB\_FMN 10

0 0.9 1 1 1 1 1 1 1 1

FSPB\_FBP 10

0.2 0.5 0.8 1 1 1 1 1 1 1

FSPB\_FDD 10

0 0.45 0.725 0.975 1 1 1 1 1 1

FSPB\_FDS 10

0.0 0.1 0.8 1.0 1.0 1.0 1.0 1.0 1.0 1.0

FSPB\_FDB 10

0 0 0.2 0.9 1 1 1 1 1 1

FSPB\_FDC 10

0.2 0.5 0.8 1 1 1 1 1 1 1

FSPB\_FDO 10

0.2 0.9 1 1 1 1 1 1 1 1

FSPB\_FDE 10

0 0 0.8 1 1 1 1 1 1 1

FSPB\_FDF 10

0 0 0.8 0.9 1 1 1 1 1 1

FSPB\_FDM 10

0.2 0.9 1 1 1 1 1 1 1 1

FSPB\_FDP 10

0 0.8 1 1 1 1 1 1 1 1

FSPB\_SHD 10

0 0.1 0.25 0.666666667 1 1 1 1 1 1

FSPB\_SHC 10

0 0 0 0.5 1 1 1 1 1 1

FSPB\_SHP 10

0 0 0 0 0.5 1 1 1 1 1

FSPB\_SHB 10

0 0 0 0.5 1 1 1 1 1 1

FSPB\_SHR 10

0 0 0 0.5 1 1 1 1 1 1

FSPB\_SSK 10

0 0.1 0.9 1 1 1 1 1 1 1

FSPB\_SB 10

0 0.5 1 1 1 1 1 1 1 1

FSPB\_SP 10

0 0.2 0.8 1 1 1 1 1 1 1

FSPB\_REP 10

0.1 0.9 1 1 1 1 1 1 1 1

FSPB\_WDG 10

0 0.1 0.3 0.5 0.5 0.5 0.5 0.5 0.5 0.5

FSPB\_PIN 10

0 0.1 0.3 0.5 0.5 0.5 0.5 0.5 0.5 0.5

FSPB\_WHB 10

0 0.3 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5

FSPB\_WHS 10

0 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

FSPB\_WHT 10

0 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

FSPB\_PWN 2

1.0 1.0

FSPB\_CEP 2

1.0 1.0

# Recruit location spatial distibutions.

FPL\_recruit\_hdistrib 11

0 0.303466913 0.183153627 0.261906146 0.135934791 0.115538523 0 0 0 0 0

FPS\_recruit\_hdistrib 11

0 0.203422447 0.168969666 0.234863274 0.050218888 0.342525726 0 0 0 0 0

FPO\_recruit\_hdistrib 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FVD\_recruit\_hdistrib 11

0 0.028208604 0.032057644 0.037068169 0.42520304 0.477462543 0 0 0 0 0

FVV\_recruit\_hdistrib 11

0 0.302862515 0.40283912 0.294298365 0 0 0 0 0 0 0

FVS\_recruit\_hdistrib 11

0 0.505093536 0.199699394 0.29520707 0 0 0 0 0 0 0

FVT\_recruit\_hdistrib 11

0 0.322859708 0.163982866 0.236402912 0.144609159 0.132145355 0 0 0 0 0

FVB\_recruit\_hdistrib 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FVO\_recruit\_hdistrib 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FMM\_recruit\_hdistrib 11

0 0.195740422 0.169552421 0.239796625 0.209852515 0.185058017 0 0 0 0 0

FMN\_recruit\_hdistrib 11

0 0.35460755 0.103411334 0.142564179 0.380852566 0.018564372 0 0 0 0 0

FBP\_recruit\_hdistrib 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FDD\_recruit\_hdistrib 11

0 0.35850819 0.174362137 0.249628868 0.190497777 0.027003029 0 0 0 0 0

FDS\_recruit\_hdistrib 11

0 0.348388584 0.185107237 0.268761383 0.119082841 0.078659954 0 0 0 0 0

FDB\_recruit\_hdistrib 11

0 0.302862517 0.402839115 0.294298369 0 0 0 0 0 0 0

FDC\_recruit\_hdistrib 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FDO\_recruit\_hdistrib 11

0 1 0 0 0 0 0 0 0 0 0

FDE\_recruit\_hdistrib 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

FDF\_recruit\_hdistrib 11

0 0.36217994 0.195040863 0.281352198 0.088958503 0.072468496 0 0 0 0 0

FDM\_recruit\_hdistrib 11

0 0.302862519 0.40283911 0.294298371 0 0 0 0 0 0 0

FDP\_recruit\_hdistrib 11

0 0.339684321 0.343556396 0.316759283 0 0 0 0 0 0 0

SHD\_recruit\_hdistrib 11

0 0.322228866 0.179138732 0.258655498 0.225789667 0.014187237 0 0 0 0 0

SHP\_recruit\_hdistrib 11

0 0.443542294 0.204799511 0.299051675 0.030876154 0.021730365 0 0 0 0 0

SHB\_recruit\_hdistrib 11

0 0.306762133 0.317606888 0.375630979 0 0 0 0 0 0 0

SHC\_recruit\_hdistrib 11

0 0.038297495 0.153395954 0.203583433 0.078444099 0.526279019 0 0 0 0 0

SHR\_recruit\_hdistrib 11

0 0.038433666 0.15390601 0.204307307 0.078714757 0.52463826 0 0 0 0 0

SSK\_recruit\_hdistrib 11

0 0.505093541 0.199699399 0.29520706 0 0 0 0 0 0 0

SB\_recruit\_hdistrib 11

0 0.505093539 0.199699398 0.295207063 0 0 0 0 0 0 0

SP\_recruit\_hdistrib 11

0 1 0 0 0 0 0 0 0 0 0

REP\_recruit\_hdistrib 11

0 1 0 0 0 0 0 0 0 0 0

WDG\_recruit\_hdistrib 11

0 0.5 0.5 0 0 0 0 0 0 0 0

#

PIN\_recruit\_hdistrib 11

0 0.398316791 0.223277008 0.32222161 0.038143258 0.018041333 0 0 0 0 0

WHB\_recruit\_hdistrib 11

0 0.469883045 0.191304342 0.280788325 0.031097302 0.026926986 0 0 0 0 0

WHS\_recruit\_hdistrib 11

0 0.322013468 0.2263127 0.322556083 0.087238726 0.041879023 0 0 0 0 0

WHT\_recruit\_hdistrib 11

0 0.229334806 0.162132273 0.229721258 0.254190521 0.124621143 0 0 0 0 0

CEP\_recruit\_hdistrib 11

0 0.303466913 0.183153627 0.261906146 0.135934791 0.115538523 0 0 0 0 0

PWN\_recruit\_hdistrib 11

0 0.303466913 0.183153627 0.261906146 0.135934791 0.115538523 0 0 0 0 0

# Recruit location vertical distibutions. First entry for each vector refers to water

# column layer closest to the sediment and then up through the watercolumn to

# surface most layer on the extreme right (regardless of how many water layers are present)

FPL\_recruit\_vdistrib 6

0 0 0 0 0 1

FPS\_recruit\_vdistrib 6

0 0 0 0 0 1

FPO\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

FVD\_recruit\_vdistrib 6

0 0 0 0 0 1

FVV\_recruit\_vdistrib 6

0 0 0 0 0.2 0.8

FVS\_recruit\_vdistrib 6

0 0 0 0 0 1

FVT\_recruit\_vdistrib 6

0 0 0 0 0 1

FVB\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

FVO\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

FMM\_recruit\_vdistrib 6

0 0 0 0.5 0.3 0.2

FMN\_recruit\_vdistrib 6

0 0 0.4 0.3 0.2 0.1

FBP\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

FDD\_recruit\_vdistrib 6

0.7 0.3 0 0 0 0

FDS\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

FDB\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

FDC\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

FDO\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

FDE\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

FDF\_recruit\_vdistrib 6

0 0 0 0 0 1

FDM\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

FDP\_recruit\_vdistrib 6

0 0 0 0 0 1

SHD\_recruit\_vdistrib 6

0 0 0.2 0.2 0.3 0.3

SHP\_recruit\_vdistrib 6

0 0 0.1 0.1 0.4 0.4

SHB\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

SHC\_recruit\_vdistrib 6

0.5 0.5 0 0 0 0

SHR\_recruit\_vdistrib 6

0 0.5 0.5 0 0 0

SSK\_recruit\_vdistrib 6

1 0 0 0 0 0

SB\_recruit\_vdistrib 6

0 0 0 0 0 1

SP\_recruit\_vdistrib 6

0 0 0 0 0 1

REP\_recruit\_vdistrib 6

0 0.5 0.5 0 0 0

WDG\_recruit\_vdistrib 6

0 0 0 0 0 1

PIN\_recruit\_vdistrib 6

0 0 0 0 0 1

WHB\_recruit\_vdistrib 6

0 0 0 0 0 1

WHS\_recruit\_vdistrib 6

0 0 0 0 0 1

WHT\_recruit\_vdistrib 6

0 0 0 0 0 1

# Stock specific recruitment scalars - to represent differential recruitment effectiveness

# for different stocks. Maybe contributing factor for regional differences in stock size,

# but required in calibration occassionally. If don't believe there is stock

# specific differences set array cell contents to 1

recSTOCK\_FPL 1

1

recSTOCK\_FPS 1

1

recSTOCK\_FPO 1

1

recSTOCK\_FVD 1

1

recSTOCK\_FVV 1

1

recSTOCK\_FVS 1

1

recSTOCK\_FVT 1

1

recSTOCK\_FVB 1

1

recSTOCK\_FVO 1

1

recSTOCK\_FMM 1

1

recSTOCK\_FMN 1

1

recSTOCK\_FBP 1

1

recSTOCK\_FDD 1

1

recSTOCK\_FDS 1

1

recSTOCK\_FDB 1

1

recSTOCK\_FDC 1

1

recSTOCK\_FDO 1

1

recSTOCK\_FDE 1

1

recSTOCK\_FDF 1

1

recSTOCK\_FDM 1

1

recSTOCK\_FDP 1

1

recSTOCK\_SHD 1

1

recSTOCK\_SHB 1

1

recSTOCK\_SHC 1

1

recSTOCK\_SHP 1

1

recSTOCK\_SHR 1

1

recSTOCK\_SSK 1

1

recSTOCK\_SB 1

1

recSTOCK\_SP 1

1

recSTOCK\_REP 1

1

recSTOCK\_WDG 1

1

recSTOCK\_PIN 1

1

recSTOCK\_WHB 1

1

recSTOCK\_WHS 1

1

recSTOCK\_WHT 1

1

# Distribution of recruits within recruitment period

rec\_m 1

rec\_sigma 1

recruitRange 4.5 max relative cohort strength (multiplicative) for groups with strong year classes

recruitRangeFlat 1.5 max relative cohort strength (multiplicative) for groups without strong year classes

## Stock-Recruit options

# Total number of new recruits for the year (used if recruit flag is set to 1 or 12) - number per individual (not per female)

# One value per stock.

KDENR\_FPL 1

2.41E+06

KDENR\_FPS 1

2.83E+07

KDENR\_FPO 1

1.39E+05

KDENR\_FVD 1

8.0E+10

KDENR\_FVV 1

1.676E+07

KDENR\_FVS 1

2.00E+07

KDENR\_FVT 1

80000

KDENR\_FVB 1

1.0E+06

KDENR\_FVO 1

2.0E+7

KDENR\_FMM 1

3.5E+8

KDENR\_FMN 1

1.0E+8

KDENR\_FBP 1

1.39E+5

KDENR\_FDD 1

700000000

KDENR\_FDS 1

3E+8

KDENR\_FDB 1

16329870

KDENR\_FDC 1

10000714

KDENR\_FDO 1

5067103

KDENR\_FDE 1

1000000000

KDENR\_FDF 1

1.5E+09

KDENR\_FDM 1

7.0E+10

KDENR\_FDP 1

2.0E+07

KDENR\_SHD 1

2

KDENR\_SHB 1

5

KDENR\_SHC 1

3

KDENR\_SHP 1

4

KDENR\_SHR 1

0.8

KDENR\_SSK 1

5

KDENR\_SB 1

12

KDENR\_SP 1

1205000000

KDENR\_REP 1

5510000000

KDENR\_WDG 1

0.2

KDENR\_PIN 1

0.35

KDENR\_WHB 1

0.05

KDENR\_WHS 1

0.8

KDENR\_WHT 1

0.2

#Average biomass of new cephalopod recruits arriving mg N m-3 0.01

KDENR\_CEP 1

0.002

#

KDENR\_PWN 1

0.01

# Primary production dependent recruitment

PP\_FPL 4.90E+07 Coefficient relating primary production and large planktivore recruits

PP\_FPS 1.65E+08 Coefficient relating primary production and small planktivore recruits

PP\_FPO 1.17E+09 Coefficient relating primary production and other planktivore recruits

PP\_FVD 1.25E+07 Coefficient relating primary production and deep piscivore recruits

PP\_FVV 1.25E+07 Coefficient relating primary production and vulnerable piscivore recruits

PP\_FVS 1.00E+11 Coefficient relating primary production and shallow piscivore recruits

PP\_FVT 80600 Coefficient relating primary production and tropical piscivore recruits

PP\_FVB 4.90E+07 Coefficient relating primary production and other piscivore recruits

PP\_FVO 1.17E+09 Coefficient relating primary production and other tuna recruits

PP\_FMM 1.29E+09 Coefficient relating primary production and migratory mesopelagics recruits

PP\_FMN 1.67E+09 Coefficient relating primary production and non-migratory mesopelagics recruits

PP\_FBP 4.90E+07 Coefficient relating primary production and benthopelagics recruits

PP\_FDD 1.11E+08 Coefficient relating primary production and deep demersal recruits

PP\_FDS 1.17E+09 Coefficient relating primary production and shallow demersal recruits

PP\_FDB 1980000 Coefficient relating primary production and other shallow demersal recruits

PP\_FDC 690000 Coefficient relating primary production and other deep demersal recruits

PP\_FDO 2760000 Coefficient relating primary production and longlived demersal recruits

PP\_FDE 1.11E+08 Coefficient relating primary production and herbivorous demersal recruits

PP\_FDF 1.25E+07 Coefficient relating primary production and flat deep demersals recruits

PP\_FDM 1.11E+08 Coefficient relating primary production and miscellaneous demersal recruits

PP\_FDP 1.11E+08 Coefficient relating primary production and protected demersal recruits

PP\_SHD 3.65E+08 Coefficient relating primary production and demersal shark recruits

PP\_SHB 2.06E+08 Coefficient relating primary production and other shark recruits

PP\_SHC 3.65E+08 Coefficient relating primary production and dogfish recruits

PP\_SHP 1.22E+05 Coefficient relating primary production and pelagic shark recruits

PP\_SHR 2.06E+08 Coefficient relating primary production and reef shark recruits

PP\_SSK 3.65E+08 Coefficient relating primary production and skates and rays recruits

PP\_SB 99 Coefficient relating primary production and seabird fledglings

PP\_SP 4.90E+07 Coefficient relating primary production and penguin fledglings

PP\_REP 3.65E+08 Coefficient relating primary production and reptiles recruits

PP\_WDG 3840 Coefficient relating primary production and dugongs young

PP\_PIN 3840 Coefficient relating primary production and pinniped young

PP\_WHS 119 Coefficient relating primary production and small toothed whale young

