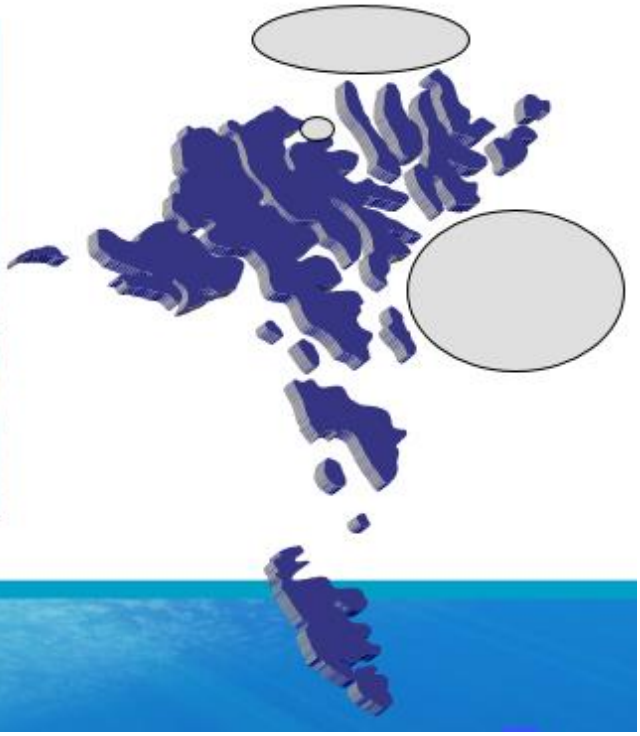
Fishing Manual

for

the Faroese Scallop Fishery



December 2015

Introduction

This manual is written on the basic of company knowledge on scallop fishery and on advises related to the MSC certification of the Faroese scallop's fishery dated May 2013. The basic reports are

https://www.msc.org/..05.04.2011_Faroe_Island_Queen_Scallop_PCR_v5.pdf

https://www.msc.org..../faroe_islands_queen_scallop..../20130903_PCR_SCA44.pdf

https://www.msc.org...../faroe_islands_queen_scallop.../20140922_SR_SCA44.pdf

https://www.msc.org/../faroe_islands_queen_scallop.../20150929_SR_SCA44.pdf

OCJoensen started in 2008 a process of MSC certification to state the sustainability of the Faroe Islands scallop fishery. This has been a difficult and expensive process which have given insight and experience although the certification has been unexpected difficult to gain and to maintain. Even the difficulties our wish to maintain the MSC certification has led us to organise the data gathering on the scallop fishery in a way, so they are manageable in accordance to a Risk-Based Framework method.

The company has decided to have a Fishing Manual outlining the fishery procedures and sampling. This Fishing Manual will be a handbook for the operating vessel. It will act as an improvement on the regular updates of the knowledge and the yearly progress of the Faroese scallop fishery. It will be regularly updated and evaluated after each fishing season and prior to every annual surveillance of the MSC certification.

This Fishery Manual will be kept with 3 identical copies at the Thor head office, at OCJoensen office and on board the operating vessel for scallop fishery f/v Norðheim. It will be sent to the Faroese Marine Research Institute (FAMRI) for knowledge, review and verification.

The scope of the Fishing Manual

The aim is to ensure that the scallop fishery is managed systematically and in accordance with the MSC certification. As the description of the scallop fishery around Faroe is well addressed in the MSC Faroe Islands Queen Scallop Reports this first edition of the Fishery Manual will especially address the Conditions and Recommendations, which not have been addressed properly up to now.

The procedures for maintaining a sustainable fishery are in focus.

Condition 1:

SG80a: A limit reference point (LRP) shall be implemented for the fishery.

SG80b&c: Evidence must be provided that the harvest control rule is set at an appropriate level to allow for recovery of local scallop beds.

Uncertainties regarding the set level of the limit reference point and the appropriateness of the tools used to control exploitation rate must be addressed as well.

The amount of catch and the time used has always been registered and still is. The limit reference point (LRP) has been part of the practical Code of Conduct every Captain is introduced in when engaged. The best evidence that the harvest control rule is set at an appropriate level to allow for recovery of local scallop beds is the relative stable fishery in the specific areas. The fishery is strictly limited to one vessel, to breadth of the dredge and to the winter period. Uncertainties regarding the Limit Reference Point is especially the weather condition. Uncertainties regarding the appropriateness of the tools used to control exploitation rate are addressed in the yearly evaluation of the fishery.

Corrective action:

- Present practice formalized by guidelines and including minimum catch limit (kg/hour)

  See Enclosure 1: **Harvest Control Rules for the scallop fishery around Faroe Islands**

- Evaluate “move on” rule by analysing the available data on the geographical positions

  See Enclosure 2: **Table, indicating Good area, Awareness areas and Closed areas for the past 4 years.**

  To ensure a sustainable fishery the captain keeps a register on the towing and the fishery as mentioned in the Harvest Control Rules. The „move on“ rule we have used or the „Harvest Control Rules“ we now have introduced is company rules to ensure a sustainable scallop fishery. To demonstrate that the rule is followed the Captain state in the fishery record book, where he has fished and when he leave the area and in the annual review all the areas are evaluated and registered as closed, awareness or good areas for the next two seasons.

The tows during a tour will be evaluated towards the different CPUE referent points. Should the CPUE be within the target area of 1.5 ton or higher the area will be indicated with a green colour. Should the CPUE be within 1.0 – 1.5 the areas will be indicated with a yellow colour and should the areas have a CPUE less than 1,0 ton the area will be indicated with a red colour. All three Referent Points are set by OCJoensen as a Fishery Management Tool to ensure sustainable harvest of the scallop areas. As the fishery has been relative stable for 3-4 decades, we are sure that these reference points are valid.

Harvest Control Rules for Scallops fishery		
Target reference point	**➢ 1,5**	**Keep on the good fishery**
Trigger reference point	**< 1,5**	**Move to a better area**
Limit reference point	**< 1,0**	**Closed area for 2 years**

Fishing areas are registered in grid outlined in a map. Good area, Awareness areas and Closed areas are separated visually each year. We have looked at the existing registration the last seasons and the results are in enclosure 2.

- Contact the Faroe Marine Research Institute (FAMRI) regarding the limit reference point and ensure a verification of the used reference points, especially the Limit Reference points.

  See enclosure 3: **Review from FAMRI on CPUE**

  FAMRI has been reviewing the scallop fishery in the period 2003 – 2015. We are continuing to supply FAMRI with date to support their research and to look closer at the ability to work on a scientific review of the eastern areas.

Condition 2:

CPUE in the eastern area should be monitored by authorities in addition to CPUE for the exploratory areas.

Corrective action:

- Continuing registration of CPUE and request the authorities to monitor this.
- Contact the authorities to have the CPUE monitoring formalized

  The Faroese Fishery Authorities are following the fishery on a regular bases. All daily catch records are immediately after fishery tours sent to the Fishery Inspection and Faroese Marine Research Institute (FAMRI). Enclosed is a review of the date from 2003 – 2015, made by the FAMRI. We will continue to supply FAMRI with data and they will be invited to participate at the yearly review of the fishery at the end of each season.

Condition 3:

Sufficient data must be provided to assess the impact of the dredge on the habitat for the main eastern fishing area.

Corrective Action

- Habitat impact assessment. This research work should be scientifically robust and ideally independent.

  OCJoensen is able to ensure a good field registration. Furthermore we are committed to do more habitat studies with an involvement of FAMRI.

  As the Faroese scallop fishery is a very small fishery with a single vessel in the winter period towing on depth around 60 – 80 meters it seems difficult to see the ability to address this in other way then keeping a good monitoring on the content within the dredge. To put cameras on the dredge has been discussed as a possibility and this may be done in upcoming fishing seasons in connection with a survey.

  Elements of the dredge has been improved in years but the breadth gap has not been changed. The aim of the last improvements on the dredge has been to reduce the wasted dredge tow, to give fish better possibilities to swim

away and to get a better sea flow through the dredge. The improvements are still not evaluated but the first results indicates that the dredge now:

- can be towed on both sides, which means that no tow is “wasted” due to wrong side.
- is more open in the front and gives fish better ability to move away.
- has a better cleaning ability for trash as more water comes through

Differences between the former and new dredge will be evaluated, based on differences in trash and bycatch. We do not expect other differences in scallop catch than less wasted tow, due to the dredge ability to tow on both sides and in more rough weather condition. The evaluation will be done each year as a part of the general review in the end of the fishing season.

The main fishing area is the eastern area as the catch has been best in this area. The fishery in the two northern areas is described in a report to The Faroese Fishery Authority from October 2015. There was fished 688 ton out of the quota on 2000 ton with a CPUE on 2.004 kg in one area and 72 ton was fished out of a quota on 267 ton with a CPUE on 1.956 kg in the other area. We see that the trash (rusk) is 36,9 % and 45,5 % of the catch in the areas, which means that a relative high amount of empty shells, whelks, starfish and other bottom elements were part of the total landing. The mean trash (rusk) part in 2014/15 was 21,9 % (úrtøkusamanbering frá Høgna). The bycatch was not part of the report and it has not been time to go through differences in areas regarding bycatch.

See Enclosure 4: **Procedure for registration and evaluation**, which also contain the methods of bycatch and trash registration.

See Enclosure 5: **Frágreiðing um skeljafiskiskapin norðanfyri 2014/15**. Report in Faroese on the fishery in the two northern areas. Stock assessments in both areas are tagged to the enclosure.

Condition 4: A research plan for the fishery must be provided.

Corrective Action:

- Research on Faroes Queen Scallop fishery

As mentioned under Condition 3 it will be very difficult for the fishing company itself to do a scientific research on this relative small scallop fishery. Also in FAMRI the scallop fishery do not seem to have research priorities as this is a very limited fishery licensed to only one company. We have stated our interest in supporting a scientific research on the Faroese Queen Scallop and are steadily supplying the FAMRI with fishery data.

Our research plan is what we have stated under condition 3: to ensure a good field registration and to urge for more habitat studies with an involvement of FAMRI. We are steadily improving the documentation of catch, bycatch and trash and we will get it reviewed by FAMRI or other competent capacity.

Condition 5: Formal mechanisms to review the fishery must be implemented. These mechanisms should provide for internal reviews on a regular basis and occasionally external review.

Corrective action:

- Internal reviews on a regular basis and occasionally external review

As stated, the company has been very careful to closely monitor the fishery through many years. This is based on internal reviews and discussions with authorities and research Institutes. We regularly improved both the fishing vessel, the equipment and the monitoring system. Also the company can receive exploratory licenses to be allow to carry out exploratory dredging outside the license areas. This is to regularly review other areas where it may be possible to harvest for scallop. As the only license holder to utilize the scallop resources around Faroe Island, the OCJoensen and the FAMRI have a mutual interest in the knowledge about the scallop resources around Faroe Islands. Bearing in mind the MRC's aim to ensure a sustainable harvesting of sea resources,

we have indeed the same interests in a sustainable scallop fishery in our area.

To ensure that an annual formal review meeting will be hold in good time in advance for the MSC annual surveillance we have decided to formalise the evaluation in the end of each fishing season with a meeting, where the FAMRI will be invited to participate:

The protocol from the meeting will register:

a. Place, time and attends
b. Agenda on the meeting
    i. Fishing tours and catch this season
    ii. CPUE and scallop meat evaluation
    iii. Good areas, Awareness areas and Closed areas evaluation
    iv. Bycatch and trash evaluation
    v. Dredge efficiency evaluation
c. Outstanding issues/conditions/recommendation from the certifier with regards to the MSC certification
d. Other items needed to discuss

Upcoming Deadlines:

FAMRI is invited to participate in the evaluation of the data from the 2015/16 fishing season. This evaluation will also include this Fishery Manual as a whole. The evaluation will be in May/June 2016.

In the end of 2016 we can deliver a note on the impact of dredging on bottom habitats based on former studies and what has been the company experience on the bottom habitat impact. The differences between areas will be further evaluated in 2016 and this will be part of the note on impact on bottom habitats, including bycatch and trash (rusk). An evaluation on the differences between dredges will be part of this note as well.

The company is in a dialog with FAMRI to priorities a Stock Assessment for the eastern area. We expect it can be done in 2016, but we are not able to ensure this on behalf on FAMRI.

Enclosure 1

Harvest Control Rules for the scallop fishery around Faroe Islands

This document is made by OCJoensen to give guidelines for the company's scallop fishery.

OCJoensen is committed to harvest the scallop beds in a sustainable way. It is important to dredge in a way which keeps the fishing grounds ecologically healthy so they are always able to regain and keep their value as scallop fishing beds

The fishing grounds are east and north of the islands divided on 3 licenses. The fishing period is from august to April.

To ensure a sustainable fishery the captain and landing site keeps a register on the towing and the fishery:

Towing area, towing length and towing time.

Total amount of scallops, total amount of trash and total amount of bycatch

Different species in the bycatch are registered onboard the vessel

Content of trash is separated and registered after landing

The fishery starts when the tow is launched in a specific area. There will be several tows in the same area as each tow cycles is around 40 minutes. A fishing tour takes normally around 30 – 40 hours.

The tows during a tour will be evaluated towards the standard CPUE, which is a historically middle value. Should the CPUE be lower than expected it will be evaluated towards the CPUE trigger for moving to another area. The trigger CPUE is the level where the amount of catch is regarded too low for a profitable fishery. Should the catch be lower than the trigger CPUE it should be evaluated towards the CPUE limit, which is the lowest point of fishery in an area, set as a fishery security limit. Areas where the fishery comes down to the limit CPUE are closed for 2 years.

- Tow should give above 1.5 ton/hour of scallops. The CPUE (target) is to keep all tow above this
- Tow lower than 1,5 ton indicate awareness and should be avoided. The CPUE (trigger) is between 1.0 -1,5 ton/hour
- Tow lower than 1 ton/hour means that the area shall be abandoned for at least 2 years. The CPUE (Limit) is 1,0 ton/hour

Harvest Control Rules for Scallops fishery	**Gross ton/hour**	**Action:**
Target reference point	**➢ 1,5**	**Keep on the good fishery**
Trigger reference point	**< 1,5**	**Move to a better area**
Limit reference point	**< 1,0**	**Closed area for 2 years**

The CPUE is calculated based on each fishing tour. It is calculated as the catch amount from the time the fishery starts in a specific area to the time the fishery ends in the same specific area.

When making these evaluations the master should bear in mind that the fishery is very much effected by weather conditions and current. It is not possible to fish in wind above 15 m/s, especially from the east. Also strong current gives problems especially in the north and the coast near part of the eastern area.

Should a tow include corals, sponges or other elements from special botton habitats (Vulnerable Marine Ecosystem (VME)), these areas shall be avoided and registered as closed areas due to special ecosystem.

As a basic for sustainable fishery in the area the OCJoensen company has decided that the captain and the crew of the vessel need to respect these Harvest Control Rules when fishing. The rules shall be evaluated yearly at the end of a fishing period.

Enclosure 2:

Tables, indicating Good area, Awareness areas and Closed areas.

