North Atlantic Albacore

Development of a Limit Reference Point

ICCAT

The Convention

Basic Texts

- The main management objective of ICCAT is to maintain the populations of tuna and tuna-like fishes at levels which will permit the maximum sustainable catch. Originally interpreted as using MSY as a target.
- ICCAT was formed before the Precautionary Approach and is therefore not mentioned in the Convention. Although stock assessments routinely consider a range of uncertainties.

Current Management Issues

Management Plans

- Recovery plans are in place for both the Eastern and Western Bluefin. Work on developing an Operating Model under the GBYP is commencing this year.
- Limit Reference Points (LRPs) are being developed this for North Atlantic Swordfish and Albacore, i.e. by evaluating the performance of reference points as part of HCRs

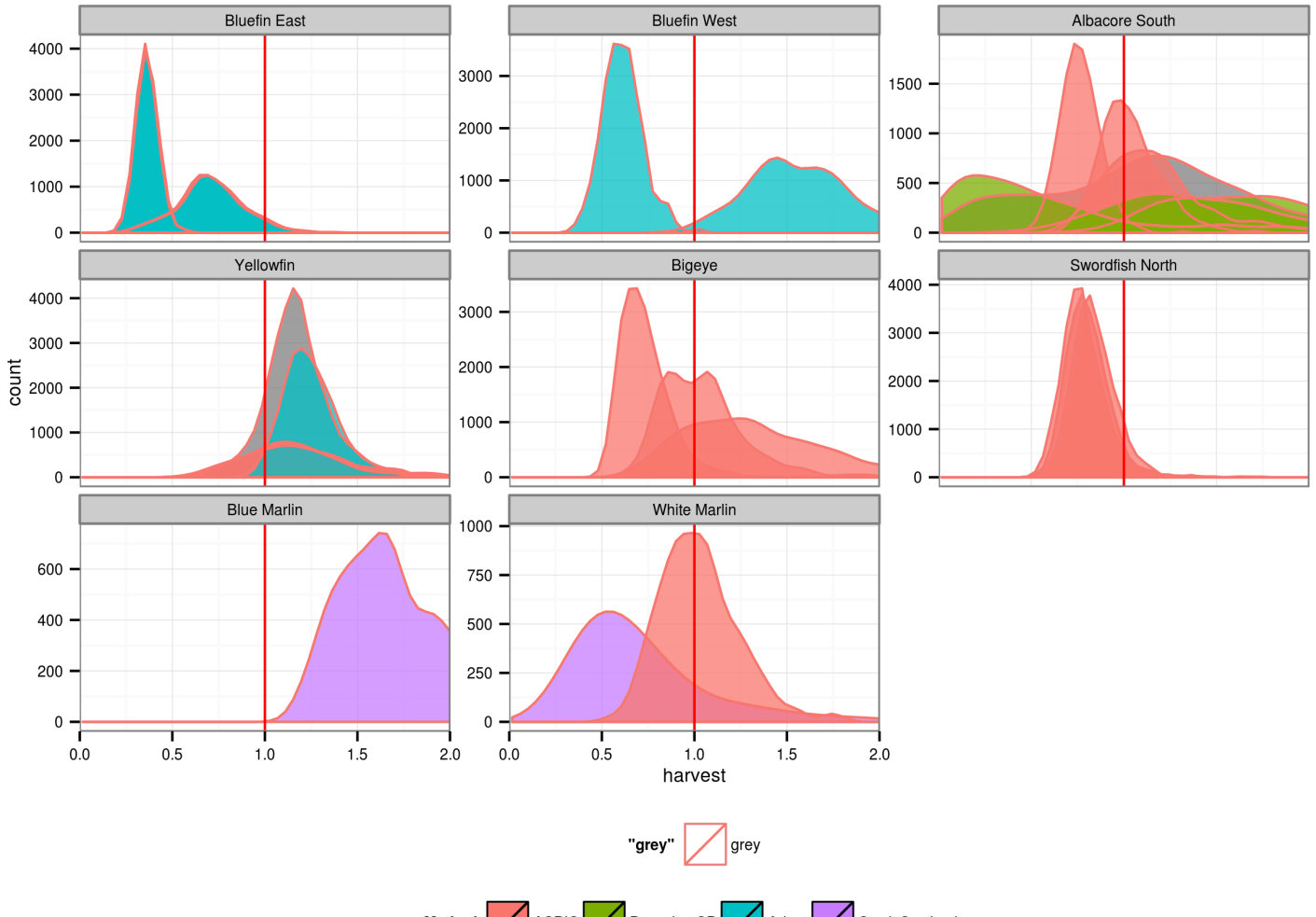
Current Management Issues

Precautionary Approach

Requires stock status to be assessed relative to limits and targets, to predict outcomes of management alternatives for reaching targets and avoiding limits, and to characterise uncertainty. This imposes specific needs for research, stock assessments, monitoring and management. A harvest control rule (HCR) is recommended to specify in advance what actions should be taken when limits are reached. However, although HCRs may include precautionary elements, it does not necessarily follow that they will be precautionary in practice, if HCRs are not formally evaluated to determine the extent to which they achieve the goals for which they were designed, given uncertainty.

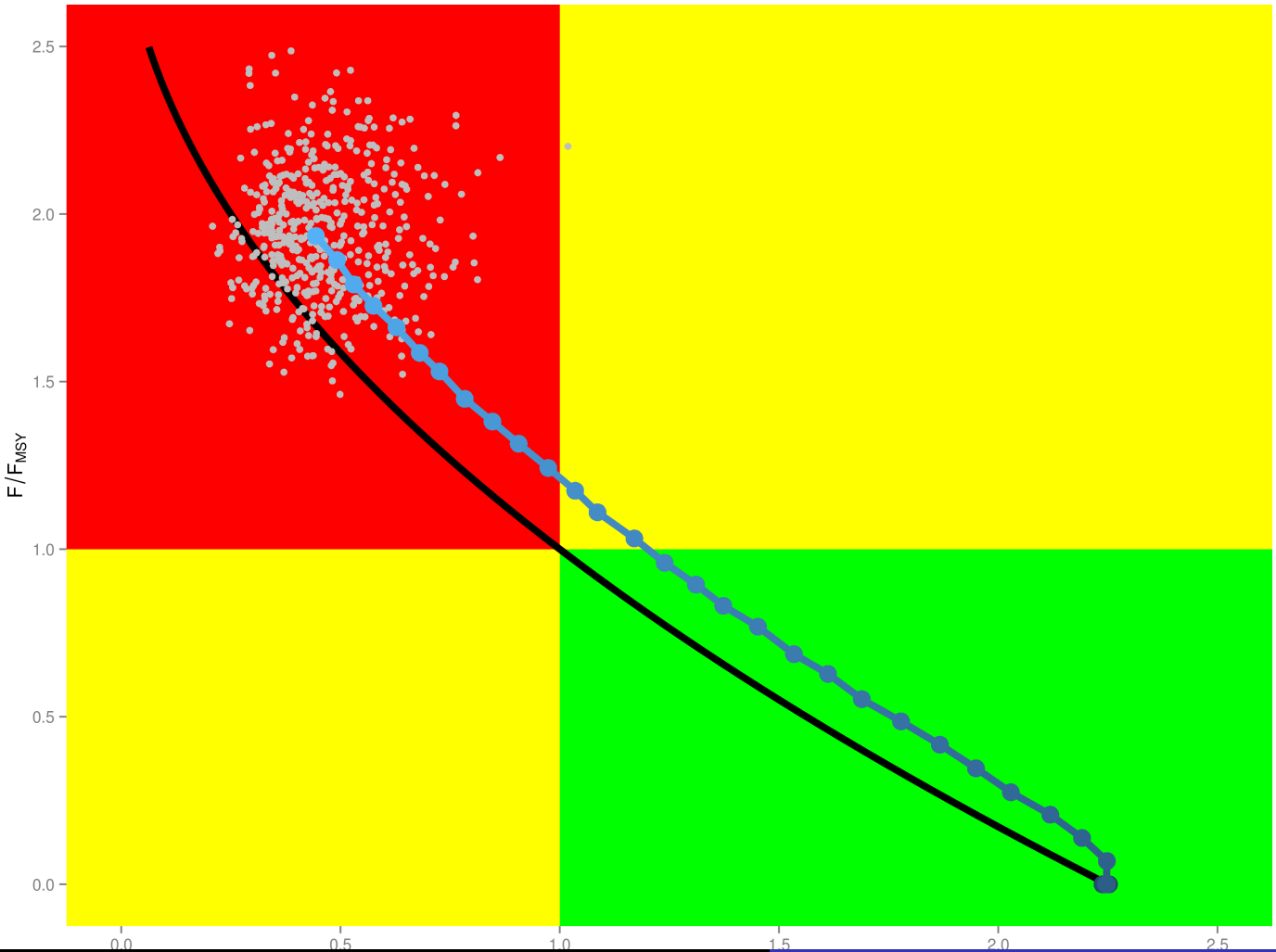
F_{MSY}

Limit or target?