PP\_WHT 119 Coefficient relating primary production and toothed whale young

PP\_WHB 2 Coefficient relating primary production and baleen whale young

PP\_CEP 3.65E+08 Coefficient relating primary production and cephalopd recruits

PP\_PWN 3.65E+08 Coefficient relating primary production and prawn recruits

ref\_chl 0.15 Reference level of chla mg Chla m-3 1.5

# Ricker recruitment

Ralpha\_FPL 1.05E+08 Alpha in Ricker for large planktivores

Ralpha\_FPS 2.55E+10 Alpha in Ricker for small planktivores

Ralpha\_FPO 7.00E+09 Alpha in Ricker for other planktivores

Ralpha\_FVD 5.00E+08 Alpha in Ricker for deep piscivores

Ralpha\_FVV 5.00E+08 Alpha in Ricker for vulnerable piscivores

Ralpha\_FVS 1.00E+10 Alpha in Ricker for shallow piscivores (5.00E+09)

Ralpha\_FVT 7500000 Alpha in Ricker for large piscivores

Ralpha\_FVB 1.05E+08 Alpha in Ricker for other piscivores (5.00E+09)

Ralpha\_FVO 7.00E+09 Alpha in Ricker for other tuna

Ralpha\_FMM 5.25E+09 Alpha in Ricker for migratory mesopelagics

Ralpha\_FMN 2.00E+09 Alpha in Ricker for non-migratory mesopelagics

Ralpha\_FBP 1.05E+08 Alpha in Ricker for benthopelagics

Ralpha\_FDD 4.00E+08 Alpha in Ricker for deep demersals

Ralpha\_FDS 7.00E+09 Alpha in Ricker for shallow demersals

Ralpha\_FDB 6.00E+08 Alpha in Ricker for other shallow demersals

Ralpha\_FDC 20000000 Alpha in Ricker for other deep demersals

Ralpha\_FDO 3.00E+08 Alpha in Ricker for longlived demersals

Ralpha\_FDE 4.00E+08 Alpha in Ricker for estuarine demersals

Ralpha\_FDF 5.00E+08 Alpha in Ricker for flat deep demersals

Ralpha\_FDM 4.00E+08 Alpha in Ricker for miscellaneous demersals

Ralpha\_FDP 4.00E+08 Alpha in Ricker for protected demersals

Ralpha\_SHD 9.00E+08 Alpha in Ricker for demersal sharks

Ralpha\_SHP 1500000 Alpha in Ricker for pelagic sharks

Ralpha\_SHB 6.20E+08 Alpha in Ricker for other sharks

Ralpha\_SHC 9.00E+08 Alpha in Ricker for demersal sharks

Ralpha\_SHR 9.00E+08 Alpha in Ricker for reef sharks

Ralpha\_SSK 9.00E+08 Alpha in Ricker for skates and rays

Ralpha\_SB 900000 Alpha in Ricker for seabirds

Ralpha\_SP 1.05E+08 Alpha in Ricker for penguins

Ralpha\_REP 9.00E+08 Alpha in Ricker for reptiles

Ralpha\_PIN 54000 Alpha in Ricker for pinnipeds

Ralpha\_WDG 54000 Alpha in Ricker for dugongs

Ralpha\_WHB 8000 Alpha in Ricker for baleen whales

Ralpha\_WHS 2000 Alpha in Ricker for small toothed whales

Ralpha\_WHT 2000 Alpha in Ricker for toothed whales

Ralpha\_CEP 9.00E+08 Alpha in Ricker for cephalopods

Ralpha\_PWN 9.00E+08 Alpha in Ricker for prawns

Rbeta\_FPL 2.00E+11 Beta in Ricker for large planktivores

Rbeta\_FPS 3.00E+10 Beta in Ricker for small planktivores

Rbeta\_FPO 6.00E+12 Beta in Ricker for other planktivores

Rbeta\_FVD 1.00E+12 Beta in Ricker for deep piscivores

Rbeta\_FVV 1.00E+12 Beta in Ricker for vulnerable piscivores

Rbeta\_FVS 1.00E+12 Beta in Ricker for shallow piscivores

Rbeta\_FVT 6.00E+10 Beta in Ricker for large piscivores

Rbeta\_FVB 2.00E+11 Beta in Ricker for shallow piscivores

Rbeta\_FVO 6.00E+12 Beta in Ricker for other tuna

Rbeta\_FMM 1.00E+10 Beta in Ricker for migratory mesopelagics

Rbeta\_FMN 2.00E+09 Beta in Ricker for non-migratory mesopelagics

Rbeta\_FBP 2.00E+11 Beta in Ricker for benthopelagics

Rbeta\_FDD 1.80E+12 Beta in Ricker for deep demersals

Rbeta\_FDS 6.00E+12 Beta in Ricker for shallow demersals

Rbeta\_FDB 6.00E+09 Beta in Ricker for other shallow demersals

Rbeta\_FDC 1.00E+10 Beta in Ricker for other deep demersals

Rbeta\_FDO 7.00E+10 Beta in Ricker for longlived demersals

Rbeta\_FDE 1.80E+12 Beta in Ricker for estuarine demersals

Rbeta\_FDF 1.00E+12 Beta in Ricker for flat deep demersals

Rbeta\_FDM 1.80E+12 Beta in Ricker for miscellaneous demersals

Rbeta\_FDP 1.80E+12 Beta in Ricker for protected demersals

Rbeta\_SHD 2.00E+12 Beta in Ricker for demersal sharks

Rbeta\_SHP 1.56E+10 Beta in Ricker for pelagic sharks

Rbeta\_SHB 3.50E+11 Beta in Ricker for other sharks

Rbeta\_SHC 2.00E+12 Beta in Ricker for dogfish

Rbeta\_SHR 3.50E+11 Beta in Ricker for reef sharks

Rbeta\_SSK 2.00E+12 Beta in Ricker for skates and rays

Rbeta\_SB 10500000 Beta in Ricker for seabirds

Rbeta\_SP 2.00E+11 Beta in Ricker for penguins

Rbeta\_REP 1.50E+09 Beta in Ricker for reptiles

Rbeta\_PIN 1.50E+09 Beta in Ricker for pinnipeds

Rbeta\_WDG 1.50E+09 Beta in Ricker for dugongs

Rbeta\_WHB 3.00E+11 Beta in Ricker for baleen whales

Rbeta\_WHT 5.00E+08 Beta in Ricker for toothed whales

Rbeta\_WHS 5.00E+08 Beta in Ricker for small whales

Rbeta\_CEP 2.00E+12 Beta in Ricker for cephalopods

Rbeta\_PWN 2.00E+12 Beta in Ricker for prawns

# Beverton-Holt recruitment

BHalpha\_FPL 1.00E+09 Alpha in Beverton-Holt for large planktivores

BHalpha\_FPS 2.00E+9 Alpha in Beverton-Holt for small planktivores

BHalpha\_FPO 1.30E+07 Alpha in Beverton-Holt for other planktivores

BHalpha\_FVD 1.00E+10 Alpha in Beverton-Holt for deep piscivores

BHalpha\_FVV 9.00E+07 Alpha in Beverton-Holt for vulnerable piscivores

BHalpha\_FVS 9.0E+11 Alpha in Beverton-Holt for shallow piscivores (5.00E+09)

BHalpha\_FVT 5.0E+06 Alpha in Beverton-Holt for tropical piscivores

BHalpha\_FVB 5.0E+07 Alpha in Beverton-Holt for other piscivores

BHalpha\_FVO 8.00E+12 Alpha in Beverton-Holt for other tuna

BHalpha\_FMM 1.60E+10 Alpha in Beverton-Holt for migratory mesopelagics

BHalpha\_FMN 4.00E+11 Alpha in Beverton-Holt for non-migratory mesopelagics

BHalpha\_FBP 3.00E+08 Alpha in Beverton-Holt for benthopelagics

BHalpha\_FDD 1.00E+10 Alpha in Beverton-Holt for deep demersals

BHalpha\_FDS 5.00E+09 Alpha in Beverton-Holt for shallow demersals

BHalpha\_FDB 2.00E+07 Alpha in Beverton-Holt for other shallow demersal

BHalpha\_FDC 9.00E+08 Alpha in Beverton-Holt for other deep demersal

BHalpha\_FDO 8.50E+07 Alpha in Beverton-Holt for longlived demersal

BHalpha\_FDE 1.00E+09 Alpha in Beverton-Holt for herbivorous demersals

BHalpha\_FDF 1.00E+08 Alpha in Beverton-Holt for flat deep demersals

BHalpha\_FDM 9.00E+09 Alpha in Beverton-Holt for miscellaneous demersals

BHalpha\_FDP 2.00E+10 Alpha in Beverton-Holt for protected demersals

BHalpha\_SHD 9.00E+08 Alpha in Beverton-Holt for demersal sharks

BHalpha\_SHB 6.20E+08 Alpha in Beverton-Holt for other sharks

BHalpha\_SHC 9.00E+08 Alpha in Beverton-Holt for dogfish

BHalpha\_SHP 1500000 Alpha in Beverton-Holt for pelagic sharks

BHalpha\_SHR 6.20E+08 Alpha in Beverton-Holt for reef sharks

BHalpha\_SSK 9.00E+09 Alpha in Beverton-Holt for skates and rays

BHalpha\_SB 900000 Alpha in Beverton-Holt for seabirds

BHalpha\_SP 1.05E+08 Alpha in Beverton-Holt for penguins

BHalpha\_REP 9.00E+08 Alpha in Beverton-Holt for reptiles

BHalpha\_WDG 54000 Alpha in Beverton-Holt for dugongs

BHalpha\_PIN 50000 Alpha in Beverton-Holt for pinnipeds

BHalpha\_WHB 3000 Alpha in Beverton-Holt for baleen whales

BHalpha\_WHS 4000 Alpha in Beverton-Holt for small toothed whales

BHalpha\_WHT 4000 Alpha in Beverton-Holt for toothed whales

BHalpha\_CEP 9.00E+11 Alpha in Beverton-Holt for demersal cephalopods

BHalpha\_PWN 9.00E+11 Alpha in Beverton-Holt for demersal prawns

BHbeta\_FPL 8.00E+08 Beta in Beverton-Holt for large planktivores

BHbeta\_FPS 3.00E+08 Beta in Beverton-Holt for small planktivores

BHbeta\_FPO 9.00E+09 Beta in Beverton-Holt for other planktivores

BHbeta\_FVD 5.00E+09 Beta in Beverton-Holt for deep piscivores

BHbeta\_FVV 1.00E+11 Beta in Beverton-Holt for vulnerable piscivores

BHbeta\_FVS 1.00E+10 Beta in Beverton-Holt for shallow piscivores

BHbeta\_FVT 1.20E+11 Beta in Beverton-Holt for tropical piscivores

BHbeta\_FVB 5.00E+10 Beta in Beverton-Holt for other piscivores

BHbeta\_FVO 6.00E+12 Beta in Beverton-Holt for other tuna

BHbeta\_FMM 1.00E+10 Beta in Beverton-Holt for migratory mesopelagics

BHbeta\_FMN 2.00E+09 Beta in Beverton-Holt for non-migratory mesopelagics

BHbeta\_FBP 1.80E+10 Beta in Beverton-Holt for benthopelagics

BHbeta\_FDD 3.00E+10 Beta in Beverton-Holt for deep demersals

BHbeta\_FDS 1.00E+10 Beta in Beverton-Holt for shallow demersals

BHbeta\_FDB 5.00E+9 Beta in Beverton-Holt for other shallow demersal

BHbeta\_FDC 1.00E+10 Beta in Beverton-Holt for other deep demersal

BHbeta\_FDO 7.00E+10 Beta in Beverton-Holt for longlived demersal

BHbeta\_FDE 1.80E+12 Beta in Beverton-Holt for herbivorous demersals

BHbeta\_FDF 2.00E+11 Beta in Beverton-Holt for flat deep demersals

BHbeta\_FDM 1.80E+12 Beta in Beverton-Holt for miscellaneous demersals

BHbeta\_FDP 1.80E+12 Beta in Beverton-Holt for protected demersals

BHbeta\_SHD 2.00E+12 Beta in Beverton-Holt for demersal sharks

BHbeta\_SHP 1.56E+10 Beta in Beverton-Holt for pelagic sharks

BHbeta\_SHB 3.50E+11 Beta in Beverton-Holt for other sharks

BHbeta\_SHR 3.50E+11 Beta in Beverton-Holt for reef sharks

BHbeta\_SHC 2.00E+12 Beta in Beverton-Holt for dogfish

BHbeta\_SSK 2.00E+12 Beta in Beverton-Holt for skates and rays

BHbeta\_SB 10500000 Beta in Beverton-Holt for seabirds

BHbeta\_SP 2.00E+11 Beta in Beverton-Holt for penguins

BHbeta\_REP 2.00E+12 Beta in Beverton-Holt for reptiles

BHbeta\_WDG 1.50E+09 Beta in Beverton-Holt for dugongs

BHbeta\_PIN 1.50E+09 Beta in Beverton-Holt for pinnipeds

BHbeta\_WHB 3.00E+11 Beta in Beverton-Holt for baleen whales

BHbeta\_WHS 5.00E+08 Beta in Beverton-Holt for small toothed whales

BHbeta\_WHT 5.00E+08 Beta in Beverton-Holt for toothed whales

BHbeta\_CEP 2.00E+13 Beta in Beverton-Holt for demersal cephalopods

BHbeta\_PWN 2.00E+13 Beta in Beverton-Holt for demersal prawns

# Recruitment modifiers to encourage recovery of stocks

recover\_mult\_FPL 1 Recruitment multiplier for large planktivores

recover\_mult\_FPS 1 Recruitment multiplier for small planktivores

recover\_mult\_FPO 1 Recruitment multiplier for other planktivores

recover\_mult\_FVD 1 Recruitment multiplier for deep piscivores

recover\_mult\_FVV 1 Recruitment multiplier for vulnerable piscivores

recover\_mult\_FVS 1 Recruitment multiplier for shallow piscivores

recover\_mult\_FVT 1 Recruitment multiplier for tropical piscivores

recover\_mult\_FVB 1 Recruitment multiplier for other piscivores

recover\_mult\_FVO 1 Recruitment multiplier for other tuna

recover\_mult\_FMM 1 Recruitment multiplier for migratory mesopelagics

recover\_mult\_FMN 1 Recruitment multiplier for non-migratory mesopelagics

recover\_mult\_FBP 1 Recruitment multiplier for benthopelagics

recover\_mult\_FDD 1 Recruitment multiplier for deep demersals

recover\_mult\_FDS 1 Recruitment multiplier for shallow demersals

recover\_mult\_FDB 1 Recruitment multiplier for other shallow demersal

recover\_mult\_FDC 1 Recruitment multiplier for other deep demersal

recover\_mult\_FDO 1 Recruitment multiplier for longlived demersal

recover\_mult\_FDE 1 Recruitment multiplier for estuarine demersals

recover\_mult\_FDF 1 Recruitment multiplier for flat deep demersals

recover\_mult\_FDM 1 Recruitment multiplier for miscellaneous demersals

recover\_mult\_FDP 1 Recruitment multiplier for protected demersals

recover\_mult\_SHD 1 Recruitment multiplier for demersal sharks

recover\_mult\_SHB 1 Recruitment multiplier for other sharks

recover\_mult\_SHP 1 Recruitment multiplier for pelagic sharks

recover\_mult\_SHC 1 Recruitment multiplier for dogfish

recover\_mult\_SHR 1 Recruitment multiplier for reef sharks

recover\_mult\_SSK 1 Recruitment multiplier for skates and rays

recover\_mult\_SB 1 Recruitment multiplier for seabirds

recover\_mult\_SP 1 Recruitment multiplier for penguins

recover\_mult\_REP 1 Recruitment multiplier for reptiles

recover\_mult\_WDG 1 Recruitment multiplier for dugongs

recover\_mult\_PIN 1 Recruitment multiplier for pinnipeds

recover\_mult\_WHB 1 Recruitment multiplier for baleen whales

recover\_mult\_WHS 1 Recruitment multiplier for small toothed whales

recover\_mult\_WHT 1 Recruitment multiplier for toothed whales

recover\_trigger 0 Prop. of init. stock remaining that triggers encourage recovery

