Systematic approach to identification and conservation of priority areas in the Russian Arctic Seas

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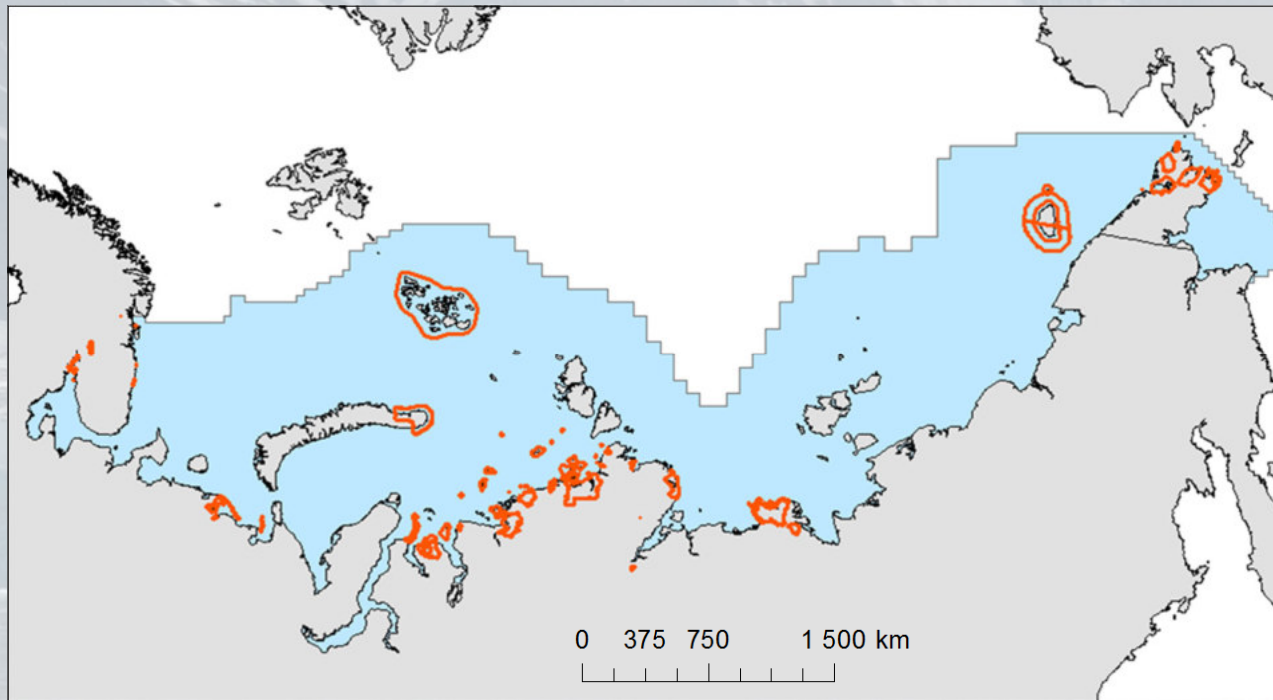[1]A. N. Severtsov Institute of Ecology and Evolution of Russian Academy of Sciences, [2]WWF Russia

CAFF Arctic Biodiversity Congress
Rovaniemi, Finland
9-12.10.2018

Russian Arctic Protected Areas (PAs) as of 2015:

1. Very few PAs were created with the purpose of marine biodiversity conservation

2. The total area of the federal PAs is just 2.4 % of the Russian EEZ area

3. Existing PAs are created on ad-hoc basis; they don't form a network

7 reserves (IUCN Ia), 1 national park (IUCN II), 4 preserves (IUCN VI), 1 natural monument (IUCN III), 41 regional PAs (IUCN Ib)

**Systematic conservation planning approach
(adapted from *Margules, Pressey, 2000*):**

1. Identify conservation goals for the planning region
2. Compile data on the biodiversity of the planning region
3. Review existing conservation areas
4. Select additional conservation areas
5. Implement conservation actions
6. Maintain the required values of conservation areas

Margules Ch.R., Pressey R.L., 2000. Systematic conservation planning // *Nature* 405.6783: 243-253

3

Identify conservation goals for the planning region

The goal:

