



Report of the Study Group on Recruitment Variability in North Sea Planktivorous Fish (SGRECVAP)

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- Changes in abundances of dominant species: *C. finmarchicus* and *C. helgolandicus* have effected recruitment
 - Changes in plankton phenology (seasonal timing)
 - Changes in the plankton community structure
 - Examination of predator interactions
 - Direct hydrographic events
- In all cases significant changes have been observed !



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Discussions:

- Cannibalism
 - Rejected - There has been no overall westerly increase in distribution
- Predation by Horse mackerel
 - Rejected - The periods in which it has been more abundant in the southern North Sea are not concomitant with periods of high Downs larval abundance
- Predation by Mackerel
 - Rejected - Its distribution tends to be in the north-eastern North Sea, where larvae are not distributed



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Discussions:

- Predation by Norway Pout
 - Rejected - Its abundance has decreased markedly since the mid-1990s
- Predation by Sprat
 - Rejected - their distribution pattern has been similar from the early 1980s to 2004



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Conclusions:

- There has been a recent increase in mackerel, horse mackerel, sardine and anchovy in the North Sea. Preliminary investigations suggest that mackerel and horse mackerel are not the cause of the poor recruitment as they do not overlap spatially and temporally with the larvae of herring



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Conclusions:

- Suitable coupled bio-physical models are not currently available for North Sea herring. Their development should be encouraged to investigate the mechanisms that determine year class strength and explain the commensurate signals seen in the environmental time series



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Conclusions:

- Whilst the impact of toxins, parasites and maternal effects were not considered in detail, these factors may be playing a role in the serial poor recruitment of North Sea herring.



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Conclusions:

- There is no evidence to suggest that the current trend will change, the assumption that poor recruitment will continue is valid within the precautionary approach. Therefore stock projections should assume that the period of poor recruitment will continue