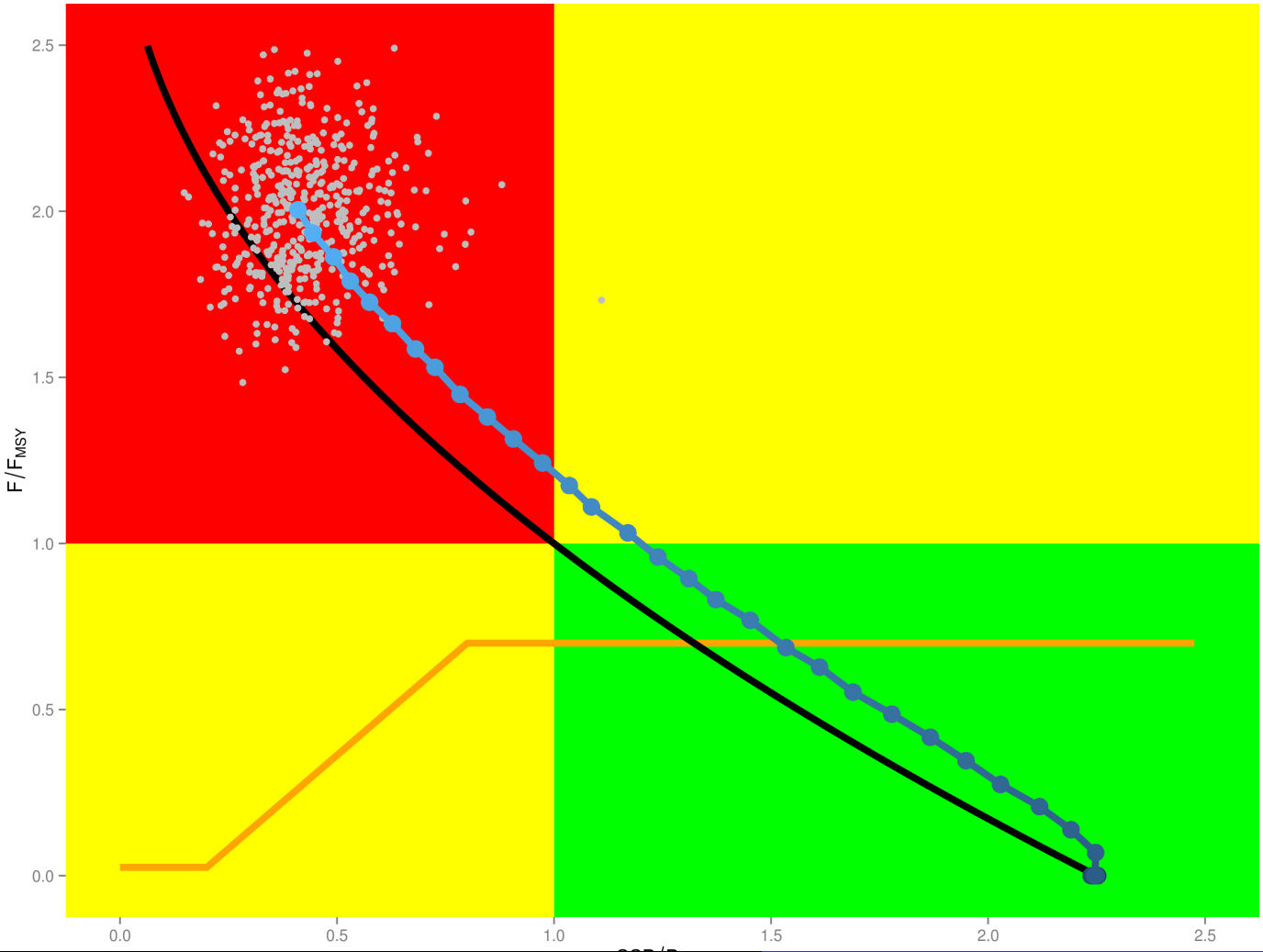
Principles of Decision Making [REC 11-13]

Overfishing



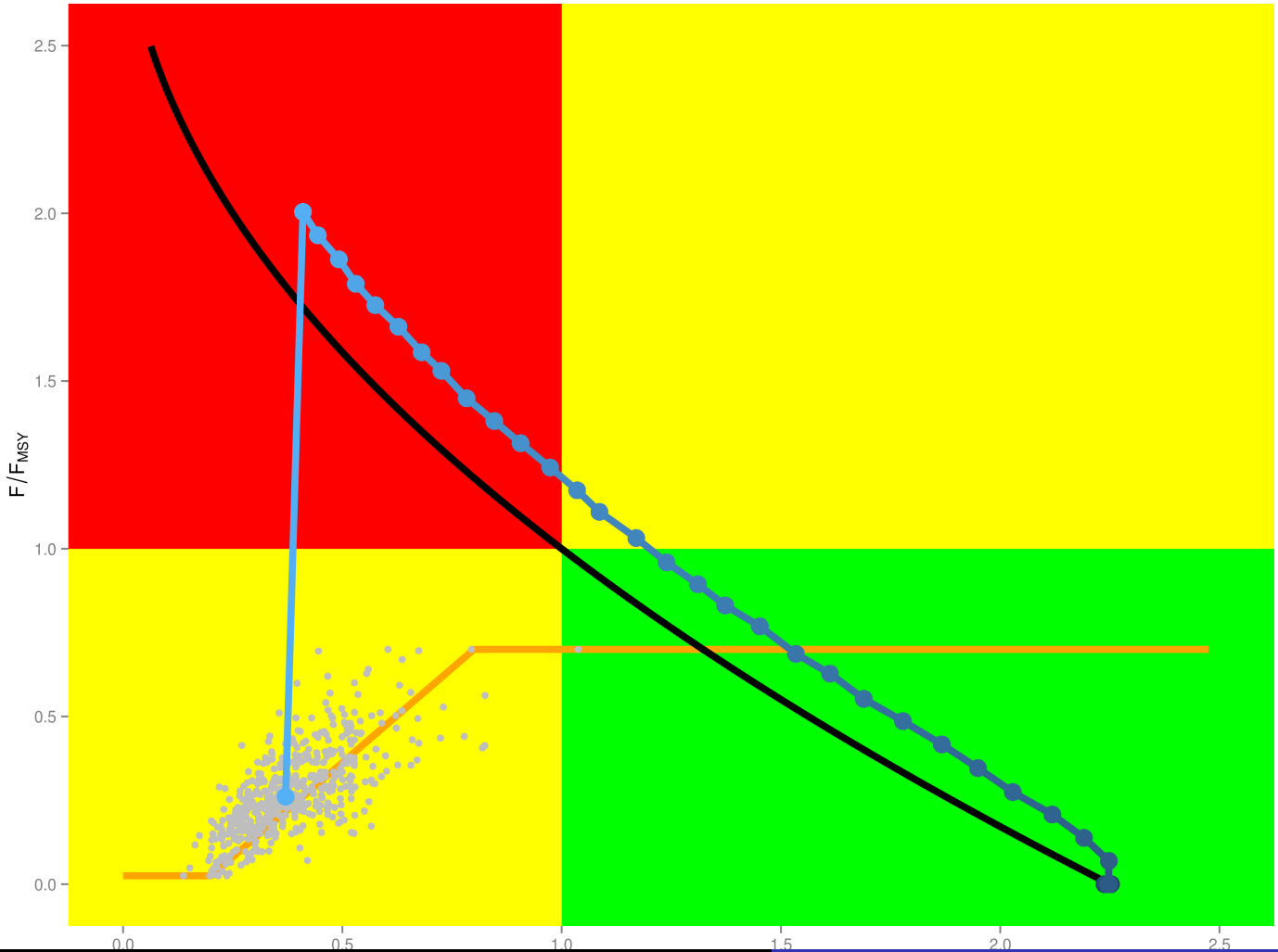
Principles of Decision Making [REC 11-13]

Harvest Control Rule



Principles of Decision Making [REC 11-13]

