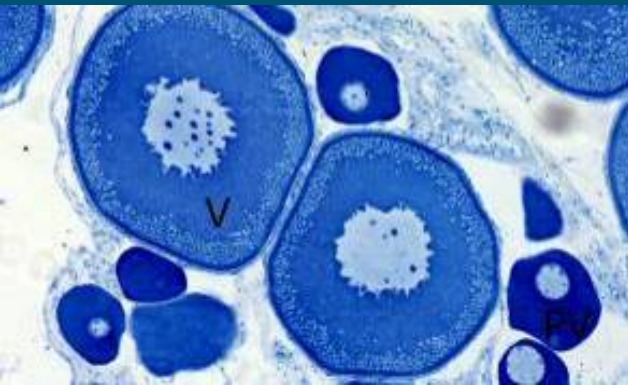


Determinate and indeterminate fecundity types in marine fish: a conceptual model

Cindy van Damme, Adriaan Rijnsdorp, Mark Dickey-Collas & Olav Sigurd Kjesbu

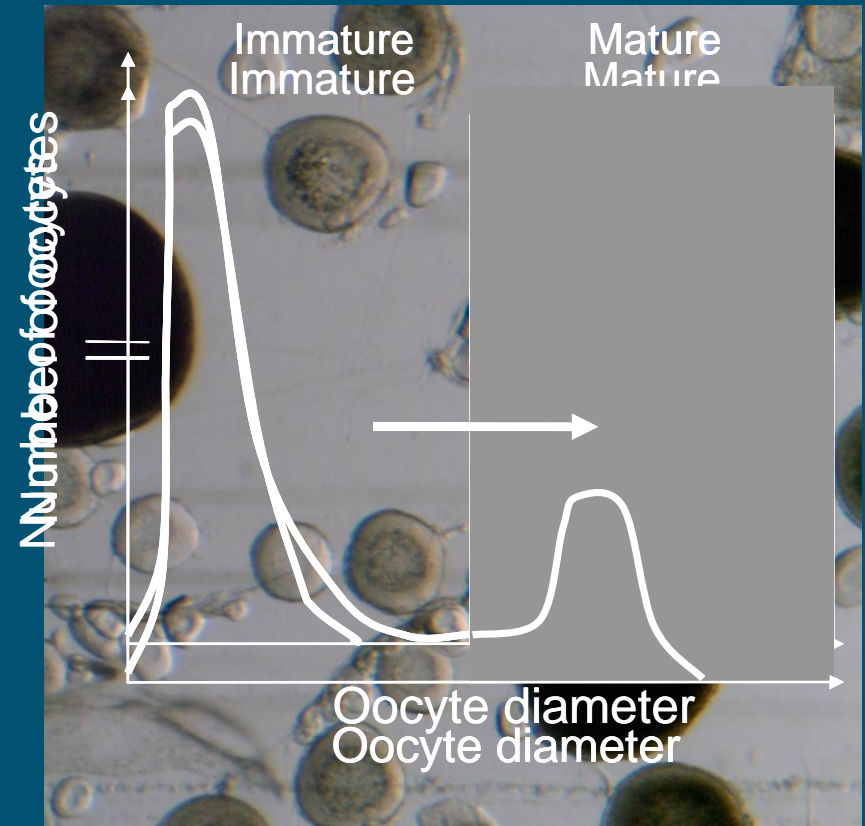


Structure

- Introduction
- Conceptual model
- Results
- Conclusions

Fecundity types

- **Determinate:**
No oocyte recruitment during spawning
- **Indeterminate:**
Oocytes keep recruiting during spawning
- **'Undeterminate'**



Reproductive strategy

- Maximizing off-spring survival

Constraints

- Survival female
- Feeding time and space
- Spawning time and space
- Surplus energy
- Oocyte maturation



