The 19th Russian-Norwegian Symposium

"Multispecies management: species interactions and trade-offs, environmental changes and multiple stressors"

Organizers:
The Institute of Marine Research (IMR), Bergen/Tromsø, Norway
and
VNIRO, Moscow / Polar Branch in Murmansk, Russia

Symposium time and venue:

Symposium will be held at the Fram Centre in Tromsø, Norway, 1-3 June 2022.

Thematic scope:

Multispecies management is a key concept in ecosystem-based fishery management, with consideration of ecological processes integrated so that management of a stock is seen in conjunction with other associated (or interacted) stocks. The concept was developed in the 1980s for the North and Barents Seas. Initially the focus was on understanding and quantifying interrelations between stocks, and development of multispecies and ecosystem models. A related topic is management of mixed fisheries where different stocks are caught in the same fishery and where the effort on one stock practically affects the level of bycatch of other co-caught stocks. Trade-offs associated with setting optimal harvest levels for interacting stocks has is another key aspect of multispecies management. More broadly the marine ecosystems are impacted by a range of different stressors, and a major challenge presently is understanding the cumulative effects of human pressures acting on harvested stocks and marine ecosystems. This again relates to management and trade-offs across sectors (such as fisheries, aquaculture, petroleum, etc.).

Program

Wednesday 1 June 2022

0900-0930
Registration
0930-1000
Opening, Introduction and Welcome

Theme session I: Predation and competition
(Tore Haug / Andrey Dolgov)

1000-1030
Dolgov, A.: Trophic relations of commercially important fishes and invertebrates: can we really consider its in multispecies management of fisheries in the Barents Sea? (**keynote**)
1030-1100
Skern-Mauritzen, M., Lindstrøm, U., Biuw, M., Elvarsson, B., Gunnlaugsson, T., Haug, T., Kovacs, K.M., Lydersen, C., McBride, M.M., Mikkelsen, B., Øien, N., Víkingsson, G.: Marine mammal consumption and fisheries removals in the Nordic and Barents Seas (**keynote**)

1100-1130
Coffee break

1130-1150
Holte, B., **Fuhrmann, M.M**., Tandberg, A.H.S., Hjelset, A.M.: Is the future snow crab population limited by food supply? Infaunal and epifaunal benthic secondary production in the Barents Sea
1150-1210
Aarflot, J. M.: Bathymetry structures predator-prey dynamics between zooplankton and fish in the Barents Sea
1210-1230
Planque, B, Favreau, A., Husson, B., Mousing, E., Hansen, C., Broms, C., Lindstrøm, U., Sivel, E.: Quantification of trophic interactions in the Norwegian Sea pelagic food-web over multiple decades
1230-1250
Eriksen, E., **Dolgov, A.V**., Prokopchuk, I.P, Benzik, A., Pedersen, T., Ono, K.: Intra- and interspecies trophic relations in fish communities in the Barents Sea
1250-1310
Dalpadado, P., Prokopchuk, I.P., **Bogstad, B.**, Dolgov, A.V., Gordeeva, A.S., Rey, A., Mørk, H.L., Gjøsæter, H.: Feeding dynamics of capelin and polar cod in the Barents Sea in a warming era
1310-1330
Fall, J., Johannesen, E., Dolgov, A., Ottersen, G.: Northern expansion of Atlantic cod and its effect on native arctic fish fauna in the Barents Sea

1330-1430
Lunch

1430-1450
Dolgov, A.V., Johannesen, E., Benzik, A., Russkikh, A., Eriksen, E., Fall, J.: Ontogentic, seasonal and interannual variation in diet of Northeast Arctic haddock.

