Fisheries and hunting in Greenland – spring semester 2016

1. **Course title:** Fisheries and hunting in Greenland

2. **Credits – ECTS:** 7.5

3. **Lecturers:**
Helle Siegstad and Fernando Ugarte, Greenland Institute of Natural Resources

4. **Number of lectures:** 12 (36 timer).

5. **Teaching period:** March 15 to April 28. Tuesdays and Thursdays from 13 - 16 hrs.

6. **Number of pages in curriculum: 705** (See lecture plan below)

7. **Examination:** The course will be finished with a written essay, to be evaluated by the responsible lecturers and an external evaluator (Grading: Pass or Fail)

8. **Course description:**
Hunting and fisheries have a high social and economic significance in the Greenland Society. The course will introduce the biology of living resources in Greenland and the process leading to management advice.

The course is targeted both natural sciences as well as social science students at undergraduate level but is also open for graduate students and professionals. The upper limit of participants is 25 and students should comprise at least 50% of the participants.

The lectures will comprise traditional lectures and discussions.

The overall aim of the course is that the participants will:

- Aquire knowledge about the biology of species that are relevant for the Greenland Society
- Be able to use concepts of sustainable use of living resources
- Understand the process leading from monitoring, assessing and advising to managing fisheries and hunting.

The course participants will learn the basic biology and biogeography of selected wildlife that is important for the Greenland society. They will also learn about the legislation for the harvesting and protection of wildlife and about the international agreements signed by Greenland, or by Denmark in behalf of Greenland. The course will briefly introduce students to the research and monitoring needed for population assessments and biological advice, and to the process leading to management decisions.

Students will be given basic instruction on the fishing and hunting techniques used in Greenland today, and will be introduced to management tools, such as quotas, protected areas and harvest seasons. Students will also be made familiar with the stakeholders involved in management, conservation and utilization of wildlife in Greenland.

The course will cover the following themes:

- Biology and biogeography of fishing and hunting resources
- Legislation and management tools for the conservation and harvesting of wildlife in Greenland
- Fishing and hunting methods used in Greenland today
- Stakeholders in Greenland and abroad: local and foreign NGOs, international agreements and international organizations
- Biological assessments and advice: Marine mammals, fisheries, hearing process and setting of quotas
- Implementation of advice

Written essay for evaluation of course Fisheries and hunting in Greenland; from biological advice to management

Deadline for submission is May 15. The essay should be delivered as a .pdf file to the universities on-line submission system. The essay should be written in either Danish or English. Total length of the essay should be approximately10 pages.

The essay should deal with the analysis of a case story dealing with biological advice and management of a species or a group of specie exploited in Greenland. Questions to be addressed should include:

- Biology/biogeography relevant for management
- Legislation
- Hunting methods
- Stakeholders in Greenland
- Relevant international agreements/organizations
- Biological advice
- Management measures
- Public opinion in Greenland and abroad
- Discussion – is there room for improvement?

Lecture plan, part 1 – Hunting of birds and mammals (Draft), Tuesdays

Lecture	Teacher	Curriculum - Theme	From	to page	total
March 15		**Marine ecology/ Biological advice / hunting**			
The importance of hunting	Fernando Ugarte	CAFF. 2013. Arctic Biodiversity Assessment. Status and trends in Arctic biodiversity.			
		Chapter 1- Synthesis: Implications for Conservation. Section 1.3 - Human use of wildlife trhough time	30	33	4
		Section 1.5 - Stressors and their alleviation ***OBS: not the whole section; subsections 1.5.1.4 & 1.5.2 excluded!***	42	48	7
Introduction to Marine ecosystems	TBD	Born, E.W et all. (2000) The Ecology of Greenland. The Marine Ecosystem(ENG/DK/KAL)	111	208	98