We will work on the ability to present this in grid on a map. In meantime, it is possible to view this in the following table:

Kg.net.fiska-tíma	sesong			
Fiskileið.	2011/2012	2012/2013	2013/2014	2014/2015
122lw22			2.201	
122mb22		1.228		
123lr95		1.474		
123ma11		2.687		
124lx22		2.172		
124ly11			2.284	
124ly22		1.613		
124ma22			1.033	
124mb44				1.389
125lu02	1.216			
125lu12	1.662			
125lu22	951			
125lu32	1.601			
125lw11	1.206			
125lw22	1.052			
125lx33				1.356
125ly12		1.525		
125ma11	1.264			
126lu20	546			
126lu22	1.104		1.830	1.439
126lu30	897			
126lw22			2.187	
126lx22			2.059	1.756
126lx44				1.683
127ma24				1.540
127mb4				1.767
128lt30	1.287			
128ma22			2.944	
128ma33				1.523
128ma44				1.618
128mb22				1.752
128mb33			3.069	
128ne44				1.656
129lw22			1.420	
129lx33			1.764	
129ly22				1.895
129ly23				2.078
129ma11		1.816		
129mb23				1.352
129mc22				2.137
130lq11		2.682		
130lq20	1.142			
130lq22			2.899	
130lr11	1.437			
130lt22	1.397			

130lu11	1.210			
130lu21	935			
130lw52			2.202	
130lw64			1.862	
130lx11	1.044			
130lx12	1.543			
130lx22			1.303	1.543
130lx23			1.982	
130lx44				1.775
130ly11			2.135	
130ly21		1.979		
130ly22	1.025			2.210
130ly33			1.926	
130ma22	1.230		2.191	
130mb22			2.841	
130mb23	1.924			
131lp21				1.564
131lp24				2.067
131lp44				1.342
131lq22				2.210
131lr11		1.920		
131lr22	1.361			2.426
131lu11		2.514		
131lu20	1.293			
131lu21		1.631		
131lu22				619
131lu32			2.327	
131lv24				1.855
131lw11		2.279		
131lw22	1.292		2.101	
131lx11	626			
131lx21	1.210			
131lx22	1.815		1.724	
131ly11		1.941	2.154	
131ly21	1.565			
131ly22	1.640			
131ma22			1.429	
131ma24			2.007	
131ma44		1.715		
131mb22			1.752	
131mc44				2.029
132ll11	854			
132ll20	1.101			
132ll22				2.347
132ln24				1.565
132lt22				1.180
132lu22			2.240	1.456
132lu30	997			

132lw11		1.580		
132lw12		1.753		
132lw22	1.555	1.544		
132lx22	996		1.985	
132lx23		2.192		
132ly12	2.067			
132ly30	1.548			
132md21		1.893		
132w22			1.933	
133lk20	1.844			
133ll02	1.320			
133ll22				2.056
133lm11	843			
133lm12		2.441		
133lm22		2.855	2.459	
133lm33			1.815	
133lt22		1.582		
133lt30	590			
133lu20	893			
133lu22	1.869	1.956	1.834	1.659
133lu24				1.515
133lu33	1.566		1.991	
133lu63			1.405	
133lw11	935			
133lw20	1.849			
133lw21		2.025		
133lw22		1.485	2.138	1.547
133lw30	1.534			
133lx11		2.034		
133lx22				1.587
133ly11		1.788		
133ly33	1.700			
134ll21	1.168			
134lm11		2.294		
134lm22			2.054	
134ln22				1.543
134lt21		2.009		
134lt22				1.373
134lu21		2.078		
134lu22			2.046	1.685
134lu23	1.076			
135ll12	1.180			
135lt11		2.775		
135lt12		2.240		
135lu11		1.224		
135lu22			977	1.571
135lv22				1.753
135lw11		1.814		

135lw21			1.599	
135lw22	1.321	2.234	2.092	1.481
135lw44			1.561	
135lx11		1.965		
135lx21		1.992		
135ly22	933			1.744
136l t22		1.981		
136lk02	843			
136ll02	1.090			
136ll11		1.863		
136ll22				2.316
136lr22		1.975		2.150
136lt22		2.302	1.169	
136lu11		2.007		
136lu22		2.032	1.867	1.647
136lu23	1.032			
136lu24				1.896
136lw11		1.861		
136lw22			1.606	1.077
136lw26				1.298
136lw33			2.110	1.453
136lw44			1.662	
136lx11		2.174		
136lx12		2.019		
136lx22		1.964	1.975	
136lx24				1.205
136ly11	558	2.135		
136ly21		1.873		
136ly22		2.014		
136ly25	1.170			
136m11		1.639		
136ma11		1.976		
136ma22			1.741	1.535
136ma33			1.798	
136mb21		1.409		
136mb22		1.730		
137lk20	510			
137ll20	1.043			
137lr23		2.395		
137lt11		1.776	3.004	
137lt22		1.918	1.321	2.129
137lu22				1.715
137lv22		2.164		
137lw11		2.040		
137lw22		2.050	2.278	
137lx11		2.341	1.601	
137lx21		2.048		
137ly02	828			

137ly1	928			
137ly11		2.076		
137ly20	739			
137ly22		1.436	2.217	1.277
137ma22			1.904	
137mb11		1.787		
137mb12		1.985		
137mb22			1.213	
138lt22				1.904
138lw22		1.562		1.540
138lx11		2.016	1.757	
138lx22				5.120
138ly22			2.156	
138ly33			1.218	
138ma11	2.667			
138ma22	1.292		1.467	
138mb22			2.015	
138me11		1.238		
139ly22		1.888		
139ma22		2.660	692	
139ma23		1.394		
139mb11		2.111		
139mb22			1.392	
139mb33			2.061	
139mc22		1.409		
140mc22			853	
149le11	3.702	1.595		
149le21	2.891			
149le22	2.702			1.313
149lf02	3.116			
149lf11		955		1.411
149lf21	1.753			
149lf22		1.479		
149lf31	1.630			
149lg21	2.128			
150ld21	1.730			
150lf12	1.689			
150lf22		1.098		
156lg11		2.344		
156lh22	2.075			1.161
156lj11			2.668	
156lk33		1.975		
157lf23			3.401	
157lg27	5.809			
157lh11	2.238	3.379	3.095	
157lh12	3.016			
157lh21	3.408	2.293		
157lh22	3.090			1.168

157lh32	2.637			
157lj21		2.528		
157lj22			2.635	1.420
157lj25			1.764	
157lj33			1.967	
157ll20	903			
157ll22	1.453			
158lf11		2.988		
158lf22			2.515	
158lg11		1.964		
158lg12		2.363		
158lg22			1.887	
158lh11	846	2.325		
158lh33	1.027			
158lj11			2.919	
158lj21		2.282		
158lj22			2.035	1.126
158lj33			2.085	
158lk11		2.467		
158ll20	1.185			
158ll22			1.714	1.165
158ll24				2.037
158lm22				1.590
158ln11		2.283		
158lq21			2.162	
158lu21		2.147		
159lf11		2.480		
159lf22	1.478		2.252	1.574
159lg12		1.909		
159lg22	1.988			
159lh11		3.632		
159lh21			2.446	
159lh22				1.258
159lj11		2.521		
159lj21	1.871			
159lj22		1.833		
159ll12		1.494		
Hovedtotal	1.533	2.039	2.024	1.655

Enclosure 3:

Review from FAMRI on CPUE has been received 15. December 2015.

“Adjustment of queen scallops CPUE data in Faroese water (2003 – 2015)”

Adjustment of queen scallops CPUE data in Faroese waters (2003 – 2015)

The present study describes briefly the standardization of catch per unit of effort data for queen scallops (*Aequipecten opercularis*) in Faroese waters. The analysis was based on logbook data from the fishing vessel M/V Norðheim in eastern fishing grounds provided to the Faroe Marine Research Institute (FAMRI) by O.C Joensen.

Catch per unit of effort (CPUE) was adjusted via a generalized lineal model (GLM) using seasonal and inter-annual variability as predictors. Spatial distribution of the fisheries was also used as a covariate in the model but it showed up as non significant. This could be explained by the spatial homogeneity of the fisheries which essentially has operated in the same area since the 1970s. The response was log-transformed and the best model was chosen among those with the lowest AIC (Akaike Information Criterion) and by performing a likelihood ratio test. Model diagnostics did not show any violations of model assumptions. The agreement between observed and expected CPUE is good. Model estimates suggests that observed CPUEs were larger than we would expect although observed catch rates are within the modeled uncertainty bands. A lineal mixed-effects model (LME) was also run as a diagnostic tool. Model estimates of both frameworks (GLM and LME) agreed substantially (not shown).

The average catch and fishing effort per trip are 37 tons and 26 hours respectively (Figure 1). Figures 2 and 3 show the seasonal and annual variation in catches and effort respectively from 2003 to 2015. Catch rates of scallops have remained relatively stable from 1 500 kg/hour in 2003 to 1 200 kg/hour in 2011 (Figure 4). Higher than average CPUEs (1 400 kg/hour) were observed from 2012 to 2014 at a level of around 1 900 kg/hour and it subsequently decreased to 1 300 kg/hour in 2015. Fishing effort (measured in hours) increased substantially from 1 500 hours in 2003 to 3 000 hours in 2007. It remained stable at around 1 900 hours from 2008 to 2011 and it decreased slowly thereafter down to 1 400 hours 2014. Although the effort increased in 2015 (1 600 hours) catch rates declined in the same year.

Although stock size of scallops in absolute terms is unknown the present analysis indicates that levels of both catches and effort (with the exception of 2007) are consistent and have fluctuated in a narrow range in the last 13 years, which suggests a stock not being subject to fisheries depletion.

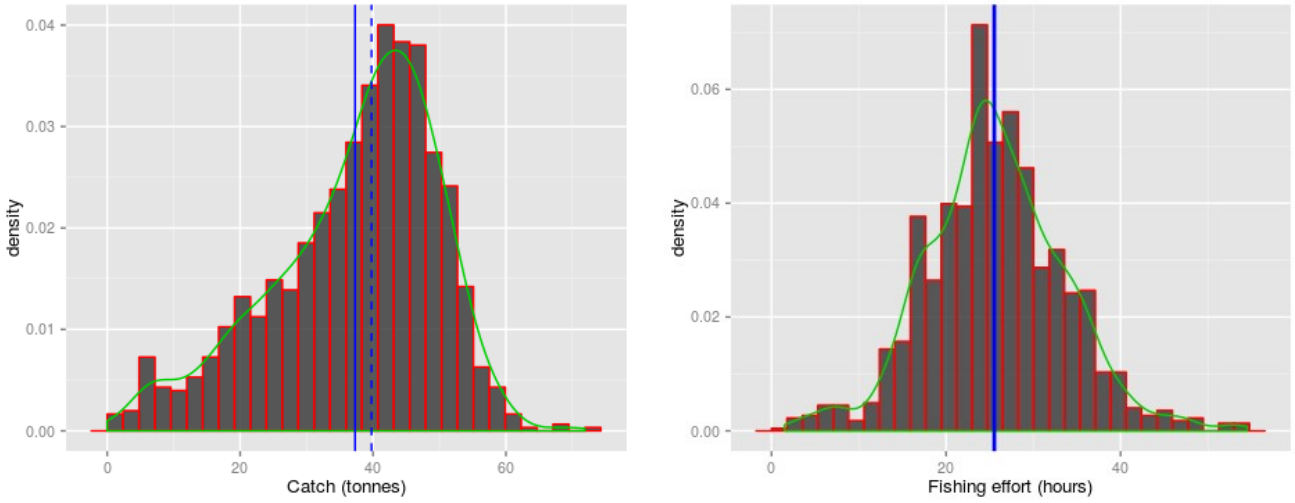


Figure 1. *Queen scallop. Distribution of catch (tons)(left) and tour duration (hours)(right). Solid and dashed vertical lines represent mean and median values respectively.*

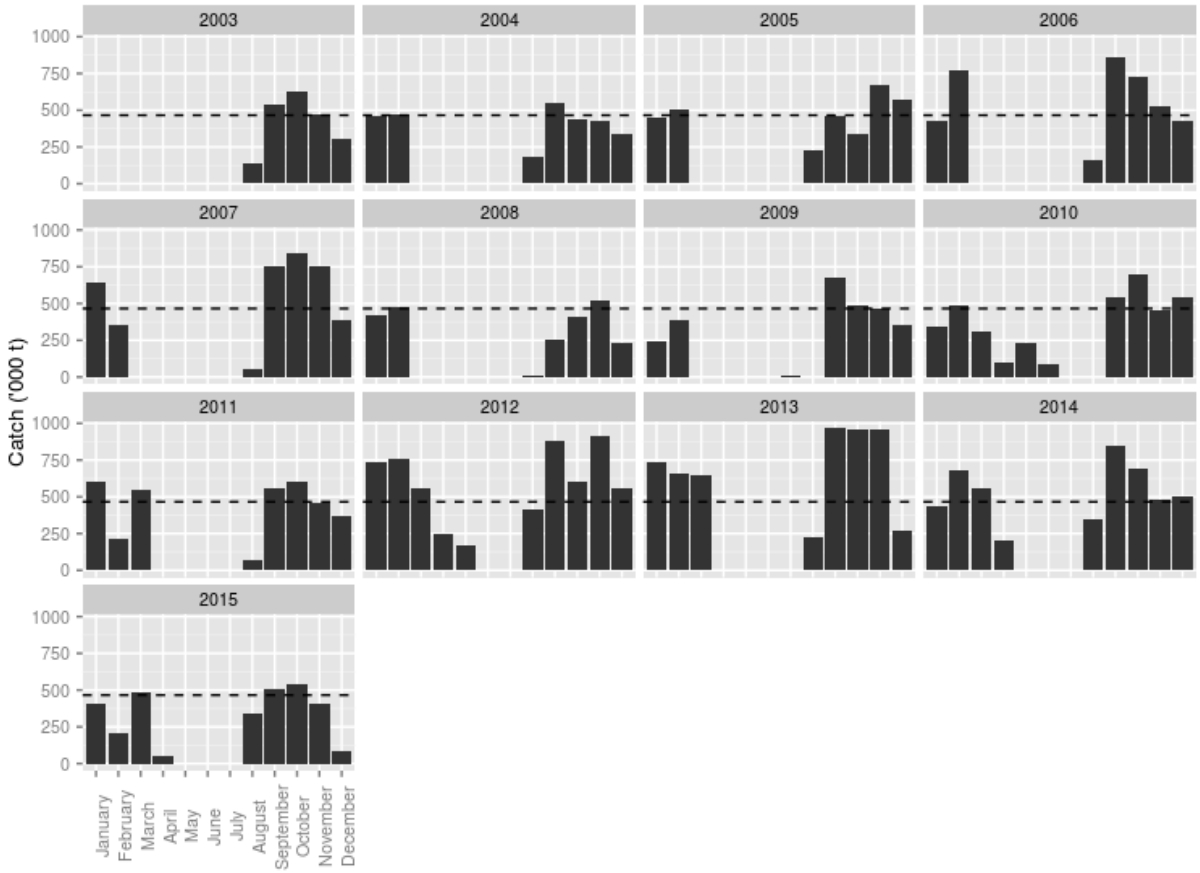


Figure 2. *Temporal distribution of catches (2003-2015). Dashed horizontal line shows overall average.*

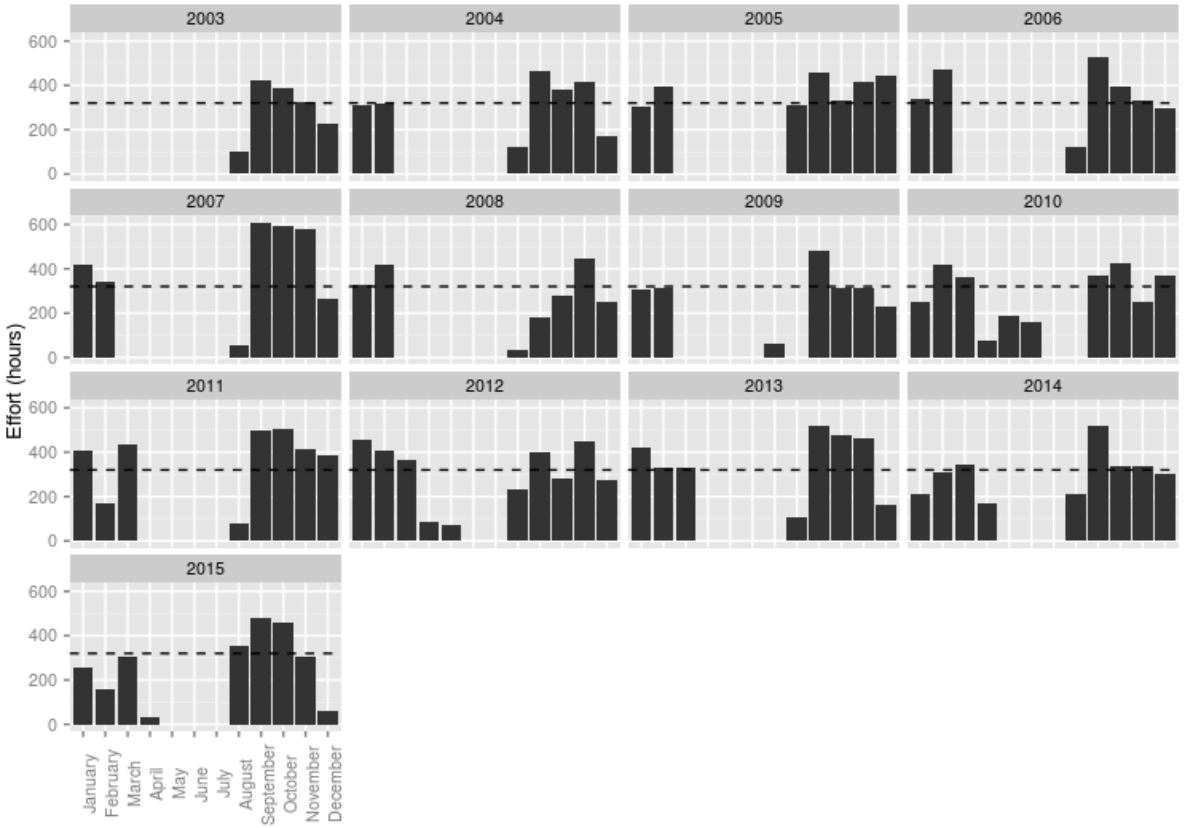


Figure 3. *Temporal distribution of effort (2003-2015). Dashed horizontal line shows overall average.*