recover\_span 31449600000 Number of days from initial trigger until recover\_mult used

recover\_subseq 1 Number of years in a row where get increased recruitment

# Starting time of perscribed recruitment recovery of stocks

recover\_start\_FPL 31449600000 Recruitment change start date for large planktivores

recover\_start\_FPS 31449600000 Recruitment change start date for small planktivores

recover\_start\_FPO 31449600000 Recruitment change start date for other planktivores

recover\_start\_FVD 31449600000 Recruitment change start date for deep piscivores

recover\_start\_FVV 31449600000 Recruitment change start date for vulnerable piscivores

recover\_start\_FVS 31449600000 Recruitment change start date for shallow piscivores

recover\_start\_FVT 31449600000 Recruitment change start date for tropical piscivores

recover\_start\_FVB 31449600000 Recruitment change start date for other piscivores

recover\_start\_FVO 31449600000 Recruitment change start date for other tuna

recover\_start\_FMM 31449600000 Recruitment change start date for migratory mesopelagics

recover\_start\_FMN 31449600000 Recruitment change start date for non-migratory mesopelagics

recover\_start\_FBP 31449600000 Recruitment change start date for benthopelagics

recover\_start\_FDD 31449600000 Recruitment change start date for deep demersals

recover\_start\_FDS 31449600000 Recruitment change start date for shallow demersals

recover\_start\_FDB 31449600000 Recruitment change start date for other shallow demersal

recover\_start\_FDC 31449600000 Recruitment change start date for other deep demersal

recover\_start\_FDO 31449600000 Recruitment change start date for longlived demersal

recover\_start\_FDE 31449600000 Recruitment change start date for estuarine demersals

recover\_start\_FDF 31449600000 Recruitment change start date for flat deep demersals

recover\_start\_FDM 31449600000 Recruitment change start date for miscellaneous demersals

recover\_start\_FDP 31449600000 Recruitment change start date for protected demersals

recover\_start\_SHD 31449600000 Recruitment change start date for demersal sharks

recover\_start\_SHP 31449600000 Recruitment change start date for pelagic sharks

recover\_start\_SHC 31449600000 Recruitment change start date for dogfish

recover\_start\_SHB 31449600000 Recruitment change start date for other sharks

recover\_start\_SHR 31449600000 Recruitment change start date for reef sharks

recover\_start\_SSK 31449600000 Recruitment change start date for skates and rays

recover\_start\_SB 31449600000 Recruitment change start date for seabirds

recover\_start\_SP 31449600000 Recruitment change start date for penguins

recover\_start\_REP 31449600000 Recruitment change start date for reptiles

recover\_start\_WDG 31449600000 Recruitment change start date for dugongs

recover\_start\_PIN 31449600000 Recruitment change start date for pinnipeds

recover\_start\_WHB 31449600000 Recruitment change start date for baleen whales

recover\_start\_WHS 31449600000 Recruitment change start date for small toothed whales

recover\_start\_WHT 31449600000 Recruitment change start date for toothed whales

# Log-normal random recruitment CHECK WITH BETH

lognorm\_mu 0.5 Centre for lognormal distribution of the number of recruits

lognorm\_sigma 0.3 Variation of lognormal distribution of the number of recruits

FPL\_log\_mult 10900000000 Multipler converting distribution to number of large planktivore recruits

FPS\_log\_mult 8230000000 Multipler converting distribution to number of small planktivore recruits

FPO\_log\_mult 58300000000 Multipler converting distribution to number of other planktivore recruits

FVD\_log\_mult 2260000000 Multipler converting distribution to number of deep piscivore recruits

FVV\_log\_mult 58300000000 Multipler converting distribution to number of vulnerable piscivore recruits

FVS\_log\_mult 5530000000 Multipler converting distribution to number of shallow piscivore recruits

FVT\_log\_mult 4030000 Multipler converting distribution to number of tropical piscivore recruits

FVB\_log\_mult 5570000000 Multipler converting distribution to number of other piscivore recruits

FVO\_log\_mult 58300000000 Multipler converting distribution to number of other tuna recruits

FMM\_log\_mult 64400000000 Multipler converting distribution to number of migratory mesopelagic recruits

FMN\_log\_mult 83400000000 Multipler converting distribution to number of non-migratory mesopelagic recruits

FBP\_log\_mult 58300000000 Multipler converting distribution to number of benthopelagics recruits

FDD\_log\_mult 5570000000 Multipler converting distribution to number of deep demersal recruits

FDS\_log\_mult 58300000000 Multipler converting distribution to number of shallow demersal recruits

FDB\_log\_mult 58300000000 Multipler converting distribution to number of other shallow demersal recruits

FDC\_log\_mult 58300000000 Multipler converting distribution to number of other deep demersal recruits

FDO\_log\_mult 58300000000 Multipler converting distribution to number of longlived demersal recruits

FDE\_log\_mult 5570000000 Multipler converting distribution to number of estuarine demersal recruits

FDF\_log\_mult 2260000000 Multipler converting distribution to number of flat deep demersals recruits

FDM\_log\_mult 58300000000 Multipler converting distribution to number of miscellaneous demersal recruits

FDP\_log\_mult 5570000000 Multipler converting distribution to number of protected demersal recruits

SHD\_log\_mult 18200000000 Multipler converting distribution to number of demersal shark recruits

SHB\_log\_mult 18200000000 Multipler converting distribution to number of other shark recruits

SHC\_log\_mult 18200000000 Multipler converting distribution to number of dogfish recruits

SHP\_log\_mult 11100000 Multipler converting distribution to number of pelagic shark recruits

SHR\_log\_mult 18200000000 Multipler converting distribution to number of reef shark recruits

SSK\_log\_mult 18200000000 Multipler converting distribution to number of skates and rays recruits

SB\_log\_mult 4920 Multipler converting distribution to number of seabird fledgother deep demersals

SP\_log\_mult 10900000000 Multipler converting distribution to number of penguin recruits

REP\_log\_mult 18200000000 Multipler converting distribution to number of reptile recruits

WDG\_log\_mult 192000 Multipler converting distribution to number of dugong young

PIN\_log\_mult 192000 Multipler converting distribution to number of pinniped young

WHB\_log\_mult 5940 Multipler converting distribution to number of baleen whale young

WHS\_log\_mult 977 Multipler converting distribution to number of small toothed whale young

WHT\_log\_mult 977 Multipler converting distribution to number of toothed whale young

CEP\_log\_mult 18200000000 Multipler converting distribution to number of cephalopod recruits

PWN\_log\_mult 18200000000 Multipler converting distribution to number of prawn recruits

