CMSY Report

10 October, 2025

Input parameters

Data selection

Input File : pez blanco.csv

Stock selected : UoA Blanco

Select year range of analysis : 2006 to 2024

Years over which to calculate catchability : 2020 to 2024

Resilience

Resilience rate : 0.05 to 0.5

Deplation

Starting depletion range (B/k) : 0.2 to 0.6

Ending depletion range (B/k) : 0.01 to 0.4

Does the catch time series have an intermediate year where biomass is particularly high or low? : No

```
## Species: Caulolatilus princeps , stock: UoA Blanco
## Pez blanco
## Region: NA , UoA
## Catch data used from years 2006 - 2023 , abundance = None
## Prior initial relative biomass = 0.2 - 0.6 expert
## Prior intermediate rel. biomass= 0.5 - 0.9 in year 2015 default
## Prior final relative biomass   = 0.01 - 0.4 expert
## Prior range for r = 0.05 - 0.5 expert, , prior range for k = 9.49 - 28.5
##
## Results of CMSY analysis
## ------------------------
## Altogether 21683 viable trajectories for 8868  r-k pairs were found
## r   = 0.259 , 95% CL = 0.143 - 0.471 , k = 13.9 , 95% CL = 9 - 21.5
## MSY = 0.852 , 95% CL = 0.636 - 1.21
## Relative biomass in last year = 0.307 k, 2.5th perc = 0.0543 , 97.5th perc = 0.397
## Exploitation F/(r/2) in last year = 2.22 , 2.5th perc = 1.72 , 97.5th perc = 12.6
##
## Reference points and indicators (based on CMSY analysis)
## ------------------------------------------------------------
## Fmsy = 0.13 , 95% CL = 0.0714 - 0.235 (if B > 1/2 Bmsy then Fmsy = 0.5 r)
## Fmsy = 0.13 , 95% CL = 0.0714 - 0.235 (r and Fmsy are linearly reduced if B < 1/2 Bmsy)
## MSY  = 0.852 , 95% CL = 0.636 - 1.21
## Bmsy = 6.96 , 95% CL = 4.5 - 10.8
```