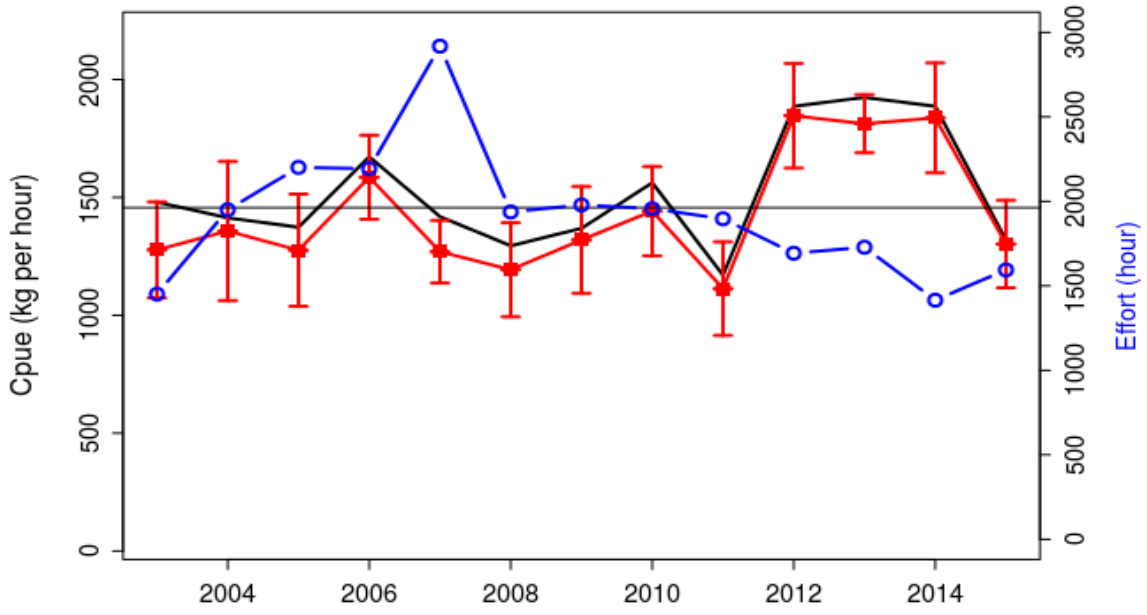


Figure 4. *Queen scallop. Observed (black line) and predicted (red line) CPUEs (GLM). Vertical red bars represent uncertainty in the estimates. Horizontal black line represents average CPUE from 2003 to 2015. Blue line shows mean fishing effort.*

Enclosure 4: Registration and Evaluation

As a basic for sustainable fishery in the area the OCJoensen company has implemented a monitoring scheme around the fishery. This has been done since the start in the 70's and the collected knowledge on the scallops and the fishery are continually used to evaluate resources, fishery and equipment.

The Harvest Control Rules together with the content of the different registrations shall be evaluated yearly at the end of the fishing season. Registration of catch, area and time shall be evaluated together with CPUE target, CPUE trigger and CPUE limit. Also registration of bycatch, bottom habitats and equipment status should be evaluated.

The abilities to improve equipment and make a better value out of the product without in any way harming the future of the stable fishery on the used fishing grounds has great importance for the company.

The content of the evaluation has to be within these areas:

- Fishing tours and catch this season
- CPUE and scallop meat evaluation
- Good areas, Awareness areas and Closed areas evaluation
- Bycatch and trash evaluation
- Dredge efficiency evaluation

Method for registration of fish on-board the vessel:

On-board the vessel after a tow the content of the dredge is emptied into a pool. From the pool, the catch will be transported through a sorting system ensuring that undersized scallops and other smaller bottom elements are transported to the sea again. The right size scallop together with other bottom creatures at this size and larger is moved into boxes and landed. Should any fish be in the dredge they shall be handled separately. It is not allowed to throw fish out again. It is the responsibility of the Captain to ensure the registration of which species fish is taken on-board with the dredge and to ensure proper landing of the bycatch.

Method for registration of trash/rusk:

The method for trash registration is that a part from the landed catch (around 20 liter basket) is taken to a table where the healthy scallops are separated from the empty shells, starfishes, stones etc. All the elements, which not are healthy scallops, are regarded as trash. The content of the trash elements is separated into different shell species, empty shells, whelks, starfishes, stones and other waste. This is registered as a sample from each tour.

The result from the sorting of the bycatch and the trash is registered in the main excel spreadsheet.

Registration forms are:

For Captains to fill out: Daily Catch records, including time, position and bycatch, Landing registration and Health-registration.

For landing site to fill out: Weight registration and full catch and production monitoring on an excel spreadsheet.

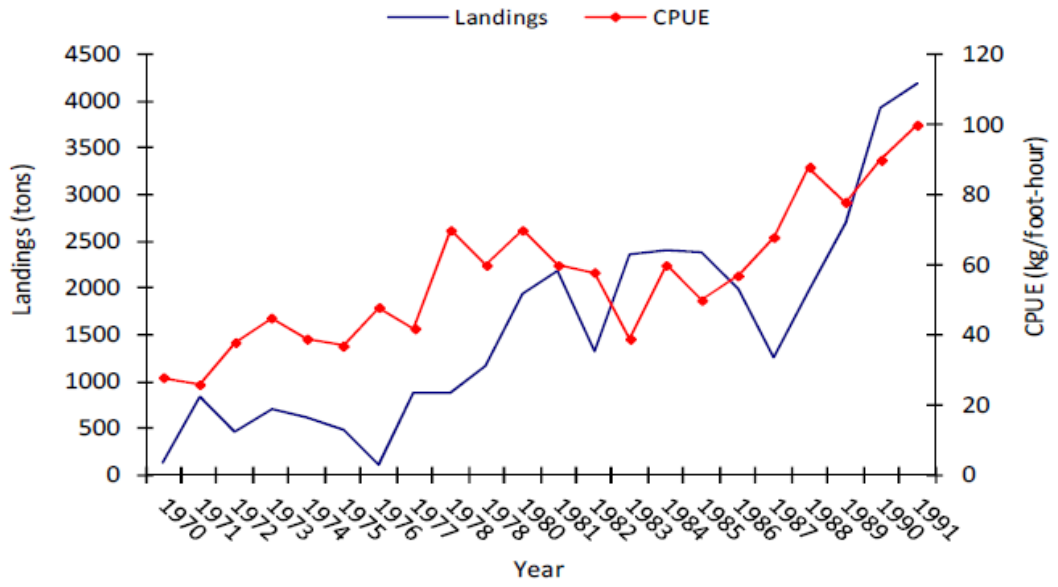
Both the Daily Catch Records and the landing documents are sent to the Faroese Fishery Authorities for further registration.

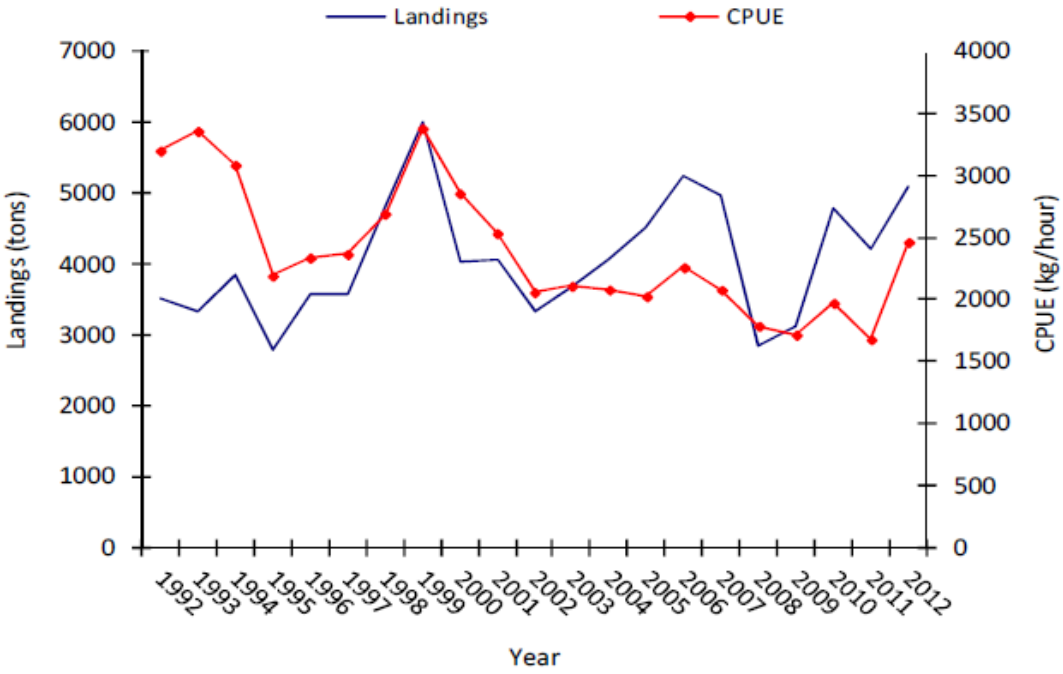
Presentation figures are:

- Landing and CPUE (see enclosed)
- Catch positions (see enclosed)
- Bycatch and trash (see enclosed)

Examples of the registration forms and some examples of data utilisation can be seen on the next pages:

Landings and CPUE





Catch position:

Kg.net.fiska-tíma	sesong			
Fiskileið.	2011/2012	2012/2013	2013/2014	2014/2015
122lw22			2.201	
122mb22		1.228		
123lr95		1.474		
123ma11		2.687		
124lx22		2.172		
124ly11			2.284	
124ly22		1.613		
124ma22			1.033	
124mb44				1.389
125lu02	1.216			
125lu12	1.662			
125lu22	951			
125lu32	1.601			
125lw11	1.206			
125lw22	1.052			
125lx33				1.356
125ly12		1.525		
125ma11	1.264			
126lu20	546			
126lu22	1.104		1.830	1.439
126lu30	897			
126lw22			2.187	
126lx22			2.059	1.756
126lx44				1.683
127ma24				1.540
127mb4				1.767
128lt30	1.287			
128ma22			2.944	
128ma33				1.523
128ma44				1.618
128mb22				1.752
128mb33			3.069	
128ne44				1.656
129lw22			1.420	
129lx33			1.764	
129ly22				1.895
129ly23				2.078
129ma11		1.816		
129mb23				1.352
129mc22				2.137
130lq11		2.682		
130lq20	1.142			
130lq22			2.899	
130lr11	1.437			
130lt22	1.397			

Bycatch and trash

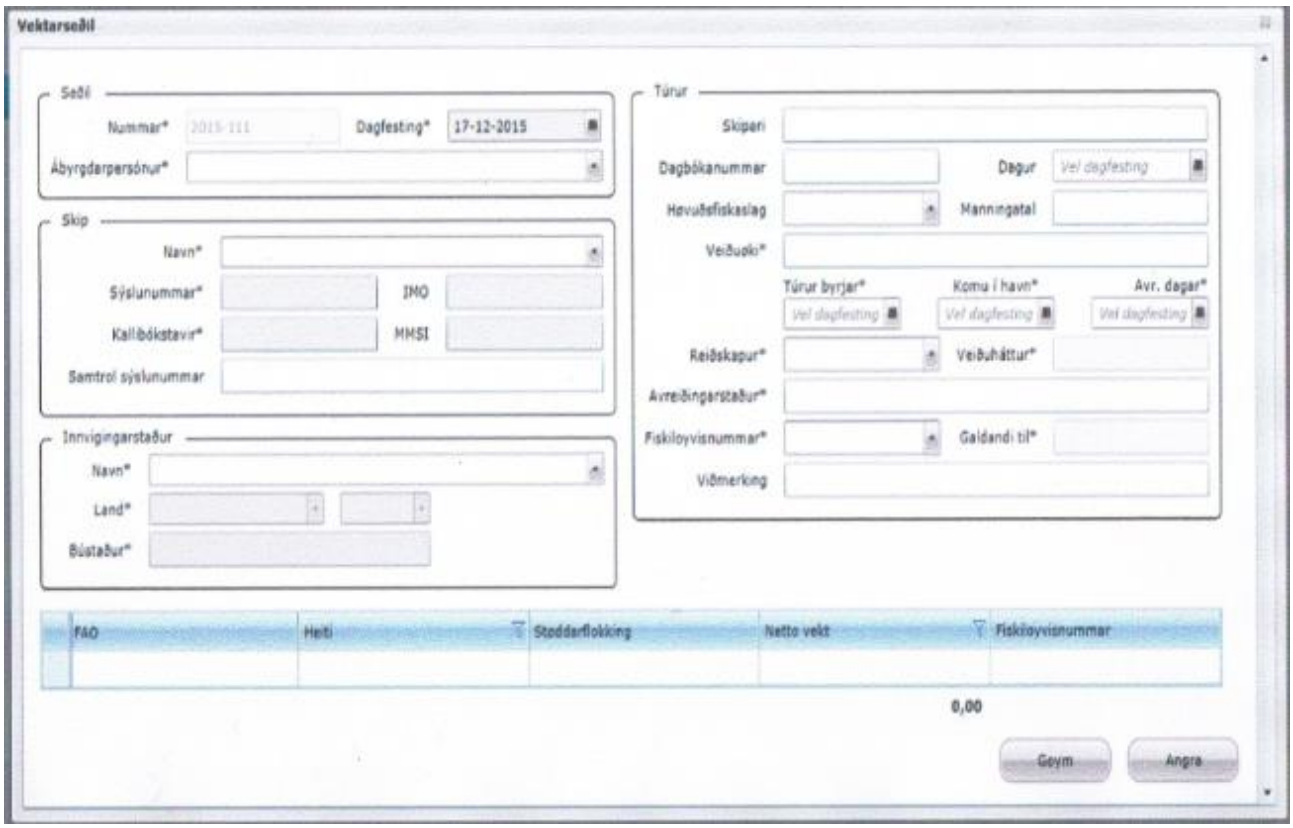
		tons	% rusk
Sesong 2014-2015		5.061.000	20,7
Byrja skilja ruski tur 27	% AV	3.418.000	20,3
Byrja registrera fisk tur 71	% AV	714.000	
Byrja við einum høgum dreggji tur 73	% AV	635.000	15,8
Byrja við tveimun høgum dreggji tur 80	% AV	284.000	16,1

	kg fiskur		% Fiskur
Sum of Torskur	585		0,08193
Sum of Havtaska	80		0,0112
Sum of Reyspetta	10		0,0014
Sum of Tunga	10		0,0014
	685		0,09594