To design an ecologically connected, representative network of conservation areas that protects and promotes the resilience of the biological diversity and the cultural heritage of the Russian Arctic marine environment, taking into account the economic development and the ongoing climate change

Identify conservation goals for the planning region

Criteria for selection of conservation features:

| |
|---|
| **Uniqueness or rarity** |
| **Special importance for life history stages of species** |
| **Importance for the threatened, endangered or declining species and/or habitats** |
| **Vulnerability, fragility, sensitivity, or slow recovery** |
| **High biological productivity** |
| **High biological diversity** |
| **Representativity of biotopes** |
| **Genetic diversity (representativity of geographical forms, populations, subpopulations etc.)** |
| **Maintenance of functions/structures of ecosystems** |
| **Species and areas of special importance for indigenous peoples / communities** |

International criteria (CBD EBSA/ IUCN MPA/IMO PSSA)

Development of MPA network in the Russian Arctic

Data collection – crucial step of the project

More than 30 experts from 10+ institutions struggled with issues of lack of data, sparsity of data, organizational issues etc.

Datasets for all Conservation Features:

- 69 benthic biotopes, habitats, biogeographical units, communities, vulnerable marine ecosystems
- 6 ice biotopes
- 45 marine mammals key habitats and ranges
- 36 birds key habitats and ranges
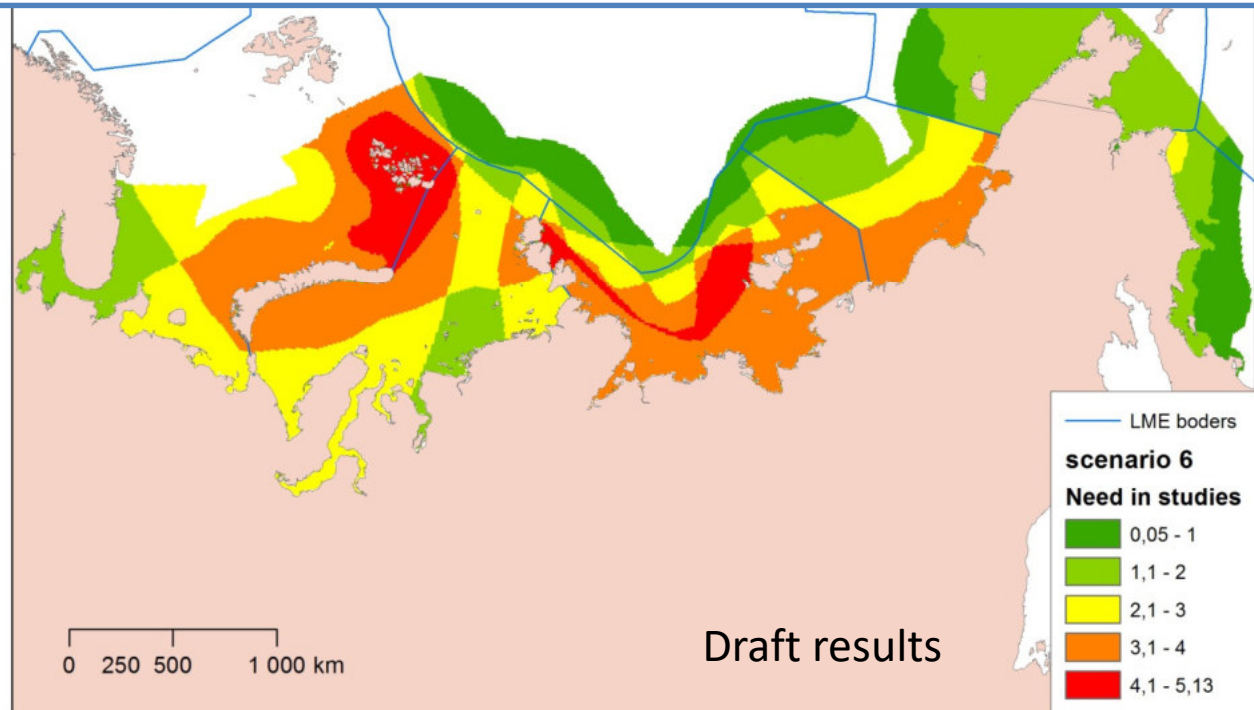- 38 fish key habitats, ranges and communities
- 1 Naturalness