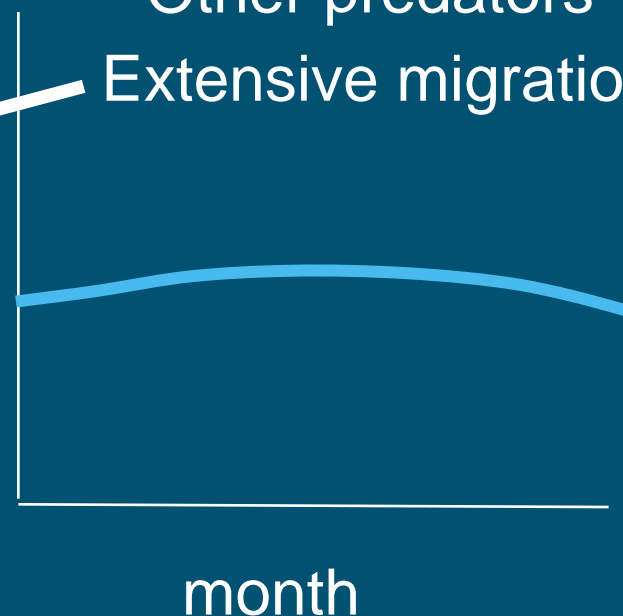
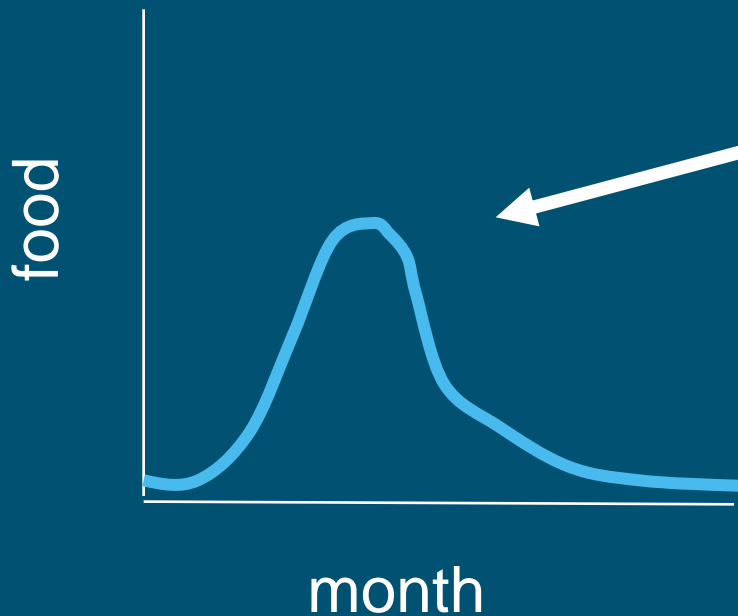
Feeding