# Size of recruits

KWSR\_FPL 40 Structural weight of large planktivore recruits mg N 0.014

KWSR\_FPS 0.028 Structural weight of small planktivore recruits mg N 0.028

KWSR\_FPO 41 Structural weight of other planktivore recruits mg N 12.03

KWSR\_FVD 73 Structural weight of deep piscivore recruits mg N 0.192

KWSR\_FVV 217 Structural weight of vulnerable pisciv. recruits mg N 0.192

KWSR\_FVS 1500 Structural weight of shallow piscivore recruits mg N 290.56

KWSR\_FVT 5549 Structural weight of tropical piscivore recruits mg N 1605.7

KWSR\_FVB 132.22 Structural weight of other piscivore recruits mg N 0.014

KWSR\_FVO 132 Structural weight of other tuna recruits mg N 12.03

KWSR\_FMM 11 Structural weight of migratory mesopel recruits mg N 0.039

KWSR\_FMN 9 Structural weight of non-mig mesopelag recruits mg N 0.081

KWSR\_FBP 99.8 Structural weight of benthopelagic recruits mg N 0.014

KWSR\_FDD 35 Structural weight of deep demersal recruits mg N 0.038

KWSR\_FDS 30 Structural weight of shallow demersal recruits mg N 12.03

KWSR\_FDB 200 Structural weight of other shallow dem. recruits mg N 0.019

KWSR\_FDC 100 Structural weight of other deep demersal recruits mg N 0.01

KWSR\_FDO 0.46 Structural weight of longlived demersal recruits mg N 0.46

KWSR\_FDE 40 Structural weight of estuarine demersal recruits mg N 0.038

KWSR\_FDF 10 Structural weight of flat deep demersal recruits mg N 0.192

KWSR\_FDM 120 Structural weight of misc. demersal recruits mg N 0.038

KWSR\_FDP 2.5 Structural weight of protected demersal recruits mg N 0.038

KWSR\_SHB 559 Structural weight of other shark recruits mg N 72.93

KWSR\_SHD 700 Structural weight of demersal shark recruits mg N 8.78

KWSR\_SHR 200 Structural weight of reef shark recruits mg N 72.93

KWSR\_SHP 8622 Structural weight of pelagic shark recruits mg N 581.3

KWSR\_SHC 149 Structural weight of dogfish recruits mg N 8.78

KWSR\_SSK 150 Structural weight of skates and rays recruits mg N 8.78

KWSR\_SB 500 Structural weight of seabird fledglings mg N 326.46

KWSR\_SP 0.014 Structural weight of penguin fledglings mg N 0.014

KWSR\_REP 8.78 Structural weight of reptile recruits mg N 8.78

KWSR\_WDG 8048.0 Structural weight of dugong young mg N 8048.0

KWSR\_PIN 20048.0 Structural weight of pinniped young mg N 8048.0

KWSR\_WHB 36919347.1 Structural weight of baleen whale young mg N 117362680.0

KWSR\_WHS 8048.0 Structural weight of small toothed whale young mg N 749557.5

KWSR\_WHT 749557.5 Structural weight of toothed whale young mg N 749557.5

KWRR\_FPL 100 Reserve weight of large planktivore recruits mg N 0.038

KWRR\_FPS 0.075 Reserve weight of small planktivore recruits mg N 0.075

KWRR\_FPO 110 Reserve weight of other planktivore recruits mg N 31.88

KWRR\_FVD 142 Reserve weight of deep piscivore recruits mg N 0.51

KWRR\_FVV 576 Reserve weight of vulnerable piscivore recruits mg N 0.51

KWRR\_FVS 7000 Reserve weight of shallow piscivore recruits mg N 769.98

KWRR\_FVT 57107 Reserve weight of tropical piscivore recruits mg N 4255.13

KWRR\_FVB 350.4 Reserve weight of other piscivore recruits mg N 0.038

KWRR\_FVO 350 Reserve weight of other tuna recruits mg N 1140.5

KWRR\_FMM 30 Reserve weight of migratory mesopelagic recruits mg N 0.1

KWRR\_FMN 25 Reserve weight of nonmigratory mesopelag recruits mg N 0.215

KWRR\_FBP 264.47 Reserve weight of benthopelagic recruits mg N 0.038

KWRR\_FDD 90 Reserve weight of deep demersal recruits mg N 0.1

KWRR\_FDS 50 Reserve weight of shallow demersal recruits mg N 31.88

KWRR\_FDB 542 Reserve weight of other shallow demersal recruits mg N 0.05

KWRR\_FDC 250 Reserve weight of other deep demersal recruits mg N 0.02

KWRR\_FDO 1.2 Reserve weight of longlived demersal recruits mg N 1.2

KWRR\_FDE 100 Reserve weight of estuarine demersal recruits mg N 0.1

KWRR\_FDF 30 Reserve weight of flat deep demersal recruits mg N 0.51

KWRR\_FDM 300 Reserve weight of miscellaneous demersal recruits mg N 0.1

KWRR\_FDP 7 Reserve weight of protected demersal recruits mg N 0.1

KWRR\_SHD 2018 Reserve weight of demersal shark recruits mg N 23.3

KWRR\_SHB 1482 Reserve weight of other shark recruits mg N 193.27

KWRR\_SHP 22849 Reserve weight of pelagic shark recruits mg N 1540.5

KWRR\_SHR 400 Reserve weight of reef shark recruits mg N 193.27

KWRR\_SHC 394 Reserve weight of dogfish recruits mg N 23.3

KWRR\_SSK 400 Reserve weight of skates and rays recruits mg N 23.3

KWRR\_SB 1600 Reserve weight of seabird fledglings mg N 865.1

KWRR\_SP 0.038 Reserve weight of penguin fledglings mg N 0.038

KWRR\_REP 23.3 Reserve weight of reptile recruits mg N 23.3

KWRR\_WDG 21328.0 Reserve weight of dugong young mg N 21328.0

KWRR\_PIN 51328.0 Reserve weight of pinniped young mg N 21328.0

KWRR\_WHB 65224179.9 Reserve weight of baleen whale young mg N 311011104.0

KWRR\_WHS 21328.0 Reserve weight of small toothed whale young mg N 1986327.0

KWRR\_WHT 1986327.0 Reserve weight of toothed whale young mg N 1986327.0

# Minimum and maximum spawning temperatures recalculated as a weighted average

FPS\_min\_spawn\_temp 14

FPL\_min\_spawn\_temp 4

FPO\_min\_spawn\_temp 14

FVD\_min\_spawn\_temp 4

FVV\_min\_spawn\_temp 14

FVS\_min\_spawn\_temp 4

FVT\_min\_spawn\_temp 22

FVB\_min\_spawn\_temp 14

FVO\_min\_spawn\_temp 12

FMM\_min\_spawn\_temp 4

FMN\_min\_spawn\_temp 4

FBP\_min\_spawn\_temp 14

FDD\_min\_spawn\_temp 4

FDS\_min\_spawn\_temp 7

FDB\_min\_spawn\_temp 14

FDC\_min\_spawn\_temp 14

FDO\_min\_spawn\_temp 18

FDE\_min\_spawn\_temp 4

FDF\_min\_spawn\_temp 4

FDM\_min\_spawn\_temp 14

FDP\_min\_spawn\_temp 4

SHD\_min\_spawn\_temp 4

SHP\_min\_spawn\_temp 4

SHB\_min\_spawn\_temp 4

SHR\_min\_spawn\_temp 4

SHC\_min\_spawn\_temp 4

SSK\_min\_spawn\_temp 4

SB\_min\_spawn\_temp 4

SP\_min\_spawn\_temp 4

REP\_min\_spawn\_temp 4

PIN\_min\_spawn\_temp 4

WDG\_min\_spawn\_temp 4

WHB\_min\_spawn\_temp 4

WHS\_min\_spawn\_temp 4

WHT\_min\_spawn\_temp 4

FPS\_max\_spawn\_temp 21

FPL\_max\_spawn\_temp 25

FPO\_max\_spawn\_temp 21

FVD\_max\_spawn\_temp 25

FVV\_max\_spawn\_temp 21

FVS\_max\_spawn\_temp 25

FVT\_max\_spawn\_temp 26

FVB\_max\_spawn\_temp 21

FVO\_max\_spawn\_temp 21

FMM\_max\_spawn\_temp 25

FMN\_max\_spawn\_temp 25

FBP\_max\_spawn\_temp 21

FDD\_max\_spawn\_temp 25

FDS\_max\_spawn\_temp 21

FDB\_max\_spawn\_temp 21

FDC\_max\_spawn\_temp 21

FDO\_max\_spawn\_temp 21

FDE\_max\_spawn\_temp 25

FDF\_max\_spawn\_temp 25

FDM\_max\_spawn\_temp 21

FDP\_max\_spawn\_temp 25

SHD\_max\_spawn\_temp 21

SHP\_max\_spawn\_temp 25

SHB\_max\_spawn\_temp 21

SHC\_max\_spawn\_temp 25

SHR\_max\_spawn\_temp 21

SSK\_max\_spawn\_temp 25

SB\_max\_spawn\_temp 25

SP\_max\_spawn\_temp 25

REP\_max\_spawn\_temp 25

PIN\_max\_spawn\_temp 25

WDG\_max\_spawn\_temp 25

WHB\_max\_spawn\_temp 25

WHS\_max\_spawn\_temp 25

WHT\_max\_spawn\_temp 25

# Minimum and maximum spawning salinities

FPS\_min\_spawn\_salt 0.0

FPL\_min\_spawn\_salt 0.0

FPO\_min\_spawn\_salt 0.0

FVD\_min\_spawn\_salt 0.0

FVV\_min\_spawn\_salt 0.0

FVS\_min\_spawn\_salt 0.0

FVT\_min\_spawn\_salt 0.0

FVB\_min\_spawn\_salt 0.0

FVO\_min\_spawn\_salt 0.0

FMM\_min\_spawn\_salt 0.0

FMN\_min\_spawn\_salt 0.0

FBP\_min\_spawn\_salt 0.0

FDD\_min\_spawn\_salt 0.0

FDS\_min\_spawn\_salt 0.0

FDB\_min\_spawn\_salt 0.0

FDC\_min\_spawn\_salt 0.0

FDO\_min\_spawn\_salt 0.0

FDE\_min\_spawn\_salt 0.0

FDF\_min\_spawn\_salt 0.0

FDM\_min\_spawn\_salt 0.0

FDP\_min\_spawn\_salt 0.0

SHD\_min\_spawn\_salt 0.0

SHP\_min\_spawn\_salt 0.0

SHB\_min\_spawn\_salt 0.0

SHR\_min\_spawn\_salt 0.0

SHC\_min\_spawn\_salt 0.0

SSK\_min\_spawn\_salt 0.0

SB\_min\_spawn\_salt 0.0

SP\_min\_spawn\_salt 0.0

REP\_min\_spawn\_salt 0.0

PIN\_min\_spawn\_salt 0.0

WDG\_min\_spawn\_salt 0.0

WHB\_min\_spawn\_salt 0.0

WHS\_min\_spawn\_salt 0.0

WHT\_min\_spawn\_salt 0.0

FPS\_max\_spawn\_salt 40.0

FPL\_max\_spawn\_salt 40.0

FPO\_max\_spawn\_salt 40.0

FVD\_max\_spawn\_salt 40.0

FVV\_max\_spawn\_salt 40.0

FVS\_max\_spawn\_salt 40.0

FVT\_max\_spawn\_salt 40.0

FVB\_max\_spawn\_salt 40.0

FVO\_max\_spawn\_salt 40.0

FMM\_max\_spawn\_salt 40.0

FMN\_max\_spawn\_salt 40.0

FBP\_max\_spawn\_salt 40.0

FDD\_max\_spawn\_salt 40.0

FDS\_max\_spawn\_salt 40.0

FDB\_max\_spawn\_salt 40.0

FDC\_max\_spawn\_salt 40.0

FDO\_max\_spawn\_salt 40.0

FDE\_max\_spawn\_salt 40.0

FDF\_max\_spawn\_salt 40.0

FDM\_max\_spawn\_salt 40.0

FDP\_max\_spawn\_salt 40.0

SHD\_max\_spawn\_salt 40.0

SHP\_max\_spawn\_salt 40.0

SHB\_max\_spawn\_salt 40.0

SHC\_max\_spawn\_salt 40.0

SHR\_max\_spawn\_salt 40.0

SSK\_max\_spawn\_salt 40.0

SB\_max\_spawn\_salt 40.0

SP\_max\_spawn\_salt 40.0

REP\_max\_spawn\_salt 40.0

PIN\_max\_spawn\_salt 40.0

WDG\_max\_spawn\_salt 40.0

WHB\_max\_spawn\_salt 40.0

WHS\_max\_spawn\_salt 40.0

WHT\_max\_spawn\_salt 40.0

## Stock structure

# Horizontal stock structure

FPS\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FPL\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FPO\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FVD\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FVV\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FVS\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FVT\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FVO\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FVB\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FMM\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FMN\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FBP\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FDD\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FDS\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FDB\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FDC\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FDO\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FDE\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FDF\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FDM\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