Introduction to Biological advice	Fernando	Nygaard K (2014) Formål og organisation - http://www.natur.gl/naturinstituttet/formaal-og-organisation/	1	1	1
		Anon (2013) Sagsområder på fangst- og jagtområder (nanoq.gl 1) - http://dk.vintage.nanoq.gl/Emner/Erhverv/Erhvervsomraader/Fangst_og_Jagt/Fangstafdelingens_arbejdsomraader.aspx	1	1	1
		Anon (2013) Internationale relationer nanoq.gl (nanoq.gl 2)- http://dk.vintage.nanoq.gl/Emner/Erhverv/Erhvervsomraader/Fangst_og_Jagt/Internationale_fangstrelationer.aspx	1	1	1
		Anon (2013) Fangstrådet (nanoq.gl 3) - http://dk.vintage.nanoq.gl/Emner/Erhverv/Erhvervsomraader/Fangst_og_Jagt/Fangstraadet.aspx	1	1	1
		Anon (nanoq.gl 4) Kvoter og rådgivning - http://dk.vintage.nanoq.gl/Emner/Erhverv/Erhvervsomraader/Fangst_og_Jagt/kvoter_raadgivning.aspx	1	1	1
March 29	**Teacher**	**Abundance estimates/ Stock structure / Seals**			
Abundance estimates of marine mammals	TBD	Heide Jørgensen & Vinter-Jensen (2010) Tællinger af havpattedyr: Hvaler og hvalros skrives i mandtal (+ underartikler). http://www.natur.gl/pattedyr-og-fugle/havpattedyr/taellinger-af-havpattedyr/			7
Determination of stock structure	Fernando	Heide Jørgensen (2005) Den forudsigelig narhval - http://niki.gl/da/artikler-om-vandrende-dyr/havpattedyr/narhval/			3
Seals in Greenland - biology	Aqqalu Rosing-Asvid (to be confirmed)	Rosing-Asvid (2015) Grønlandssæl - http://www.natur.gl/pattedyr-og-fugle/havpattedyr/groenlandssael/	1	1	1
		Rosing-Asvid (2014a) Ringsæl - http://www.natur.gl/pattedyr-og-fugle/havpattedyr/ringsael/	1	1	1
		Rosing-Asvid (2014b) Spættet sæl - http://www.natur.gl/pattedyr-og-fugle/havpattedyr/spaettet-sael/	1	1	1
		Rosing-Asvid (2014c) Klapmyds - http://www.natur.gl/pattedyr-og-fugle/havpattedyr/klapmyds/	1	1	1
		Rosing-Asvid (2015d) Remmesæl - http://www.natur.gl/pattedyr-og-fugle/havpattedyr/remmesael/	1	1	1
Management and trade on seal skin	Fernando + TBD	Anon (2012) Management and Utilization of seals in Greenland. Government of Greenland	6	38	33
April 5	**Teacher**	**CITES and assessments of marine mammals: walrus, narwhal, beluga and polar bear**			
CITES Non Detriment Findings: walrus, narwhal,	Fernando				
		Ugarte (2015) Third Standing Non-Detriment Findings for exports from Greenland of products derived from Atlantic Walrus	1	7	7

beluga and polar bear		Heide-Jørgensen & Ugarte (2009) Standing Non-Detriment Findings for Exports from Greenland of Products derived from Narwhal (Monodon monoceros).	1	2	2
		Born and Ugarte (2007) Standing Non-Detriment Findings for Exports from Greenland of Products derived from polar bear (Ursus maritimus)	1	7	7
		Ugarte & Heide Jørgensen (2007) Standing Non-Detriment findings for exports from Greenland of products derived from beluga (Delphinapterus leucas)	1	4	4
April 12	**Teacher**	**Large whales / ecology / climate change**			
Large whales and the IWC	Nette Levernann (TBC)	Anon 2012. White paper on management and utilization of large whales in Greenland. IWC/64/ASW 7 http://iwc.int/private/downloads/1anx6az4iutcs0kwwos8wgk4k/64-ASW%207.PDF	26	71	46
How much do marine mammals eat?	Fernando	Frederiksen (2015) Hvor store fiskemængder spiser hvidhvalen i gennemsnit pr. år ? og hvilke fiskearter spiser hvidhvalen? Inatsisartut § 37 spørgsmål - http://www.inatsisartut.gl/documents/para3637/2015/spm/003_Hvidhval_og_Narhval_anfr_dk.pdf	1	2	2
		Kruse (2015) Svar på spørgsmål nr. 003 til Naalakkersuisut vedrørende bestandsstørrelse, føde og migration af hvid- og narhvaler. Samt svar på spørgsmål om sælers fødeindtag. Inatsisartut § 37 spørgsmål - http://www.inatsisartut.gl/documents/para3637/2015/svar/003_Hvidhval_og_Narhval_anfr_svar.pdf	1	9	9
Climate change and the status of marine mammals		Lidre et al (2015) Arctic marine mammal population status, sea ice habitat loss, and conservation recommendations for the 21st century. Conservation biology	1	13	13
April 19	**Teacher**	**Seabirds**			
Seabirds	Flemming Merkel or Aili Labansen (TBC)	Anon (2009) Hjemmestyrets bekendtgørelse nr. 8 af 2. marts 2009 om beskyttelse og fangst af fugle	1	8	8
		Merkel and Labansen (2013) Rådgivning om lomvier, september 2013 - http://www.natur.gl/biologisk-raadgivning/fugle/	1	7	7
		Merkel (2013) Rådgivning om ederfugl, september 2013 - http://www.natur.gl/biologisk-raadgivning/fugle/	1	6	6
		Merkel (2010) Evidence of recent population recovery in common eiders breeding in Western	1869	1873	5