HCR and Recovery



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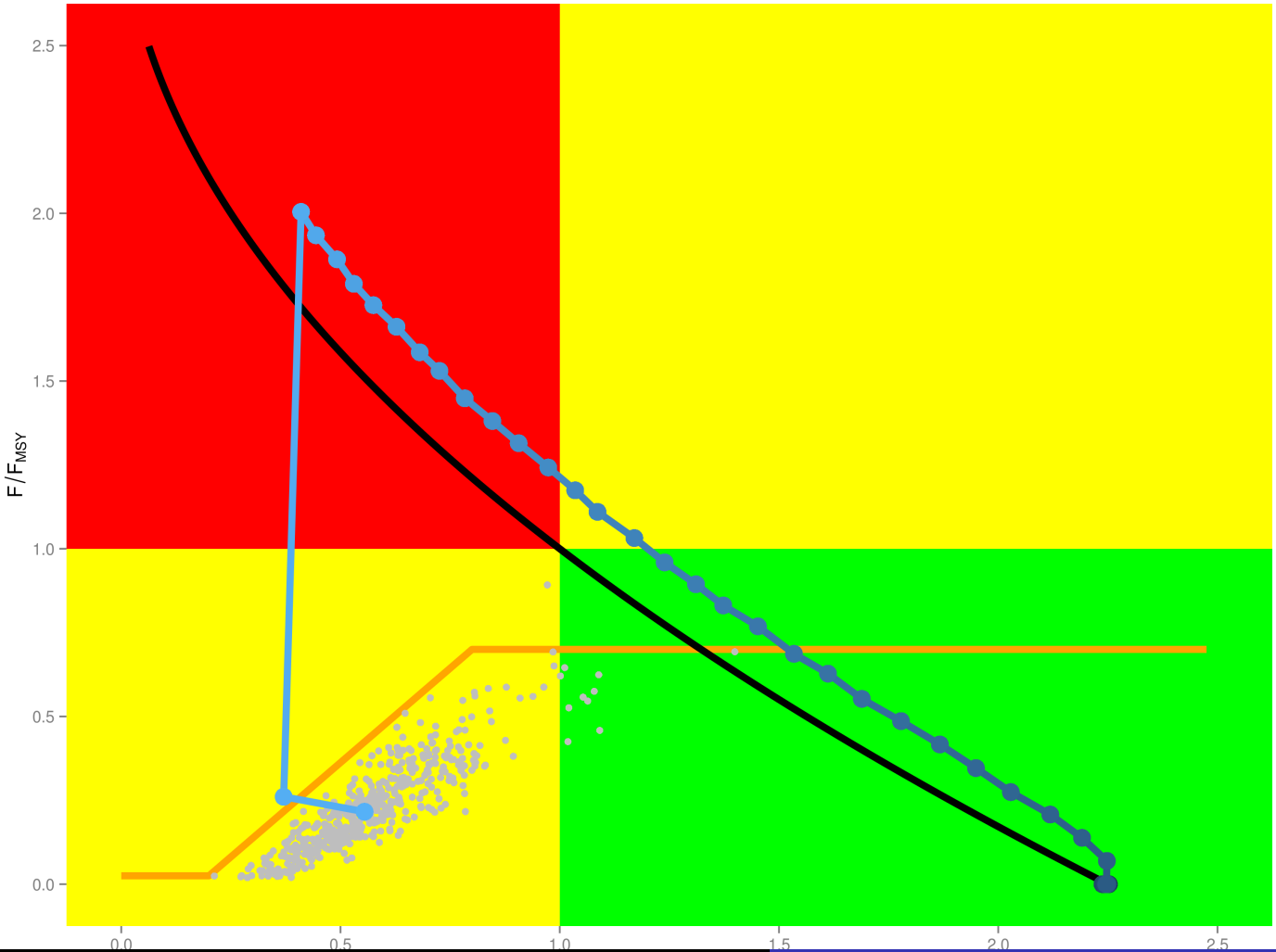

Principles of Decision Making [REC 11-13]

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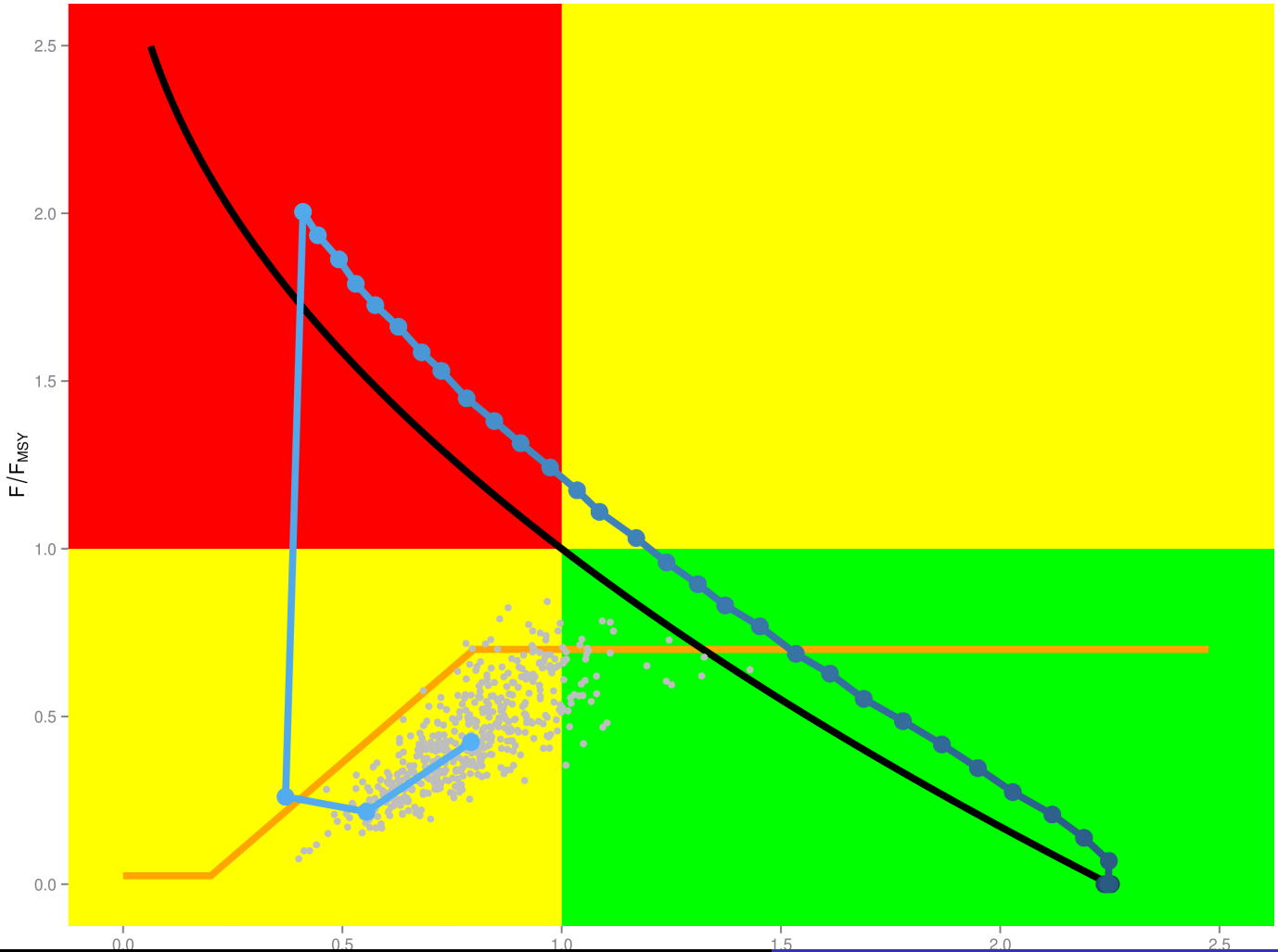

