



PN2. Interactions of mesopelagic and bathypelagic fauna with the benthopelagic community associated with MAR seamounts/slopes.

Element 1: Trophic ecology of the benthopelagic community of the Sedlo seamount in the southern MAR-ECO sub-area. (Part of the EU funded OASIS project). **PI: Bernd Christiansen (Germany)**

Element 2 : Trophic ecology and food-webs of fish and cephalopods of the Mid-Atlantic Ridge. **PI: Aage Høines (Norway).**

Aims:

1. Classify nekton species according to feeding pattern.
2. Identify intraspecific variation, e.g. changes in diet and feeding pattern with size.
3. Identify major interspecific linkages (predator-prey relationships).
4. Derive conceptual food-web models that can be linked to similar models for zooplankton and epibenthos.
5. Compare interspecific patterns and trophic transfer processes between sub-areas of the MAR-ECO area.
6. Compare patterns observed on the MAR with those in continental slope waters based on previously collected data.



Hypothesis:

- The main prey resources of the deep scattering layer fish and cephalopods are vertically migrating crustacean plankton and micronekton.
- The main prey of the benthopelagic and benthic fish and cephalopods are pelagic and benthopelagic plankton and nekton.
- For non-piscivorous nekton, crustaceans are the more significant prey taxon, and only few species are adapted to feeding on e.g. gelatinous prey organisms.
- The main processes providing these patterns are the vertical migration of prey species, and the concentration of food organisms on slopes and near seamounts.
- Observed feeding patterns are the same in all sub-areas, and similar to those observed on adjacent continental slopes.
- **NOTE: Element 1 have more specific hypotheses concerning seamount processes (See OASIS website).**

Strategy:

Element 1: Focused studies on the Sedlo seamount and adjacent waters. Material from OASIS cruises only.

Element 2: Focused studies in the three MAR-ECO sub-areas, but also opportunistic sampling in other areas.

Technology/Methods:

- Traditional stomach content analyses (but using modern sampling methods).
- Biochemical analyses (fatty acid biomarkers, $\delta^{15}\text{N}$, $\delta^{13}\text{C}$, ^{234}Th , ETS activity, DNA analyses)
- Comparative analyses of feeding modes based on morphological/anatomical features and behaviour.
- Multivariate analyses, diet overlap indices.
- ECOPATH model

Deliverables:

- New information on mid-oceanic food-web relationships and trophic processes in ridge-associated communities.
- Enhanced understanding of seamount-related trophic processes, especially in the near-bottom zone.
- Papers published in high-ranking science journals, and popular presentations on open-ocean ecology (website, journals, press, books, exhibitions, school network).

Schedule: Preparation of field work: 2002-2003, Sampling at sea: 2003-2005, Analysis and dissemination: 2005-2008.

Commitments: OASIS project activity, labour and other costs. Master student at Univ. Bergen.,

Additional needs: Post doctoral fellowship, electrophoresis equipment, sample analysis.

Proposals accepted: EU 5th Framework Programme, OASIS Project (primarily German and Portuguese contribution).

Partners:

Element 1: OASIS partners, e.g. Bernd Christiansen, Gui Menezes, Telmo Morato Gomes (Portugal) a.o.

Element 2: Tracey Sutton (USA), O.A. Bergstad, Åge Høines, Tonje Castberg, Agnes Gundersen, Ruth Anne Sandaa (Norway), Franz Uiblein (Austria), Andrey Dolgov (Russia).