		Greenland. Journal of wildlife management 74(8):1869-1874			
		Merkel et al (2014) Declining trends in the majority of Greenland's thick billed murre (Uria lomvia) colonies 1981-2011. Polar Biol	1	7	7
		Born et al (2000) Grønlands økologi_ Havfugle	170	184	14
April 26	**Teacher**	**Biodiversity hotspots / User's knowledge**			
Biodiversity hotspots	Tenna Boye (TBC)	Christiansen et al (Udkast) biologiske kerneområder i Vest- og Sydøstgrønlandgrønland			
		Kap.5. Natur lovgivning og internationale retningslinjer og aftaler	8	24	17
		Kap. 7. Kriterier for identifikation af vigtige områder for økosystemer	38	40	3
		Kap. 10. Identifikation af økologiske og biologiske interesseområder (kun sektioner 10.1 0g 10.2)	141	144	4
The use of catch statistics in environmental advice	Josephine Nymand (TBC)				
Interview studies	Fernando	Vongraven 2009. The Balyhoo over polar bear. Polar Biology	326	328	3
		Born et al. 2011. Polar bears in Northeast Greenland; an interview survey about the catch and the climate	7 200	8 213	15

Part 2 Fish, fishery and management, Thursdays (315 pages, preliminary)

2. Fish, fishery and management					
March 17					
2.1 Fishing resources, investigation and fishing methods	2.1..1	Hansen P M (1998) Fiskeriundersøgelser i grønlandske farvand 1908-1967. page 37 - 50 OG In Kapel F.O. Nielsen K R (1998) Grønlands Fiskeriundersøgelsser gennem 50 år (Danish and Greenlandic)	37	58	19
	2.1..2	Rasmusen, O.R and Hamilton L. C (2001) The Development of Fisheries in Greenland, with Special Focus on Paamiut/Frederikshab and	24	48	24

		Sisimiut/Holsteinsborg. Roskilde, Denmark: North Atlantic Regional Studies. Nors. 24-48			
	2.1..3	Pingortitalerfik Homepage natur.gl http://www.natur.gl/fisk-og-skaldyr/			2
	2.1..4	Fishing gears and techniques Kap 5.5 page108-111. In: Marine fisheries ecology (2001) Simon Jennings, Michel J. Kaiser, John D. Reynolds.	108	111	3
2.2. Management greenland Fisheries laws, tekniske bevaringsforanstaltninger	2.2.1	Fiskeriloven (DK/KAL) English version dropdox eller http://lovgivning.gl/Lov.aspx?rid={633775EA-C4B9-401C-99D6-892817ED86B1}			15
	2.2.2	Bycatch (DK/KAL) English version dropdox eller http://lovgivning.gl/Services/Soegeresultat.aspx			
	2.2.3	Tekniske bevaringsforanst.(DK/KAL/EN) http://lovgivning.gl/Lov?rid=%7b49817A0D-29C0-456A-8CCC-B72D48D52109%7d&sc_lang=da-DK			
2.3. Biological asssessment, advice and manement	2.3.1	Degnbo, P og E. Kirkegaard Fiskeribiologisk rådgivning. Reference punkter. In: Fisk og Hav, No. 51, 2000, p. 7-17. 10 pages (Dansk) http://orbit.dtu.dk/en/journals/fisk--hav(6d671ba5-7118-4255-acf5-5e74046cdb67).html	7	17	10
	2.3.2	Single–spieces stock assessment. MSY. Kap 7.1., 7.2., 7.3 Page 127 - 135 In: Marine fisheries ecology (2001) S Jennings, M J Kaiser, J D. Reynolds.	127	135	8
	2.3.3	Advisory document example 1: Offshore Cod (2012) http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2012/2012/cod-offgr.pdf	1	3	2
	2.3.4	Advisory document example 2: Shrimp advice 2014 (Dk-Eng) http://www.natur.gl/fileadmin/user_files/Dokumenter/Raadgivning/Fisk/Orientering_rejeraadgivning_2014_Dk.pdf	2	4	2

