CIGALA FU2627: SOLO CON CATCH AND INDEX\_SURVEY

capture.output(summary(res))

[1] "Convergence: 0 MSG: relative convergence (4)"

[2] "Objective function at optimum: 71.4685929"

[3] "Euler time step (years): 1/16 or 0.0625"

[4] "Nobs C: 45, Nobs I1: 32"

[5] ""

[6] "Priors"

[7] " logn ~ dnorm[log(2), 2^2]"

[8] " logalpha ~ dnorm[log(1), 2^2]"

[9] " logbeta ~ dnorm[log(1), 2^2]"

[10] ""

[11] "Model parameter estimates w 95% CI "

[12] " estimate cilow ciupp log.est "

[13] " alpha 2.468773e+01 3.3078875 1.842517e+02 3.2063062 "

[14] " beta 7.178749e-01 0.3822402 1.348221e+00 -0.3314599 "

[15] " r 2.994049e-01 0.0040684 2.203391e+01 -1.2059585 "

[16] " rc 5.062400e-02 0.0012432 2.061473e+00 -2.9833301 "

[17] " rold 2.764950e-02 0.0006956 1.099098e+00 -3.5881476 "

[18] " m 2.178259e+02 9.7841304 4.849500e+03 5.3836963 "

[19] " K 1.081102e+04 5391.5435138 2.167806e+04 9.2883215 "

[20] " q 8.099490e-02 0.0373964 1.754225e-01 -2.5133694 "

[21] " n 1.182858e+01 2.3802459 5.878189e+01 2.4705188 "

[22] " sdb 2.793150e-02 0.0037935 2.056576e-01 -3.5779993 "

[23] " sdf 3.072908e-01 0.2067570 4.567082e-01 -1.1799608 "

[24] " sdi 6.895658e-01 0.5368389 8.857425e-01 -0.3716931 "

[25] " sdc 2.205964e-01 0.1534114 3.172043e-01 -1.5114207 "

[26] " "

[27] "Deterministic reference points (Drp)"

[28] " estimate cilow ciupp log.est "

[29] " Bmsyd 8605.644426 4075.8711697 18169.641017 9.060174 "

[30] " Fmsyd 0.025312 0.0006216 1.030736 -3.676477 "

[31] " MSYd 217.825938 9.7841304 4849.499856 5.383696 "

[32] "Stochastic reference points (Srp)"

[33] " estimate cilow ciupp log.est rel.diff.Drp "

[34] " Bmsys 8529.1611110 4128.402251 17621.003196 9.051246 -0.008967273 "

[35] " Fmsys 0.0232003 0.000428 1.257495 -3.763590 -0.091019704 "

[36] " MSYs 197.7175648 6.583549 5937.867033 5.286840 -0.101702512 "

[37] ""

[38] "States w 95% CI (inp$msytype: s)"

[39] " estimate cilow ciupp log.est "

[40] " B\_2019.81 259.4045544 132.3425959 508.4585381 5.5583888 "

[41] " F\_2019.81 0.0187437 0.0080792 0.0434852 -3.9768974 "

[42] " B\_2019.81/Bmsy 0.0304138 0.0126210 0.0732908 -3.4928575 "

[43] " F\_2019.81/Fmsy 0.8079079 0.0174309 37.4458560 -0.2133072 "

[44] ""

[45] "Predictions w 95% CI (inp$msytype: s)"

[46] " prediction cilow ciupp log.est "

[47] " B\_2020.00 259.8318615 132.7532524 508.5570036 5.5600347 "

[48] " F\_2020.00 0.0188905 0.0078456 0.0454842 -3.9690946 "

[49] " B\_2020.00/Bmsy 0.0304639 0.0124954 0.0742715 -3.4912116 "

[50] " F\_2020.00/Fmsy 0.8142365 0.0174216 38.0551413 -0.2055045 "

[51] " Catch\_2020.00 4.9276879 2.4977999 9.7213983 1.5948699 "

[52] " E(B\_inf) 8898.6750990 NA NA 9.0936577 "

> #Summary of the parameter estimates and their 95% CIs.

> round(sumspict.parest(res),2)

estimate cilow ciupp log.est

alpha 24.69 3.31 184.25 3.21

beta 0.72 0.38 1.35 -0.33

r 0.30 0.00 22.03 -1.21

rc 0.05 0.00 2.06 -2.98

rold 0.03 0.00 1.10 -3.59

m 217.83 9.78 4849.50 5.38

K 10811.02 5391.54 21678.06 9.29

q 0.08 0.04 0.18 -2.51

n 11.83 2.38 58.78 2.47

sdb 0.03 0.00 0.21 -3.58

sdf 0.31 0.21 0.46 -1.18

sdi 0.69 0.54 0.89 -0.37

sdc 0.22 0.15 0.32 -1.51

> #Reference points

> sumspict.drefpoints(res)#deterministic reference points

estimate cilow ciupp log.est

Bmsyd 8.605644e+03 4.075871e+03 18169.641017 9.060174

Fmsyd 2.531198e-02 6.215900e-04 1.030737 -3.676477

MSYd 2.178259e+02 9.784130e+00 4849.499856 5.383696

> sumspict.srefpoints(res)#stochastic reference points

estimate cilow ciupp log.est rel.diff.Drp

Bmsys 8529.1611110 4.128402e+03 17621.003196 9.051246 -0.008967273

Fmsys 0.0232003 4.280400e-04 1.257495 -3.763590 -0.091019704

MSYs 197.7175648 6.583548e+00 5937.867033 5.286840 -0.101702512

> #The basic plotting of the results is done using the generic function

> plot(res)

> ###############################################################################################################################################

> #1. The assessment converged equals 0

> ##############################################################################################################################################

> res$opt$convergence

[1] 0

> ###############################################################################################################################################

> #2. All variance parameters of the model parameters are finite should be TRUE

> ###############################################################################################################################################

> all(is.finite(res$sd))

[1] TRUE

> ##########################################################################################

> #3. No violation of model assumptions based on one-step-ahead residuals (bias, auto-correlation, normality).