Project Data quality and density distribution

ALL= 1N_low+2N_medium+3N_high
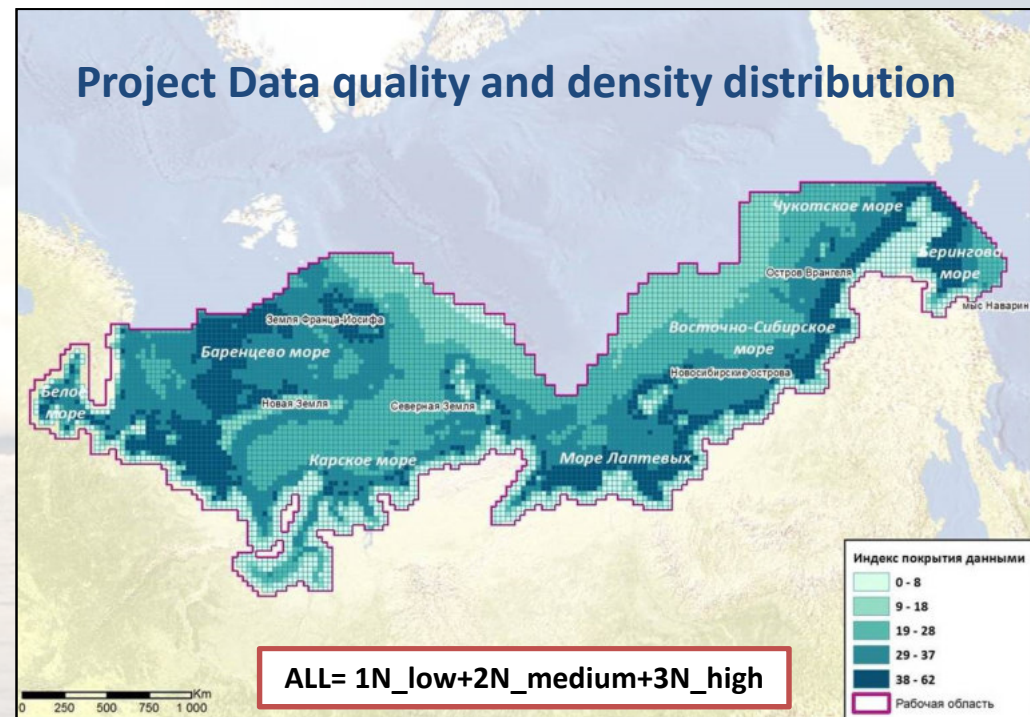
Solovyev et al. (2018) Identifying a network of priority areas …: Practical lessons from Russia. DOI: 10.1002/aqc.2806

6

Gap analysis of data: selection of Research Priority Areas

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1. Issue of gaps in biological and oceanographic data
2. Need to identify these gaps in a systematic way
3. We are currently developing and testing a toolbox for identification of Research Priority Areas based on Systematic Conservation Planning Approach
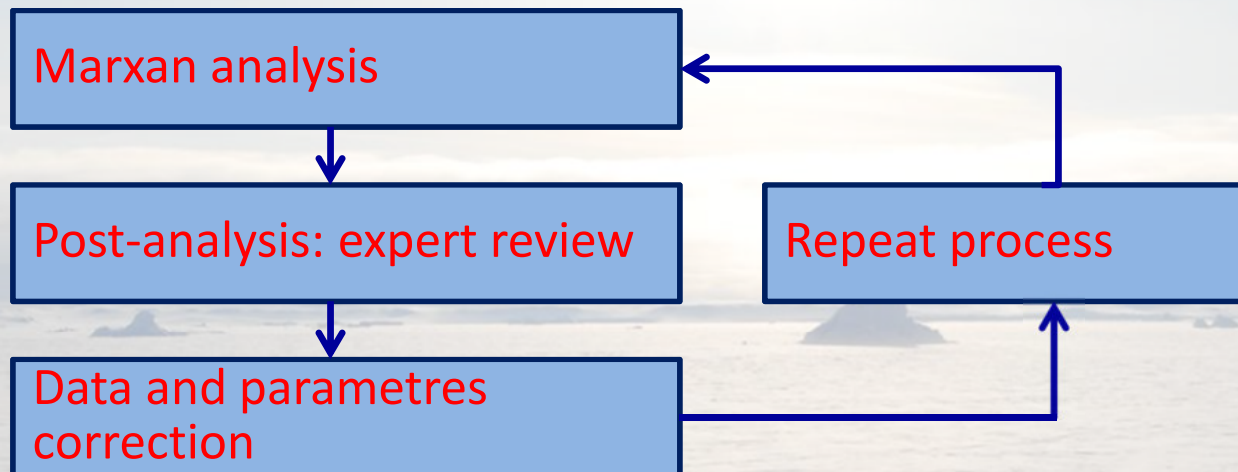
Research priority areas for 6 Arctic marine mammals species: Bowhead whale, beluga, narwhal, ringed seal, bearded seal and walrus