FDP\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

SHB\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

SHD\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

SHC\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

SHP\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

SHR\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

SSK\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

SB\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

SP\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

REP\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

PIN\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

WDG\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

WHB\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

WHS\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

WHT\_stock\_struct 11

1 1 1 1 1 1 1 1 1 1 1

# Vertical stock structure. First entry for each vector refers to water

# column layer closest to the sediment and then up through the watercolumn to

# surface most layer on the extreme right

FPS\_vert\_stock\_struct 6

1 1 1 1 1 1

FPL\_vert\_stock\_struct 6

1 1 1 1 1 1

FPO\_vert\_stock\_struct 6

1 1 1 1 1 1

FVD\_vert\_stock\_struct 6

1 1 1 1 1 1

FVV\_vert\_stock\_struct 6

1 1 1 1 1 1

FVS\_vert\_stock\_struct 6

1 1 1 1 1 1

FVT\_vert\_stock\_struct 6

1 1 1 1 1 1

FVO\_vert\_stock\_struct 6

1 1 1 1 1 1

FVB\_vert\_stock\_struct 6

1 1 1 1 1 1

FMM\_vert\_stock\_struct 6

1 1 1 1 1 1

FMN\_vert\_stock\_struct 6

1 1 1 1 1 1

FBP\_vert\_stock\_struct 6

1 1 1 1 1 1

FDD\_vert\_stock\_struct 6

1 1 1 1 1 1

FDS\_vert\_stock\_struct 6

1 1 1 1 1 1

FDB\_vert\_stock\_struct 6

1 1 1 1 1 1

FDC\_vert\_stock\_struct 6

1 1 1 1 1 1

FDO\_vert\_stock\_struct 6

1 1 1 1 1 1

FDE\_vert\_stock\_struct 6

1 1 1 1 1 1

FDF\_vert\_stock\_struct 6

1 1 1 1 1 1

FDM\_vert\_stock\_struct 6

1 1 1 1 1 1

FDP\_vert\_stock\_struct 6

1 1 1 1 1 1

SHB\_vert\_stock\_struct 6

1 1 1 1 1 1

SHD\_vert\_stock\_struct 6

1 1 1 1 1 1

SHC\_vert\_stock\_struct 6

1 1 1 1 1 1

SHP\_vert\_stock\_struct 6

1 1 1 1 1 1

SHR\_vert\_stock\_struct 6

1 1 1 1 1 1

SSK\_vert\_stock\_struct 6

1 1 1 1 1 1

SB\_vert\_stock\_struct 6

1 1 1 1 1 1

SP\_vert\_stock\_struct 6

1 1 1 1 1 1

REP\_vert\_stock\_struct 6

1 1 1 1 1 1

PIN\_vert\_stock\_struct 6

1 1 1 1 1 1

WDG\_vert\_stock\_struct 6

1 1 1 1 1 1

WHB\_vert\_stock\_struct 6

1 1 1 1 1 1

WHS\_vert\_stock\_struct 6

1 1 1 1 1 1

WHT\_vert\_stock\_struct 6

1 1 1 1 1 1

## Regional output information - when want overall Biom.txt file split by region too

# Biomass reporting regions - give the region each box will be counted in (so if two

# regions each box must be either in region 0 or 1 etc)

regID 11

0 0 0 0 0 0 0 0 0 0 0

## Vectors of pre-existing age distirbutions (how numbers within age class are split

# up by years in that class). Only used if readin\_popratio is set to 1

# Entries are per stock per group (currently assumes 4 stocks max per group) and the

# number of entries per array must equal the group's AgeClassSize. For those groups

# with less than 4 stocks make all entries 0 in the absent stocks (e.g. for Stock4

# if only have 3 stocks etc).

FPL1popratioStock1 3

4.318431e-001 3.298566e-001 2.383003e-001

FPL2popratioStock1 3

3.915910e-001 3.373396e-001 2.710694e-001

FPL3popratioStock1 3

3.280734e-001 3.343682e-001 3.375584e-001

FPL4popratioStock1 3

3.518862e-001 3.352822e-001 3.128316e-001

FPL5popratioStock1 3

3.271838e-001 3.234729e-001 3.493434e-001

FPL6popratioStock1 3

3.656744e-001 3.399068e-001 2.944189e-001

FPL7popratioStock1 3

3.262624e-001 2.605279e-001 4.132097e-001

FPL8popratioStock1 3

4.677710e-001 2.571268e-001 2.751023e-001

FPL9popratioStock1 3

3.745552e-001 3.063308e-001 3.191140e-001

FPL10popratioStock1 3

1.324304e-001 4.312161e-001 4.363536e-001

FPO1popratioStock1 1

1

FPO2popratioStock1 1

1

FPO3popratioStock1 1

1

FPO4popratioStock1 1

1

FPO5popratioStock1 1

1

FPO6popratioStock1 1

1

FPO7popratioStock1 1

1

FPO8popratioStock1 1

1

FPO9popratioStock1 1

1

FPO10popratioStock1 1

1

FPS1popratioStock1 1

1.00E+00

FPS2popratioStock1 1

1.00E+00

FPS3popratioStock1 1

1.00E+00

FPS4popratioStock1 1

1.00E+00

FPS5popratioStock1 1

1.00E+00

FPS6popratioStock1 1

1.00E+00

FPS7popratioStock1 1

1.00E+00

FPS8popratioStock1 1

1.00E+00

FPS9popratioStock1 1

1.00E+00

FPS10popratioStock1 1

1.00E+00

FVD1popratioStock1 1

1.00E+00

FVD2popratioStock1 1

1.00E+00

FVD3popratioStock1 1

1.00E+00

FVD4popratioStock1 1

1.00E+00

FVD5popratioStock1 1

1.00E+00

FVD6popratioStock1 1

1.00E+00

FVD7popratioStock1 1

1.00E+00

FVD8popratioStock1 1

1.00E+00

FVD9popratioStock1 1

1.00E+00

FVD10popratioStock1 1

1.00E+00

FVV1popratioStock1 3

5.67E-01 2.76E-01 1.57E-01

FVV2popratioStock1 3

4.67E-01 3.05E-01 2.28E-01

FVV3popratioStock1 3

4.48E-01 3.23E-01 2.29E-01

FVV4popratioStock1 3

4.61E-01 3.05E-01 2.33E-01

FVV5popratioStock1 3

3.88E-01 3.35E-01 2.77E-01

FVV6popratioStock1 3

3.58E-01 3.25E-01 3.17E-01

FVV7popratioStock1 3

4.28E-01 2.72E-01 3.01E-01

FVV8popratioStock1 3

5.10E-01 2.02E-01 2.89E-01

FVV9popratioStock1 3

4.57E-01 2.55E-01 2.89E-01

FVV10popratioStock1 3

4.42E-01 2.33E-01 3.25E-01

FVS1popratioStock1 1

1.00E+00

FVS2popratioStock1 1

1.00E+00

FVS3popratioStock1 1

1.00E+00

FVS4popratioStock1 1

1.00E+00

FVS5popratioStock1 1

1.00E+00

FVS6popratioStock1 1

1.00E+00

FVS7popratioStock1 1

1.00E+00

FVS8popratioStock1 1

1.00E+00

FVS9popratioStock1 1

1.00E+00

FVS10popratioStock1 1

1.00E+00

FVB1popratioStock1 1

1

FVB2popratioStock1 1

1

FVB3popratioStock1 1

1

FVB4popratioStock1 1

1

FVB5popratioStock1 1

1

FVB6popratioStock1 1

1

FVB7popratioStock1 1

1

FVB8popratioStock1 1

1

FVB9popratioStock1 1

1

FVB10popratioStock1 1

1

FVT1popratioStock1 1

1.00E+00

FVT2popratioStock1 1

1.00E+00

FVT3popratioStock1 1

1.00E+00

FVT4popratioStock1 1

1.00E+00

FVT5popratioStock1 1

1.00E+00

FVT6popratioStock1 1

1.00E+00

FVT7popratioStock1 1

1.00E+00

FVT8popratioStock1 1

1.00E+00

FVT9popratioStock1 1

1.00E+00

FVT10popratioStock1 1

1.00E+00

FVO1popratioStock1 1

1.00E+00

FVO2popratioStock1 1

1.00E+00

FVO3popratioStock1 1

1.00E+00

FVO4popratioStock1 1

1.00E+00

FVO5popratioStock1 1

1.00E+00

FVO6popratioStock1 1

1.00E+00

FVO7popratioStock1 1

1.00E+00

FVO8popratioStock1 1

1.00E+00

FVO9popratioStock1 1

1.00E+00

FVO10popratioStock1 1

1.00E+00

FMM1popratioStock1 1

1.00E+00

FMM2popratioStock1 1

1.00E+00

FMM3popratioStock1 1

1.00E+00

FMM4popratioStock1 1

1.00E+00

FMM5popratioStock1 1

1.00E+00

FMM6popratioStock1 1

1.00E+00

FMM7popratioStock1 1

1.00E+00

FMM8popratioStock1 1

1.00E+00

FMM9popratioStock1 1

1.00E+00

FMM10popratioStock1 1

1.00E+00

FMN1popratioStock1 1

1.00E+00

FMN2popratioStock1 1

1.00E+00

FMN3popratioStock1 1

1.00E+00

FMN4popratioStock1 1

1.00E+00

FMN5popratioStock1 1

1.00E+00

FMN6popratioStock1 1

1.00E+00

FMN7popratioStock1 1

1.00E+00

FMN8popratioStock1 1

1.00E+00

FMN9popratioStock1 1

1.00E+00

FMN10popratioStock1 1

1.00E+00

FBP1popratioStock1 1

1.00E+00

FBP2popratioStock1 1

1.00E+00

FBP3popratioStock1 1

1.00E+00

FBP4popratioStock1 1

1.00E+00

FBP5popratioStock1 1

1.00E+00

FBP6popratioStock1 1

1.00E+00

FBP7popratioStock1 1

1.00E+00

FBP8popratioStock1 1

1.00E+00

FBP9popratioStock1 1

1.00E+00

FBP10popratioStock1 1

1.00E+00

FDD1popratioStock1 4

3.54E-01 2.28E-01 2.55E-01 1.64E-01

FDD2popratioStock1 4

3.14E-01 2.88E-01 2.12E-01 1.86E-01

FDD3popratioStock1 4

3.14E-01 2.94E-01 2.03E-01 1.90E-01

FDD4popratioStock1 4

3.00E-01 2.71E-01 2.02E-01 2.27E-01

FDD5popratioStock1 4

1.14E-01 1.61E-01 2.14E-01 5.11E-01

FDD6popratioStock1 4

2.10E-01 2.83E-01 3.72E-01 1.35E-01

FDD7popratioStock1 4

2.47E-01 2.93E-01 3.41E-01 1.18E-01

FDD8popratioStock1 4

2.71E-01 2.96E-01 3.20E-01 1.14E-01

FDD9popratioStock1 4

2.73E-01 2.93E-01 3.15E-01 1.18E-01

FDD10popratioStock1 4

2.81E-01 2.96E-01 3.07E-01 1.16E-01

FDE1popratioStock1 1

1.00E+00

FDE2popratioStock1 1

1.00E+00

FDE3popratioStock1 1

1.00E+00

FDE4popratioStock1 1

1.00E+00

FDE5popratioStock1 1

1.00E+00

FDE6popratioStock1 1

1.00E+00

FDE7popratioStock1 1

1.00E+00

FDE8popratioStock1 1

1.00E+00

FDE9popratioStock1 1

1.00E+00

FDE10popratioStock1 1

1.00E+00

FDS1popratioStock1 3

5.67E-01 2.76E-01 1.57E-01

FDS2popratioStock1 3

4.67E-01 3.05E-01 2.28E-01

FDS3popratioStock1 3

4.48E-01 3.23E-01 2.29E-01

FDS4popratioStock1 3

4.61E-01 3.05E-01 2.33E-01

FDS5popratioStock1 3

3.88E-01 3.35E-01 2.77E-01

FDS6popratioStock1 3

3.58E-01 3.25E-01 3.17E-01

FDS7popratioStock1 3

4.28E-01 2.72E-01 3.01E-01

FDS8popratioStock1 3

5.10E-01 2.02E-01 2.89E-01

FDS9popratioStock1 3

4.57E-01 2.55E-01 2.89E-01

FDS10popratioStock1 3

4.42E-01 2.33E-01 3.25E-01

FDM1popratioStock1 1

1.00E+00

FDM2popratioStock1 1

1.00E+00

FDM3popratioStock1 1

1.00E+00

FDM4popratioStock1 1

1.00E+00

FDM5popratioStock1 1

1.00E+00

FDM6popratioStock1 1

1.00E+00

FDM7popratioStock1 1

1.00E+00

FDM8popratioStock1 1

1.00E+00

FDM9popratioStock1 1

1.00E+00

FDM10popratioStock1 1

1.00E+00

FDO1popratioStock1 2

0.5 0.5

FDO2popratioStock1 2

0.5 0.5

FDO3popratioStock1 2

0.5 0.5

FDO4popratioStock1 2

0.5 0.5

FDO5popratioStock1 2

0.5 0.5

FDO6popratioStock1 2

0.5 0.5

FDO7popratioStock1 2

0.5 0.5

FDO8popratioStock1 2

0.5 0.5

FDO9popratioStock1 2

0.5 0.5

FDO10popratioStock1 2

0.5 0.5

FDP1popratioStock1 1

1.00E+00

FDP2popratioStock1 1

1.00E+00

FDP3popratioStock1 1

1.00E+00

FDP4popratioStock1 1

1.00E+00

FDP5popratioStock1 1

1.00E+00

FDP6popratioStock1 1

1.00E+00

FDP7popratioStock1 1

1.00E+00

FDP8popratioStock1 1

1.00E+00

FDP9popratioStock1 1

1.00E+00

FDP10popratioStock1 1

1.00E+00

FDB1popratioStock1 1

1

FDB2popratioStock1 1

1

FDB3popratioStock1 1

1

FDB4popratioStock1 1

1

FDB5popratioStock1 1

1

FDB6popratioStock1 1

1

FDB7popratioStock1 1

1

FDB8popratioStock1 1

1

FDB9popratioStock1 1

1

FDB10popratioStock1 1

1

FDC1popratioStock1 1

1

FDC2popratioStock1 1

1

FDC3popratioStock1 1

1

FDC4popratioStock1 1

1

FDC5popratioStock1 1

1

FDC6popratioStock1 1

1

FDC7popratioStock1 1

1

FDC8popratioStock1 1

1

FDC9popratioStock1 1

1

FDC10popratioStock1 1

1

FDF1popratioStock1 2

0.5 0.5

FDF2popratioStock1 2

0.5 0.5

FDF3popratioStock1 2

0.5 0.5

FDF4popratioStock1 2

0.5 0.5

FDF5popratioStock1 2

0.5 0.5

FDF6popratioStock1 2

0.5 0.5

FDF7popratioStock1 2

0.5 0.5

FDF8popratioStock1 2

0.5 0.5

FDF9popratioStock1 2

0.5 0.5

FDF10popratioStock1 2

0.5 0.5

SHB1popratioStock1 6

2.307692e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001

SHB2popratioStock1 6

2.307692e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001

SHB3popratioStock1 6

1.217119e-001 1.713097e-001 1.713097e-001 1.741199e-001 1.825678e-001 1.789809e-001

SHB4popratioStock1 6

2.063475e-001 1.852102e-001 1.763617e-001 1.569506e-001 1.375650e-001 1.375650e-001

SHB5popratioStock1 6

2.079883e-001 1.938040e-001 1.721859e-001 1.487040e-001 1.386589e-001 1.386589e-001

SHB6popratioStock1 6

1.564604e-001 1.439585e-001 1.400010e-001 1.865267e-001 1.865267e-001 1.865267e-001

SHB7popratioStock1 6

1.318209e-001 1.515890e-001 1.977313e-001 1.570033e-001 1.678013e-001 1.940543e-001

SHB8popratioStock1 6

2.014844e-001 2.093795e-001 1.701025e-001 1.396849e-001 1.396849e-001 1.396638e-001

SHB9popratioStock1 6

2.200547e-001 1.838378e-001 1.518755e-001 1.506179e-001 1.469109e-001 1.467031e-001

SHB10popratioStock1 6

1.734745e-001 1.586007e-001 1.627445e-001 1.446509e-001 1.855798e-001 1.749496e-001

SHD1popratioStock1 3

4.29E-01 2.86E-01 2.86E-01

SHD2popratioStock1 3

4.29E-01 2.86E-01 2.86E-01

SHD3popratioStock1 3

3.98E-01 3.29E-01 2.73E-01

SHD4popratioStock1 3

3.57E-01 3.31E-01 3.12E-01

SHD5popratioStock1 3

3.52E-01 3.35E-01 3.13E-01

SHD6popratioStock1 3

3.50E-01 3.33E-01 3.18E-01

SHD7popratioStock1 3

3.47E-01 3.33E-01 3.20E-01

SHD8popratioStock1 3

3.26E-01 3.18E-01 3.56E-01

SHD9popratioStock1 3

3.15E-01 3.10E-01 3.75E-01

SHD10popratioStock1 3

2.97E-01 3.59E-01 3.44E-01

SHC1popratioStock1 6

2.307692e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001

SHC2popratioStock1 6

2.307692e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001

SHC3popratioStock1 6

1.217119e-001 1.713097e-001 1.713097e-001 1.741199e-001 1.825678e-001 1.789809e-001

SHC4popratioStock1 6

2.063475e-001 1.852102e-001 1.763617e-001 1.569506e-001 1.375650e-001 1.375650e-001

SHC5popratioStock1 6

2.079883e-001 1.938040e-001 1.721859e-001 1.487040e-001 1.386589e-001 1.386589e-001

SHC6popratioStock1 6

1.564604e-001 1.439585e-001 1.400010e-001 1.865267e-001 1.865267e-001 1.865267e-001

SHC7popratioStock1 6

1.318209e-001 1.515890e-001 1.977313e-001 1.570033e-001 1.678013e-001 1.940543e-001

SHC8popratioStock1 6

2.014844e-001 2.093795e-001 1.701025e-001 1.396849e-001 1.396849e-001 1.396638e-001

SHC9popratioStock1 6

2.200547e-001 1.838378e-001 1.518755e-001 1.506179e-001 1.469109e-001 1.467031e-001

SHC10popratioStock1 6

1.734745e-001 1.586007e-001 1.627445e-001 1.446509e-001 1.855798e-001 1.749496e-001

SHP1popratioStock1 4

2.502999e-001 2.508369e-001 2.507282e-001 2.481350e-001

SHP2popratioStock1 4

3.333333e-001 2.222222e-001 2.222222e-001 2.222222e-001

SHP3popratioStock1 4

3.302534e-001 2.294087e-001 2.201689e-001 2.201689e-001

SHP4popratioStock1 4

3.029848e-001 2.651923e-001 2.298330e-001 2.019899e-001

SHP5popratioStock1 4

2.844471e-001 2.598464e-001 2.374680e-001 2.182385e-001

SHP6popratioStock1 4

2.730383e-001 2.577900e-001 2.425725e-001 2.265992e-001

SHP7popratioStock1 4

2.697333e-001 2.558558e-001 2.438781e-001 2.305328e-001

SHP8popratioStock1 4

2.673205e-001 2.545772e-001 2.435194e-001 2.345829e-001

SHP9popratioStock1 4

2.638464e-001 2.544638e-001 2.453109e-001 2.363789e-001

SHP10popratioStock1 4

2.641011e-001 2.546531e-001 2.448239e-001 2.364219e-001

SHR1popratioStock1 6

2.307692e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001

SHR2popratioStock1 6

2.307692e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001 1.538462e-001

SHR3popratioStock1 6

1.217119e-001 1.713097e-001 1.713097e-001 1.741199e-001 1.825678e-001 1.789809e-001

SHR4popratioStock1 6

2.063475e-001 1.852102e-001 1.763617e-001 1.569506e-001 1.375650e-001 1.375650e-001

SHR5popratioStock1 6

2.079883e-001 1.938040e-001 1.721859e-001 1.487040e-001 1.386589e-001 1.386589e-001

SHR6popratioStock1 6

1.564604e-001 1.439585e-001 1.400010e-001 1.865267e-001 1.865267e-001 1.865267e-001

SHR7popratioStock1 6

1.318209e-001 1.515890e-001 1.977313e-001 1.570033e-001 1.678013e-001 1.940543e-001

SHR8popratioStock1 6

2.014844e-001 2.093795e-001 1.701025e-001 1.396849e-001 1.396849e-001 1.396638e-001

SHR9popratioStock1 6

2.200547e-001 1.838378e-001 1.518755e-001 1.506179e-001 1.469109e-001 1.467031e-001

SHR10popratioStock1 6

1.734745e-001 1.586007e-001 1.627445e-001 1.446509e-001 1.855798e-001 1.749496e-001

SSK1popratioStock1 3

4.29E-01 2.86E-01 2.86E-01

SSK2popratioStock1 3

4.29E-01 2.86E-01 2.86E-01

SSK3popratioStock1 3

3.46E-01 3.31E-01 3.22E-01

SSK4popratioStock1 3

3.30E-01 3.33E-01 3.37E-01

SSK5popratioStock1 3

3.39E-01 3.29E-01 3.32E-01

SSK6popratioStock1 3

3.26E-01 3.34E-01 3.40E-01

SSK7popratioStock1 3

2.52E-01 3.69E-01 3.78E-01

SSK8popratioStock1 3

2.84E-01 2.91E-01 4.25E-01

SSK9popratioStock1 3

2.72E-01 3.90E-01 3.38E-01

SSK10popratioStock1 3

3.98E-01 3.37E-01 2.65E-01

SB1popratioStock1 4

3.33E-01 2.22E-01 2.22E-01 2.22E-01

SB2popratioStock1 4

3.33E-01 2.22E-01 2.22E-01 2.22E-01

SB3popratioStock1 4

3.33E-01 2.22E-01 2.22E-01 2.22E-01

SB4popratioStock1 4

3.33E-01 2.22E-01 2.22E-01 2.22E-01

SB5popratioStock1 4

3.15E-01 2.60E-01 2.14E-01 2.10E-01

SB6popratioStock1 4

2.93E-01 2.62E-01 2.35E-01 2.10E-01

SB7popratioStock1 4

2.82E-01 2.59E-01 2.40E-01 2.19E-01

SB8popratioStock1 4

2.72E-01 2.52E-01 2.71E-01 2.05E-01

SB9popratioStock1 4

2.32E-01 2.67E-01 2.93E-01 2.08E-01

SB10popratioStock1 4

2.41E-01 2.76E-01 2.74E-01 2.09E-01

PIN1popratioStock1 2

6.00E-01 4.00E-01

PIN2popratioStock1 2

6.00E-01 4.00E-01

PIN3popratioStock1 2

5.50E-01 4.50E-01

PIN4popratioStock1 2

5.20E-01 4.80E-01

PIN5popratioStock1 2

5.15E-01 4.85E-01

PIN6popratioStock1 2

5.14E-01 4.86E-01

PIN7popratioStock1 2

5.12E-01 4.88E-01

PIN8popratioStock1 2

5.14E-01 4.86E-01

PIN9popratioStock1 2

5.09E-01 4.91E-01

PIN10popratioStock1 2

5.07E-01 4.93E-01

WDG1popratioStock1 2

6.00E-01 4.00E-01

WDG2popratioStock1 2

6.00E-01 4.00E-01

WDG3popratioStock1 2

5.50E-01 4.50E-01

WDG4popratioStock1 2

5.20E-01 4.80E-01

WDG5popratioStock1 2

5.15E-01 4.85E-01

WDG6popratioStock1 2

5.14E-01 4.86E-01

WDG7popratioStock1 2

5.12E-01 4.88E-01

WDG8popratioStock1 2

5.14E-01 4.86E-01

WDG9popratioStock1 2

5.09E-01 4.91E-01

WDG10popratioStock1 2

5.07E-01 4.93E-01

SP1popratioStock1 2

6.00E-01 4.00E-01

SP2popratioStock1 2

6.00E-01 4.00E-01

SP3popratioStock1 2

5.50E-01 4.50E-01

SP4popratioStock1 2

5.20E-01 4.80E-01

SP5popratioStock1 2

5.15E-01 4.85E-01

SP6popratioStock1 2

5.14E-01 4.86E-01

SP7popratioStock1 2

5.12E-01 4.88E-01

SP8popratioStock1 2

5.14E-01 4.86E-01

SP9popratioStock1 2

5.09E-01 4.91E-01

SP10popratioStock1 2

5.07E-01 4.93E-01

REP1popratioStock1 2

6.00E-01 4.00E-01

REP2popratioStock1 2

6.00E-01 4.00E-01

REP3popratioStock1 2

5.50E-01 4.50E-01

REP4popratioStock1 2

5.20E-01 4.80E-01

REP5popratioStock1 2

5.15E-01 4.85E-01

REP6popratioStock1 2

5.14E-01 4.86E-01

REP7popratioStock1 2

5.12E-01 4.88E-01

REP8popratioStock1 2

5.14E-01 4.86E-01

REP9popratioStock1 2

5.09E-01 4.91E-01

REP10popratioStock1 2

5.07E-01 4.93E-01

WHB1popratioStock1 6

2.31E-01 1.54E-01 1.54E-01 1.54E-01 1.54E-01 1.54E-01

WHB2popratioStock1 6

1.54E-01 2.31E-01 1.54E-01 1.54E-01 1.54E-01 1.54E-01

WHB3popratioStock1 6

1.54E-01 2.31E-01 1.54E-01 1.54E-01 1.54E-01 1.54E-01

WHB4popratioStock1 6

1.58E-01 1.61E-01 1.65E-01 1.75E-01 1.66E-01 1.75E-01

WHB5popratioStock1 6

1.72E-01 1.68E-01 1.63E-01 1.94E-01 1.54E-01 1.48E-01

WHB6popratioStock1 6

1.51E-01 1.55E-01 1.59E-01 2.04E-01 1.65E-01 1.65E-01

WHB7popratioStock1 6

1.63E-01 1.61E-01 1.59E-01 1.98E-01 1.59E-01 1.60E-01

WHB8popratioStock1 6

1.61E-01 1.61E-01 1.61E-01 1.96E-01 1.61E-01 1.60E-01

WHB9popratioStock1 6

1.60E-01 1.60E-01 1.61E-01 1.97E-01 1.60E-01 1.62E-01

WHB10popratioStock1 6

1.62E-01 1.62E-01 1.61E-01 1.90E-01 1.63E-01 1.62E-01

WHS1popratioStock1 5

2.73E-01 1.82E-01 1.82E-01 1.82E-01 1.82E-01

WHS2popratioStock1 5

2.73E-01 1.82E-01 1.82E-01 1.82E-01 1.82E-01

WHS3popratioStock1 5

2.07E-01 2.03E-01 2.00E-01 1.97E-01 1.93E-01

WHS4popratioStock1 5

2.06E-01 2.04E-01 2.02E-01 1.96E-01 1.92E-01

WHS5popratioStock1 5

1.58E-01 2.06E-01 2.02E-01 2.11E-01 2.24E-01

WHS6popratioStock1 5

1.79E-01 1.87E-01 1.93E-01 2.03E-01 2.38E-01

WHS7popratioStock1 5

1.89E-01 1.95E-01 2.05E-01 2.25E-01 1.87E-01

WHS8popratioStock1 5

1.93E-01 1.98E-01 2.07E-01 2.22E-01 1.81E-01

WHS9popratioStock1 5

1.92E-01 1.99E-01 2.07E-01 2.21E-01 1.81E-01

WHS10popratioStock1 5

1.93E-01 2.00E-01 2.10E-01 2.26E-01 1.71E-01

WHT1popratioStock1 8

1.34E-01 1.38E-01 1.33E-01 1.29E-01 1.24E-01 1.20E-01 1.17E-01 1.05E-01

WHT2popratioStock1 8

1.41E-01 1.26E-01 1.24E-01 1.29E-01 1.19E-01 1.24E-01 1.23E-01 1.14E-01

WHT3popratioStock1 8

1.76E-01 1.18E-01 1.18E-01 1.18E-01 1.18E-01 1.18E-01 1.18E-01 1.18E-01

WHT4popratioStock1 8

1.75E-01 1.26E-01 1.17E-01 1.17E-01 1.17E-01 1.17E-01 1.17E-01 1.17E-01

WHT5popratioStock1 8

1.59E-01 1.45E-01 1.35E-01 1.25E-01 1.16E-01 1.07E-01 1.06E-01 1.06E-01

WHT6popratioStock1 8

1.43E-01 1.38E-01 1.33E-01 1.28E-01 1.23E-01 1.18E-01 1.12E-01 1.06E-01

WHT7popratioStock1 8

1.24E-01 1.31E-01 1.42E-01 1.18E-01 1.19E-01 1.20E-01 1.22E-01 1.24E-01

WHT8popratioStock1 8

1.31E-01 1.39E-01 1.55E-01 1.11E-01 1.12E-01 1.15E-01 1.17E-01 1.21E-01

WHT9popratioStock1 8

1.31E-01 1.39E-01 1.52E-01 1.12E-01 1.14E-01 1.16E-01 1.18E-01 1.19E-01

WHT10popratioStock1 8

1.23E-01 1.25E-01 1.25E-01 1.24E-01 1.24E-01 1.24E-01 1.26E-01 1.29E-01

# Invading species params - if allowing for invading species

invading\_sp\_model 0 Invading species model: 0 = not used, 1 = simple drip feed model, 2 - more complex (not implemented yet)