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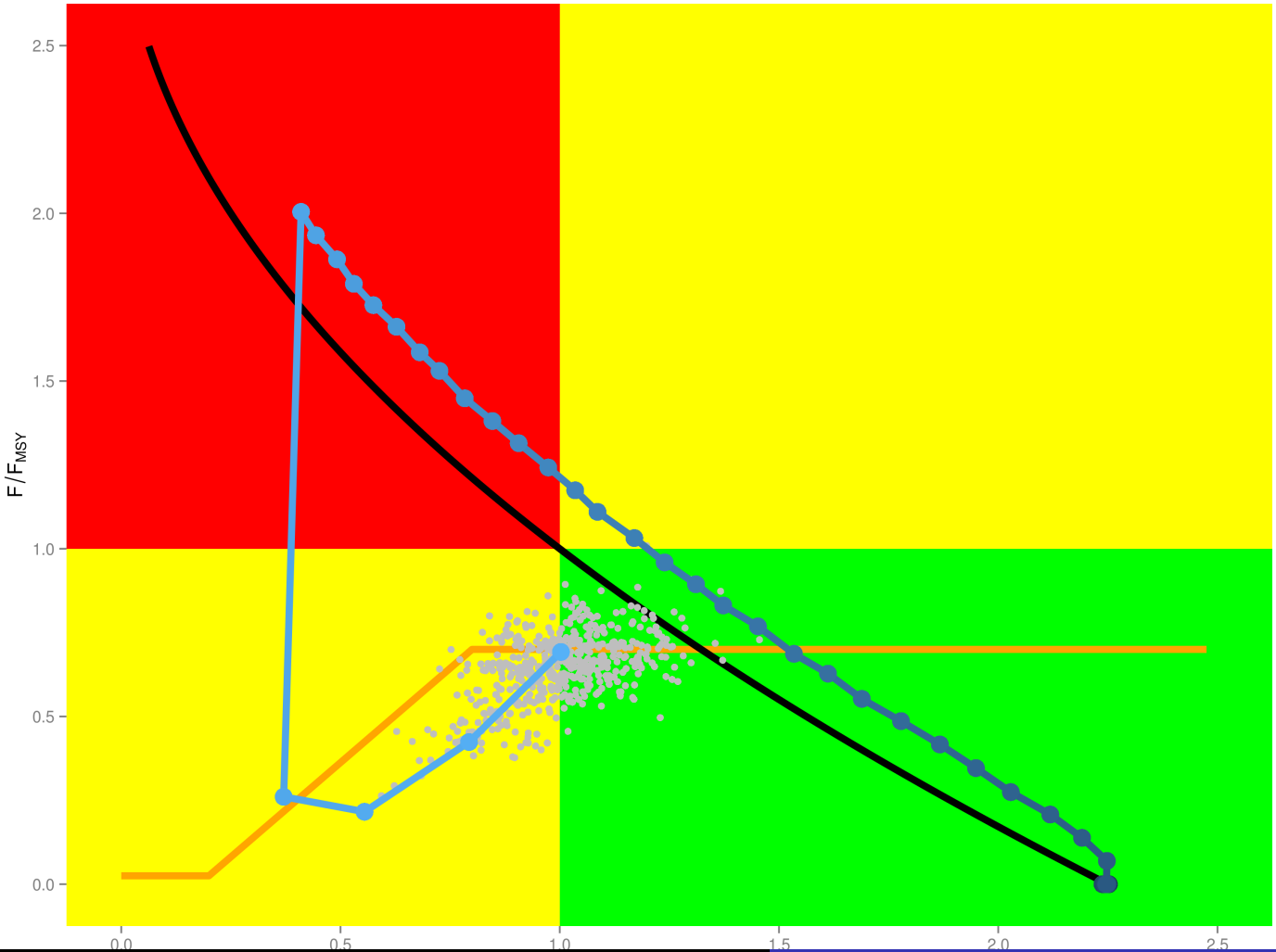

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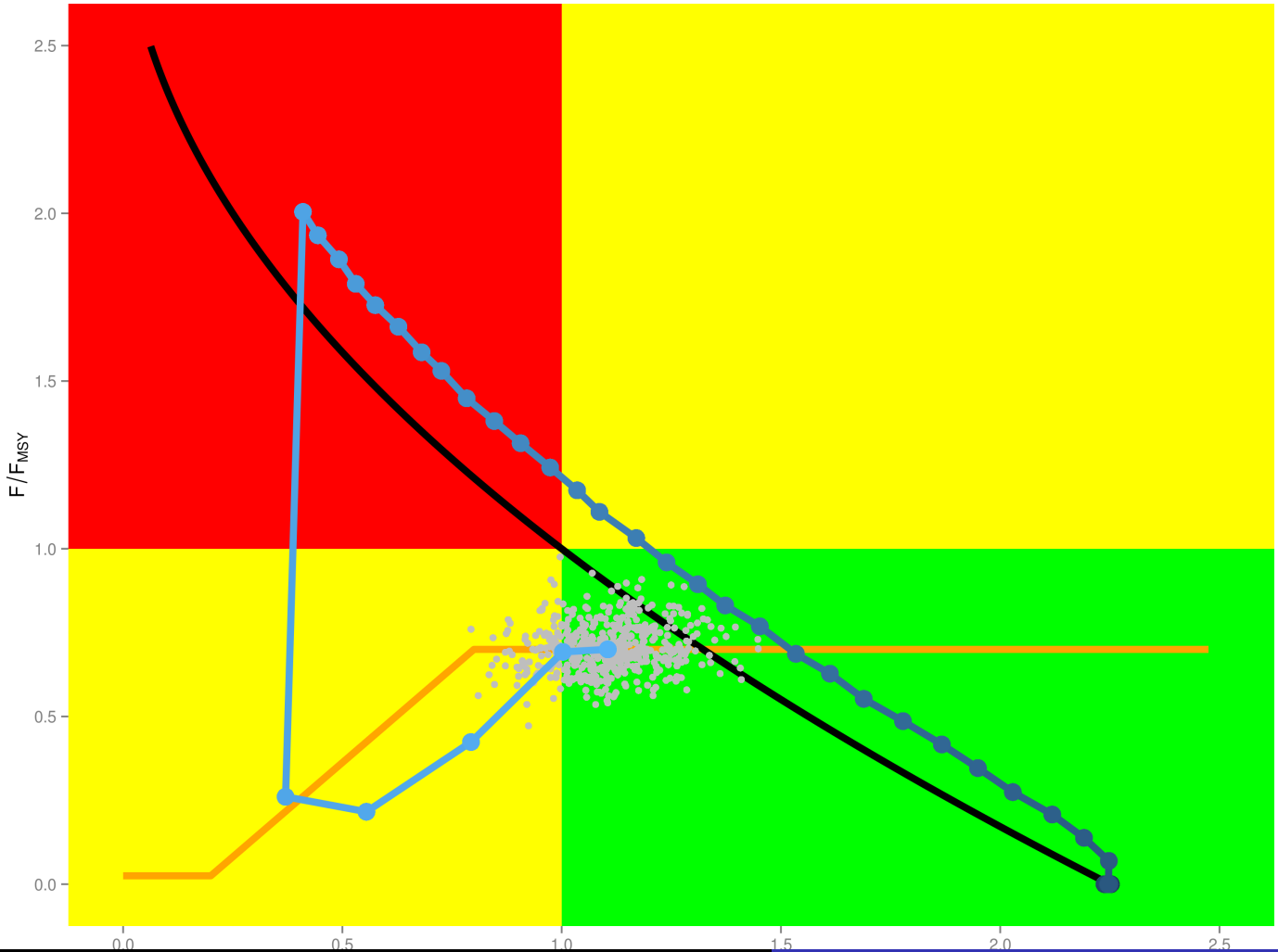

Principles of Decision Making [REC 11-13]

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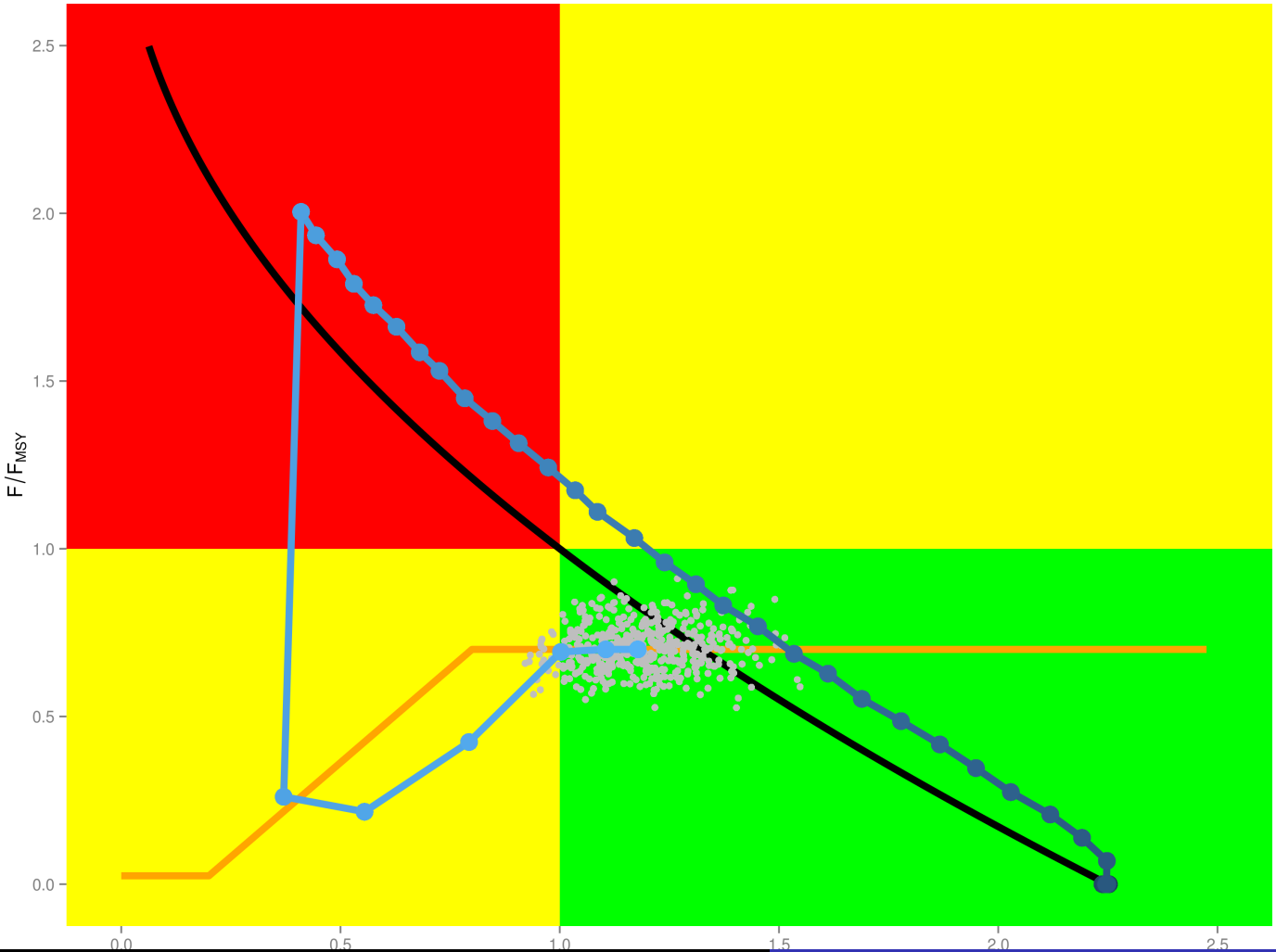