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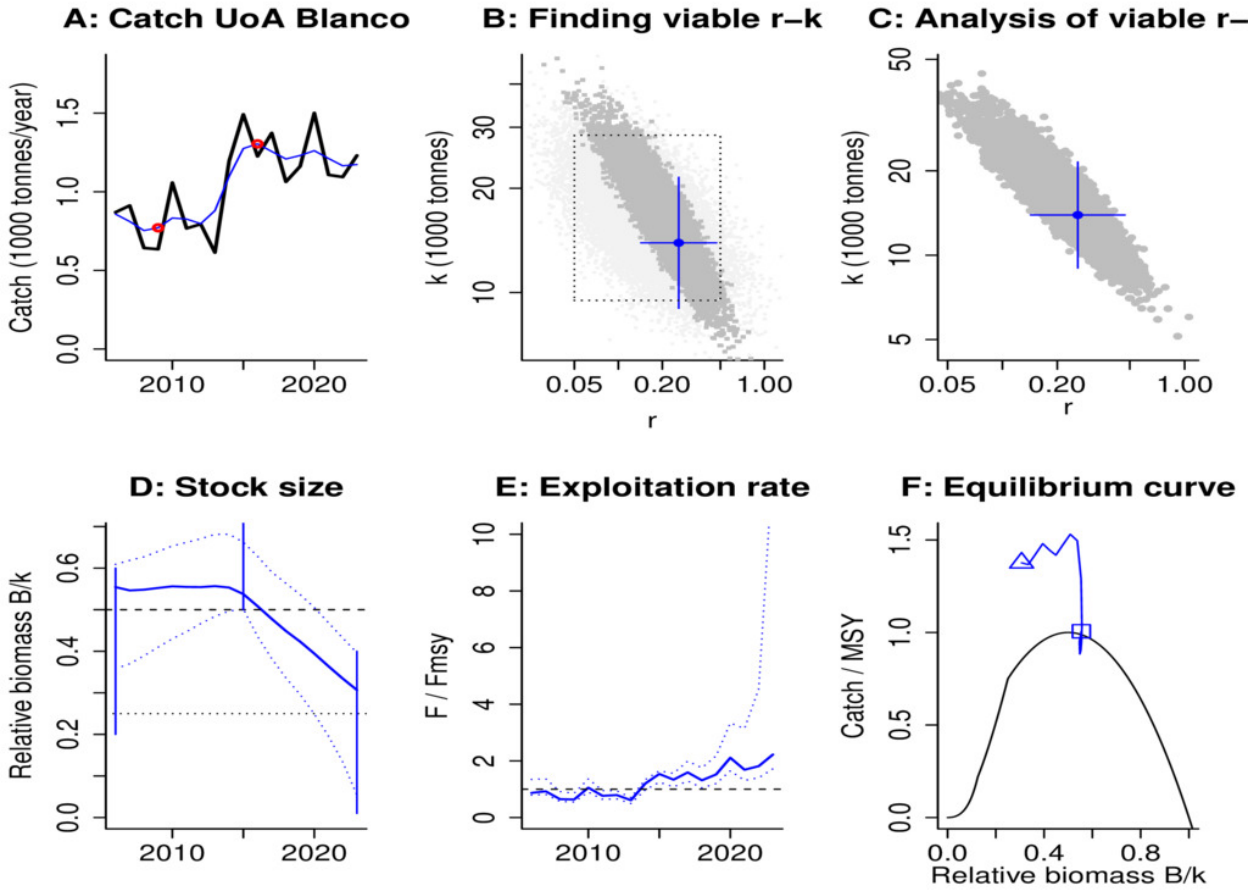
## Biomass in last year = 4.27 , 2.5th perc = 0.756 , 97.5 perc = 5.52
## B/Bmsy in last year  = 0.614 , 2.5th perc = 0.109 , 97.5 perc = 0.793
## Fishing mortality in last year = 0.288 , 2.5th perc = 0.223 , 97.5 perc = 1.63
## Exploitation F/Fmsy  = 2.22 , 2.5th perc = 1.72 , 97.5 perc = 12.6
## Comment: comments
## ------------------------------------------------------------
```

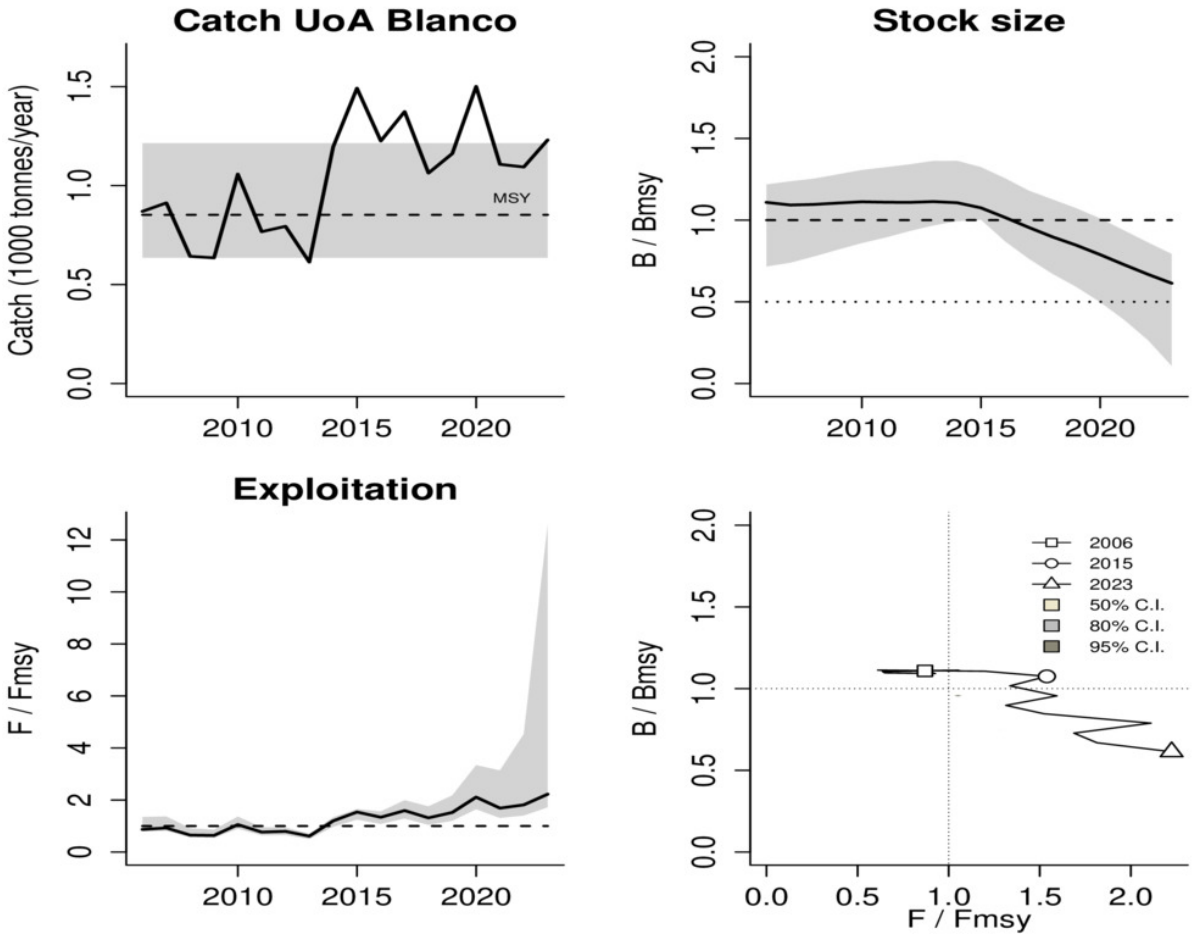
#Cmsy method report

The upper left panel shows catches relative to the estimate of MSY, with indication of 95% confidence limits in grey. The upper right panel shows the development of relative total biomass (B/Bmsy), with the grey area indicating uncertainty. The lower left graph shows relative exploitation (F/Fmsy), with Fmsy corrected for reduced recruitment below 0.5 Bmsy. The lower-right panel shows the trajectory of relative stock size (B/Bmsy) over relative exploitation (F/Fmsy).



##Output Graphs