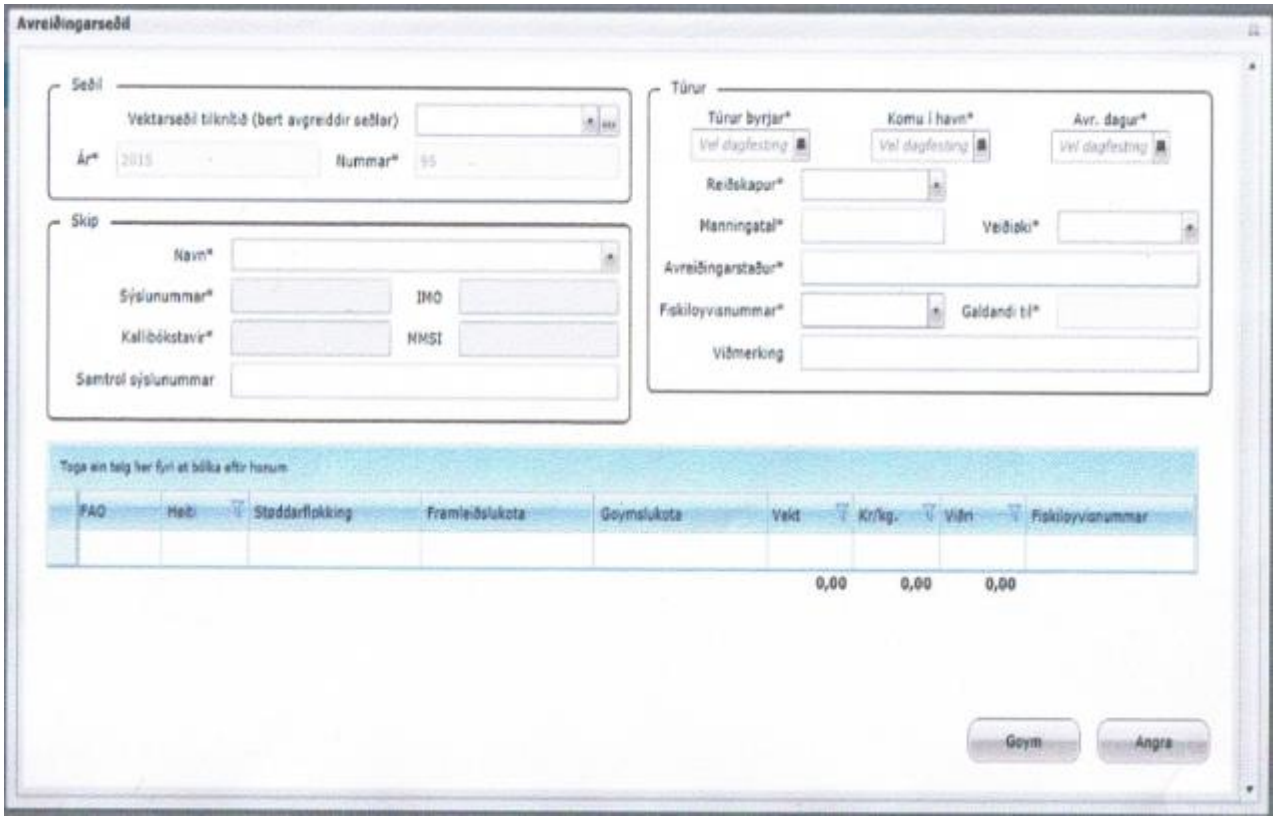
Býti av ruskinum		Kg rusk	% Rusk
Sum of Jákupskeljaknús		52,5	31,52
Sum of Øða heil		8,55	5,12
Sum of Øða-skeljaknús		7,01	4,2
Sum of Kúbiskel við mæti		1,03	0,62
Sum of Kúbiskel uttan mæt		61,05	36,56
Sum of Gágga við mæt		17,55	10,52
Sum of Gágga uttan mæt		6,11	3,66
Sum of Ripiskeel við mæti		0,7	0,42
Sum of Ripiskeel uttan mæt		0,88	0,53
Sum of Krábba goggur		2,09	1,25
Sum of Krabbi uttan gággu		1,79	1,07
Sum of Krossfiskur		6,32	3,79
Sum of Igulsker		1,22	0,73
		166,9	100

Ravøra tils:	5.061.000
Rusk tils:	1.047.627
Prosent Rusk	20,70%

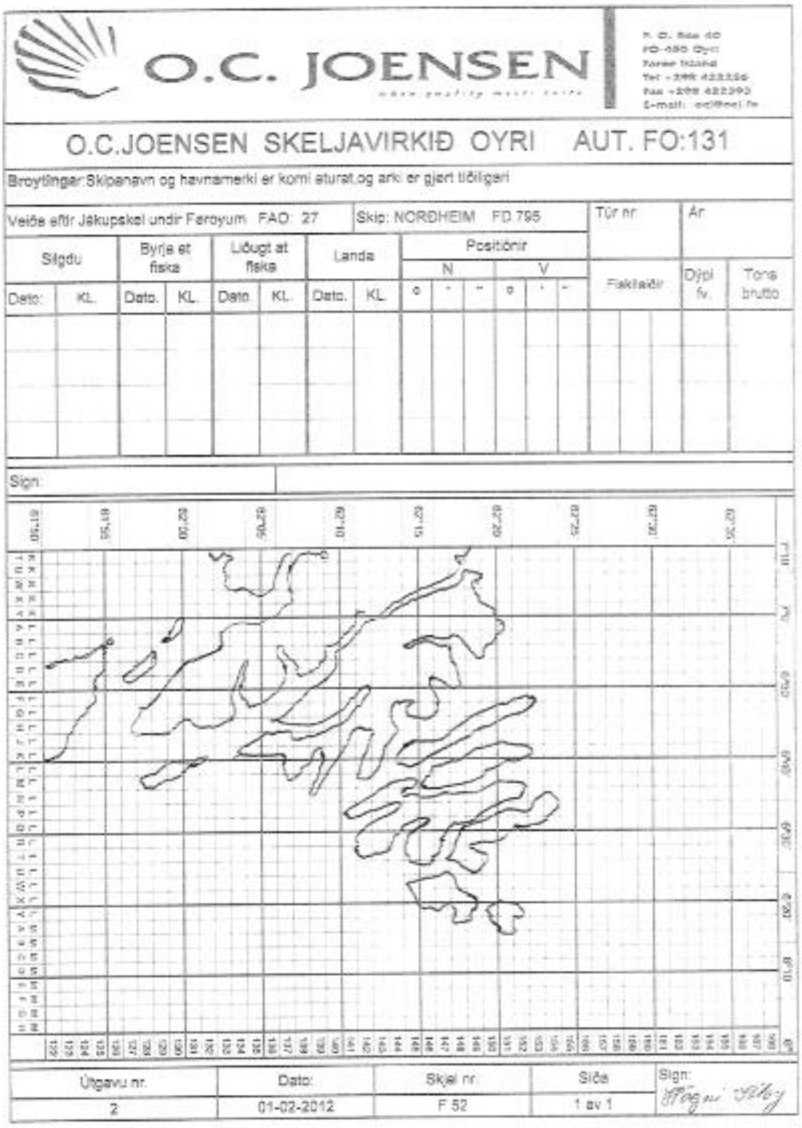
Registration of weight



Registration of landing



Registration of health


O.C. JOENSEN

O.C.JOENSEN SKELJAVIRKIÐ OYRI AUT. FO:131

Broytingar: Skipanavn og havnamerki er komi aturat, og ark er gjørt tíðiligari

Veiða eftir Jákupskel undir Føroyum FAO: 27								Skip: NORÐHEIM FD 795						Túr nr.	Ár	
Sigdu		Byrja at fiska		Liðugt at fiska		Landa		Positiónir						Fiskileiðir	Dýpi fv.	Tons brutto
								N			V					
Dato:	KL.	Dato.	KL.	Dato	KL.	Dato.	KL.	°	'	"	°	'	"			

Sign:

Útgávu nr.	Dato:	Skjal nr.	Síða	Sign:
2	01-02-2012	F 52	1 av 1	

Registration of catch

Trol **VEIÐIDAGBÓK**

Túrur nr.	Skipsnavn	Havnakenningar nr.	Radiokallimerki	Manningartal	Fráfaringardagur	Koma á fiskiøki	Fóru at sigla heim	Koma heim
36	Norðheim	FD795	XPRI	5	26.10.14	26.10.14	27.10.14	28.10.14

Trolslag (set x): Botn ☐ Flóti ☐ Ídnaðar ☐ Annað:	Høvuðlínulongd: Breiddalongd: Meskavídd (í posan):	Trolingarháttur (set x): Lemmatrol ☐ Samtrol ☐	Um samtrolar: Maki: Kallimerki:	Avreiðingarstað: OYRI Avreiðingardagur: 28/10-14

Dagfesting: /

Ætt, vindmegi (m/sek) og alda á middeg:

Knattstaða á middegi:

Veiða umborð, tá túrur byrjaði:

Trolið á botni: Klokkan tími	min	Knattstaða grad	min	Dýpi (fm)	Fóru at hála: Klokkan tími	min	Knattstaða grad	min	Dýpi (fm)	Høvuðsfiska slag	Toskur (kg)	Hýsa (kg)	Upsi (kg)	Kongafiskur (kg)	(kg)	(kg)	(kg)	(kg)	(kg)	Viðmerkingar
21	20	b 62 l 06	06 26	30	23	00	b 62 l 6	b 06 l 29	36						64*					÷ OYRI 19 45 + OYRI 01 15
		b l	b l				b l	b l												
		b l	b l				b l	b l												
		b l	b l				b l	b l												
		b l	b l				b l	b l												
		b l	b l				b l	b l												
		b l	b l				b l	b l												
		b l	b l				b l	b l												
		b l	b l				b l	b l												

Veiða á túrinum samanlagt:

Flutt veiða:

At flyta:

Undirskrift skipara: J.S

71818

Catch relevant spreadsheed

Ár	Sesong	Dato.	Túr nr	Kg. RV.Tils.	Silgdu dato/kl.	Byrja at fiska dato/kl.	Góðust at fiska dato/kl.	Landa dato/kl.	Pos N	Pos. W	N/V	Fiskileið	Tons
2015	2015/2016	14-08-2015	1	54000	12-08-15 00:15	12-08-15 04:30	14-08-15 04:05	14-08-15 07:30	62,26,00	006,36,00	157lj	157lj54	54
2015	2015/2016	17-08-2015	2	59000	15-08-15 00:30	15-08-15 03:30	17-08-15 03:17	17-08-15 06:30	62,03,00	006,20,00	131lp	131lp410	59
2015	2015/2016	19-08-2015	3	48000	17-08-15 10:00	17-08-15 13:00	19-08-15 03:55	19-08-15 07:00	61,24,16	006,19,24	126ly	126ly34	48
2015	2015/2016	21-08-2015	4	43000	19-08-15 08:45	19-08-15 11:30	21-08-15 10:00	21-08-15 12:30	61,58,00	006,20,00	128lt	128lt55	43
2015	2015/2016	24-08-2015	5	62500	22-08-15 14:00	22-08-15 16:05	24-08-15 05:00	24-08-15 07:00	62,04,44	006,28,133	138lt	138lt63	62,5
2015	2015/2016	26-08-2015	6	64000	24-08-15 11:00	24-08-15 13:45	26-08-15 03:20	26-08-15 06:00	62,03,23	006,29,27	138lr	138lr50	64
2015	2015/2016	28-08-2015	7	64000	26-08-15 09:15	26-08-15 11:20	27-08-15 23:45	28-08-15 01:45	62,06,05	006,22,18	137lt	137lt22	64
2015	2015/2016	29-08-2015	8	30000	28-08-15 05:15	28-08-15 07:40	29-08-15 05:05	29-08-15 07:00	62,05,28	006,23,71	130lr	130lr22	30
2015	2015/2016	31-08-2015	9	61500	29-08-15 11:15	29-08-15 13:45	31-08-15 05:45	31-08-15 08:00	61,59,00	006,32,00	130lq	130lq22	61,5
2015	2015/2016	02-09-2015	10	51000	31-08-15 12:45	31-08-15 15:50	02-09-15 05:15	02-09-15 07:30	61,59,08	006,26,28	128lr	128lr44	51
2015	2015/2016	04-09-2015	11	59000	02-09-15 12:25	02-09-15 14:25	04-09-15 05:30	04-09-15 08:00	62,15,00	006,23,9	133ln	133ln33	59
2015	2015/2016	07-09-2015	12	64000	05-09-15 00:20	05-09-15 02:15	07-09-15 00:00	07-09-15 02:30	62,03,63	006,24,18	133lv	133lv33	64
2015	2015/2016	09-09-2015	13	62000	07-09-15 07:00	07-09-15 10:20	09-09-15 05:40	09-09-15 08:00	62,01,10	006,23,8	132lw	132lw22	62
2015	2015/2016	10-09-2015	14	23000	09-09-15 11:00	09-09-15 12:30	10-09-15 07:00	10-09-15 10:30	62,01,15	006,24,74	132mb	132mb11	23
2015	2015/2016	12-09-2015	15	44000	10-09-15 16:00	10-09-15 18:30	12-09-15 03:10	12-09-15 08:00	62,00,17	006,17,44	131lr	131lr22	44

OK-skel	Tómt	100 stk.	Tóm skel hond	Rein skel hond	Rusk % hond	Fiskitíð	Kg br. Fiska pr. troltíma	Kg.net.fiska pr.troltíma	Sjótímar	Torskur	Havtaska	Reyspetta	Tunga	Kolonne5	Jákupskeljaknús
11,14	3,47	4,56	12825	41175	23,8	47,6	1135	865	55,25	50		40	10		
10,30	3,14	3,24	13784	45216	23,4	47,8	1235	946	54,00	10	30	10			1,815
9,26	5,07	2,99	16983	31017	35,4	38,9	1233	797	45,00	40		10			2,458
11,48	5,39	3,49	13739	29261	32,0	46,5	925	629	51,75						1,123
10,14	6,52	3,51	24460	38040	39,1	36,9	1693	1.030	41,00						0,658
11,25	5,75	3,73	21647	42353	33,8	37,6	1703	1.127	43,00						1,016
10,50	4,75	3,9	19934	44066	31,1	36,4	1757	1.210	40,50						0,024
11,60	3,50	3,36	6954	23046	23,2	21,4	1401	1.076	25,75						0,632
12,02	2,52	3,65	10659	50841	17,3	40,0	1537	1.271	44,75						0,608
9,82	4,61	3,48	16293	34707	31,9	37,4	1363	928	42,75						1,21
9,69	1,24	3,4	6694	52306	11,3	39,1	1510	1.338	43,58						0,541
11,31	4,15	3,4	17180	46820	26,8	45,8	1399	1.023	50,17						1,133
10,60	4,24	3,18	17714	44286	28,6	43,3	1431	1.022	49,00						0,573
10,35	7,03	3,68	9303	13697	40,4	18,5	1243	740	23,50						2,774
13,83	1,79	3,54	5042	38958	11,5	32,7	1347	1.193	40,00						0,415

Øða við mæti	Øða-tóm	Kúbiskel við mæti	Kúbiskel tóm	Gágga V/mæti	Gágga tóm	Ripiskeel tóm	Ripiskeel V/mæti	Krábba gágga	Krabbi	Krossfiskur	Igulsker	Trasiralsur	Mjæravøttur	Lús	Skøtiegg
	0,088			0,04	0,226					0,324	0,026	0,007		0,196	
0,143	0,926	0,117		0,436	0,048	0,053				0,124	0		0	0	0
0,229	0,04		2,733	0,1333	0,554			0,25							
			4,6	0,48	0,708			0,14	0,32	0,76	0,22			0,026	
0,65	0,015		3,637		0,353				0,012	0,209	0,031	0,108			
			3,634	0,275	0,417				0,09	0,263					
		0,019	2,789	0,142	0,385			0,041	0,024		0,036				
0,700	0,066		0,261	0,139	0,335			0,290		0,129		0,098			
1,515	0,239	0,316	0,28	0,062	0,543			0,087	0,018	0,186					
	0,023	0,24	0,221		0,042				0,028	0,105					
0,123	0,336	0,097	0,795	0,02	0,771			0,086	0,178	0,139		0,051			
		1,02	1,39	0,161	0,421			0,113	0,07	0,27	0,017				
0,242	1,142	0,667	0,353	0,041	0,756			0,150	0,003	0,101	0,084				
0,469	0,05			0,117	0,083			0,032	0,018	0,385	0,012		0,061		