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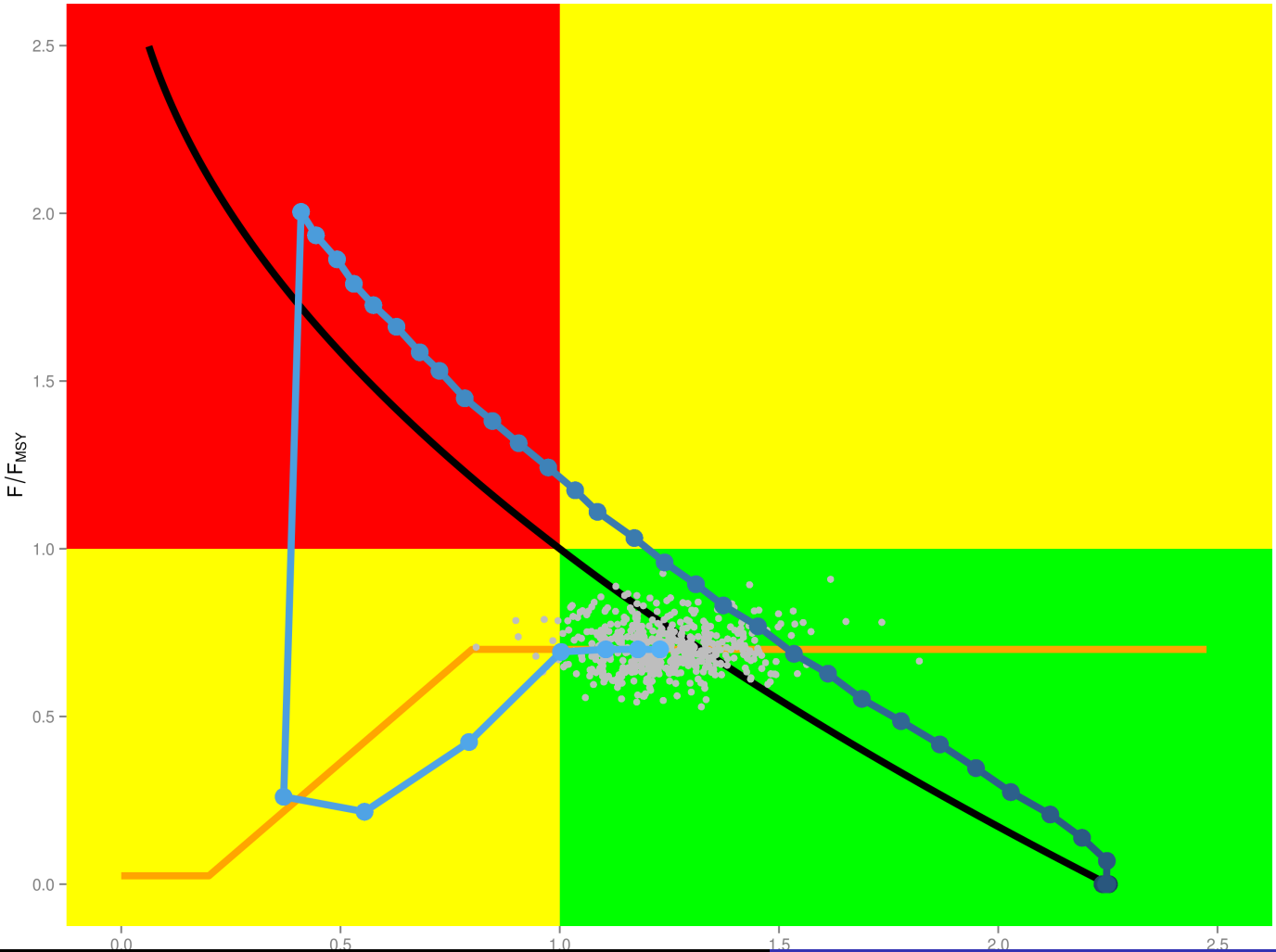

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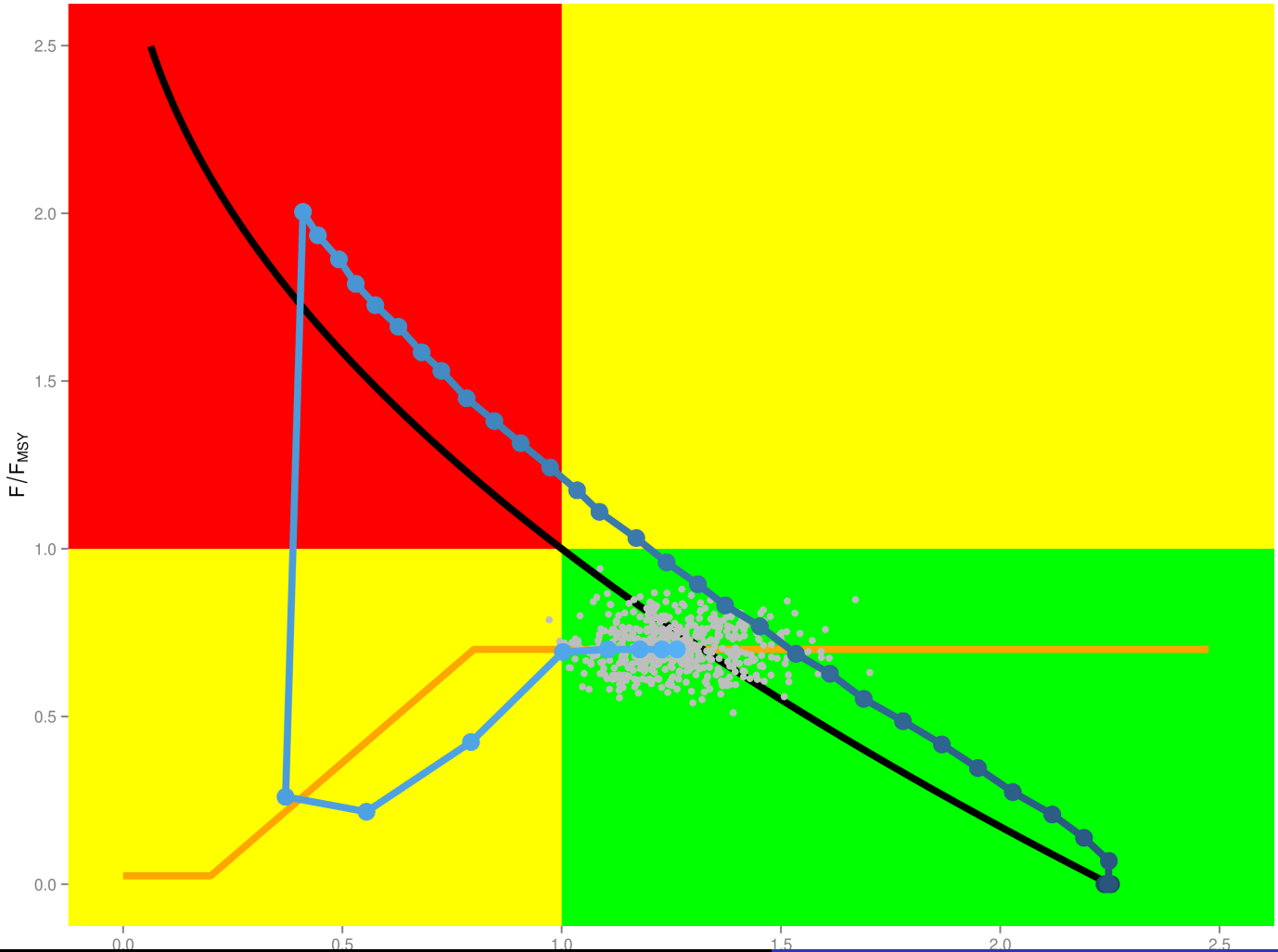
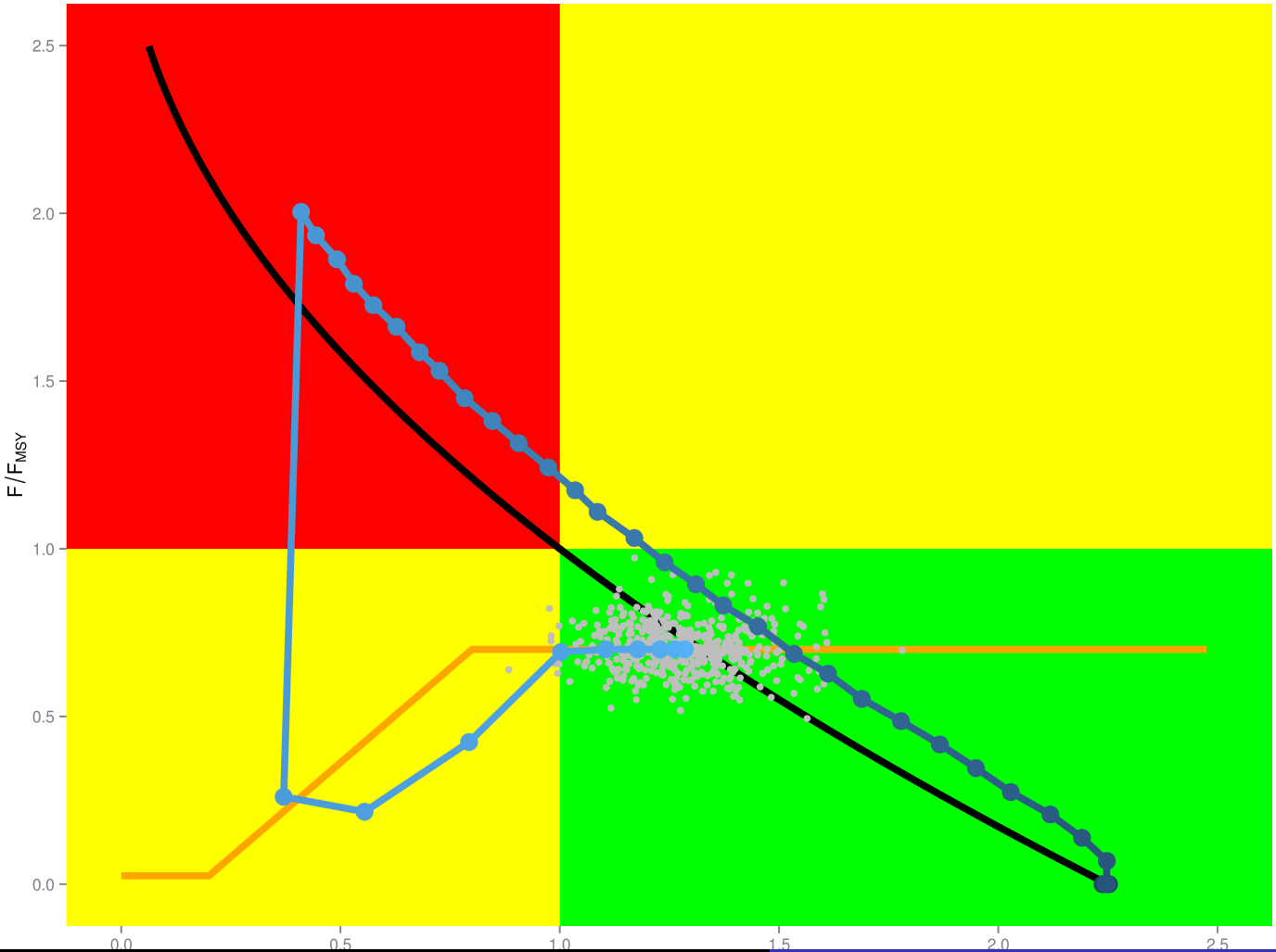