InvaderIndex 0 Guild that is invading

minInvaderAge 0 Minimum age class invading

maxInvaderAge 0 Maximum age class invading

InvaderEntryBox 0 Which box invader entering first

InvaderMinDepth 2000.0 Minimum depth invader tolerates

InvaderMaxDepth 2000.0 Maximum depth invader tolerates

InvaderStartDay 36666666660 Day of run invasion begins

InvaderEndDay 36666666660 Day of run invasion ends

InvaderScalar 1.0 Proportional scalar to represent drip feed of invaders to existing population

InvaderSpeed 0.0 Rate of spread of front of the invading species (m hr-1)

#Added by Bec Gorton 17/12/2010

# Read in for the SM\_INF groups. If true group releaseNH contributes to ReminNet.

BD\_remin\_contrib 1

BC\_remin\_contrib 0

BO\_remin\_contrib 1

BB\_remin\_contrib 1

# Added by Bec Gorton 23rd April 2013.

jack\_a\_FPS 0

jack\_a\_FPL 0

jack\_a\_FPO 0

jack\_a\_FVD 0

jack\_a\_FVV 0

jack\_a\_FVS 0

jack\_a\_FVT 0

jack\_a\_FVB 0

jack\_a\_FVO 0

jack\_a\_FMM 0

jack\_a\_FMN 0

jack\_a\_FBP 0

jack\_a\_FDD 0

jack\_a\_FDS 0

jack\_a\_FDB 0

jack\_a\_FDC 0

jack\_a\_FDO 0

jack\_a\_FDE 0

jack\_a\_FDF 0

jack\_a\_FDM 0

jack\_a\_FDP 0

jack\_a\_SHD 0

jack\_a\_SHC 0

jack\_a\_SHB 0

jack\_a\_SHR 0

jack\_a\_SHP 0

jack\_a\_SSK 0

jack\_a\_SB 0

jack\_a\_SP 0

jack\_a\_REP 0

jack\_a\_WDG 0

jack\_a\_PIN 0

jack\_a\_WHB 0

jack\_a\_WHS 0

jack\_a\_WHT 0

jack\_a\_CEP 0

jack\_a\_PWN 0

jack\_b\_FPS 0

jack\_b\_FPL 0

jack\_b\_FPO 0

jack\_b\_FVD 0

jack\_b\_FVV 0

jack\_b\_FVS 0

jack\_b\_FVT 0

jack\_b\_FVB 0

jack\_b\_FVO 0

jack\_b\_FMM 0

jack\_b\_FMN 0

jack\_b\_FBP 0

jack\_b\_FDD 0

jack\_b\_FDS 0

jack\_b\_FDB 0

jack\_b\_FDC 0

jack\_b\_FDO 0

jack\_b\_FDE 0

jack\_b\_FDF 0

jack\_b\_FDM 0

jack\_b\_FDP 0

jack\_b\_SHD 0

jack\_b\_SHC 0

jack\_b\_SHB 0

jack\_b\_SHR 0

jack\_b\_SHP 0

jack\_b\_SSK 0

jack\_b\_SB 0

jack\_b\_SP 0

jack\_b\_REP 0

jack\_b\_WDG 0

jack\_b\_PIN 0

jack\_b\_WHB 0

jack\_b\_WHS 0

jack\_b\_WHT 0

jack\_b\_CEP 0

jack\_b\_PWN 0

## Evolution related parameters

flag\_do\_evolution 0 Whether do evolution (1) or not (0) 0

flag\_mult\_grow\_curves 0 Whether using mutiple growth curves not evolution per se (1) or not (0) 0

flag\_bound\_change 0 Whether evolution is effecting bound (1) or impact (0) 0

evol\_stdev\_range 2.0 Range of genotypes in terms of stdev 1-2

max\_rate\_evol 0.0 Maximum evolutionary shift at any one point in time

flag\_inheritance 1 Flag indicating whether complex (0), simple (1) or straight (2) inheritance model used (1)