LME boders

scenario 6
Need in studies
- 0,05 - 1
- 1,1 - 2
- 2,1 - 3
- 3,1 - 4
- 4,1 - 5,13

0   250 500   1 000 km

Draft results

Development of MPA network in the Russian Arctic as an iterative process

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┌─────────────────────┐
│   Marxan analysis   │◄──────────────────┐
└─────────────────────┘                   │
          │                               │
          ▼                               │
┌─────────────────────┐   ┌───────────────────┐
│ Post-analysis:      │   │  Repeat process   │
│ expert review       │   └───────────────────┘
└─────────────────────┘            ▲
          │                        │
          ▼                        │
┌─────────────────────┐            │
│ Data and parametres │────────────┘
│ correction          │
└─────────────────────┘
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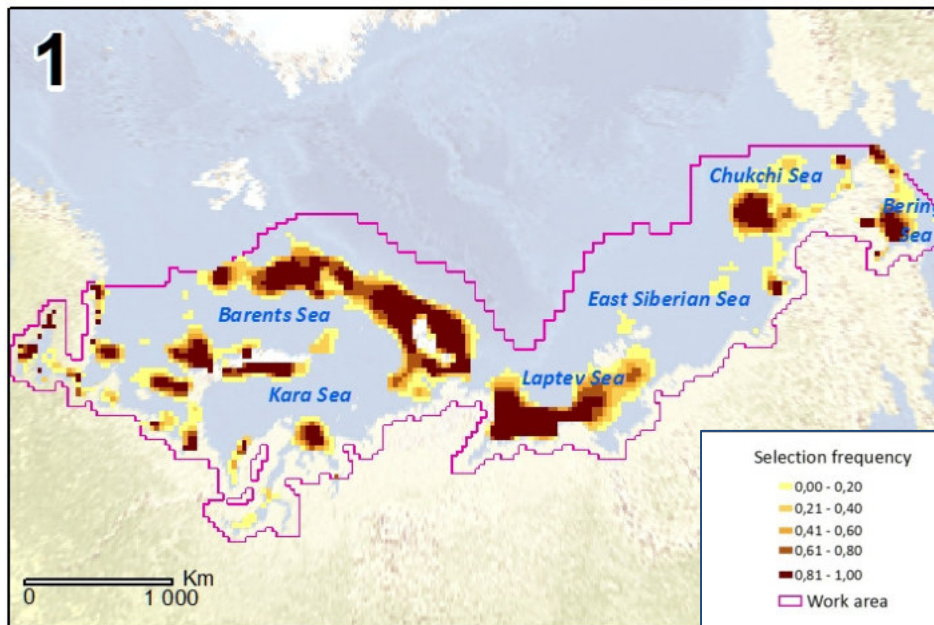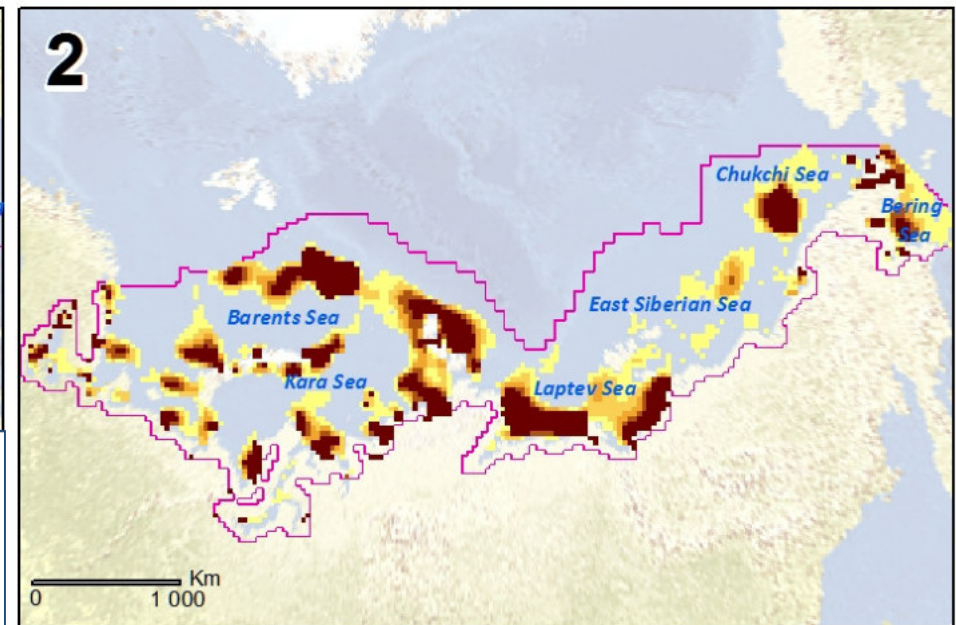
- Transparent
- Open
- Iterative

