NP Minke 'Old stock structure' – Greg Donovan

North Pacific common minke whales: reliving the nightmare?

- An Idiot's Guide……
- A Guide from an Idiot

If he can understand it – anyone can!

1

From single stock to multi-stock

- *Implementation simulation trials*
- Specific to species/area
- 'Plausible hypotheses'
  - Stock structure, productivity etc.
  - Sub areas ➡ *Management Areas*
  - Whaling operations
- CLA options (variants):
  - Catch cascading/ catch capping

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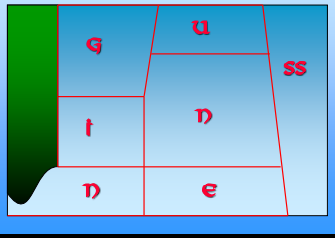
Small Areas:
Contain whales from only one biological stock or
If more than one, harvesting is same ratio to relative abundance



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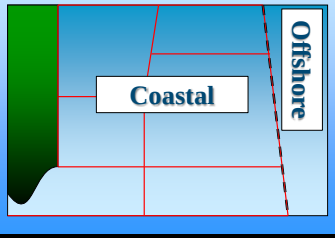
Medium Areas:
Correspond to range of known or suspected biological stocks



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Use of sub-areas

- Primary purpose is to allow geographical specification of stock structure hypotheses (and associated issues such as past and future removals, future surveys)
- Added complication of whaling on migration - temporal as well as geographical mixing
- May or may not turn out to be *Small Areas*

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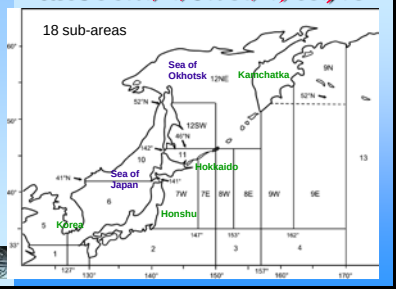
Western North Pacific

18 sub-areas



Focus of implementation

- Primary focus on animals on Pacific side of Japan
- All hypotheses included a separate J-stock - mainly west of Japan but with some mixing in some months in some sub-areas

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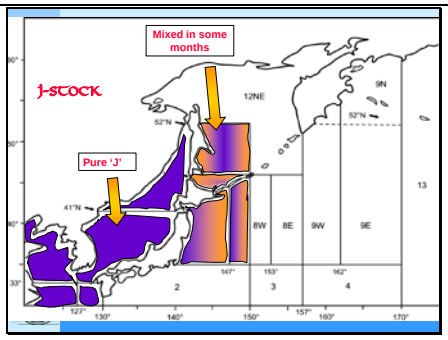

Baselines A and B

- Baseline A (based on hypothesis testing)
  - 3-stocks (J, O, W) [2 –n case of B]
  - W-stock sporadically in sub-area 9
  - O-stock may be in sub-area 10
  - Hypothetic breeding ground locations
  - Possible feeding migrations for 'O'
  - Temporal mixing of O and J
  - Age – and sex- structure

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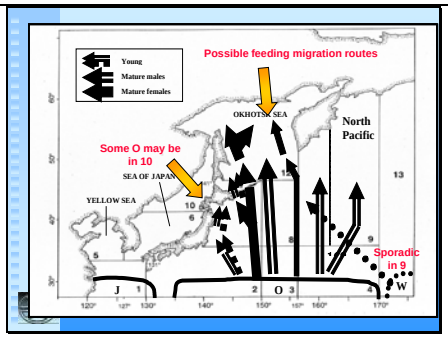

Baseline C

- Based on 'boundary rank' method
- 4 stocks, 3 to west of Japan
- 'preferred hypothesis' – no mixing with boundary at 147E and 158E
- Variants:
  - Ow/Oe boundary at 153E with mixing
  - Further intrusion of Oe into 9E
  - Some mixing of Ow and Oe in 7 and 8

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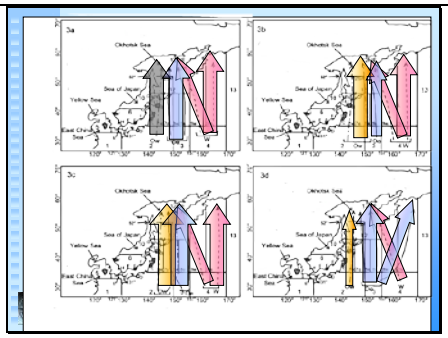

