Coverpage

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Working directory :
      /home/millaco/work/git_projects/Ignoring-stock-structure/presentation

Current contents of .GlobalEnv:

     <empty>

Session information:

R version 2.15.1 (2012-06-22)
Platform: x86_64-pc-linux-gnu (64-bit)

locale:
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 [3] LC_TIME=en_GB.UTF-8        LC_COLLATE=en_US.UTF-8
 [5] LC_MONETARY=en_GB.UTF-8    LC_MESSAGES=en_US.UTF-8
 [7] LC_PAPER=C                 LC_NAME=C
 [9] LC_ADDRESS=C               LC_TELEPHONE=C
[11] LC_MEASUREMENT=en_GB.UTF-8 LC_IDENTIFICATION=C

attached base packages:
[1] stats     graphics  grDevices utils     datasets  methods   base

other attached packages:
[1] xtable_1.7-0       lattice_0.20-6     RColorBrewer_1.0-5

loaded via a namespace (and not attached):
[1] grid_2.15.1  tools_2.15.1
```

Material in references file

Rue and Held (2005) R Development Core Team (2012), Rue et al. (2009), and some more ...

The Cost of Ignoring Stock Structure

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Abstract

This simulation study investigates the robustness of harvest control rule (HCR) reference points to misspecification of stock structure. Specifically the case where there are multiple sub populations exploited by one fishery. Three factors are investigated: initial population size, population productivity and population mixing. This allows appropriate HCR reference points to be suggested for varying degrees of stock structuring and productivity. From this we show the potential costs of ignoring stock structure in HCRs (in terms of long term yield and probability of stock crash), but also highlight the potential gains of including good estimates of population mixing and productivity parameters in management plans.

Keywords: management, reference points, stock structure, sub populations, productivity, stochastic simulation

Brainstorming

Here is what we are doing in a nutshell

- HCR rule robustness
- investigate initial population size, productivity, mixing
- Assess costs = long term yeild and risk to substock collapse
- Do we do better if we know the mixing and relative abundances?

We have two populations that are fished have properties outlines in figure 1. It has life history parameters that define its natural mortality, recruitment and fecundity; it has an initial starting size and age distribution; it has a portion of the fishing mortality and it has an area. Area is important when it comes to observing the populations as the combined survey index will be a weighted average of the survey indices from each population, and the weights will depend on the area.

First thoughts are to keep it simple and 2 levels per variable:

Mixing	low	high
productivity	low	high
Initial population size	under exploited	over exploited

This means we can apply to a range of stocks chosen from the wklife list.

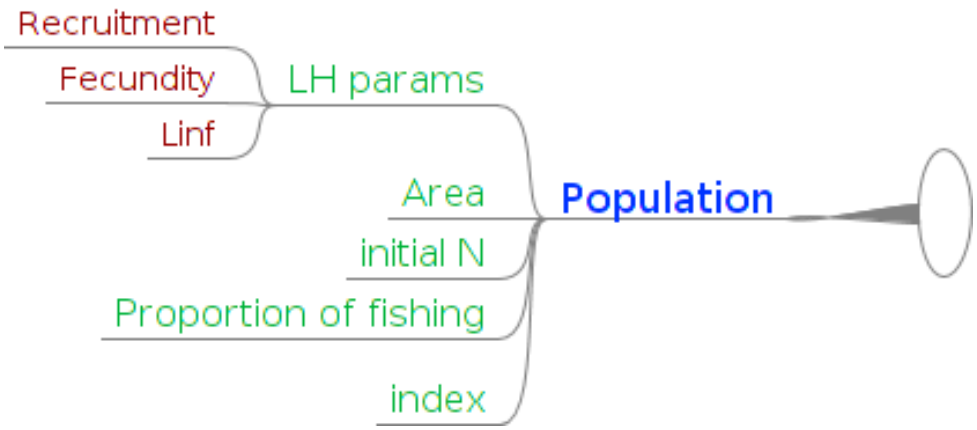

Figure 1: The definition of a population

References

R Development Core Team (2012). *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. ISBN 3-900051-07-0.

Rue, H. and L. Held (2005). *Gaussian Markov Random Fields: Theory and Applications*. Chapman and Hall/CRC.

Rue, H., S. Martino, and F. Lindgren (2009). *INLA: Functions which allow to perform a full Bayesian analysis of structured (geo-)additive models using Integrated Nested Laplace Approximaxion*. R package version 0.0.