Principles of Decision Making [REC 11-13]

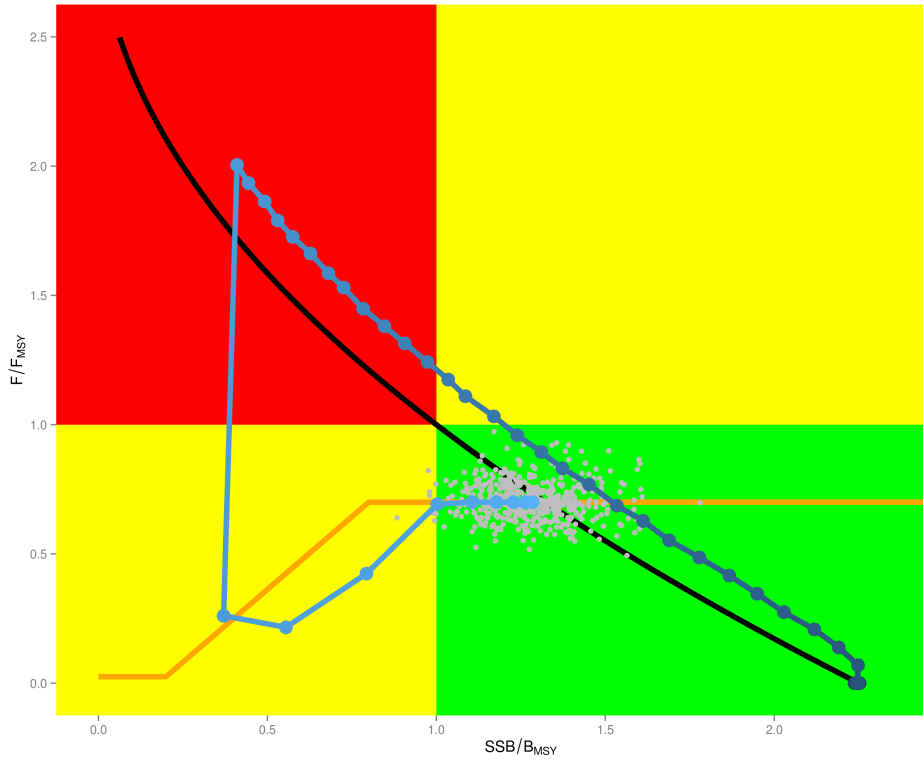
HCR and Recovery



Principles of Decision Making [REC 11-13]

Green Quadrant

For stocks that are not overfished and not subject to overfishing management measures shall be designed to result in a high probability of maintaining the stock within the green quadrant.

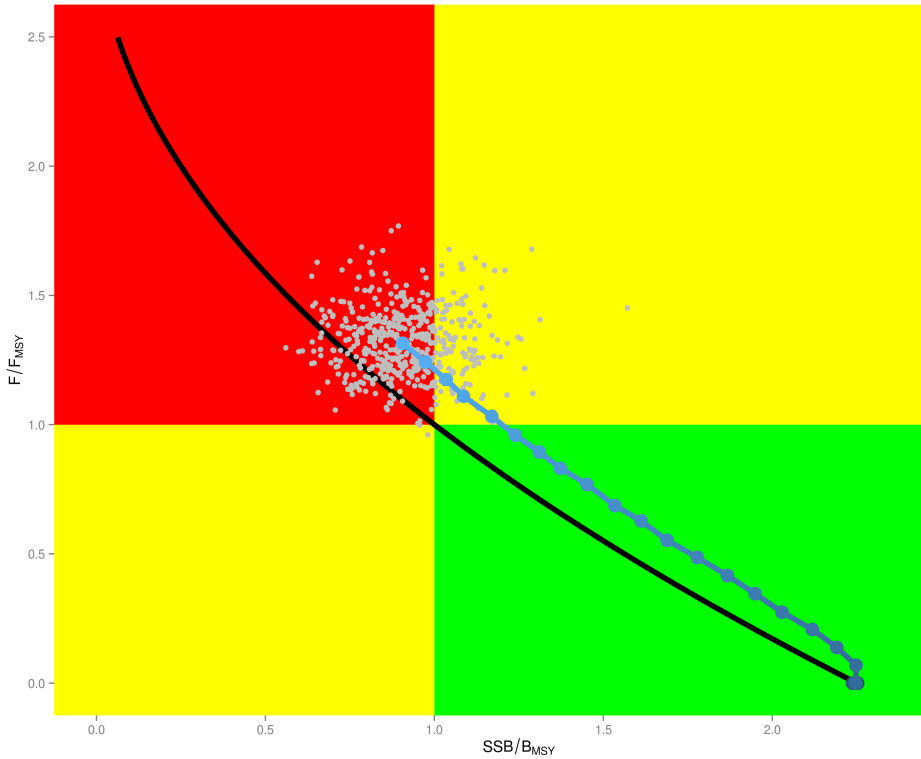


Principles of Decision Making [REC 11-13]

Red Quadrant

Management should ensure a high probability of ending overfishing in as short a period as possible. A plan must also be adopted for rebuilding taking into account the biology of the stock and SCRS advice.

Risk Levels, Probabilities and Time Scales are not specified.



