| **Heiti á verkætlan**:<br>Annual variation in productivity on the Faroe Shelf during the 20th century | **Ár byrjan og endi**:<br>1.apríl 2010 til 31. mars 2011 |
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**Endamálið við verkætlanini**:

The 1-year project aims to sample specimens of *Arctica islandica* from shallow waters (< 130 m) on the Faroe Shelf and to construct a preliminary productivity-chronology back in time. The productivity may not be uniform on the Faroe Shelf, i.e. there might be a southern component (off Suðuroy) and a northern component (off the other islands). Also, the productivity in enclosed bays and fjords might be different from off shore locations. Hence, it will be necessary to sample *Arctica islandica* from different locations in order to investigate spatial variations in productivity and – based on this information – to select those sites/individuals that are suitable to be used to the chronology of ecosystem productivity. The validity of the chronology will be tested against phytoplankton productivity for 1990-2008 as well as indirect measures of productivity (cod recruitment 1925-2008 and cod growth 1961-2008).

**Samandráttur av úrslitum**:

**Samandráttur á føroyskum:**

Kúpuskelin goymir uppá rættiliga áhugaverdar upplýsingar, sum kunnu avdúka, hvussu viðurskiftini í havinum hava verið fleiri hundrað ár aftur í tíðina.

Kúpuskel heldur til í Norðuratlantshavi, her hon livir niðri á botni, lutvíst niðurgrivin. Kúpuskel er tað dýrið, sum livir longst. Tann elsta, sum er funnin í Norðsjónum, er 500 ára gomul. Kanningin vísir, at tað er vanligt at finna kúpuskeljar við Føroyar, sum eru meira enn hundrað ára gamlar. Kúpuskelin veksur skjótt fyrstu 20 árini, men síðani sera seint. Í skelini verður hvørt ár lagdur ein ringur eins og í trøum. Tjúkdin á

árringinum vísur hvussu nógv skelin er vaksin og hetta er tengt at, hvussu nógv hon hevur etið. Føðin hjá kúpuskel er plantuæti, sum hon sílar úr sjónum. Hetta merkir, at um árringurin er tjúkkur, hevur nógv verið til av plantuæti tað árið. Harvið kann kúpuskel vísa, hvussu tær nátturligu umstøðurnar hava verið fyrr í tíðini.

Úrslitini frá kanningini vísa, at samband er millum tann mátaða gróðurin á Landgrunninum og vøksturin á kúpuskelini. Tó bendir tað á, at kúpuskelin veksur væl eitt til tvey ár framman undan, at gróðurin er góður. Árið fyri at kúpuskelin er vaksin serliga nógv, er saltari sjógvur komin inn á Landgrunnin. Saltinnihaldið vísir, hvaðani sjógvurin stavar. Ein saltur sjógvur kemur úr Biskayavíkini (er av subtropiskum uppruna), meðan feskari sjógvur kemur úr Norðuratlantsstreyminum (er av subpolarum uppruna). Planktonsamfeløgini í hesum báðum sløgum av sjógvi eru heilt ymisk. Hetta kann merkja, at í tí salta sjónum er góð føði til kúpuskelina, sum so sæst aftur á vøkstrinum á skelini árið eftir. Eisini vísa úrslitini, at toskur veksur væl árið eftir, at vøksturin á kúpuskelini hevur verið góður. Fiskastovnar, so sum toskur og hýsa, eru í hæddini 2-4 ár eftir, at gróðurin hevur verið góður. Hetta merkir alt í alt, at umleið 5 ár eftir, at kúpuskelin er vaksin nógv eru toska- og hýsustovnarnir í hæddini.

Harvið kann kúpuskelin møguliga siga nakað um fiskiskapin umleið 5 ár fram í tíðina. Hetta eru tó úrslit, sum byggja á eitt lítið grundarlag og skulu tí takast við fyrivarni. Neyðugt er at kanna fleiri kúpuskeljar. Eisini er neyðugt at kanna nærri, um hetta sambandið millum saltan sjógv, vøkstur hjá kúpuskel og vøkstur hjá toski er veruligt, og ikki bara tilvild.

**Samandráttur á enskum:**

The ocean quahog (*Arctica islandica*) is long-lived (up to 500 years) and may be regarded as a living 'monitoring station' of the environmental conditions in the vicinity of the individual. The annual variation in growth of the ocean quahog in Faroese waters is investigated. The annual growth varies. A large annual increment indicates that the environment in the growth period has been favorable. Ocean quahog feeds on phytoplankton, and the growth of ocean quahogs should therefore be a good proxy for the primary production.

This project has proved it feasible to get ocean quahogs more than a hundred years old. This makes it possible to reconstruct the primary production over the last century.

Results from this study indicate a growth difference between the three sampled areas as well as between the individual clams. This may be caused by local effects like fresh water run-off and the difference in exposure (sheltered or exposed). Such local differences may have an effect on the productivity in the area. The results indicate that the number of specimens examined is too low to give reliable statistically results on the growth differences between the sites.

The ocean quahogs sampled in Oyndarfjørður seem to be the most appropriate of the sampled areas when compared to parameters like primary production and cod growth. Oyndarfjørður is situated northerly and is a rather open inlet with no big rivers entering. Therefore Oyndarfjørður might be a good reference of the primary production on the continental shelf.

The Arctica-based growth index reveals that favorable growth years precede year with high on-shelf primary production by a year or two. Comparing the shell growth of ocean quahogs to the growth of cod reveals that the growth of ocean quahog is one year earlier than cod growth, but biomass of cod seems to follow the growth of ocean quahog with a lag of about three years. A high growth is observed in the ocean quahog one year after the passage of saline oceanic anomalies. Thereby, the growth of ocean quahogs may not only tell something about the past, but about the future as well. There is a need for further studies to confirm or reject a possible connection between the oceanic marine climate and the on-shelf, growth of ocean quahogs and cod growth.

Further studies on growth increments of ocean quahog could represent crucial information about reference points for sustainable fisheries on the Faroe Plateau as well as information about global warming and climate change.

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| **Váttan frá verkætlanarleiðara**: | |