Conservation priority areas as a result of the Marxan analysis and the experts review
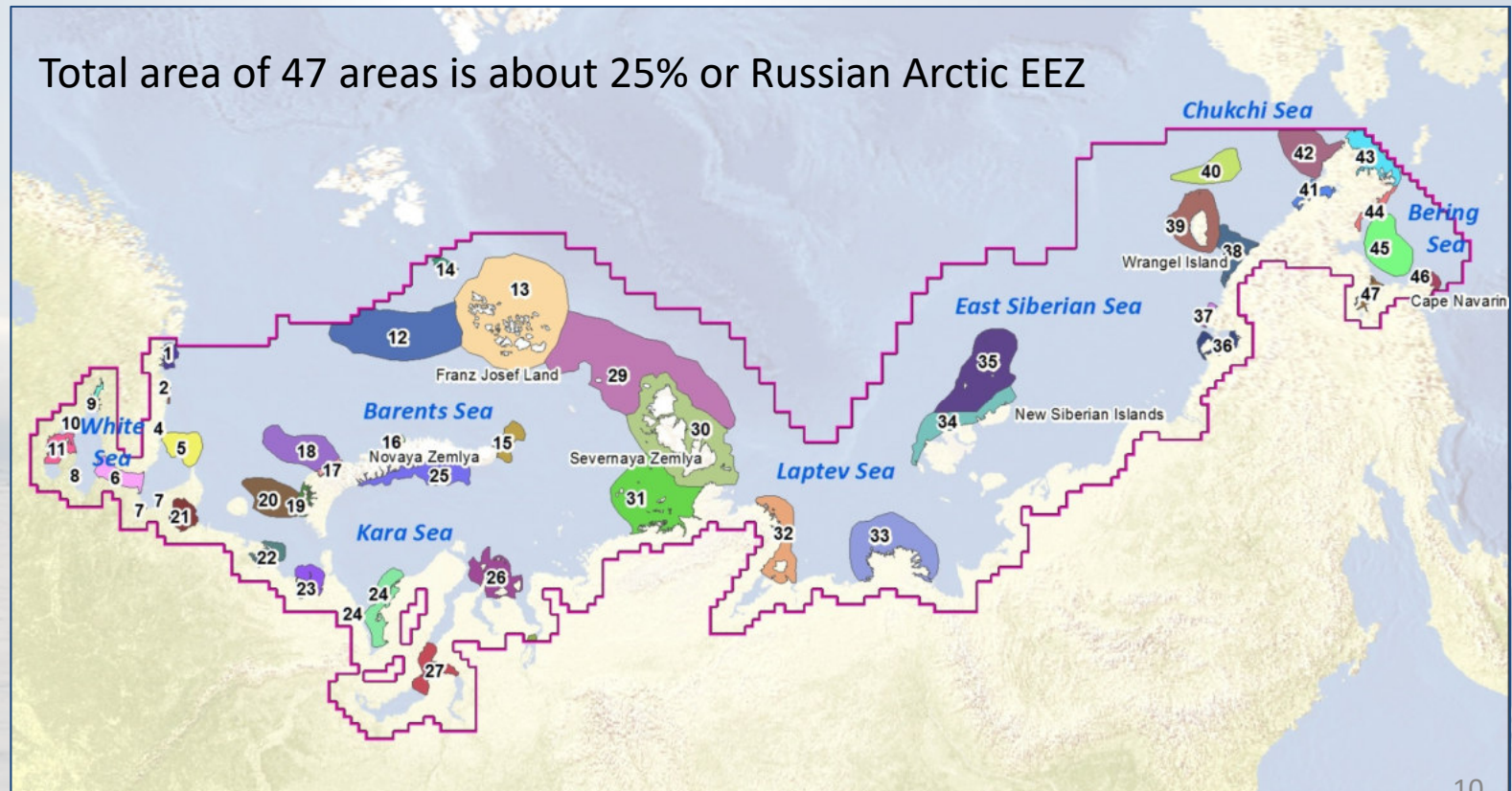