Planktivorous
medium – high latitudes

Planktivorous
low altitudes

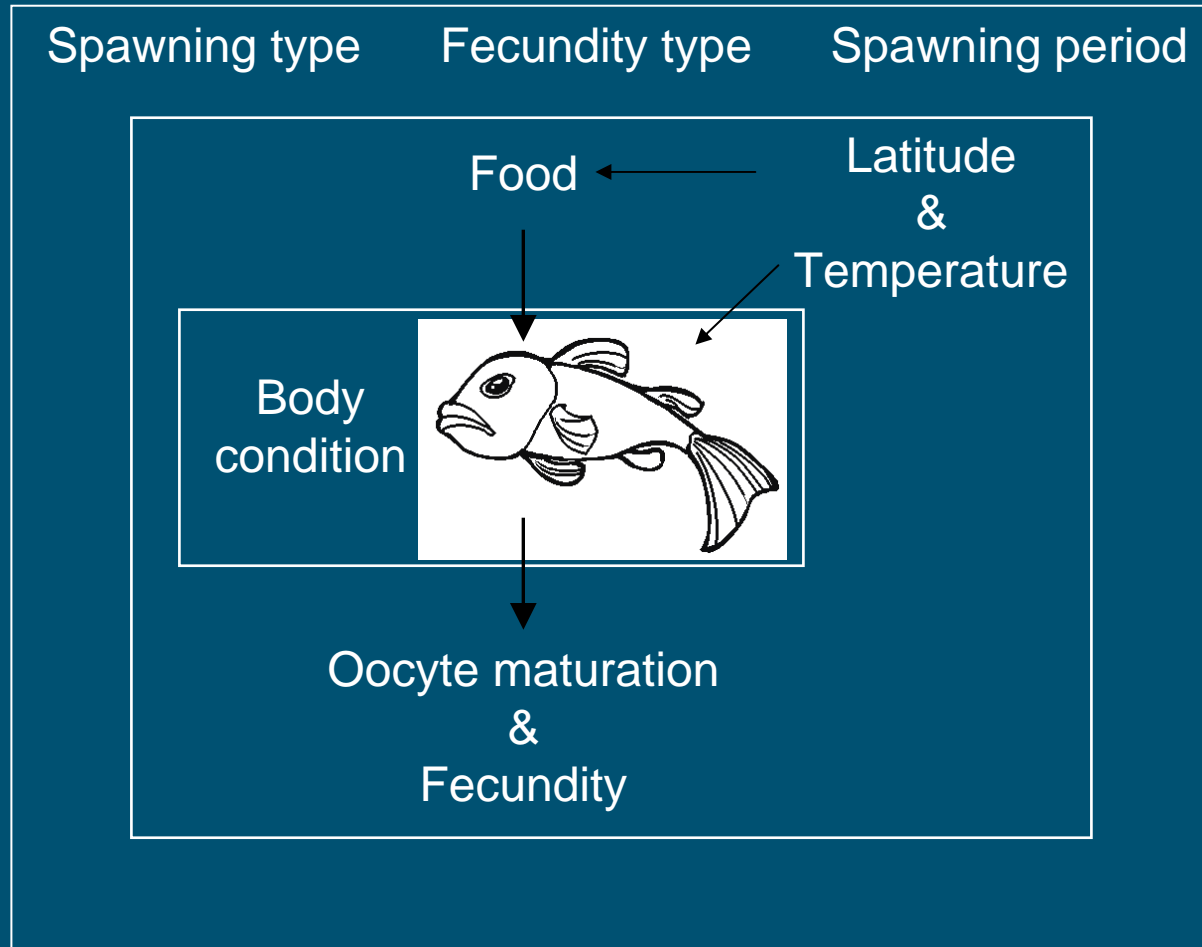
&

Other predators
Extensive migrations



Reproductive strategy

Reproductive strategy



Conceptual model

Fecundity type



Spawning type (n batches)
Spawning period
Relative fecundity (standardized)
Food availability (yes or no)
Body condition (K)
Egg dry weight
Oocyte maturation
Latitude (mean)
Temperature (mean)