Baseline D

- Synthesis
- 3 stock hypothesis (J, O, W)
- O- and W- stocks mix across 147-162E
- O stocks dominate in west
- W stocks dominate in east

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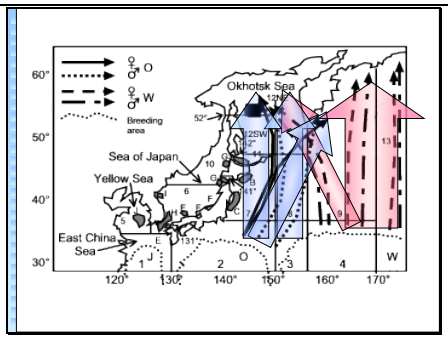

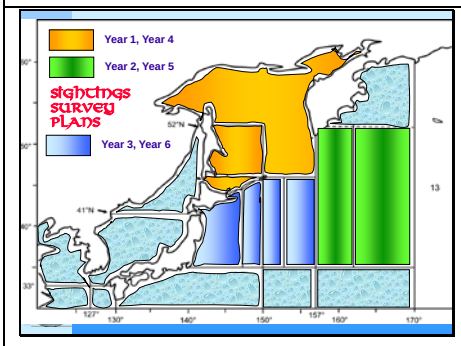

- Catch mixing matrix
  - Specifies the fraction of each stock in each sub-area each month by age and sex
  - Juveniles; Males 10+; Females 10+
- Conditioning
  - Select values for the operating models so that they adequately
  - (1) mimic the data and
  - (2) the dynamics of the scenario
  - In the context of evaluating performance

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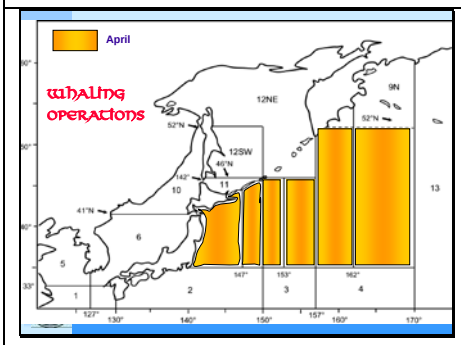

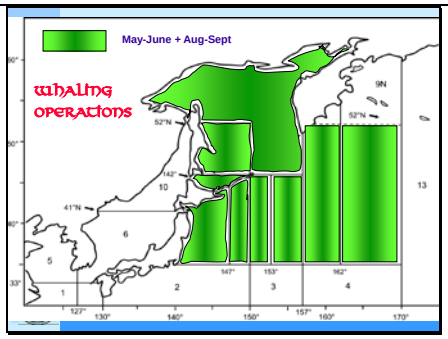

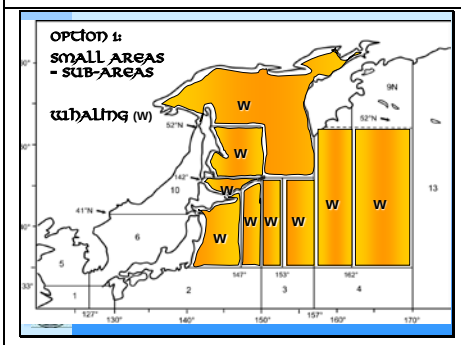

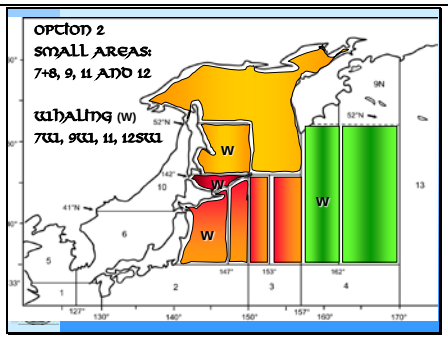

Trials

- 4 baseline, 1% and 4% MSYR, J-stock at 30%K

Sensitivity

- J-stock depletion, 15-70%
- MSYR 1-4%
- Various levels of mixing and intrusion
- Various assumptions of bycatch (Japan and Korea)

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Plausibility

- Is it plausible to agree on plausibility?

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