1. Basic scenario

2. Existing PAs included in the analysis

Conservation priority areas resulted from Marxan and post-Marxan analyses
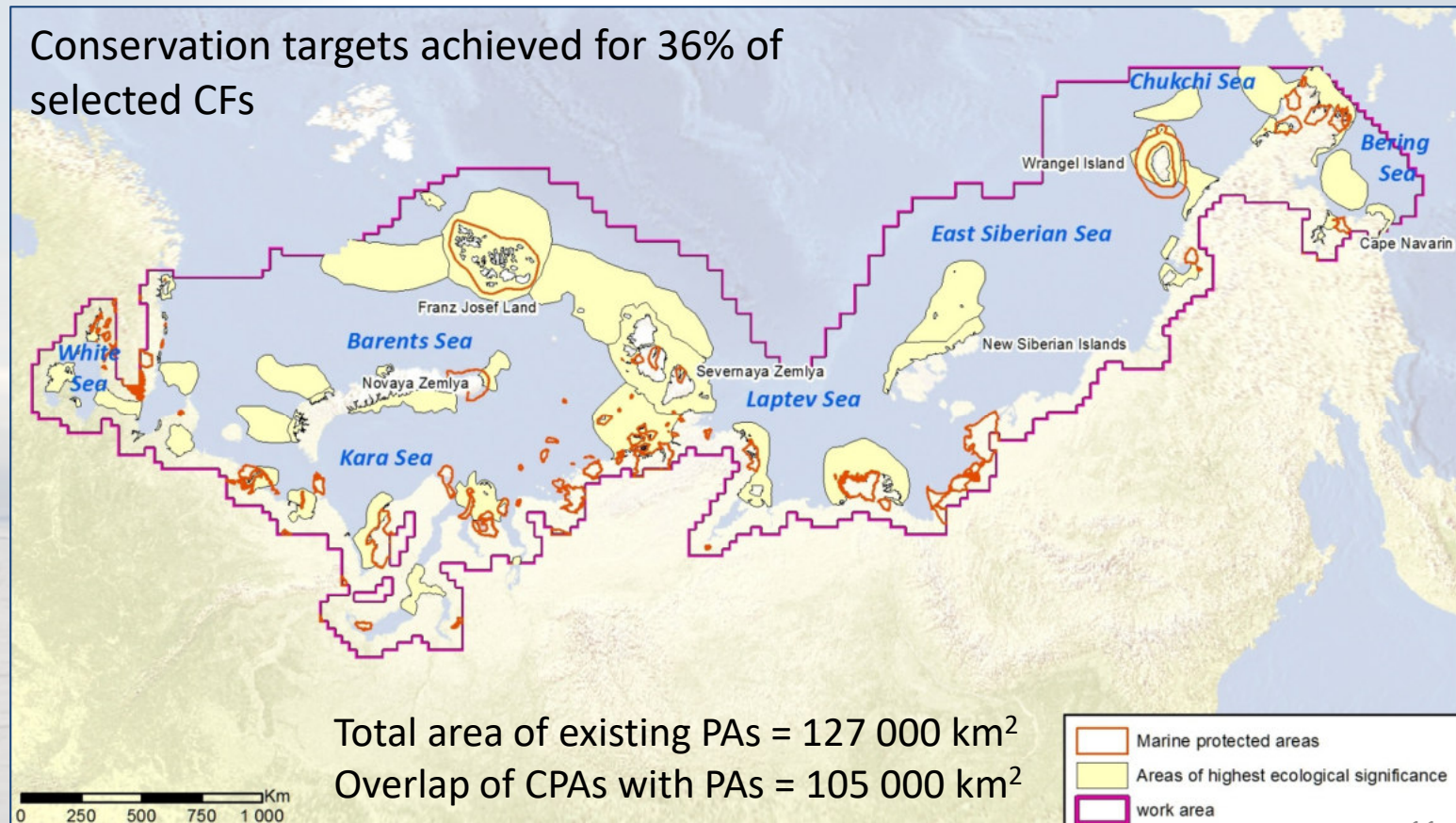
Total area of 47 areas is about 25% or Russian Arctic EEZ