1450-1510
Holt, R.E., Durant, J.M., Ottersen, G., Dolgov, A.D., Yaragina, N.A., and Bogstad, B.: Predator-prey interactions in response to changing prey abundance: The case of Barents Sea cod (*Gadus morhua*) and capelin (*Mallotus villosus)*
1510-1530
Durant, J.M.: Non-linearity in interspecific interactions between Barents Sea cod and haddock in response to climate change
1530-1550
Dupont, N., Durant, J.M., Langangen, Ø., Stige, L.C.: Change in the Barents Sea Arctic food-web dynamic based on biotic and abiotic environmental factors

1550-1620
Coffee break

1620-1640
Ohlberger, J.**, Langangen, Ø.,** Stige, L.C.: Age structure affects population productivity in an exploited fish species
1640-1700
Yaragina, N.A., Dolgov, A.V., Russkikh, A.A., Prokopchuk, I.P.: Long-term dynamics of liver condition indices of gadoid fish in the Barents and adjacent seas: influence of forage and climatic conditions
1700-1720
Lindstrøm, U., André, C.S., MacKenzie, K.: Feeding ecology of harbour porpoise in Norwegian coastal communities
1720-1740
Solvang, H.K., Haug, T., Øien, N., Biuw, M., Lindstrøm, U., Gjøsæter, H., Knutsen, T.: Inference for causal relationships among balaenopterids and their prey using categorical data analyses

Thursday 2 June 2022

Theme session II: Mixed fisheries and bycatch
(Bjarte Bogstad / Konstantin Sokolov)

0900-0930
Dingsør, G.: Bycatch and mixed fisheries issues in demersal fisheries in the Barents Sea (**keynote**)
0930-1000
Prozorkevich, D.: By-catch and discards of pelagic fish. Observation experience (**keynote**)
1000-1020
Stesko, A.: On the red king crabs bycatches and survival within bottom trawl fishery
1020-1040
Breivik, O.N.: Bycatch in the Barents Sea shrimp fishery
1040-1100
Bruvold, I., Hansen, A., Hanebrekke, T., Lynghammar, A., Höffle, H., Tranang, C., Nedreaas, K., Nilssen, E., Johansen, T.: Morphological evidence supports splitting of species in the North Atlantic *Sebastes* spp. complex

1100-1130
Coffee break

1130-1150
Filin, A.: Impact on mixed fishery on the stock dynamics of the Norwegian-Barents Sea golden redfish (*Sebastes norwegicus*)
1150-1210
Liu, X., Hansen, C., Nedreaas, K., Stockhause, H.H., Heino, M.: Revealing spatial and temporal harvesting patterns from fishing trips
1210-1230
Blom, G., Aarbakke, B.: Species composition and length distribution in Norwegian catches fished with small-meshed trawl for the target species Norway pout (*Trisopterus esmarkii*) and blue whiting (*Micromesistius poutassou*) in the North Sea during 2014-2019
1230-1250
Blom, G., Yarichevskaya, N., Piskunovich, D., Sytova, M., Kharenko, E.: The importance of accurate conversion factors for landing/catch statistics of fish – achievements from the joint Norwegian-Russian cooperation on measurements and calculations of conversion factors during 1993-2021
1250-1310
Moan, A., Bjørge, A., **Biuw, M.**: Incidental catches of harbour porpoise, *Phocoena phocoena*, by the Norwegian offshore gillnet fleet

1310-1410
Lunch

Theme session III: Pressures on environment and ecosystems
(Mette Skern-Mauritzen / Andrey Krovnin)

1410-1440
Sandø, A.B.: A sensitivity study of climate exposures on different stocks in the North, Norwegian, and Barents Seas. (**keynote**)
1440-1510
Trofimov, A.G. and Ivshin, V.A.: The current trends in the Barents Sea climate (**keynote**)
1510-1530
Trofimov, A., Karsakov, A., Antsiferov, M., Ivshin, V., Gubanishchev, M.: 120 years of oceanographic observations along the Kola Section
1530-1550
Sentyabov, E.: Long-term monitoring of the Lofoten Vortex based on field observations
1550-1610
Garrido, E.C.: Meta-analysis of *Calanus finmarchicus* vertical distribution and its relationship with hydrographic variables in the North Atlantic basin
1610-1630
Prokopchuk, I.P., Bagøien, E., Dalpadado, P.: Zooplankton biomass trends in subareas of the Barents Sea – recent developments
1630-1650
Lowther, A.D., Johannessen, E., Krafft, B.A., Menze, S., McCauley, G.: Developing management strategies for the Antarctic krill fishery