ævøttur	Lús	Skøtiegg	Tæppiskel	Tæri	Onnur skel	Græs/mosi	Annað rusk
	0,196						0,144
0	0	0	0		0	0,044	0,163
						0,027	
	0,026					0,006	0,169
						0,024	0,087
						0,003	
						0,013	0,029
						0,071	
						0,011	0,016
						0,005	
						0,075	
						0,046	0,081
						0,032	0,473
0,061						0,025	0,066

Example on the rows of the Full Excel Spreadsheed 1970 - 2015

	Sesong nr.	Ár	Sesong	Máni	máni ár	Vika	Sesong nr.	Ár	Sesong	Máni	máni ár	Vika nr.AR	Vika nr.	Túra ti	Antal d	Dagur	Dato.	Túr nr	Kg. RV.Ti	Kg.RV. ti
272	31	2000	1999/2000	feb	feb-00		31	2000	1999/2000	feb	feb-00	06-00	6	1	1		09-02-2000	99	33900	33900
273	31	2000	1999/2000	feb	feb-00		31	2000	1999/2000	feb	feb-00	06-00	6		1		10-02-2000	99	26000	26000
274	31	2000	1999/2000	feb	feb-00		31	2000	1999/2000	feb	feb-00	07-00	7	1	1	tí	15-02-2000	100	54400	54400
275	31	2000	1999/2000	feb	feb-00		31	2000	1999/2000	feb	feb-00	07-00	7	1	1	hó	17-02-2000	101	57000	57000
276	31	2000	1999/2000	feb	feb-00		31	2000	1999/2000	feb	feb-00	07-00	7	1		hó	17-02-2000	102	5200	5200
1683	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	37-14	37	1	1	ley	13-09-2014	14	64000	
1684	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	38-14	38	1	1	má	15-09-2014	15	64000	
1685	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	38-14	38	1	1	tí	16-09-2014	16	64000	
1686	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	38-14	38	1	1	hó	18-09-2014	17	64000	
1687	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	38-14	38	1	1	fr	19-09-2014	18	62000	
1688	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	39-14	39	1	1	má	22-09-2014	19	64000	
1689	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	39-14	39	1	1	tí	23-09-2014	20	64000	
1690	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	39-14	39	1	1	mi	24-09-2014	21	64000	
1691	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	39-14	39	1	1	fr	26-09-2014	22	64000	
1692	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	40-14	40	1	1	má	29-09-2014	23	64000	
1693	46	2014	2014/2015	sep	sep-14		46	2014	2014/2015	sep	sep-14	40-14	40	1	1	tí	30-09-2014	24	64000	
1694	46	2014	2014/2015	okt	okt-14		46	2014	2014/2015	okt	okt-14	41-14	41	1	1	má	06-10-2014	25	56000	
1695	46	2014	2014/2015	okt	okt-14		46	2014	2014/2015	okt	okt-14	42-14	42	1	1	má	13-10-2014	26	64000	

	Sesong nr.	Ár	Sesong	Máni	máni ár	Vika	Kg. RV.Ti	Kg.RV. ti	Kg.RV. til Sem	Vektir	Innvølur	Brutto.	Rusk	Stk.invø.	Gr.bollar	Gr.slógv	Byrja kl.	Liðugt
272	31	2000	1999/2000	feb	feb-00		33900	33900								0		
273	31	2000	1999/2000	feb	feb-00		26000	26000								0		
274	31	2000	1999/2000	feb	feb-00		54400	54400								0		
275	31	2000	1999/2000	feb	feb-00		57000	57000								0		
276	31	2000	1999/2000	feb	feb-00		5200	5200								0		
1683	46	2014	2014/2015	sep	sep-14		64000		64000			1359	84	109	517	758	13-09-2014 07:09	13-09-2014
1684	46	2014	2014/2015	sep	sep-14		64000		64000			1279	43	104	525	711	15-09-2014 07:05	15-09-2014
1685	46	2014	2014/2015	sep	sep-14		64000		64000			1325	47	106	510	768	16-09-2014 07:03	16-09-2014
1686	46	2014	2014/2015	sep	sep-14		64000		64000			1374	33	102	627	714	18-09-2014 07:08	18-09-2014
1687	46	2014	2014/2015	sep	sep-14		62000		62000			1419	58	109	552	809	19-09-2014 10:07	19-09-2014
1688	46	2014	2014/2015	sep	sep-14		64000		64000			1255	24	106	527	704	22-09-2014 07:03	22-09-2014
1689	46	2014	2014/2015	sep	sep-14		64000		64000			1287	30	104	550	707	23-09-2014 07:04	23-09-2014
1690	46	2014	2014/2015	sep	sep-14		64000		64000			1466	25	109	587	854	24-09-2014 09:30	24-09-2014
1691	46	2014	2014/2015	sep	sep-14		64000		64000			1285	27	103	516	742	26-09-2014 07:18	26-09-2014
1692	46	2014	2014/2015	sep	sep-14		64000		64000			1265	27	103	544	694	29-09-2014 07:10	29-09-2014
1693	46	2014	2014/2015	sep	sep-14		64000		64000			1339	46	105	506	787	30-09-2014 07:07	30-09-2014
1694	46	2014	2014/2015	okt	okt-14		56000		56000			1178	28	101	491	659	06-10-2014 07:00	06-10-2014
1695	46	2014	2014/2015	okt	okt-14		64000		64000			1463	113	103	584	766	13-10-2014 07:11	13-10-2014

	Sesong nr.	Ár	Sesong	Máni	máni ár	Vika	Liðugt kl.	Út skeljar	Út bollar F.	Út bollar L.	Kóki tíð	RV.til €	Silgdu dato/kl.	Byrja at fiska da	Góðust at fiska dat	Landa d
272	31	2000	1999/2000	feb	feb-00			221	2	1			07-02-00 19:15	###########	08-02-2000 11:30	08-02-20
273	31	2000	1999/2000	feb	feb-00			130	0	1						
274	31	2000	1999/2000	feb	feb-00			321	1	0			13-02-00 14:30	###########	14-02-2000 17:00	14-02-20
275	31	2000	1999/2000	feb	feb-00			331	11	2			15-02-00 21:00	###########	16-02-2000 19:40	16-02-20
276	31	2000	1999/2000	feb	feb-00			102	1	1			17-02-00 00:30	###########	17-02-2000 03:30	17-02-20
1683	46	2014	2014/2015	sep	sep-14		13-09-2014 14:28	288	3	6	48		11-09-14 15:00	11-09-14 17:20	12-09-14 21:00	12-09-1
1684	46	2014	2014/2015	sep	sep-14		15-09-2014 14:05	272	2	4	48		13-09-14 05:30	13-09-14 07:30	14-09-14 13:30	14-09-1
1685	46	2014	2014/2015	sep	sep-14		16-09-2014 14:24	176	3	0	48		14-09-14 19:00	14-09-14 21:30	16-09-14 04:00	16-09-1
1686	46	2014	2014/2015	sep	sep-14		18-09-2014 13:56	236	2	3	48		16-09-14 12:45	16-09-14 15:30	17-09-14 18:00	17-09-1
1687	46	2014	2014/2015	sep	sep-14		19-09-2014 17:09	247	1	3	48		18-09-14 00:25	18-09-14 04:25	19-09-14 07:30	19-09-1
1688	46	2014	2014/2015	sep	sep-14		22-09-2014 14:24	280	1	1	48		20-09-14 01:30	20-09-14 03:30	21-09-14 04:30	21-09-1
1689	46	2014	2014/2015	sep	sep-14		23-09-2014 13:51	254	0	1	48		21-09-14 10:00	21-09-14 12:15	22-09-14 18:00	22-09-1
1690	46	2014	2014/2015	sep	sep-14		24-09-2014 16:04	215	0	2	48		23-09-14 01:30	23-09-14 03:30	24-09-14 07:00	24-09-1
1691	46	2014	2014/2015	sep	sep-14		26-09-2014 14:30	245	1	2	48		24-09-14 13:30	24-09-14 15:30	25-09-14 18:00	25-09-1
1692	46	2014	2014/2015	sep	sep-14		29-09-2014 14:55	247	1	2	48		27-09-14 00:00	27-09-14 02:00	28-09-14 10:30	28-09-1
1693	46	2014	2014/2015	sep	sep-14		30-09-2014 14:19	256	2	1	48		28-09-14 16:30	28-09-14 18:30	29-09-14 21:15	29-09-1
1694	46	2014	2014/2015	okt	okt-14		06-10-2014 13:46	301	2	2	48		04-10-14 02:15	04-10-14 04:00	05-10-14 08:30	05-10-1
1695	46	2014	2014/2015	okt	okt-14		13-10-2014 14:46	236	1	2	48		11-10-14 11:00	11-10-14 13:00	12-10-14 13:30	12-10-1

	Sesong nr.	Ár	Sesong	Máni	máni ár	Vika	Landa dato/kl.	Pos N	Pos. W	N/V	Fiskileið	Suður	Eystur	Fj. s / n	Fj. e / w	Dýpi	Tons	Norð/suður	OK-ske
272	31	2000	1999/2000	feb	feb-00		08-02-2000 14:00									42	59,90	S	8,7
273	31	2000	1999/2000	feb	feb-00													S	8,7
274	31	2000	1999/2000	feb	feb-00		14-02-2000 08:30									42	54,40	S	5,6
275	31	2000	1999/2000	feb	feb-00		16-02-2000 22:00									42	57,00	S	7,1
276	31	2000	1999/2000	feb	feb-00		17-02-2000 06:00									42	5,20	S	9,0
1683	46	2014	2014/2015	sep	sep-14		12-09-14 23:00	62,02,00	006,25,00	133lu	133lu22	133	23	2	2	44	64	S	12,2
1684	46	2014	2014/2015	sep	sep-14		14-09-14 15:50	62,04,00	006,23,00	133lw	133lw22	133	24	2	2	44	64	S	12,1
1685	46	2014	2014/2015	sep	sep-14		16-09-14 06:00	62,04,00	006,23,00	133lw	135lw22	135	24	2	2	40	64	S	12,9
1686	46	2014	2014/2015	sep	sep-14		17-09-14 21:45	62,27,00	006,39,00	158ll	158ll22	158	20	2	2	50	64	N	13,0
1687	46	2014	2014/2015	sep	sep-14		19-09-14 10:00	62,28,00	006,49,00	159lf	159lf22	159	11	2	2	57	62	N	14,2
1688	46	2014	2014/2015	sep	sep-14		21-09-14 07:00	62,05,00	006,19,00	135ly	135ly22	135	26	2	2	46	64	S	14,5
1689	46	2014	2014/2015	sep	sep-14		22-09-14 22:00	62,28,00	006,45,00	159lh	159lh22	159	23	2	2	53	64	N	12,3
1690	46	2014	2014/2015	sep	sep-14		24-09-14 09:30	62,05,00	006,23,00	136lw	136lw22	136	24	2	2	46	64	S	10,5
1691	46	2014	2014/2015	sep	sep-14		25-09-14 20:00	62,05,00	006,24,00	136lu	136lu24	136	23	2	4	40	64	S	11,7
1692	46	2014	2014/2015	sep	sep-14		28-09-14 13:00	62,01,00	006,34,00	131lp	131lp21	131	19	2	1	32	64	S	12,6
1693	46	2014	2014/2015	sep	sep-14		29-09-14 23:30	62,03,00	006,23,00	133lu	133lu24	133	23	2	4	40	64	S	10,9
1694	46	2014	2014/2015	okt	okt-14		05-10-14 10:30	62,00,00	006,33,00	131lp	131lp44	131	19	4	4	30	56	S	9,7
1695	46	2014	2014/2015	okt	okt-14		12-10-14 15:30	62,05,00	006,29,00	136lr	136lr22	136	21	2	2	36	64	S	14,3

Enclosure 5: Report on the fishery in the two northern areas.

Also are stock assessments on these areas tagged to the enclosure.

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Frágreiðing um skeljafiskiskapin norðanfyri 2014/2015.

Fiskiloyvini norðanfyri eru nr 21151 og nr. 21153. Tey eru galdandi frá 31.10.2014 til 31.08.2015 og eru soljóðandi:

Nr. 21151:

Fiskaslag	Jákupsskel
Heildarkvota:	2.000 tons
Fiskileið:	Føroyskur sjógvur - norðanfyri 62°25' N
Viðmerking:	Royndir eiga at verða gjørdar á víðum øki norðanfyri. Veiða er ikki loyvd á stongdum gýtingarleiðum.

Nr. 21153:

Fiskaslag	Jákupsskel
Eginkvota:	267 tons
Fiskileið:	Føroyskur sjógvur - leiðin út fyri Funningsfjørð
Viðmerking:	Roynast skal uttan fyri linju drigna millum Funningsmúla og Fjalltanga

Veiðureiðskapur er dregg og tað er skipið M/V Norðheim, XPRI, FD 795, við O.C. Joensen sum eigara, sum stendur fyri fiskiskapinum. Norðheim er bygdur í 1966, er 171 BT og gevur maskinorku á 441 KW / 600 HK.

Fylgjandi túrar vóru norðanfyri í hesum tíðarskeiðnum:

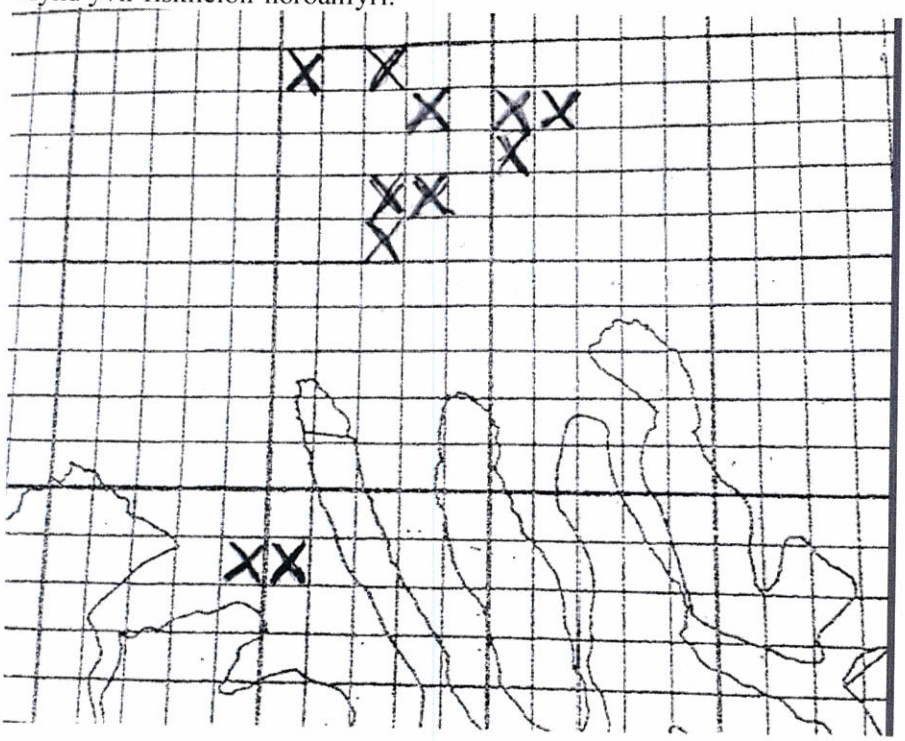
Loyvi nr. 21151 - økið norðanfyri $62^0$25' N:

Túr nr. – dato	Fiski-tíð	Veiða í Tons	Kg fiska brutto pr. tíma	Rusk %	Pos N	Pos W	Fiskileið/ /dýpi
05 - 25.08.14	31,5	66	2.095	46,3	$62^0$28'	$6^0$43'	158/LJ/56
09 - 02.09.14	26	64	2.462	36,1	$62^0$27'	$6^0$39'	158/LL/52
10 - 04.09.14	29,75	64	2.151	26,1	$62^0$27'	$6^0$37'	158/LM/50
12 - 07.09.14	9	12	1.333	20,1	$62^0$27'	$6^0$39'	158/LL/50
17 – 17.09.14	26,5	64	2.415	32,4	$62^0$27'	$6^0$39'	158/LL/50
18 – 18.09.14	27,08	62	2.289	31,2	$62^0$28'	$6^0$49'	159/LF/55
20 – 22.09.14	29,75	64	2.151	41,5	$62^0$28'	$6^0$45'	159/LH/52
30 – 19.10.14	29,33	64	2.182	35,4	$62^0$27'	$6^0$40'	158/LL/50
38 – 01.11.14	39,75	62	1.560	38,4	$62^0$26'	$6^0$45'	156/LH/54
43 – 17.11.14	31,83	64	2.010	40,8	$62^0$27'	$6^0$43'	157/LJ/50
44 – 19.11.14	28,33	64	2.259	47,1	$62^0$27'	$6^0$46'	157/LH/54
76 – 21.02.15	34,5	38	1.101	47,2	$62^0$26'	$6^0$45'	157/LH/52
Samlað	**343 t.**	**688 tons**	**2,004 kg**	**36,9%**	**$62^0$26-28'**	**$6^0$39-49'**	**Sí mynd**

Loyvi nr. 21153 - økið út fyri Funningsfjørð:

Túr nr. – dato	Fiskitíð	Veiða í tons	Kg fiska brutto pr. tíma	Rusk %	Pos N	Pos W	Fiskileið//dýpi
39 - 03.11.14	4,5	8	1,778	46,2	$62^0$17'	$06^0$48'	149/LF/78
42 - 16.11.14	30	64	2,133	44,7	$62^0$19'	$06^0$50'	149/LE/58
Samlað	**34,5 t.**	**72 tons**	**1,956 kg**	**45,5 %**	**$62^0$17-19'**	**$06^0$48-50'**	**Sí mynd**

Mynd yvir fiskileiðir norðanfyri:



Niðurstøða:

Tað vóru gjørdir ialt 12 túrar norðanfyri uppá tilsamans 343,3 fiskitímar og 2 túrar út fyri Funningsfjørð uppá tilsamans 34,5 fiskitímar. Fiskiskapurin norðanfyri var ialt 688 tons ella í miðal 2.004 kg pr tíma og út fyri Funningsfjørð 72 tons ella í meðal 1,956 kg pr. tíma. Nógv tóm skel var ímillum og var ruskprosentið norðanfyri 36,9 % í miðal og út fyri Funningsfirði 45,5 % í miðal. Yvurhøvur var veðri ófantaligt í fjør og var hetta við til at avmarkað túranøgdina.

05.10.2015/JPJ

Assessment of queen scallop (*Aequipecten opercularis*) in a north-west fjord ("Djúpini") of the Faroe Islands 2013

Luis Ridao Cruz

Una Matras

Faroe Marine Research Institute (Havstovan)

1. Introduction

The following assessment is based on a research survey carried out by the scallop fishing vessel M/S Norðheim.

The dominant cohabitants in the main habitat of the scallop are different species of whelks, mussels, starfishes, brittlestars, prawns, sea urchins, sea anemones, hydroids, bristle worms and hermit crabs.

2. Material and methods

The methodology in the present assessment is similar to that used for the assessment of the northern component of the queen scallop (Assessment of queen scallop (Aequipecten opercularis) in the Faroe Islands 2013, report).

A swept-area biomass is calculated based on 8 hauls recorded by the Faroese scallop vessel Norðheim in January 2013. (Figure 2.1).

The area was divided in 9 equal-sized squares of 3.20 km^2 each (1.723 km longitude, 1.855 km latitude) covering a total area of 29 km^2 (Figure 2.2). Due to logistic issues one station (nr. 8) was discarded and not taken into account in the analysis. The scallop beds are situated in a north-west south -east axis in depths of 90-145

m

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Every square was towed once with a double 12-feet dredge (7.3 m). Towing time was set to 10 minutes and the average towing speed 4.8 knots (8.8 km/h). Catch was recorded in every haul and a random sample of 10 scallops taken for further biological measurements.

Density is calculated by dividing catches by the swept area:

$$\text{Density (kg/km}^2\text{)} = \text{Catch (kg)} \ / \ \text{Area Swept (km}^2\text{)}$$

Swept area is calculated as:

$$\text{Swept Area (km}^2\text{)} = \text{towing time (hr)} \times \text{towing speed (km/hr)} \times \text{width of trawl (km)}$$

Biomass is calculated as area of square times density:

$$\text{Biomass (t)} = \text{Area square (km}^2\text{)} \times \text{Density (kg/km}^2\text{)} \times 1000$$

3. Results

Geographical distributions of catch, density and biomass are shown in figures 3.1, 3.2 and 3.3 respectively. The graphs clearly display concentrations of scallops in the northern sea-beds whereas the southern waters show almost a complete lack thereof.

A total catch of 3.8 tons was landed with a mean density of 52 t/ km^2 over the entire survey area.

Average catch is 0.5 tons (std. Error = 0.120 t.) while mean density is estimated at 52.2 t/ km^2 (std. Error = 19.3 t/km^2)

The estimated total biomass of queen scallop in the area is 1 336 tons with an average of 167 t (std. Error = 61.98 t). Following the same management plan implemented in the northern area fishery and based on precautionary-approach principles (20% of total stock) a quota not larger than 267 tons would be reasonable estimate for the sustainable harvest of stock.

The stock consists mostly of scallops aged 2,4 and 5 years old (Figure 3.4) comprising 67% of the total age composition. There is a large overlapping in the length distribution of scallops aged 3 and older (Figure 3.5).

Figures 3.5 and 3.6 display several relations between some of the biological measurements taken on the scallop samples. Wet weight relates exponentially ($W = aL^b$) with scallop shell length (Figure 3.5). The average weight of a 60 mm. scallop is 27 gr. and it can reach up to 43 gr. at a 70 mm length.

It is clear when looking at age-disaggregated shell-length, -width and -thickness distributions that large variability is present in 2-year old scallops compared to older individuals (Figures 3.6.a, 3.6.b, 3.6.c)(This may be an effect of that spawning occurs twice a year in Feb. and Aug.) Asymptotic shell-length and -width is 74 and 80 mm respectively while shell-thickness is estimated at 23 mm. Soft body weight of 4-year and older scallops is limited to the 15-20 gr. interval (Figure 3.6.h).

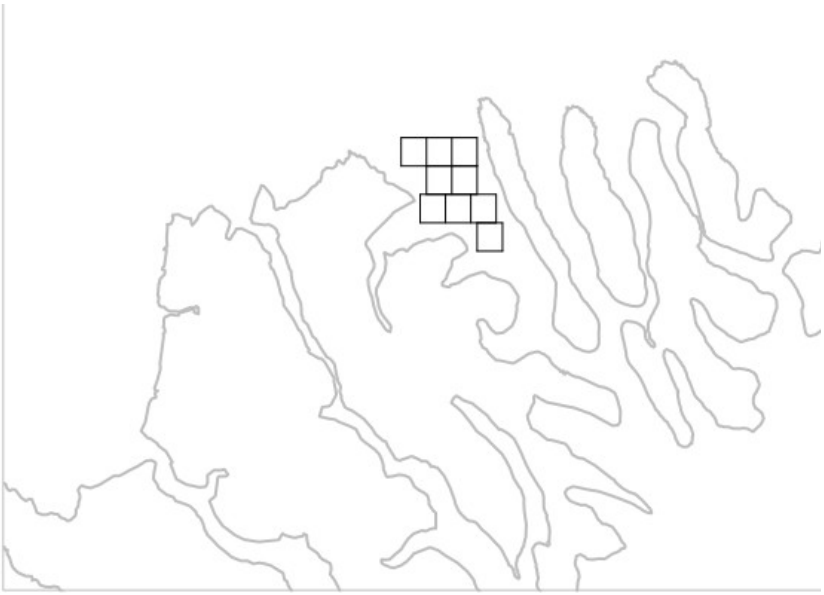


Figure 2.1. Location of the survey area.

Figure 2.2. Geographical representation of the survey area. Station 8 was discarded .

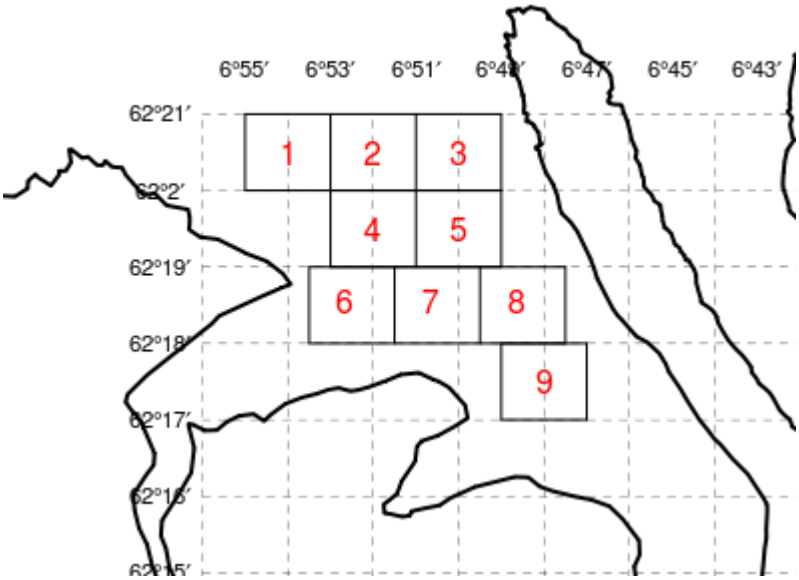


Figure 3.1. Queen scallop. Catches (kg)

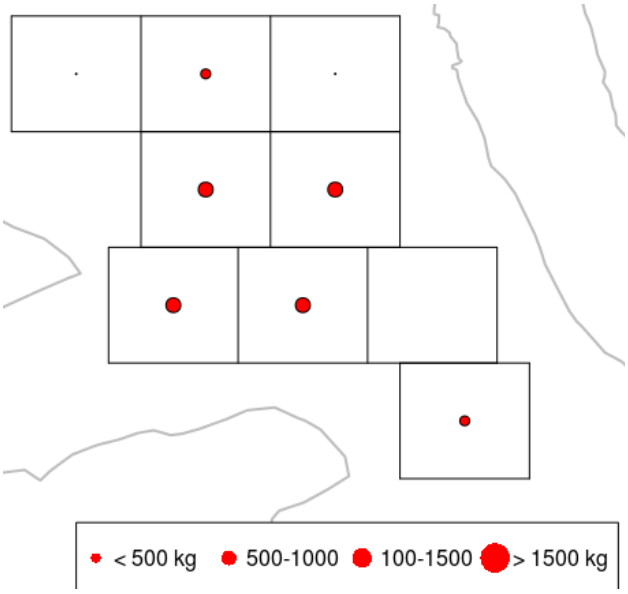


Figure 3.2. Queen scallop. Density estimates (t/km^2)

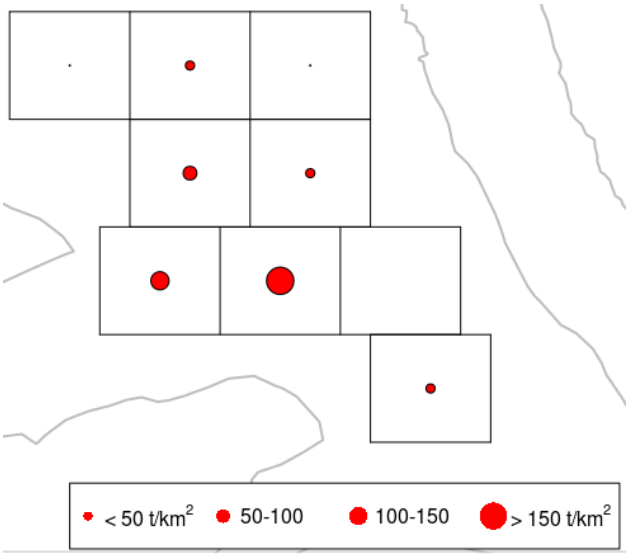
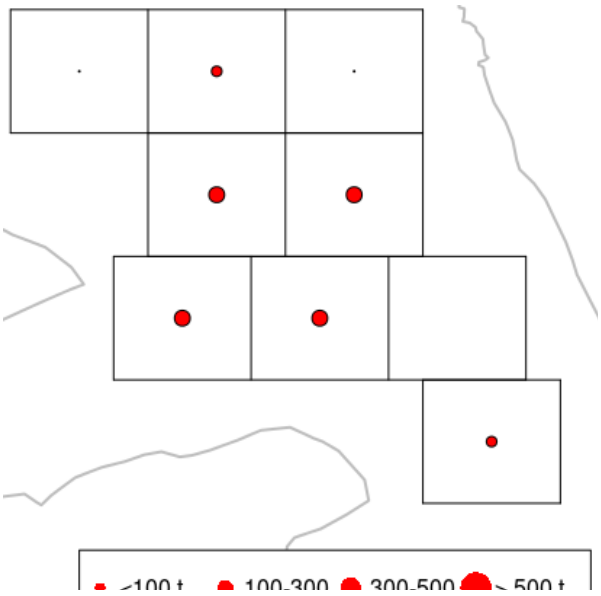


Figure 3.3. Queen scallop. Biomass estimates (tons)



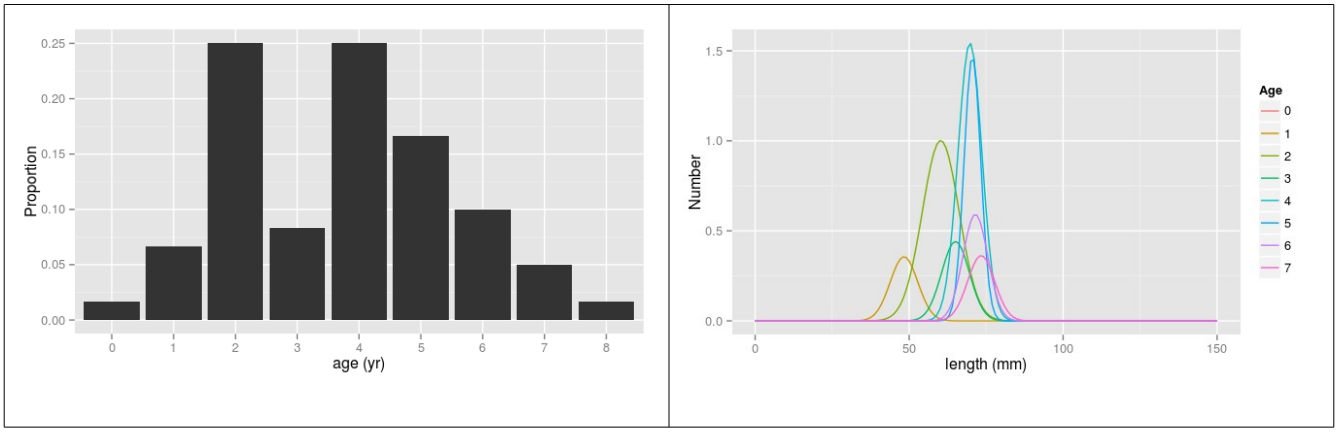


Figure 3.4. Queen scallop. Age composition (left-figure) and age-length relationship (right-figure)