Contents

Albacore

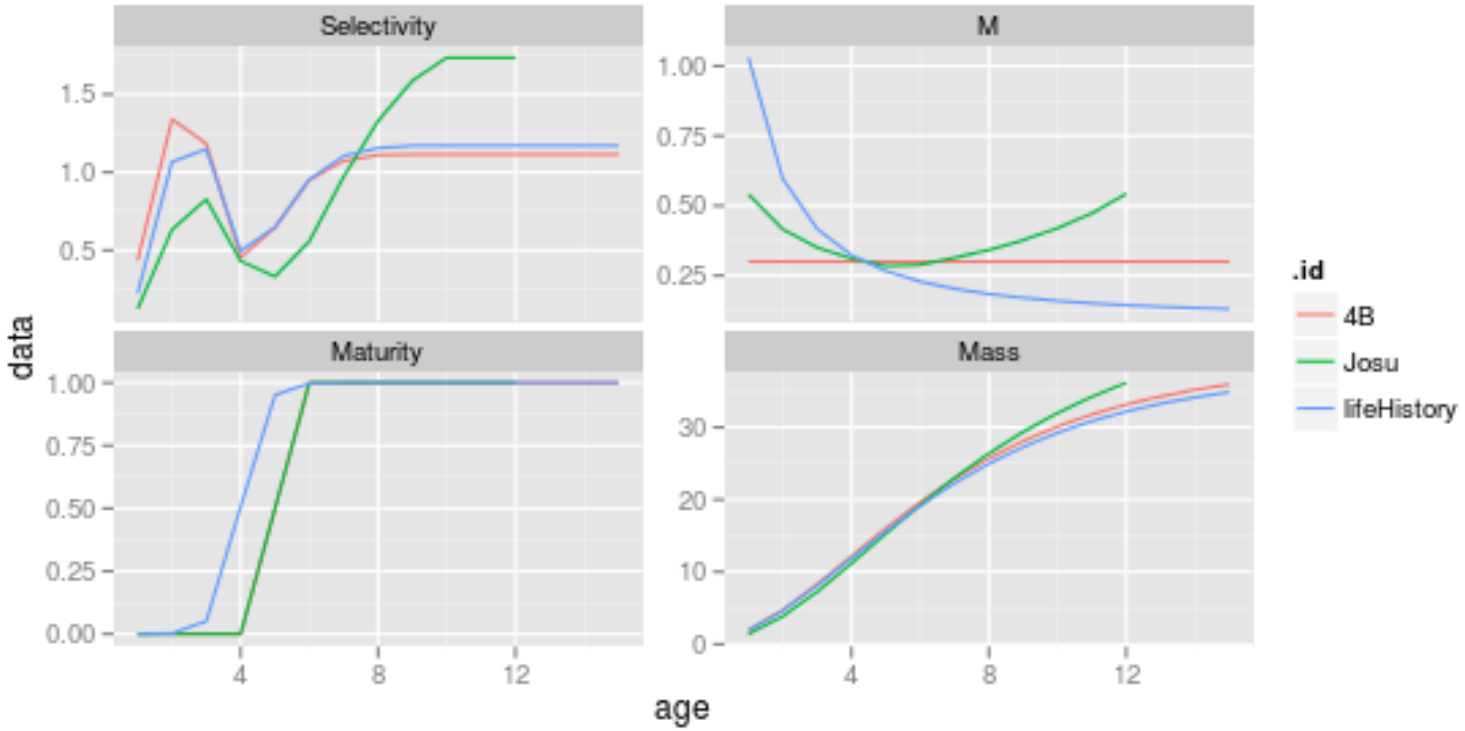
Limit Reference Points

In advance of the next assessment of Northern Atlantic Albacore, the SCRS shall develop a Limit Reference Point (LRP) for this stock. Future decisions on the management of this stock shall include a measure that would trigger a rebuilding plan, should the biomass decrease to a level approaching the defined LRP as established by the SCRS. [REC 11-04]

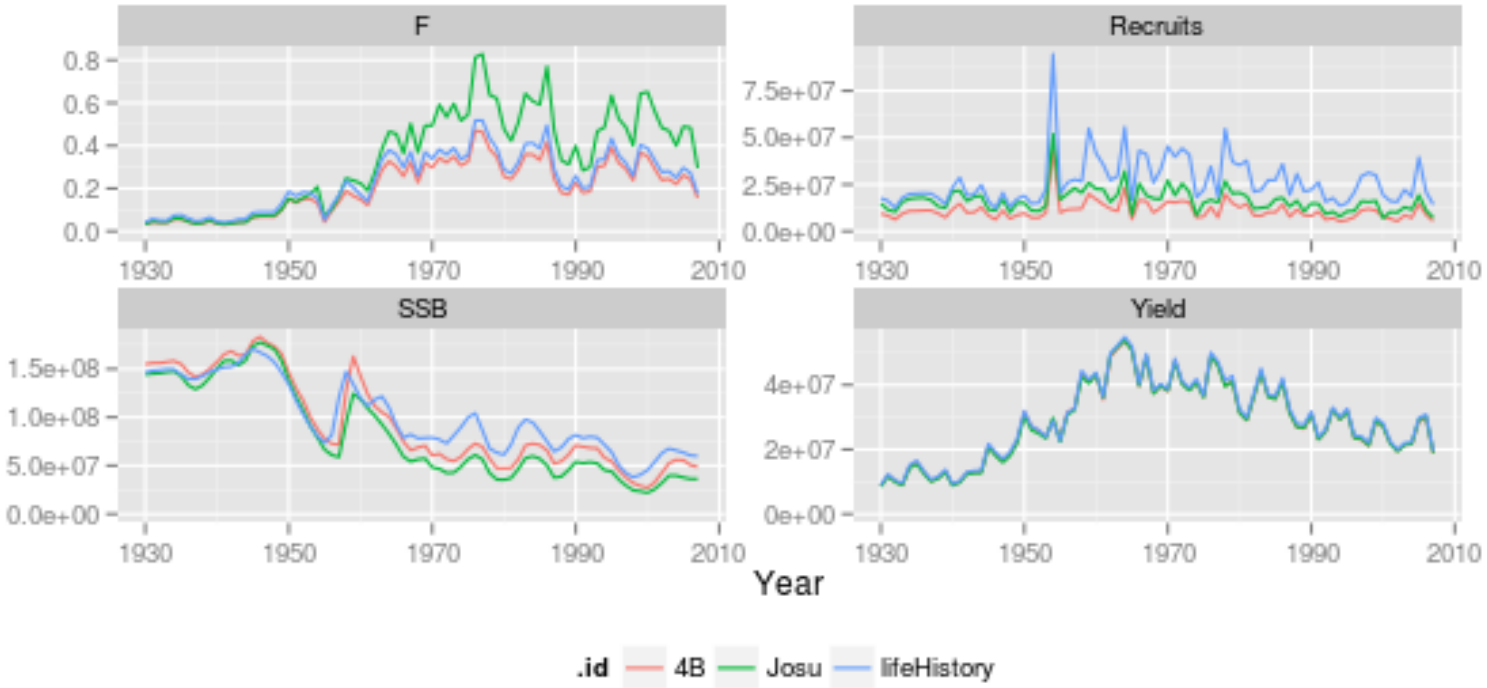
Management Strategy Evaluation

- Operating Model, conditioned on Multifan-CL
  - Three hypotheses about Life History parameters
  - Fleet hypotheses?, weighting, trends, in selectivity, q, ...
  - Catch-at-size?