trait\_active\_FPL 7

0 0 0 0 0 0 0

trait\_active\_FPS 7

0 0 0 0 0 0 0

trait\_active\_FPO 7

0 0 0 0 0 0 0

trait\_active\_FVD 7

0 0 0 0 0 0 0

trait\_active\_FVV 7

0 0 0 0 0 0 0

trait\_active\_FVS 7

0 0 0 0 0 0 0

trait\_active\_FVT 7

0 0 0 0 0 0 0

trait\_active\_FVO 7

0 0 0 0 0 0 0

trait\_active\_FVB 7

0 0 0 0 0 0 0

trait\_active\_FMM 7

0 0 0 0 0 0 0

trait\_active\_FMN 7

0 0 0 0 0 0 0

trait\_active\_FBP 7

0 0 0 0 0 0 0

trait\_active\_FDD 7

0 0 0 0 0 0 0

trait\_active\_FDS 7

0 0 0 0 0 0 0

trait\_active\_FDB 7

0 0 0 0 0 0 0

trait\_active\_FDC 7

0 0 0 0 0 0 0

trait\_active\_FDO 7

0 0 0 0 0 0 0

trait\_active\_FDE 7

0 0 0 0 0 0 0

trait\_active\_FDF 7

0 0 0 0 0 0 0

trait\_active\_FDP 7

0 0 0 0 0 0 0

trait\_active\_FDM 7

0 0 0 0 0 0 0

trait\_active\_SHD 7

0 0 0 0 0 0 0

trait\_active\_SHC 7

0 0 0 0 0 0 0

trait\_active\_SHP 7

0 0 0 0 0 0 0

trait\_active\_SHB 7

0 0 0 0 0 0 0

trait\_active\_SHR 7

0 0 0 0 0 0 0

trait\_active\_SSK 7

0 0 0 0 0 0 0

trait\_active\_SB 7

0 0 0 0 0 0 0

trait\_active\_SP 7

0 0 0 0 0 0 0

trait\_active\_REP 7

0 0 0 0 0 0 0

trait\_active\_PIN 7

0 0 0 0 0 0 0

trait\_active\_WDG 7

0 0 0 0 0 0 0

trait\_active\_WHB 7

0 0 0 0 0 0 0

trait\_active\_WHT 7

0 0 0 0 0 0 0

trait\_active\_WHS 7

0 0 0 0 0 0 0

trait\_active\_PB 7

0 0 0 0 0 0 0

trait\_active\_BB 7

0 0 0 0 0 0 0

trait\_active\_BO 7

0 0 0 0 0 0 0

trait\_active\_BD 7

0 0 0 0 0 0 0

trait\_active\_BC 7

0 0 0 0 0 0 0

trait\_active\_BFS 7

0 0 0 0 0 0 0

trait\_active\_BFD 7

0 0 0 0 0 0 0

trait\_active\_BFF 7

0 0 0 0 0 0 0

trait\_active\_BG 7

0 0 0 0 0 0 0

trait\_active\_BMS 7

0 0 0 0 0 0 0

trait\_active\_BMD 7

0 0 0 0 0 0 0

trait\_active\_BML 7

0 0 0 0 0 0 0

trait\_active\_CEP 7

0 0 0 0 0 0 0

trait\_active\_PWN 7

0 0 0 0 0 0 0

trait\_active\_PL 7

0 0 0 0 0 0 0

trait\_active\_PS 7

0 0 0 0 0 0 0

trait\_active\_DF 7

0 0 0 0 0 0 0

trait\_active\_MA 7

0 0 0 0 0 0 0

trait\_active\_MB 7

0 0 0 0 0 0 0

trait\_active\_SG 7

0 0 0 0 0 0 0

trait\_active\_ZG 7

0 0 0 0 0 0 0

trait\_active\_ZL 7

0 0 0 0 0 0 0

trait\_active\_ZM 7

0 0 0 0 0 0 0

trait\_active\_ZS 7

0 0 0 0 0 0 0

# Max proportional shift in phenotypes with aging

max\_prop\_shift\_FPS 0.0 0.0

max\_prop\_shift\_FPL 0.0 0.0

max\_prop\_shift\_FPO 0.0 0.0

max\_prop\_shift\_FVD 0.0 0.0

max\_prop\_shift\_FVV 0.0 0.0

max\_prop\_shift\_FVS 0.0 0.0

max\_prop\_shift\_FVT 0.0 0.0

max\_prop\_shift\_FVO 0.0 0.0

max\_prop\_shift\_FVB 0.0 0.0

max\_prop\_shift\_FMM 0.0 0.0

max\_prop\_shift\_FMN 0.0 0.0

max\_prop\_shift\_FBP 0.0 0.0

max\_prop\_shift\_FDD 0.0 0.0

max\_prop\_shift\_FDS 0.0 0.0

max\_prop\_shift\_FDB 0.0 0.0

max\_prop\_shift\_FDC 0.0 0.0

max\_prop\_shift\_FDO 0.0 0.0

max\_prop\_shift\_FDE 0.0 0.0

max\_prop\_shift\_FDF 0.0 0.0

max\_prop\_shift\_FDP 0.0 0.0

max\_prop\_shift\_FDM 0.0 0.0

max\_prop\_shift\_SHD 0.0 0.0

max\_prop\_shift\_SHC 0.0 0.0

max\_prop\_shift\_SHP 0.0 0.0

max\_prop\_shift\_SHB 0.0 0.0

max\_prop\_shift\_SHR 0.0 0.0

max\_prop\_shift\_SSK 0.0 0.0

max\_prop\_shift\_SB 0.0 0.0

max\_prop\_shift\_SP 0.0 0.0

max\_prop\_shift\_REP 0.0 0.0

max\_prop\_shift\_PIN 0.0 0.0

max\_prop\_shift\_WDG 0.0 0.0

max\_prop\_shift\_WHB 0.0 0.0

max\_prop\_shift\_WHT 0.0 0.0

max\_prop\_shift\_WHS 0.0 0.0

max\_prop\_shift\_PB 0.0 0.0

max\_prop\_shift\_BB 0.0 0.0

max\_prop\_shift\_BO 0.0 0.0

max\_prop\_shift\_BD 0.0 0.0

max\_prop\_shift\_BC 0.0 0.0

max\_prop\_shift\_BFS 0.0 0.0

max\_prop\_shift\_BFD 0.0 0.0

max\_prop\_shift\_BFF 0.0 0.0

max\_prop\_shift\_BG 0.0 0.0

max\_prop\_shift\_BMS 0.0 0.0

max\_prop\_shift\_BMD 0.0 0.0

max\_prop\_shift\_BML 0.0 0.0

max\_prop\_shift\_CEP 0.0 0.0

max\_prop\_shift\_PWN 0.0 0.0

max\_prop\_shift\_PL 0.0 0.0

max\_prop\_shift\_PS 0.0 0.0

max\_prop\_shift\_DF 0.0 0.0

max\_prop\_shift\_MA 0.0 0.0

max\_prop\_shift\_MB 0.0 0.0

max\_prop\_shift\_SG 0.0 0.0

max\_prop\_shift\_ZG 0.0 0.0

max\_prop\_shift\_ZL 0.0 0.0

max\_prop\_shift\_ZM 0.0 0.0

max\_prop\_shift\_ZS 0.0 0.0

# Level of inheritance

inheritance\_FPS 0.0 0.0

inheritance\_FPL 0.0 0.0

inheritance\_FPO 0.0 0.0

inheritance\_FVD 0.0 0.0

inheritance\_FVV 0.0 0.0

inheritance\_FVS 0.0 0.0

inheritance\_FVT 0.0 0.0

inheritance\_FVO 0.0 0.0

inheritance\_FVB 0.0 0.0

inheritance\_FMM 0.0 0.0

inheritance\_FMN 0.0 0.0

inheritance\_FBP 0.0 0.0

inheritance\_FDD 0.0 0.0

inheritance\_FDS 0.0 0.0

inheritance\_FDB 0.0 0.0

inheritance\_FDC 0.0 0.0

inheritance\_FDO 0.0 0.0

inheritance\_FDE 0.0 0.0

inheritance\_FDF 0.0 0.0

inheritance\_FDP 0.0 0.0

inheritance\_FDM 0.0 0.0

inheritance\_SHD 0.0 0.0

inheritance\_SHC 0.0 0.0

inheritance\_SHP 0.0 0.0

inheritance\_SHB 0.0 0.0

inheritance\_SHR 0.0 0.0

inheritance\_SSK 0.0 0.0

inheritance\_SB 0.0 0.0

inheritance\_SP 0.0 0.0

inheritance\_REP 0.0 0.0

inheritance\_PIN 0.0 0.0

inheritance\_WDG 0.0 0.0

inheritance\_WHB 0.0 0.0

inheritance\_WHT 0.0 0.0

inheritance\_WHS 0.0 0.0

inheritance\_PB 0.0 0.0

inheritance\_BB 0.0 0.0

inheritance\_BO 0.0 0.0

inheritance\_BD 0.0 0.0

inheritance\_BC 0.0 0.0

inheritance\_BFS 0.0 0.0

inheritance\_BFD 0.0 0.0

inheritance\_BFF 0.0 0.0

inheritance\_BG 0.0 0.0

inheritance\_BMS 0.0 0.0

inheritance\_BMD 0.0 0.0

inheritance\_BML 0.0 0.0

inheritance\_CEP 0.0 0.0

inheritance\_PWN 0.0 0.0

inheritance\_PL 0.0 0.0

inheritance\_PS 0.0 0.0

inheritance\_DF 0.0 0.0

inheritance\_MA 0.0 0.0

inheritance\_MB 0.0 0.0

inheritance\_SG 0.0 0.0

inheritance\_ZG 0.0 0.0

inheritance\_ZL 0.0 0.0

inheritance\_ZM 0.0 0.0

inheritance\_ZS 0.0 0.0

# Level of trait variance

trait\_variance\_FPS 0.0 0.0

trait\_variance\_FPL 0.0 0.0

trait\_variance\_FPO 0.0 0.0

trait\_variance\_FVD 0.0 0.0

trait\_variance\_FVV 0.0 0.0

trait\_variance\_FVS 0.0 0.0

trait\_variance\_FVT 0.0 0.0

trait\_variance\_FVO 0.0 0.0

trait\_variance\_FVB 0.0 0.0

trait\_variance\_FMM 0.0 0.0

trait\_variance\_FMN 0.0 0.0

trait\_variance\_FBP 0.0 0.0

trait\_variance\_FDD 0.0 0.0

trait\_variance\_FDS 0.0 0.0

trait\_variance\_FDB 0.0 0.0

trait\_variance\_FDC 0.0 0.0

trait\_variance\_FDO 0.0 0.0

trait\_variance\_FDE 0.0 0.0

trait\_variance\_FDF 0.0 0.0

trait\_variance\_FDP 0.0 0.0

trait\_variance\_FDM 0.0 0.0

trait\_variance\_SHD 0.0 0.0

trait\_variance\_SHC 0.0 0.0

trait\_variance\_SHP 0.0 0.0

trait\_variance\_SHB 0.0 0.0

trait\_variance\_SHR 0.0 0.0

trait\_variance\_SSK 0.0 0.0

trait\_variance\_SB 0.0 0.0

trait\_variance\_SP 0.0 0.0

trait\_variance\_REP 0.0 0.0

trait\_variance\_PIN 0.0 0.0

trait\_variance\_WDG 0.0 0.0

trait\_variance\_WHB 0.0 0.0

trait\_variance\_WHT 0.0 0.0

trait\_variance\_WHS 0.0 0.0

trait\_variance\_PB 0.0 0.0

trait\_variance\_BB 0.0 0.0

trait\_variance\_BO 0.0 0.0

trait\_variance\_BD 0.0 0.0

trait\_variance\_BC 0.0 0.0

trait\_variance\_BFS 0.0 0.0

trait\_variance\_BFD 0.0 0.0

trait\_variance\_BFF 0.0 0.0

trait\_variance\_BG 0.0 0.0

trait\_variance\_BMS 0.0 0.0

trait\_variance\_BMD 0.0 0.0

trait\_variance\_BML 0.0 0.0

trait\_variance\_CEP 0.0 0.0

trait\_variance\_PWN 0.0 0.0

trait\_variance\_PL 0.0 0.0

trait\_variance\_PS 0.0 0.0

trait\_variance\_DF 0.0 0.0

trait\_variance\_MA 0.0 0.0

trait\_variance\_MB 0.0 0.0

trait\_variance\_SG 0.0 0.0

trait\_variance\_ZG 0.0 0.0

trait\_variance\_ZL 0.0 0.0

trait\_variance\_ZM 0.0 0.0

trait\_variance\_ZS 0.0 0.0

# Minimum level of trait variance (i.e. what the variance can decline to as evolution occurs dynamically)

min\_trait\_variance\_FPS 0.0 0.0

min\_trait\_variance\_FPL 0.0 0.0

min\_trait\_variance\_FPO 0.0 0.0

min\_trait\_variance\_FVD 0.0 0.0

min\_trait\_variance\_FVV 0.0 0.0

min\_trait\_variance\_FVS 0.0 0.0

min\_trait\_variance\_FVT 0.0 0.0

min\_trait\_variance\_FVO 0.0 0.0

min\_trait\_variance\_FVB 0.0 0.0

min\_trait\_variance\_FMM 0.0 0.0

min\_trait\_variance\_FMN 0.0 0.0

min\_trait\_variance\_FBP 0.0 0.0

min\_trait\_variance\_FDD 0.0 0.0

min\_trait\_variance\_FDS 0.0 0.0

min\_trait\_variance\_FDB 0.0 0.0

min\_trait\_variance\_FDC 0.0 0.0

min\_trait\_variance\_FDO 0.0 0.0

min\_trait\_variance\_FDE 0.0 0.0

min\_trait\_variance\_FDF 0.0 0.0

min\_trait\_variance\_FDP 0.0 0.0

min\_trait\_variance\_FDM 0.0 0.0

min\_trait\_variance\_SHD 0.0 0.0

min\_trait\_variance\_SHC 0.0 0.0

min\_trait\_variance\_SHP 0.0 0.0

min\_trait\_variance\_SHB 0.0 0.0

min\_trait\_variance\_SHR 0.0 0.0

min\_trait\_variance\_SSK 0.0 0.0

min\_trait\_variance\_SB 0.0 0.0

min\_trait\_variance\_SP 0.0 0.0

min\_trait\_variance\_REP 0.0 0.0

min\_trait\_variance\_PIN 0.0 0.0

min\_trait\_variance\_WDG 0.0 0.0

min\_trait\_variance\_WHB 0.0 0.0

min\_trait\_variance\_WHT 0.0 0.0

min\_trait\_variance\_WHS 0.0 0.0

min\_trait\_variance\_PB 0.0 0.0

min\_trait\_variance\_BB 0.0 0.0

min\_trait\_variance\_BO 0.0 0.0

min\_trait\_variance\_BD 0.0 0.0

min\_trait\_variance\_BC 0.0 0.0

min\_trait\_variance\_BFS 0.0 0.0

min\_trait\_variance\_BFD 0.0 0.0

min\_trait\_variance\_BFF 0.0 0.0

min\_trait\_variance\_BG 0.0 0.0

min\_trait\_variance\_BMS 0.0 0.0

min\_trait\_variance\_BMD 0.0 0.0

min\_trait\_variance\_BML 0.0 0.0

min\_trait\_variance\_CEP 0.0 0.0

min\_trait\_variance\_PWN 0.0 0.0

min\_trait\_variance\_PL 0.0 0.0

min\_trait\_variance\_PS 0.0 0.0

min\_trait\_variance\_DF 0.0 0.0

min\_trait\_variance\_MA 0.0 0.0

min\_trait\_variance\_MB 0.0 0.0

min\_trait\_variance\_SG 0.0 0.0

min\_trait\_variance\_ZG 0.0 0.0

min\_trait\_variance\_ZL 0.0 0.0

min\_trait\_variance\_ZM 0.0 0.0

min\_trait\_variance\_ZS 0.0 0.0

flag\_benthos\_sediment\_link 0 flag indicating whether growth of benthos is scaled based on bottom types (1) or not (0)

flag\_competing\_epiff 0

flag\_invert\_biohab 0

#flag indicating which refugia model to use

# refuge\_model option: 0 = none, 1 = original, 2 is rugosity related

flag\_refuge\_model 1

#flag indicating which rugosity model to use

# rugosity\_model option: 0 = none, 1 = mechanistic, 2 is an empirical relationship from Blackwood

flag\_rugosity\_model 0

RugCover\_Coefft 1.4613

RugCover\_Const 0.0475

RugCover\_Cap 4

min\_rugosity 1

max\_rugosity 5

flag\_georugosity 0

# Bozec model for rugosity

rugosity\_const 1.2 # was 0.88 from Bozec et al 2014 but to allow for box wide effects this has been retuned here.

flag\_move\_habdepend 1 setting it to 0 means that habitat is not considered when doing movement, it will still be considering in feeding etc

FPS\_rec\_HabDepend 0 small planktivores recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FPL\_rec\_HabDepend 0 large planktivores recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FBG\_rec\_HabDepend 0 grenadier recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FVD\_rec\_HabDepend 0 deep piscivorous fish recruit depend. on demersal habitat: 0 = no, 0 = yes 0

FBM\_rec\_HabDepend 0 banded morwong recruitment depend on demersal habitat: 0 = no, 0 = yes 0

FVS\_rec\_HabDepend 0 shallow pisciv. fish recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FVT\_rec\_HabDepend 0 tropical pisciv. fish depend. on demersal habitat: 0 = no, 0 = yes 0

FFH\_rec\_HabDepend 0 flathead recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FDR\_rec\_HabDepend 0 demersal reef fish recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FMM\_rec\_HabDepend 0 migratory mesopelag. depend. on demersal habitat: 0 = no, 0 = yes 0

FMN\_rec\_HabDepend 0 non-mig. mesopelag. depend. on demersal habitat: 0 = no, 0 = yes 0

FBP\_rec\_HabDepend 0 benthopelagic recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FDD\_rec\_HabDepend 0 deep demersal fish recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FDS\_rec\_HabDepend 0 shallow demersal fish depend. on demersal habitat: 0 = no, 0 = yes 0

FHC\_rec\_HabDepend 0 herring cale recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FBW\_rec\_HabDepend 0 blue throat wrasse recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FSN\_rec\_HabDepend 0 pink snapper recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FDH\_rec\_HabDepend 0 herbivorous demersal recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FWT\_rec\_HabDepend 0 warehou recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FDM\_rec\_HabDepend 0 miscell. demersal recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FDT\_rec\_HabDepend 0 territorial demersal recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

FST\_rec\_HabDepend 0 striped tuna recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

SHD\_rec\_HabDepend 0 demersal sharks recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

SHS\_rec\_HabDepend 0 dogshark recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

SHP\_rec\_HabDepend 0 pelagic sharks recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

SHG\_rec\_HabDepend 0 green-eye dogfish recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

SHR\_rec\_HabDepend 0 gummy shark recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

SSK\_rec\_HabDepend 0 skates and rays recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

SB\_rec\_HabDepend 0 seabirds recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

BGU\_rec\_HabDepend 0 urchin recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

PIN\_rec\_HabDepend 0 pinnipeds recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

BGA\_rec\_HabDepend 0 abalone recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

BRL\_rec\_HabDepend 0 lobster recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

WHB\_rec\_HabDepend 0 baleen whales recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

WHS\_rec\_HabDepend 0 small toothed whales recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

WHT\_rec\_HabDepend 0 toothed whales recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

CEP\_rec\_HabDepend 0 cephalopod recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

PWN\_rec\_HabDepend 0 prawn recruitment dependent on demersal habitat: 0 = no, 0 = yes 0