Panel A shows in black the time series of catches and in blue the three-years moving average with indication of highest and lowest catch, as used in the estimation of prior biomass by the default rules. Panel B shows the explored r-k log space and in dark grey the r-k pairs which were found by the CMSY model to be compatible with the catches and the prior information. Panel C shows the most probable r-k pair and its approximate 95% confidence limits in blue. Panel D shows in blue the biomass trajectory estimated by CMSY. Dotted lines indicate the 2.5th and 97.5th percentiles. Vertical blue lines indicate the prior biomass ranges. Panel E shows in blue the harvest rate from CMSY. Panel F shows the Schaefer equilibrium curve of catch/MSY relative to B/k, here indented at B/k < 0.25 to account for reduced recruitment at low stock sizes. The blue dots are scaled by CMSY estimates.


Catch UoA Blanco
Catch (1000 tonnes/year)
0.0
0.5
1.0
1.5
MSY
2010
2015
2020
Stock size
B / Bmsy
0.0
0.5
1.0
1.5
2.0
2010
2015
2020
Exploitation
F / Fmsy
0
2
4
6
8
10
12
2010
2015
2020
B / Bmsy
0.0
0.5
1.0
1.5
2.0
2006
2015
2023
50% C.I.
80% C.I.
95% C.I.
0.0
0.5
1.0
1.5
2.0
F / Fmsy