- Surplus energy → fecundity
- Food availability → surplus energy

Hypothesis

- Food availability → surplus energy → fecundity
- Fecundity type flexible

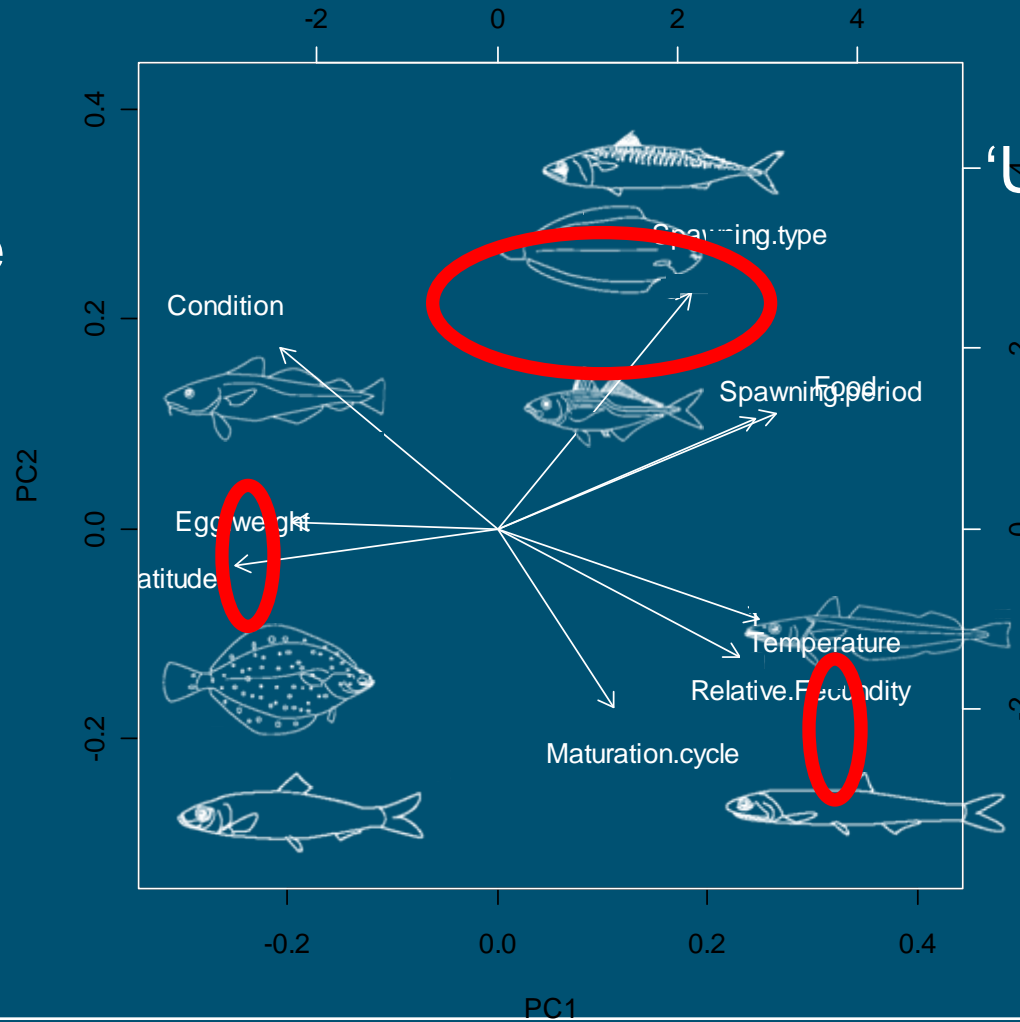
Data

- Determinate: herring, cod and plaice
- Indeterminate: anchovy, hake
- 'Undeterminate': horse mackerel, mackerel, sole

Food availability & Latitude

PCA

Determinate



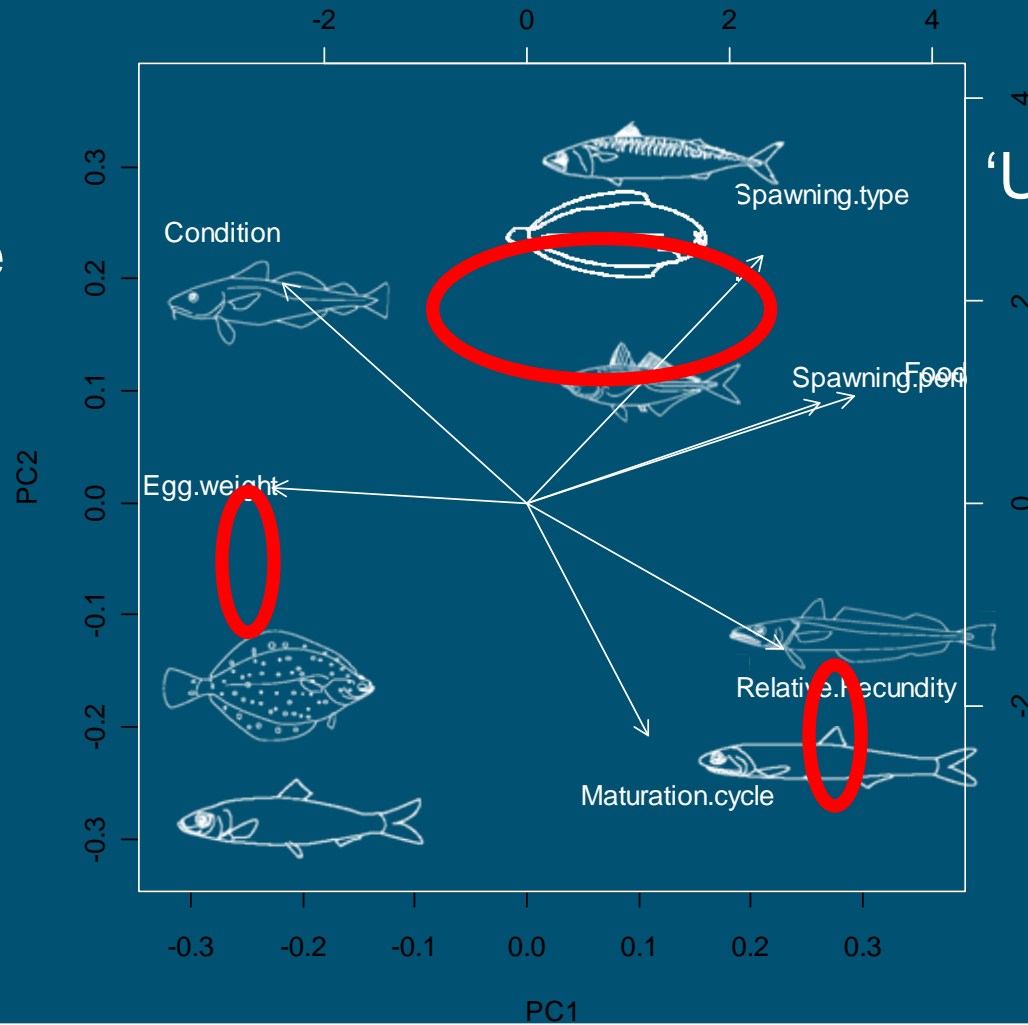
'Undeterminate'