#Added by Bec Gorton 28th May 2015

min\_pH\_PL 0

min\_pH\_PS 0

min\_pH\_DF 0

min\_pH\_MA 0

min\_pH\_MB 0

min\_pH\_SG 0

min\_pH\_ZG 0

min\_pH\_ZL 0

min\_pH\_ZM 0

min\_pH\_ZS 0

min\_pH\_FPS 0

min\_pH\_FPL 0

min\_pH\_FPO 0

min\_pH\_FVD 0

min\_pH\_FVV 0

min\_pH\_FVS 0

min\_pH\_FVT 0

min\_pH\_FVO 0

min\_pH\_FVB 0

min\_pH\_FMM 0

min\_pH\_FMN 0

min\_pH\_FBP 0

min\_pH\_FDD 0

min\_pH\_FDS 0

min\_pH\_FDB 0

min\_pH\_FDC 0

min\_pH\_FDO 0

min\_pH\_FDE 0

min\_pH\_FDF 0

min\_pH\_FDP 0

min\_pH\_FDM 0

min\_pH\_SHD 0

min\_pH\_SHC 0

min\_pH\_SHP 0

min\_pH\_SHB 0

min\_pH\_SHR 0

min\_pH\_SSK 0

min\_pH\_SB 0

min\_pH\_SP 0

min\_pH\_REP 0

min\_pH\_PIN 0

min\_pH\_WDG 0

min\_pH\_WHB 0

min\_pH\_WHT 0

min\_pH\_WHS 0

min\_pH\_PB 0

min\_pH\_BB 0

min\_pH\_BO 0

min\_pH\_BD 0

min\_pH\_BC 0

min\_pH\_BFS 0

min\_pH\_BFD 0

min\_pH\_BFF 0

min\_pH\_BG 0

min\_pH\_BMS 0

min\_pH\_BMD 0

min\_pH\_BML 0

min\_pH\_CEP 0

min\_pH\_PWN 0

max\_pH\_PL 0

max\_pH\_PS 0

max\_pH\_DF 0

max\_pH\_MA 0

max\_pH\_MB 0

max\_pH\_SG 0

max\_pH\_ZG 0

max\_pH\_ZL 0

max\_pH\_ZM 0

max\_pH\_ZS 0

max\_pH\_FPS 0

max\_pH\_FPL 0

max\_pH\_FPO 0

max\_pH\_FVD 0

max\_pH\_FVV 0

max\_pH\_FVS 0

max\_pH\_FVT 0

max\_pH\_FVO 0

max\_pH\_FVB 0

max\_pH\_FMM 0

max\_pH\_FMN 0

max\_pH\_FBP 0

max\_pH\_FDD 0

max\_pH\_FDS 0

max\_pH\_FDB 0

max\_pH\_FDC 0

max\_pH\_FDO 0

max\_pH\_FDE 0

max\_pH\_FDF 0

max\_pH\_FDP 0

max\_pH\_FDM 0

max\_pH\_SHD 0

max\_pH\_SHC 0

max\_pH\_SHP 0

max\_pH\_SHB 0

max\_pH\_SHR 0

max\_pH\_SSK 0

max\_pH\_SB 0

max\_pH\_SP 0

max\_pH\_REP 0

max\_pH\_PIN 0

max\_pH\_WDG 0

max\_pH\_WHB 0

max\_pH\_WHT 0

max\_pH\_WHS 0

max\_pH\_PB 0

max\_pH\_BB 0

max\_pH\_BO 0

max\_pH\_BD 0

max\_pH\_BC 0

max\_pH\_BFS 0

max\_pH\_BFD 0

max\_pH\_BFF 0

max\_pH\_BG 0

max\_pH\_BMS 0

max\_pH\_BMD 0

max\_pH\_BML 0

max\_pH\_CEP 0

max\_pH\_PWN 0

pHmortstart\_PL 0

pHmortstart\_PS 0

pHmortstart\_DF 0

pHmortstart\_MA 0

pHmortstart\_MB 0

pHmortstart\_SG 0

pHmortstart\_ZG 0

pHmortstart\_ZL 0

pHmortstart\_ZM 0

pHmortstart\_ZS 0

pHmortstart\_FPS 0

pHmortstart\_FPL 0

pHmortstart\_FPO 0

pHmortstart\_FVD 0

pHmortstart\_FVV 0

pHmortstart\_FVS 0

pHmortstart\_FVT 0

pHmortstart\_FVO 0

pHmortstart\_FVB 0

pHmortstart\_FMM 0

pHmortstart\_FMN 0

pHmortstart\_FBP 0

pHmortstart\_FDD 0

pHmortstart\_FDS 0

pHmortstart\_FDB 0

pHmortstart\_FDC 0

pHmortstart\_FDO 0

pHmortstart\_FDE 0

pHmortstart\_FDF 0

pHmortstart\_FDP 0

pHmortstart\_FDM 0

pHmortstart\_SHD 0

pHmortstart\_SHC 0

pHmortstart\_SHP 0

pHmortstart\_SHB 0

pHmortstart\_SHR 0

pHmortstart\_SSK 0

pHmortstart\_SB 0

pHmortstart\_SP 0

pHmortstart\_REP 0

pHmortstart\_PIN 0

pHmortstart\_WDG 0

pHmortstart\_WHB 0

pHmortstart\_WHT 0

pHmortstart\_WHS 0

pHmortstart\_PB 0

pHmortstart\_BB 0

pHmortstart\_BO 0

pHmortstart\_BD 0

pHmortstart\_BC 0

pHmortstart\_BFS 0

pHmortstart\_BFD 0

pHmortstart\_BFF 0

pHmortstart\_BG 0

pHmortstart\_BMS 0

pHmortstart\_BMD 0

pHmortstart\_BML 0

pHmortstart\_CEP 0

pHmortstart\_PWN 0

pHmortA\_PL 0

pHmortA\_PS 0

pHmortA\_DF 0

pHmortA\_MA 0

pHmortA\_MB 0

pHmortA\_SG 0

pHmortA\_ZG 0

pHmortA\_ZL 0

pHmortA\_ZM 0

pHmortA\_ZS 0

pHmortA\_FPS 0

pHmortA\_FPL 0

pHmortA\_FPO 0

pHmortA\_FVD 0

pHmortA\_FVV 0

pHmortA\_FVS 0

pHmortA\_FVT 0

pHmortA\_FVO 0

pHmortA\_FVB 0

pHmortA\_FMM 0

pHmortA\_FMN 0

pHmortA\_FBP 0

pHmortA\_FDD 0

pHmortA\_FDS 0

pHmortA\_FDB 0

pHmortA\_FDC 0

pHmortA\_FDO 0

pHmortA\_FDE 0

pHmortA\_FDF 0

pHmortA\_FDP 0

pHmortA\_FDM 0

pHmortA\_SHD 0

pHmortA\_SHC 0

pHmortA\_SHP 0

pHmortA\_SHB 0

pHmortA\_SHR 0

pHmortA\_SSK 0

pHmortA\_SB 0

pHmortA\_SP 0

pHmortA\_REP 0

pHmortA\_PIN 0

pHmortA\_WDG 0

pHmortA\_WHB 0

pHmortA\_WHT 0

pHmortA\_WHS 0

pHmortA\_PB 0

pHmortA\_BB 0

pHmortA\_BO 0

pHmortA\_BD 0

pHmortA\_BC 0

pHmortA\_BFS 0

pHmortA\_BFD 0

pHmortA\_BFF 0

pHmortA\_BG 0

pHmortA\_BMS 0

pHmortA\_BMD 0

pHmortA\_BML 0

pHmortA\_CEP 0

pHmortA\_PWN 0

pHmortB\_PL 0

pHmortB\_PS 0

pHmortB\_DF 0

pHmortB\_MA 0

pHmortB\_MB 0

pHmortB\_SG 0

pHmortB\_ZG 0

pHmortB\_ZL 0

pHmortB\_ZM 0

pHmortB\_ZS 0

pHmortB\_FPS 0

pHmortB\_FPL 0

pHmortB\_FPO 0

pHmortB\_FVD 0

pHmortB\_FVV 0

pHmortB\_FVS 0

pHmortB\_FVT 0

pHmortB\_FVO 0

pHmortB\_FVB 0

pHmortB\_FMM 0

pHmortB\_FMN 0

pHmortB\_FBP 0

pHmortB\_FDD 0

pHmortB\_FDS 0

pHmortB\_FDB 0

pHmortB\_FDC 0

pHmortB\_FDO 0

pHmortB\_FDE 0

pHmortB\_FDF 0

pHmortB\_FDP 0

pHmortB\_FDM 0

pHmortB\_SHD 0

pHmortB\_SHC 0

pHmortB\_SHP 0

pHmortB\_SHB 0

pHmortB\_SHR 0

pHmortB\_SSK 0

pHmortB\_SB 0

pHmortB\_SP 0

pHmortB\_REP 0

pHmortB\_PIN 0

pHmortB\_WDG 0

pHmortB\_WHB 0

pHmortB\_WHT 0

pHmortB\_WHS 0

pHmortB\_PB 0

pHmortB\_BB 0

pHmortB\_BO 0

pHmortB\_BD 0

pHmortB\_BC 0

pHmortB\_BFS 0

pHmortB\_BFD 0

pHmortB\_BFF 0

pHmortB\_BG 0

pHmortB\_BMS 0

pHmortB\_BMD 0

pHmortB\_BML 0

pHmortB\_CEP 0

pHmortB\_PWN 0

pHmortmid\_PL 0

pHmortmid\_PS 0

pHmortmid\_DF 0

pHmortmid\_MA 0

pHmortmid\_MB 0

pHmortmid\_SG 0

pHmortmid\_ZG 0

pHmortmid\_ZL 0

pHmortmid\_ZM 0

pHmortmid\_ZS 0

pHmortmid\_FPS 0

pHmortmid\_FPL 0

pHmortmid\_FPO 0

pHmortmid\_FVD 0

pHmortmid\_FVV 0

pHmortmid\_FVS 0

pHmortmid\_FVT 0

pHmortmid\_FVO 0

pHmortmid\_FVB 0

pHmortmid\_FMM 0

pHmortmid\_FMN 0

pHmortmid\_FBP 0

pHmortmid\_FDD 0

pHmortmid\_FDS 0

pHmortmid\_FDB 0

pHmortmid\_FDC 0

pHmortmid\_FDO 0

pHmortmid\_FDE 0

pHmortmid\_FDF 0

pHmortmid\_FDP 0

pHmortmid\_FDM 0

pHmortmid\_SHD 0

pHmortmid\_SHC 0

pHmortmid\_SHP 0

pHmortmid\_SHB 0

pHmortmid\_SHR 0

pHmortmid\_SSK 0

pHmortmid\_SB 0

pHmortmid\_SP 0

pHmortmid\_REP 0

pHmortmid\_PIN 0

pHmortmid\_WDG 0

pHmortmid\_WHB 0

pHmortmid\_WHT 0

pHmortmid\_WHS 0

pHmortmid\_PB 0

pHmortmid\_BB 0

pHmortmid\_BO 0

pHmortmid\_BD 0

pHmortmid\_BC 0

pHmortmid\_BFS 0

pHmortmid\_BFD 0

pHmortmid\_BFF 0

pHmortmid\_BG 0

pHmortmid\_BMS 0

pHmortmid\_BMD 0

pHmortmid\_BML 0

pHmortmid\_CEP 0

pHmortmid\_PWN 0

intersp\_depend\_recruit\_PL 0

intersp\_depend\_recruit\_PS 0

intersp\_depend\_recruit\_DF 0

intersp\_depend\_recruit\_MA 0

intersp\_depend\_recruit\_MB 0

intersp\_depend\_recruit\_SG 0

intersp\_depend\_recruit\_ZG 0

intersp\_depend\_recruit\_ZL 0

intersp\_depend\_recruit\_ZM 0

intersp\_depend\_recruit\_ZS 0

intersp\_depend\_recruit\_FPS 0

intersp\_depend\_recruit\_FPL 0

intersp\_depend\_recruit\_FPO 0

intersp\_depend\_recruit\_FVD 0

intersp\_depend\_recruit\_FVV 0

intersp\_depend\_recruit\_FVS 0

intersp\_depend\_recruit\_FVT 0

intersp\_depend\_recruit\_FVO 0

intersp\_depend\_recruit\_FVB 0

intersp\_depend\_recruit\_FMM 0

intersp\_depend\_recruit\_FMN 0

intersp\_depend\_recruit\_FBP 0

intersp\_depend\_recruit\_FDD 0

intersp\_depend\_recruit\_FDS 0

intersp\_depend\_recruit\_FDB 0

intersp\_depend\_recruit\_FDC 0

intersp\_depend\_recruit\_FDO 0

intersp\_depend\_recruit\_FDE 0

intersp\_depend\_recruit\_FDF 0

intersp\_depend\_recruit\_FDP 0

intersp\_depend\_recruit\_FDM 0

intersp\_depend\_recruit\_SHD 0

intersp\_depend\_recruit\_SHC 0

intersp\_depend\_recruit\_SHP 0

intersp\_depend\_recruit\_SHB 0

intersp\_depend\_recruit\_SHR 0

intersp\_depend\_recruit\_SSK 0

intersp\_depend\_recruit\_SB 0

intersp\_depend\_recruit\_SP 0

intersp\_depend\_recruit\_REP 0

intersp\_depend\_recruit\_PIN 0

intersp\_depend\_recruit\_WDG 0

intersp\_depend\_recruit\_WHB 0

intersp\_depend\_recruit\_WHT 0

intersp\_depend\_recruit\_WHS 0

intersp\_depend\_recruit\_PB 0

intersp\_depend\_recruit\_BB 0

intersp\_depend\_recruit\_BO 0

intersp\_depend\_recruit\_BD 0

intersp\_depend\_recruit\_BC 0

intersp\_depend\_recruit\_BFS 0

intersp\_depend\_recruit\_BFD 0

intersp\_depend\_recruit\_BFF 0

intersp\_depend\_recruit\_BG 0

intersp\_depend\_recruit\_BMS 0

intersp\_depend\_recruit\_BMD 0

intersp\_depend\_recruit\_BML 0

intersp\_depend\_recruit\_CEP 0

intersp\_depend\_recruit\_PWN 0

intersp\_depend\_sp\_PL 0

intersp\_depend\_sp\_PS 0

intersp\_depend\_sp\_DF 0

intersp\_depend\_sp\_MA 0

intersp\_depend\_sp\_MB 0

intersp\_depend\_sp\_SG 0

intersp\_depend\_sp\_ZG 0

intersp\_depend\_sp\_ZL 0

intersp\_depend\_sp\_ZM 0

intersp\_depend\_sp\_ZS 0

intersp\_depend\_sp\_FPS 0

intersp\_depend\_sp\_FPL 0

intersp\_depend\_sp\_FPO 0

intersp\_depend\_sp\_FVD 0

intersp\_depend\_sp\_FVV 0

intersp\_depend\_sp\_FVS 0

intersp\_depend\_sp\_FVT 0

intersp\_depend\_sp\_FVO 0

intersp\_depend\_sp\_FVB 0

intersp\_depend\_sp\_FMM 0

intersp\_depend\_sp\_FMN 0

intersp\_depend\_sp\_FBP 0

intersp\_depend\_sp\_FDD 0

intersp\_depend\_sp\_FDS 0

intersp\_depend\_sp\_FDB 0

intersp\_depend\_sp\_FDC 0

intersp\_depend\_sp\_FDO 0

intersp\_depend\_sp\_FDE 0

intersp\_depend\_sp\_FDF 0

intersp\_depend\_sp\_FDP 0

intersp\_depend\_sp\_FDM 0

intersp\_depend\_sp\_SHD 0

intersp\_depend\_sp\_SHC 0

intersp\_depend\_sp\_SHP 0

intersp\_depend\_sp\_SHB 0

intersp\_depend\_sp\_SHR 0

intersp\_depend\_sp\_SSK 0

intersp\_depend\_sp\_SB 0

intersp\_depend\_sp\_SP 0

intersp\_depend\_sp\_REP 0

intersp\_depend\_sp\_PIN 0

intersp\_depend\_sp\_WDG 0

intersp\_depend\_sp\_WHB 0

intersp\_depend\_sp\_WHT 0

intersp\_depend\_sp\_WHS 0

intersp\_depend\_sp\_PB 0

intersp\_depend\_sp\_BB 0

intersp\_depend\_sp\_BO 0

intersp\_depend\_sp\_BD 0

intersp\_depend\_sp\_BC 0

intersp\_depend\_sp\_BFS 0

intersp\_depend\_sp\_BFD 0

intersp\_depend\_sp\_BFF 0

intersp\_depend\_sp\_BG 0

intersp\_depend\_sp\_BMS 0

intersp\_depend\_sp\_BMD 0

intersp\_depend\_sp\_BML 0

intersp\_depend\_sp\_CEP 0

intersp\_depend\_sp\_PWN 0

intersp\_depend\_scale\_PL 0

intersp\_depend\_scale\_PS 0

intersp\_depend\_scale\_DF 0

intersp\_depend\_scale\_MA 0

intersp\_depend\_scale\_MB 0

intersp\_depend\_scale\_SG 0

intersp\_depend\_scale\_ZG 0

intersp\_depend\_scale\_ZL 0

intersp\_depend\_scale\_ZM 0

intersp\_depend\_scale\_ZS 0

intersp\_depend\_scale\_FPS 0

intersp\_depend\_scale\_FPL 0

intersp\_depend\_scale\_FPO 0

intersp\_depend\_scale\_FVD 0

intersp\_depend\_scale\_FVV 0

intersp\_depend\_scale\_FVS 0

intersp\_depend\_scale\_FVT 0

intersp\_depend\_scale\_FVO 0

intersp\_depend\_scale\_FVB 0

intersp\_depend\_scale\_FMM 0

intersp\_depend\_scale\_FMN 0

intersp\_depend\_scale\_FBP 0

intersp\_depend\_scale\_FDD 0

intersp\_depend\_scale\_FDS 0

intersp\_depend\_scale\_FDB 0

intersp\_depend\_scale\_FDC 0

intersp\_depend\_scale\_FDO 0

intersp\_depend\_scale\_FDE 0

intersp\_depend\_scale\_FDF 0

intersp\_depend\_scale\_FDP 0

intersp\_depend\_scale\_FDM 0

intersp\_depend\_scale\_SHD 0

intersp\_depend\_scale\_SHC 0

intersp\_depend\_scale\_SHP 0

intersp\_depend\_scale\_SHB 0

intersp\_depend\_scale\_SHR 0

intersp\_depend\_scale\_SSK 0

intersp\_depend\_scale\_SB 0

intersp\_depend\_scale\_SP 0

intersp\_depend\_scale\_REP 0

intersp\_depend\_scale\_PIN 0

intersp\_depend\_scale\_WDG 0

intersp\_depend\_scale\_WHB 0

intersp\_depend\_scale\_WHT 0

intersp\_depend\_scale\_WHS 0

intersp\_depend\_scale\_PB 0

intersp\_depend\_scale\_BB 0

intersp\_depend\_scale\_BO 0

intersp\_depend\_scale\_BD 0

intersp\_depend\_scale\_BC 0

intersp\_depend\_scale\_BFS 0

intersp\_depend\_scale\_BFD 0

intersp\_depend\_scale\_BFF 0

intersp\_depend\_scale\_BG 0

intersp\_depend\_scale\_BMS 0

intersp\_depend\_scale\_BMD 0

intersp\_depend\_scale\_BML 0

intersp\_depend\_scale\_CEP 0

intersp\_depend\_scale\_PWN 0

flagstockingPL 0

flagstockingPS 0

flagstockingDF 0

flagstockingMA 0

flagstockingMB 0

flagstockingSG 0

flagstockingZG 0

flagstockingZL 0

flagstockingZM 0

flagstockingZS 0

flagstockingFPS 0

flagstockingFPL 0

flagstockingFPO 0

flagstockingFVD 0

flagstockingFVV 0

flagstockingFVS 0

flagstockingFVT 0

flagstockingFVO 0

flagstockingFVB 0

flagstockingFMM 0

flagstockingFMN 0

flagstockingFBP 0

flagstockingFDD 0

flagstockingFDS 0

flagstockingFDB 0

flagstockingFDC 0

flagstockingFDO 0

flagstockingFDE 0

flagstockingFDF 0

flagstockingFDP 0

flagstockingFDM 0

flagstockingSHD 0

flagstockingSHC 0

flagstockingSHP 0

flagstockingSHB 0

flagstockingSHR 0

flagstockingSSK 0

flagstockingSB 0

flagstockingSP 0

flagstockingREP 0

flagstockingPIN 0

flagstockingWDG 0

flagstockingWHB 0

flagstockingWHT 0

flagstockingWHS 0

flagstockingPB 0

flagstockingBB 0

flagstockingBO 0

flagstockingBD 0

flagstockingBC 0

flagstockingBFS 0

flagstockingBFD 0

flagstockingBFF 0

flagstockingBG 0

flagstockingBMS 0

flagstockingBMD 0

flagstockingBML 0

flagstockingCEP 0

flagstockingPWN 0

flag\_do\_var\_express 0

flag\_evolvar\_capped 0