2.4 International agreements and organizations and stakeholders, management tools, catch control (TAC), technical measures, international bodies	2.4.1	Maguire, JJ (2001) Fisheries science and management in the North Atlantic 4.1.1. http://www.seaaroundus.org/researcher/dpauly/PDF/2001/Books%26Chapters/FisheriesImpactsNorthAtlanticEcosystemsEvaluationPolicyExplo.pdf#page=39	36	48	12
	2.4.2	Management and conservation options. Kap. 17. 327 -347. In: Marine fisheries ecology (2001) S Jennings, M J. Kaiser, J D Reynolds	327	347	20
	2.4.3	International Management of Shared Stocks. Arenda, M et all. Kap. 2. 29-54 In: The Knowlegde Base for Fisheries Management (2006) ed. L Motos and D Clyde Wilson. http://books.google.no/books?hl=da&lr=&id=bpuSUn4KTEgC&oi=fnd&pg=PA29&dq=International+Management+of+Shared+Stocks&ots=cTwfZ6b4Vk&sig=kuMgDZxI4j6y4zqIsWhJY4LP9ck&redir_esc=y#v=onepage&q=International%20Management%20of%20Shared%20Stocks&f=false	29	54	25
2.5 Case studies					
2.5.1 Snowcrab and new fisheries	2.5.1	Perry (1999) A framework for providing scientific advice for the management of new and developing invertebrate fisheries. http://link.springer.com/article/10.1023/A:1008946522213			8
2.5.2 Mackerel	2.5.2	Ásmundsson S(2014) Freedom of Fishing on the High Seas, and the Relevance of Regional Fisheries Management Organisations (RFMOs). http://neafc.org/news/10453			5
	2.5.2	FAO (1995) Straddling Fish Stocks and Highly Migratory Fish Stocks agreement. Review. http://www.un.org/depts/los/convention_agreements/reviewconf/FishStocks_EN_B.pdf			3
	2.5.2	Sermitsiaq (2014, nr. 15) Norge Kritiseres for dårlig optræden i makrelkrigen (Dansk og grønlandsk)			2

		page 20+21.			
2.5.3 Cod managementplan	2.5.3	Cod managementplan 2014-2016			13
		And what happend thereafter			
2.5.4 Economi and management	2.5.4	Den samfundsøkonomiske værdi af fiskerierhvervet 22 oktober 2013.pdf			42
	2.5.4	Economics_for_Fisheries_Management _Ch1			23
	2.5.4	From Rags to FishesDataPoor Methods for Fishery Managers_honey			26
2.5.5 Arctic ocean	2.5.5	Paper on potential movement of fish to arctic ocean(Hollowed 2013)			16
	2.5.5	Report of 2nd Scientific Meeting on Arctic Fish Stocks Tromsø 28-31 October 2013			22
	2.5.5	2013-06_Arctic ICES AFWG			5
	2.5.5	HFO_in_th_Arctic-Phase-2-Final_report-V2	7	15	8
I ALT					315
Other relevant litteratur classic for fisheries management	99,1	FAO (1995) Code of Conduct for Responsible Fisheries. Rome. ftp://ftp.fao.org/docrep/fao/005/v9878e/v9878e00.pdf			ca. 50
	99,3	1977: FN's Convention of the Law of the Sea. http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf			202