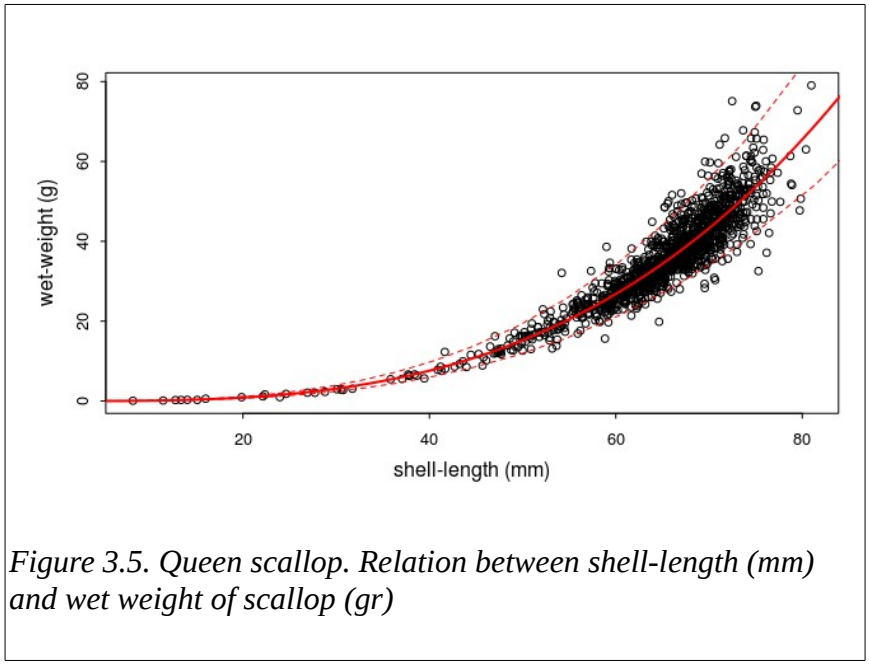
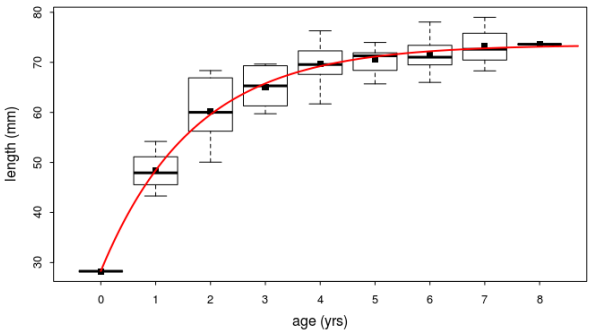
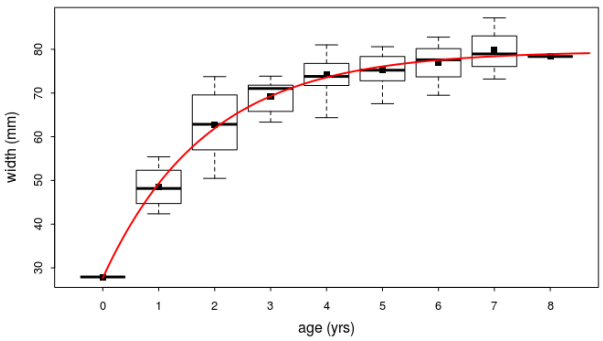


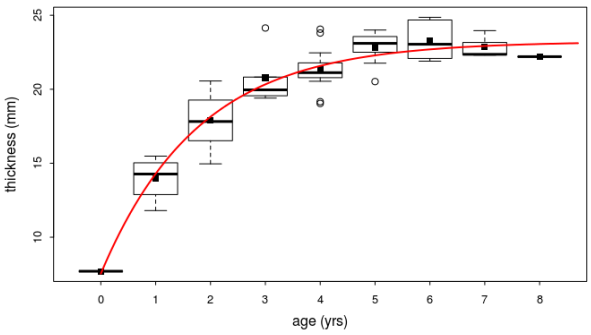
Figure 3.5. Queen scallop. Relation between shell-length (mm) and wet weight of scallop (gr)



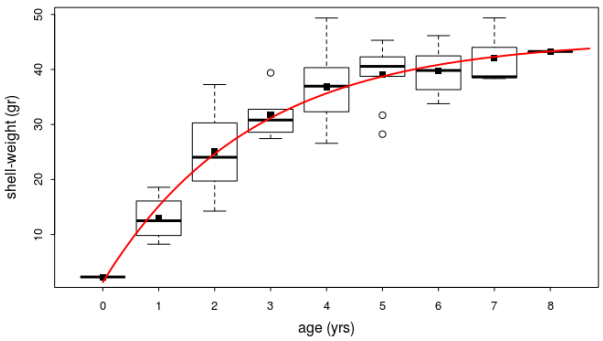
(a) Age (yr)- shell-length (mm)



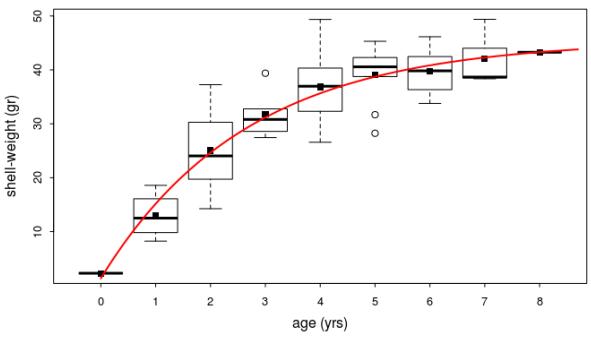
(b) Age (yr)- shell-width (mm)



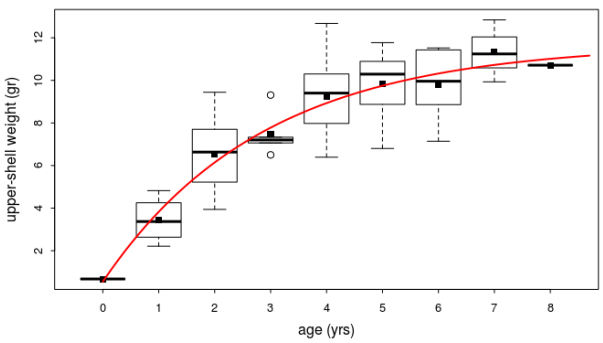
(c) Age (yr)- shell-thickness (mm)



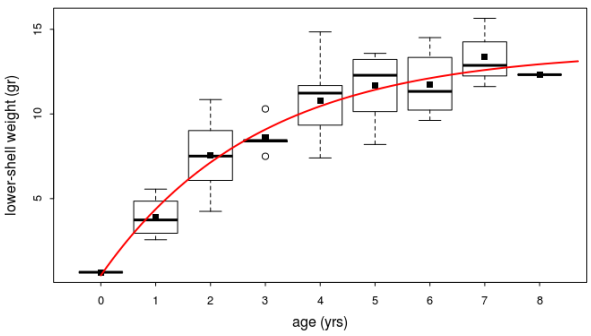
(d) Age (yr)- weight scallop (g)

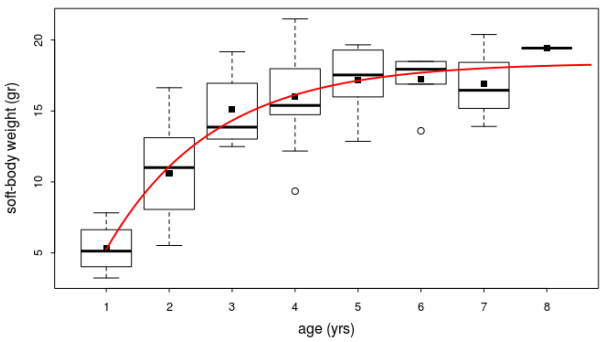


(e) Age (yr)- shell-weight (g)



(f) Age (yr)- upper-shell weight (g)





(g) Age (yr)- lower-shell weight (g)	(h) Age (yr)- soft body weight (g)

Figure 3.6. Queen scallop. Relation between age (years) and shell-length (mm)(a), shell-width (mm.)(b), shell-thickness (mm)(c), scallop weight (gr)(d), shell-weight (gr)(e), upper-shell weight (gr)(f), lower-shell weight (gr)(g), soft body weight (gr)(h).

Assessment of queen scallop (*Aequipecten opercularis*) north of the Faroe Islands in 2013

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1. Introduction

The queen scallop fishery in the Faroe Islands began in the early 1970s. The main area is east of the Islands. Compared to the eastern area there is not a long tradition for queen scallop (*Aequipecten opercularis*) dredging in the area north of the Islands. During the years 1989/90, a factory trawler "Fame" dredge the area intensively. Since then no dredging has been in the area until the years 1997, 1998 when an experimental queen scallop fishery took place. Since then has a more or less steady fishery been ongoing. The scallop beds are situated about 15 n. mi. (30 km.) off shore in depths of 80-115 m.

Average catches were around 100 tons from 2001 to 2010 (Figure 1.) Since 2011 the total catch has increased substantially to peak 1 600 tons in 2012. A preliminary quota of 1 000 tons was set in 2013 with a possibility of an increase depending on the results of the present study. For 2013 a total quota of 2 000 tons was established for the north-area scallop fishery.

The following assessment is based on a research survey carried out by the only vessel present in the scallop fishery (M/S Norðheim)

The dominant cohabitants in the main habitat of the scallop are different species of whelks, mussels, starfishes, brittlestars, sea urchins, sea anemones, hydroids and hermit crabs.

2. Material and methods

The methodology in the present assessment is the use of a swept-area biomass based on 42 hauls recorded by the Faroese scallop vessel Norðheim in the period November to December 2013. The survey area covered the main fishing ground north of the Faroes (Figure 2.1).

The area was divided in 50 equal-sized squares of 3.22 km^2 each (1.702 km longitude, 1.893 km latitude) covering a total area of 161 km^2 (Figure 2.2). Due to logistic issues some stations were either discarded or not taken into account in the analysis.

Every square was towed once with a double 12-feet dredge (7.3 m). Towing time was 10 minutes and the average towing speed 3.8 knots (7 km/h). Catch was recorded in every haul and a random sample of 10 scallops taken for further biological measurements.

Density is calculated by dividing catches by the swept area:

$$\text{Density (kg/km}^2\text{)} = \text{Catch (kg)} \ / \ \text{Area Swept (km}^2\text{)}$$

Swept area is calculated as :

$$\text{Swept Area (km}^2\text{)} = \text{towing time (hr) x towing speed (km/hr) x width of trawl (km)}$$

Biomass is calculated as area of square times density:

$$\text{Biomass (t)} = \text{Area square (km}^2\text{)} \times \text{Density (kg/km}^2\text{)}$$

3. Results

Geographical distributions of catch, density and biomass are shown in figures 3.1, 3.2 and 3.3 respectively. The graphs clearly display large concentrations of scallops in the northern sea-beds whereas the southern waters show almost a complete lack thereof.

A total catch of 21.9 tons was landed with a mean density of 3 045 t/ km^2 over the entire survey area.

Average catch is 0.5 tons (std. Error = 0.087 t.) while mean density is estimated at 72.5 t/ km^2 (std. Error = 14.7 t/km^2)

The estimated total biomass of queen scallop in the northern areas is 9 800 tons with an average of 234 t (std. Error = 47 t). Based on precautionary-approach principles (20% of total stock) a quota not larger than 2 000 tons would be reasonable estimate for the sustainable harvest of stock.

The stock in the northern area consist mostly of scallops aged 2 to 5 years old (Figure 3.4). There is a large overlapping in the length distribution of scallops aged 2 and older (Figure 3.5).

Figures 3.5 and 3.6 display several relations between some of the biological measurements taken on the scallop samples. Wet weight relates exponentially ($W = aL^b$) with scallop shell length (Figure 3.5). The average weight of a 60 mm. scallop is 30 gr. and it can reach up to 47 gr. at a 70 mm length.

It is clear when looking at age-disaggregated shell-length, -width and -thickness distributions that large variability is present in 1-year old scallops compared to older individuals (Figures 3.6.a, 3.6.b, 3.6.c)(This may be an effect of that spawning occurs twice a year in Feb. and Aug.) Asymptotic shell-length and -width is around 80mm while shell-thickness lies at 25 mm. Soft body weight of 4-year and older scallops is around 20 gr. although some individuals may reach up to 30 gr. (Figure 3.6.h)

Considerable quantities of empty-shell mussels (*Modiolus modiolus*) were found in the southern sector of the survey grid (stations 29, 34, 35, 37, 39, 40, 43, 44, 46)(personal communication). Unfortunately no precise figures were recorded during the survey period.

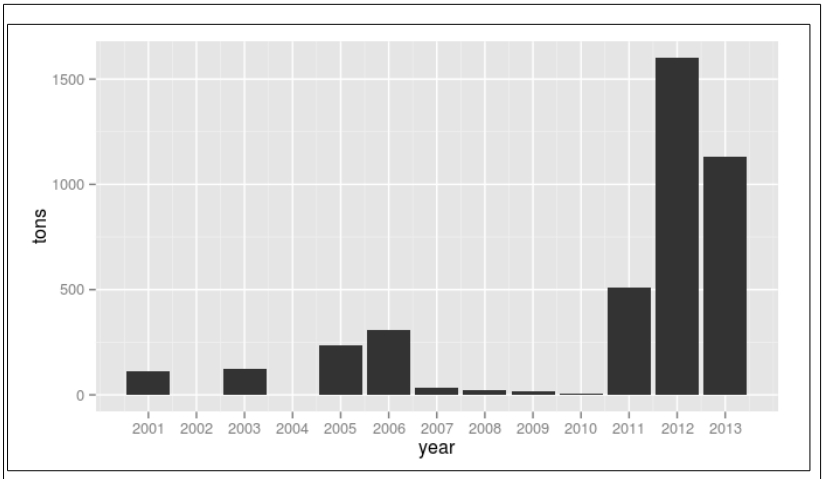


Figure 1. Queen scallop. Landings in northern area (tons)

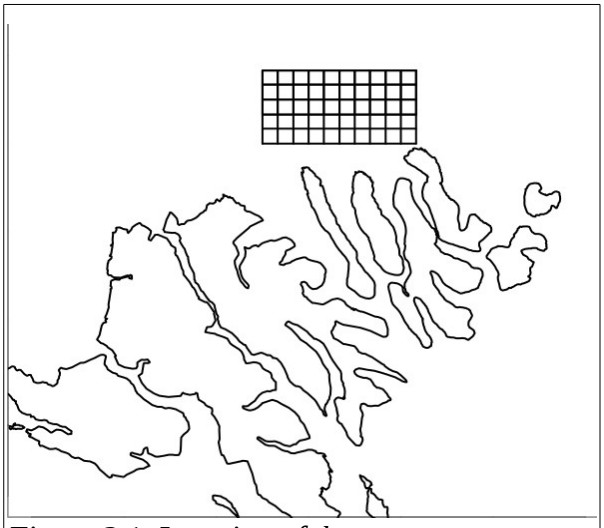


Figure 2.1. Location of the survey area.

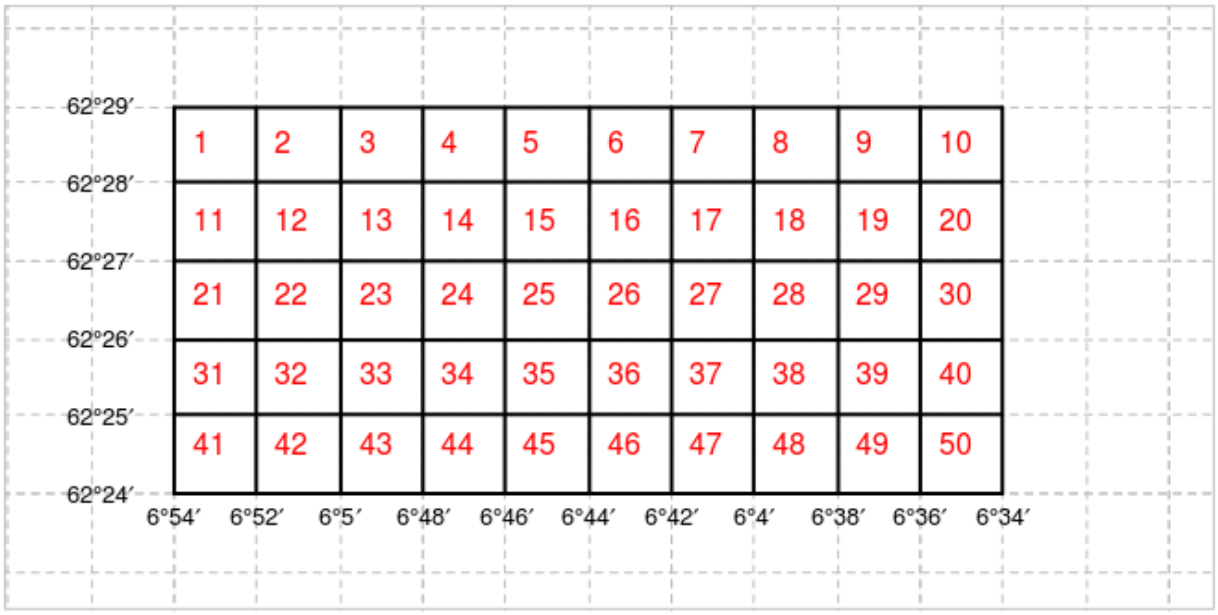


Figure 2.2. Geographical representation of the survey area. Stations 27-31, 43 and 49-50 were discarded and/or not towed.