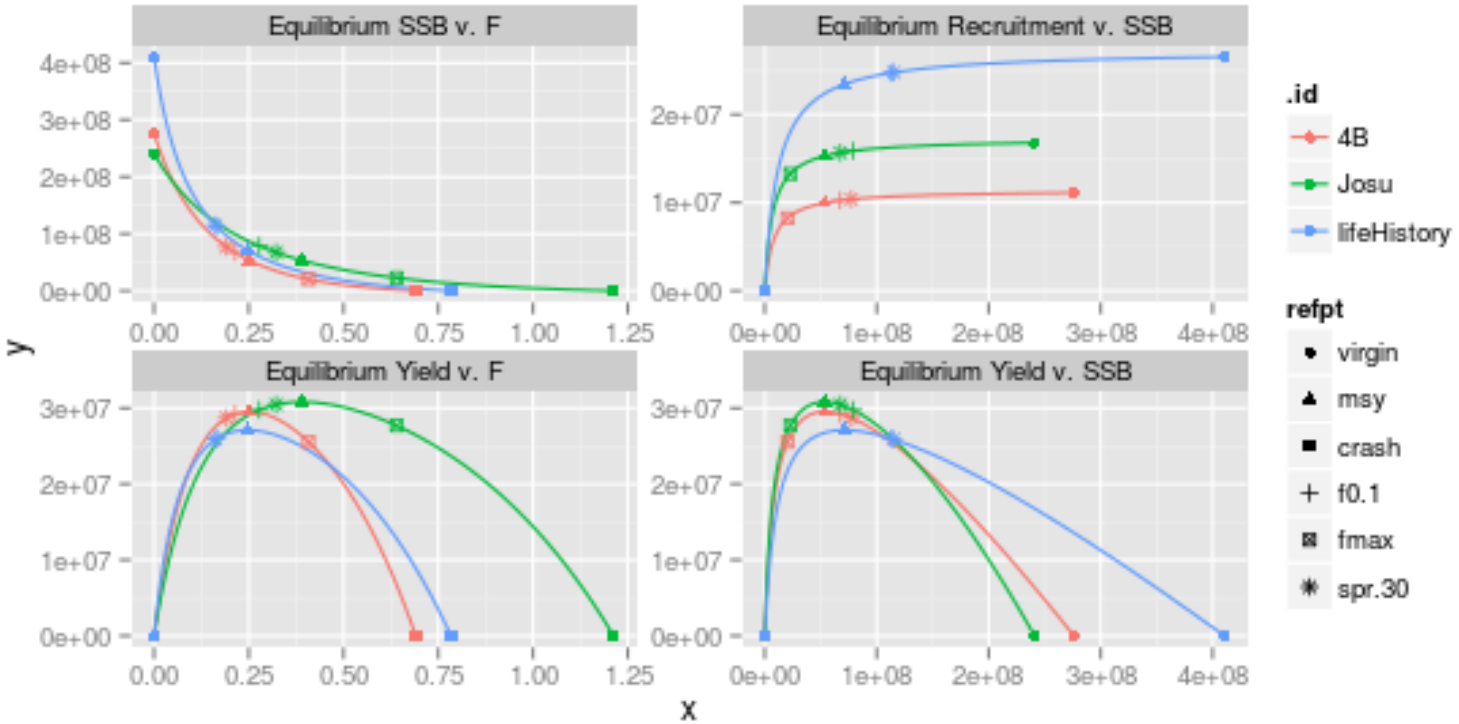
Biological Assumptions in the OM



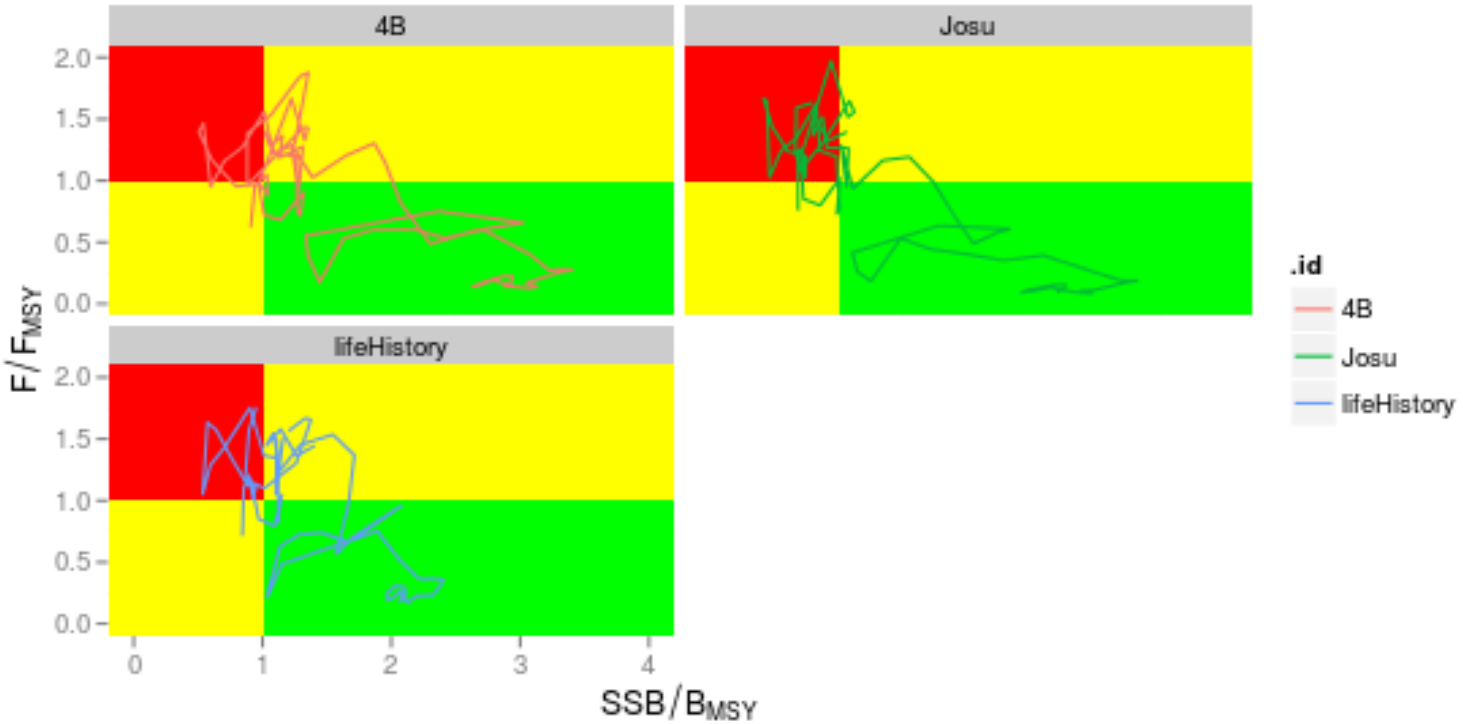
Historic Time Series



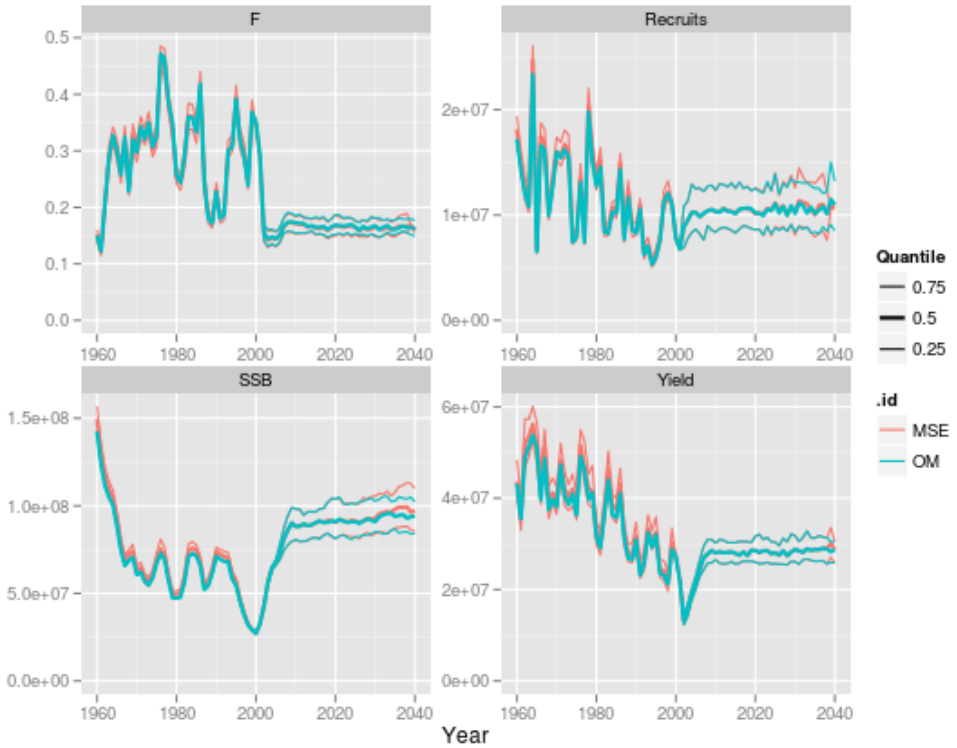
Reference Points



Kobe Phase Plots



Perfect Projections



Management Strategy Evaluation

- Operating Model, conditioned on Multifan-CL
- Management Procedure
  - Biomass dynamic model, including estimates of uncertainty based on Hessian, Bootstrap, Jack knife, MCMC or JAGs?
  - VPA
  - WCSAM
    - Statistical Catch-at-age model (Cox & Swain)
    - State Space Model (Neilsen)
- Evaluation
  - Performance Statistics
  - Akaiki weighting of hypotheses or
  - Plausibility, e.g. Brydes Whales and IWC

References I

REC 11-02

RECOMMENDATION BY ICCAT FOR THE CONSERVATION OF NORTH ATLANTIC SWORDFISH

REC 11-04

SUPPLEMENTAL RECOMMENDATION BY ICCAT CONCERNING THE NORTH ATLANTIC ALBACORE REBUILDING PROGRAM

REC 11-13

RECOMMENDATION BY ICCAT ON THE PRINCIPLES OF DECISION MAKING FOR ICCAT CONSERVATION AND MANAGEMENT MEASURES

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RESOLUTION BY ICCAT TO STANDARDIZE THE PRESENTATION OF SCIENTIFIC INFORMATION IN THE SCRS ANNUAL REPORT AND IN WORKING GROUP DETAIL REPORTS