> ##########################################################################################

> res <- calc.osa.resid(res)

> #tiff(filename = "Model\_results/Plots/Diagnostics.tiff")

> plotspict.diagnostic(res)#check correlation and normality

> rep=retro(res, nretroyear=3)# by the 1 to 5 last observations, change with nretroyear

> plotspict.retro(rep)

> ##########################################################################################

> #5. Realistic production curve.

> #The shape of the production curve should not be too skewed.

> # BMSY/K should be between 0.1 and 0.9

> #Low values of BMSY/K allow for an infinite population growth rate K

> ##########################################################################################

> calc.bmsyk(res)

[1] 0.7960065

> ############################################################################################################

> #7. Initial values do not influence the parameter estimates

> ############################################################################################################

> fit <- check.ini(res)

Checking sensitivity of fit to initial parameter values...

Trial 1 ... model fitted!

Trial 2 ... model fitted!

Trial 3 ... convergence not obtained!

Trial 4 ... model fitted!

Trial 5 ... model fitted!

Trial 6 ... model fitted!

Trial 7 ... model fitted!

Trial 8 ... model fitted!

Trial 9 ... convergence not obtained!

Trial 10 ... convergence not obtained!

$propchng

logm logK logq logn logsdb logsdf logsdi logsdc

Trial 1 2.22 -0.10 0.26 1.24 0.76 -0.65 0.01 -0.51

Trial 2 -0.32 0.28 -0.31 -0.78 0.05 -0.80 -0.98 0.12

Trial 3 -1.22 0.08 0.23 0.99 -0.18 -1.27 -1.40 -1.20

Trial 4 -0.38 0.11 0.07 1.08 -0.07 -0.27 -1.18 0.83

Trial 5 0.30 0.24 -0.14 0.76 1.32 -0.94 1.32 1.33

Trial 6 1.25 -0.17 -0.06 -0.60 1.38 0.89 0.85 -1.38

Trial 7 2.11 -0.26 -0.17 1.10 -0.86 -0.99 -0.39 -0.34

Trial 8 1.35 0.25 -0.32 0.81 0.60 -1.38 0.96 -0.44

Trial 9 1.79 -0.01 -0.11 1.02 -0.32 1.00 -0.10 -0.67

Trial 10 -0.35 -0.19 0.15 0.23 0.20 0.31 0.59 0.55

$inimat

Distance logn logK logm logq logsdb logsdf logsdi logsdc

Basevec 0.00 0.69 8.10 5.84 -1.52 -1.61 -1.61 -1.61 -1.61

Trial 1 3.48 2.24 7.31 7.36 -3.42 -2.83 -0.57 -1.63 -0.78

Trial 2 3.76 0.47 10.35 4.01 -0.33 -1.70 -0.32 -0.02 -1.80

Trial 3 4.27 -0.15 8.73 7.17 -3.03 -1.32 0.44 0.64 0.33

Trial 4 3.05 0.43 8.99 6.27 -3.17 -1.50 -1.17 0.28 -2.94

Trial 5 4.68 0.90 10.08 5.01 -2.68 -3.73 -0.09 -3.73 -3.75

Trial 6 4.18 1.56 6.70 5.47 -0.61 -3.83 -3.04 -2.97 0.61

Trial 7 3.92 2.16 6.03 4.87 -3.20 -0.23 -0.02 -0.98 -1.06

Trial 8 4.32 1.63 10.11 3.98 -2.76 -2.57 0.61 -3.15 -0.90

Trial 9 2.91 1.94 8.03 5.21 -3.08 -1.10 -3.22 -1.45 -0.52

Trial 10 2.31 0.45 6.56 6.72 -1.87 -1.93 -2.11 -2.56 -2.49

$resmat

Distance m K q n sdb sdf sdi sdc

Basevec 0.00 217.83 10811.02 0.08 11.83 0.03 0.31 0.69 0.22

Trial 1 0.01 217.83 10811.02 0.08 11.83 0.03 0.31 0.69 0.22

Trial 2 0.01 217.82 10811.02 0.08 11.83 0.03 0.31 0.69 0.22

Trial 3 0.00 NA NA NA NA NA NA NA NA

Trial 4 0.02 217.83 10811.00 0.08 11.83 0.03 0.31 0.69 0.22

Trial 5 0.10 217.83 10810.92 0.08 11.83 0.03 0.31 0.69 0.22

Trial 6 0.04 217.83 10810.98 0.08 11.83 0.03 0.31 0.69 0.22

Trial 7 0.13 217.84 10810.89 0.08 11.83 0.03 0.31 0.69 0.22

Trial 8 0.01 217.83 10811.01 0.08 11.83 0.03 0.31 0.69 0.22

Trial 9 0.00 NA NA NA NA NA NA NA NA

Trial 10 0.00 NA NA NA NA NA NA NA NA

There were 13 warnings (use warnings() to see them)

> ############################################################################################################

> #6. High assessment uncertainty can indicate a lack of contrast in the input data or violation of

> #the ecological model assumptions. Confidence intervals for B/BMSY and F/BSMY should not span more

> #than 1 order of magnitude

> ##########################################################################################

> calc.om(fit)

lower est upper CI range order magnitude

B/Bmsy 0.01 0.03 0.07 0.06 0

F/Fmsy 0.02 0.81 37.45 37.43 3

> #The estimates should be the same for all initial values

> res$ckeck.ini$resmat

NULL