Indeterminate



Food availability & Spawning period

Determinate



'Undeterminate'

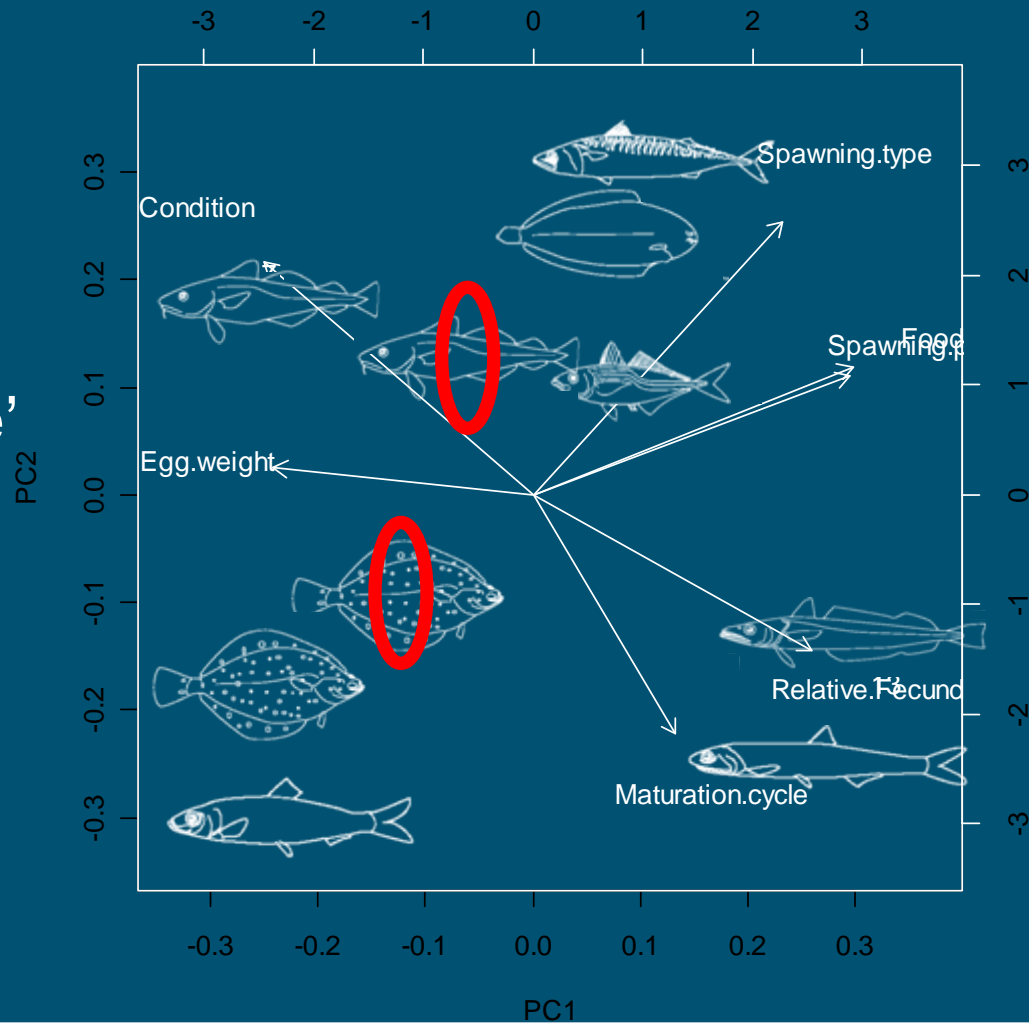
Indeterminate

Food available at spawning determinate spawners

Determinate



'Undeterminate'



Conclusions

- Food availability regulates fecundity type
- Fecundity type not fixed, but flexible
- Only European data, other data available?