1650-1720
Coffee break

1720-1800
Poster session

1930
Symposium dinner

Friday 3 June 2022

Theme session III: (Continued from Thursday)

0900-0920
Jørgensen, L.L., Logerwell, E.A., Strelkova, N., Zakharov, D., Roy, V., Nozères, C., Bluhm, B.A., Ólafsdóttir, S.H., Burgos, J.M., Sørensen, J. Zimina, O., Rand, K.: International Megabenthic Long-Term Monitoring of a Changing Arctic Ecosystem: baseline results
0920-0940
Zakharov, D.V., Manushin, I.E., Strelkova, N.A., Jørgensen, L.L.: Impact on megabenthic communities from two large, introduced crab species
0940-1000
Cipriani, P., Bao, M., Giulietti, L., Storesund, J.E., Palomba, M., Mattiucci, S., Levsen, A.: A hidden biodiversity in the Northeast Atlantic waters: ascaridoid nematodes in Atlantic cod *Gadus morhua*
1000-1020
Klepikovskiy R., Ivshin, V.: Habitat conditions for cetaceans in the Barents Sea during summer and winter seasons in 2007-2019
1020-1040
Lindstrøm, U.: Population viability analysis (PVA) of harbour porpoises in Norwegian coastal communities

1040-1110
Coffee break

Theme session IV: Multispecies and ecosystem modelling
(Elena Eriksen / Yuri Kovalev)

1110-1140
Filin, A.: Multispecies models for the Barents Sea: historical review, application, perspectives (**keynote**)
1140-1210
Koen-Alonso, M: A tale from the NAFO ecosystem trenches: Concepts, challenges, and hopefully applications of ecosystem and multispecies models for fisheries management (**keynote**)
1210-1230
Aarflot, J.M.: Life-history and spatial distribution of *Calanus glacialis* in the Barents Sea: an individual-based model in a 3D model system
1230-1250
Namyatov A.A., Makarevich P.R., Pastuhov I.A., Chovgan O.V.: Stable isotopes as a tracer of the marine environment ecosystem studies

1250-1310
Johannesen, E., Perez-Rodriguez, A., Fall, J., Russkikh, A.: Estimation of ecosystem effect on cohort growth Northeast Arctic haddock

1310-1410
Lunch

1410-1430
Pedersen, T., Eriksen, E.: How revision of fish diets of the Barents Sea Ecopath model influence prediction of the current ecosystem status
1430-1450
Nascimento, M.C., Pedersen, T., Husson, B., Guillet, L.: Can a spatial ecosystem model simulate species distributions due to variations in environmental conditions in the Barents Sea?
1450-1510
Wells, N., **Aune, M.**, Ramasco, V., Lindstrøm, U., Koen-Alonso, M., Pedersen, E., Renaud, P., Eriksen, E., Primicerio, R.: Spatial and temporal patterns of fish diversity in the Northwest Atlantic after the ecosystem collapse
1510-1530
Howell, D.: F_{eco} – Using ecosystem model information directly in quota advice

1530-1600
Discussion and meeting closure

Posters

Theme session II: Mixed fisheries and bycatch

Clegg, T.L., Fuglebakk, E.: Using the Barents Sea longline fishery as a case study to evaluate assumptions behind design-based estimators for unreported catches

Theme session III: Pressures on environment and ecosystems

Sumkina, A., Krovnin, A., Ivanov, V., Kivva, K.: Seasonal ice in the Barents Sea and its variability

Kudryashova, A.S., Strelkova, N.A., Manushin, I.E., Viyaznikova, V.S., Blinova, D.Ju., Khacheturova, K.S., **Zakharov, D.V.**: Sponge communities in the Barents Sea and its vulnerability under impacts of bottom trawling (on the example of Rybach'ya Bank)

Svetochev, V.N., Svetocheva, O.N.: Monitoring of the harp seal population (Phoca (Pagophilus) groenlandica) in unstable ice conditions in the White Sea

Theme session IV: Multispecies and ecosystem modelling

Stesko, A.: On distribution of different types of red king crabs aggregations of Russian part of the Barents Sea