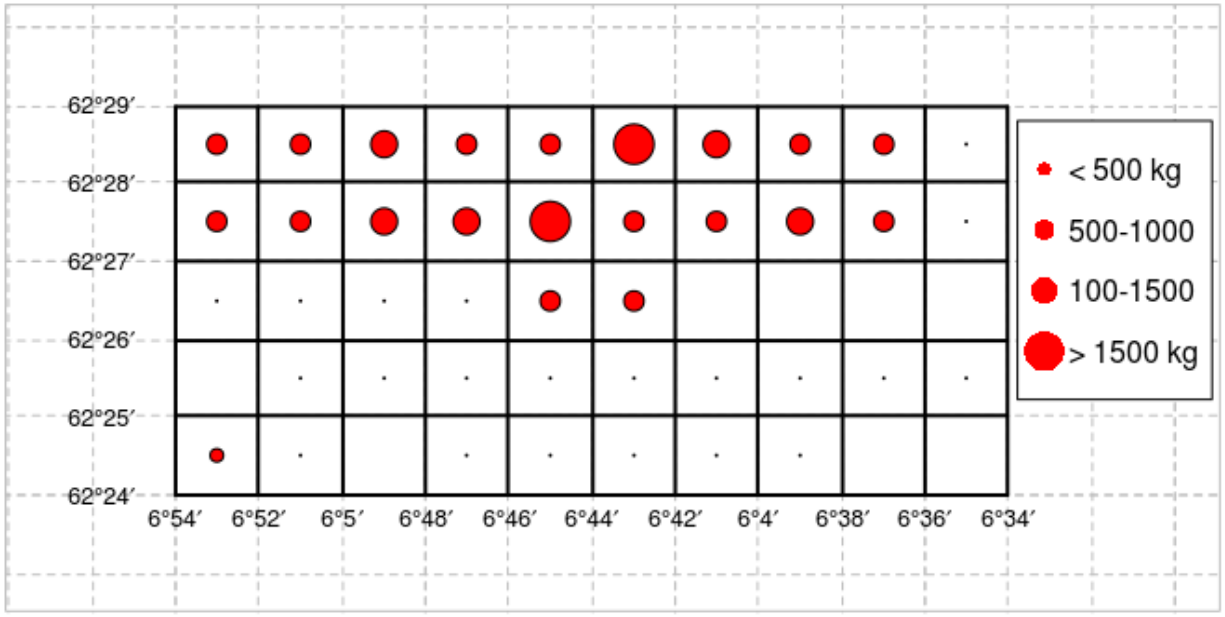


Figure 3.1. Queen scallop. Catches (kg)

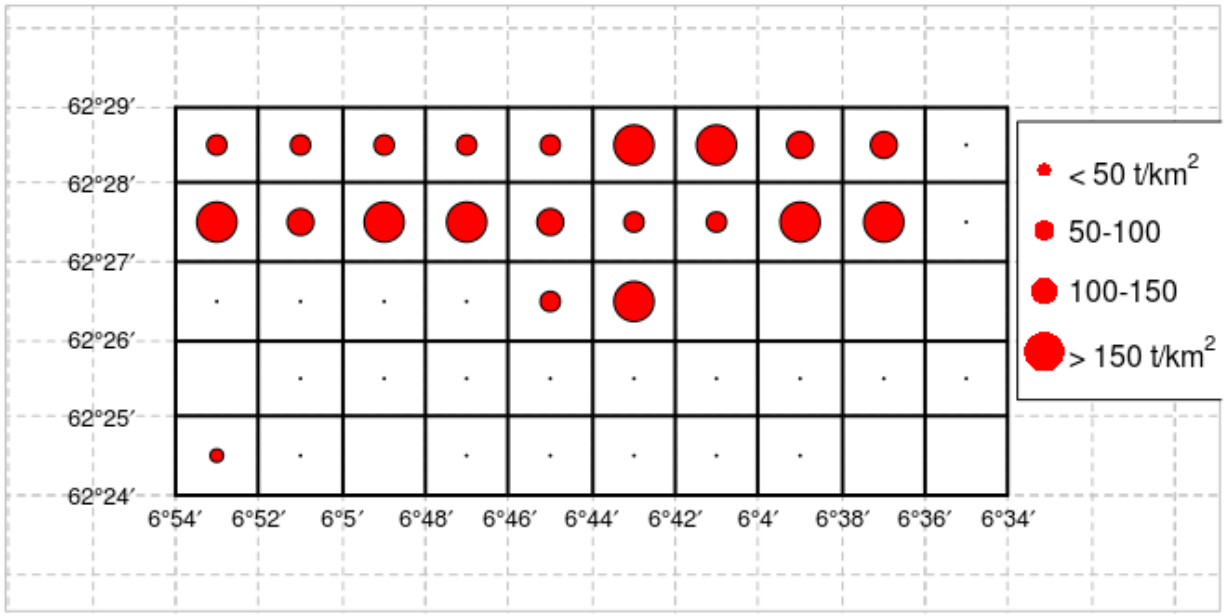


Figure 3.2. Queen scallop. Density estimates (t/km^2)

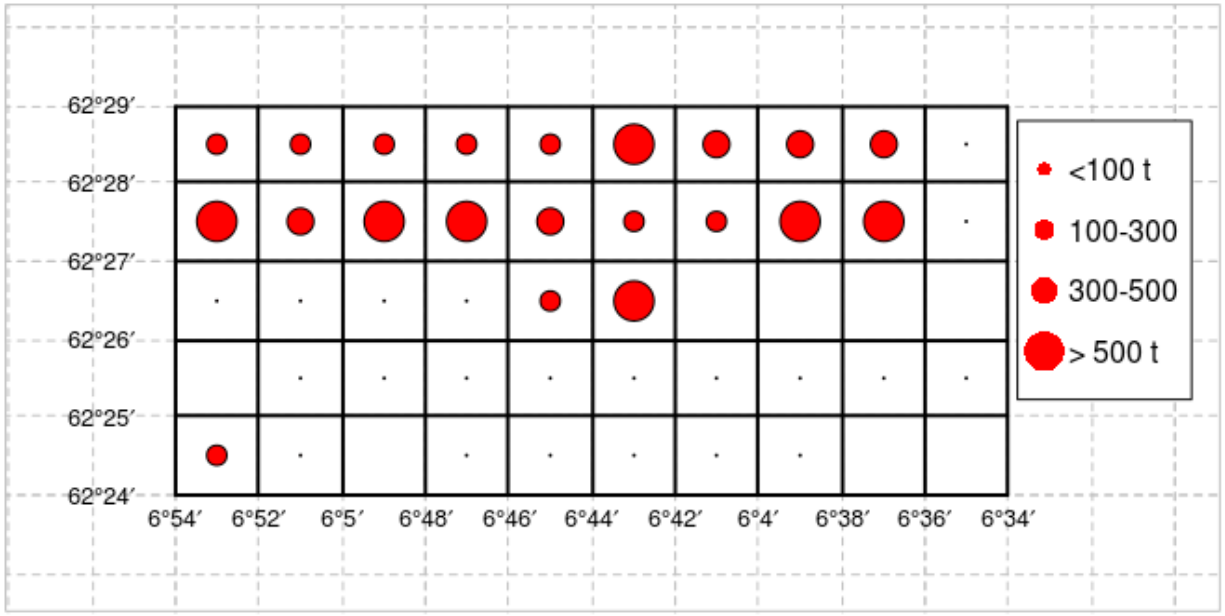


Figure 3.3. Queen scallop. Biomass estimates (tons)

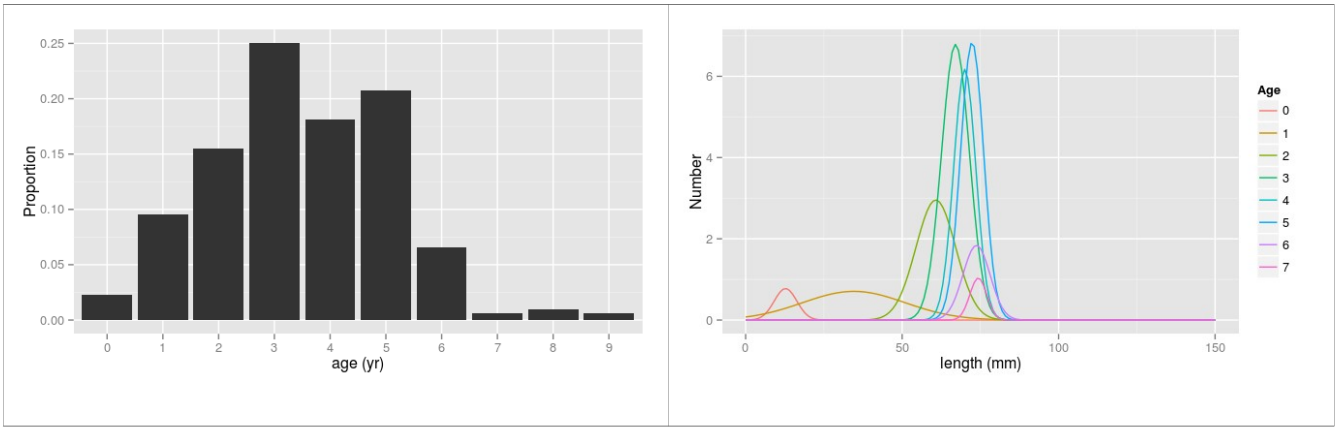


Figure 3.4. Queen scallop. Age composition (left-figure) and age-length relationship (right-figure)

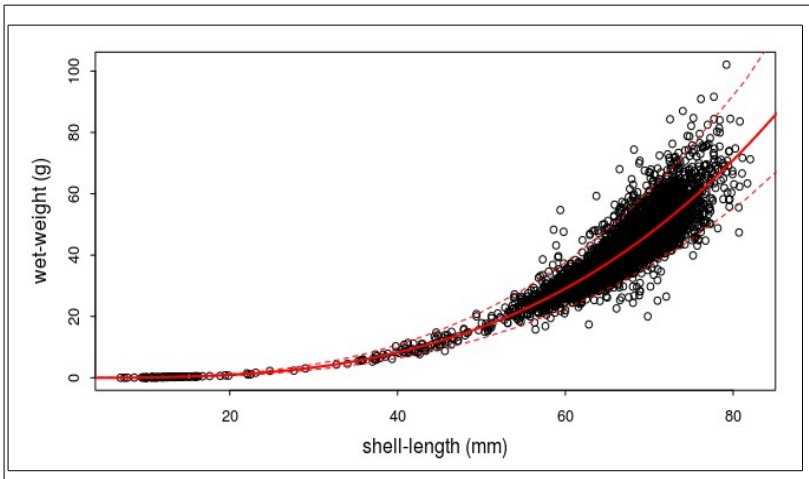
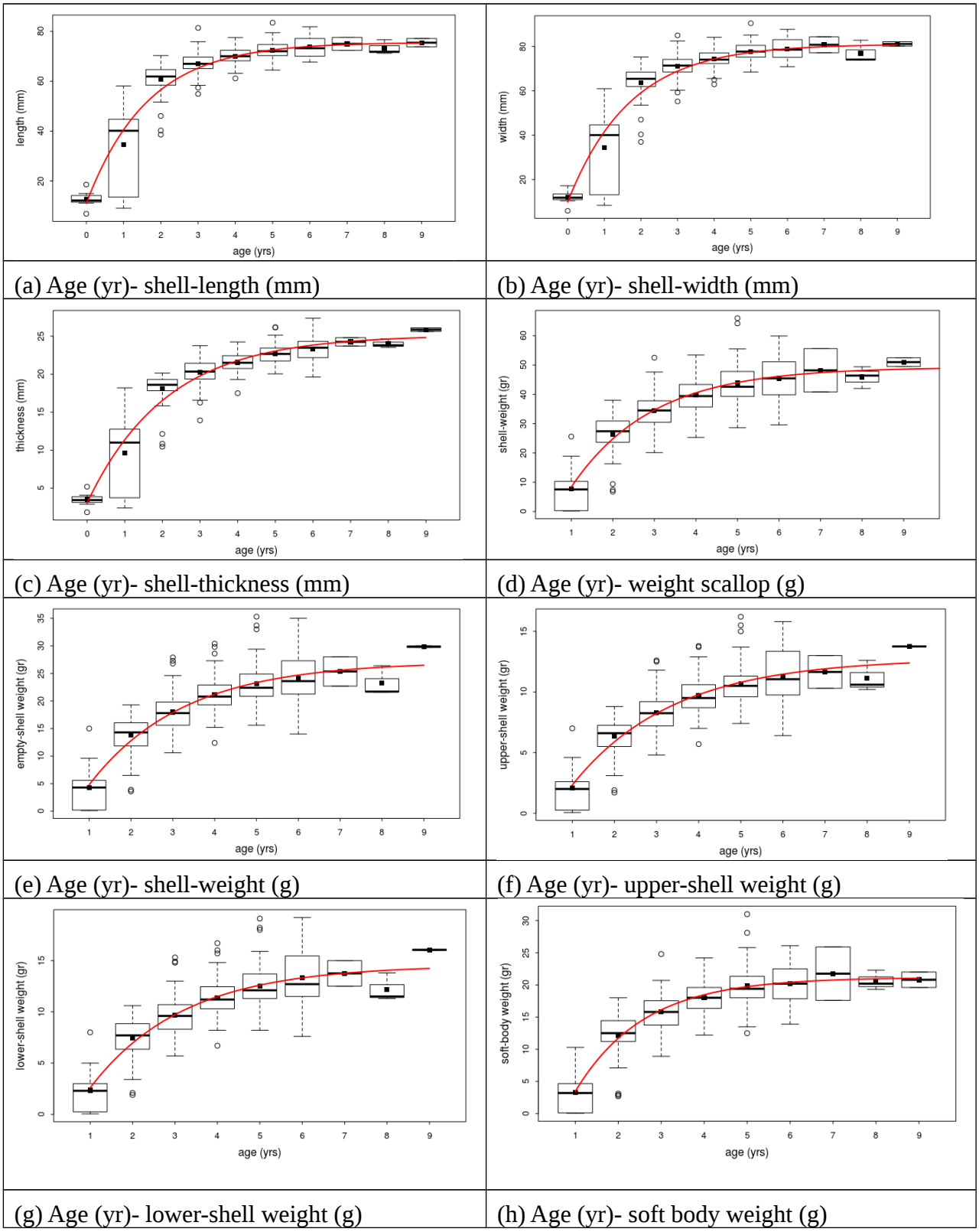


Figure 3.5. Queen scallop. Relation between shell-length (mm) and wet weight of scallop (gr)



(a) Age (yr)- shell-length (mm)

(b) Age (yr)- shell-width (mm)

(c) Age (yr)- shell-thickness (mm)

(d) Age (yr)- weight scallop (g)

(e) Age (yr)- shell-weight (g)

(f) Age (yr)- upper-shell weight (g)

(g) Age (yr)- lower-shell weight (g)

(h) Age (yr)- soft body weight (g)

Figure 3.6. Queen scallop. Relation between age (years) and shell-length (mm)(a), shell-width (mm.)(b), shell-thickness (mm)(c), scallop weight (gr)(d), shell-weight (gr)(e), upper-shell weight (gr)(f), lower-shell weight (gr)(g), soft body weight (gr)(h).