Review of existing conservation areas

Conservation targets achieved for 36% of selected CFs

Total area of existing PAs = 127 000 km^2
Overlap of CPAs with PAs = 105 000 km^2

Legend:
- Marine protected areas
- Areas of highest ecological significance
- work area

Map labels: Chukchi Sea, Bering Sea, Wrangel Island, East Siberian Sea, Cape Navarin, Franz Josef Land, Barents Sea, New Siberian Islands, White Sea, Novaya Zemlya, Severnaya Zemlya, Laptev Sea, Kara Sea

Implementation strategy

1. Create new MPAs and expand exiting MPAs
2. Develop other area-based Conservation Measures
3. Advance from identification of Conservation Priority Areas to Ecosystem Approach to Management

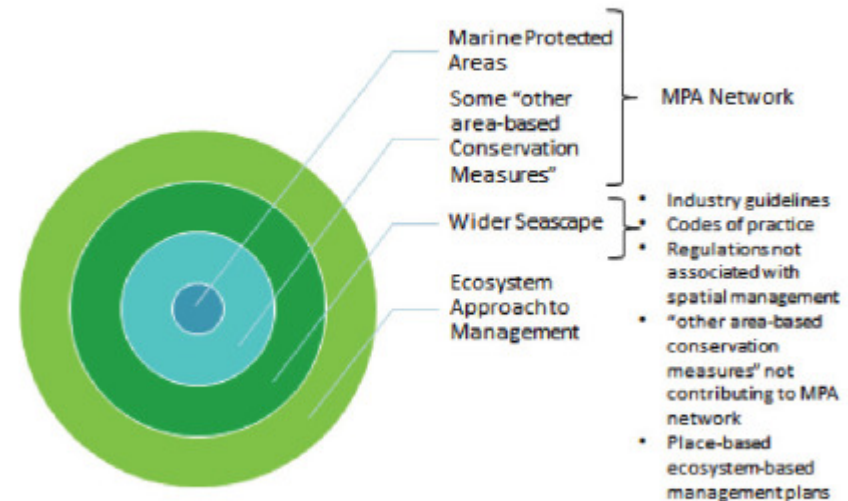MPA Networks as Part of an Ecosystem Approach to Management

Marine Protected Areas
Some "other area-based Conservation Measures"
} MPA Network

Wider Seascape
- Industry guidelines
- Codes of practice
- Regulations not associated with spatial management

Ecosystem Approach to Management
- "other area-based conservation measures" not contributing to MPA network
- Place-based ecosystem-based management plans

Figure 3. Relationship between MPAs, "other area-based conservation measures," wider seascape and an ecosystem approach to management.

*Page 13, Framework for a Pan-Arctic Network of Marine Protected Areas, PAME, April 2015

12

Novosibirskie Islands (New Siberian Islands) Federal Preserve

Established in March 2018

Improved achievement of conservation targets for 38 out of 195 (appr. 20%) CF selected for the systematic analysis.
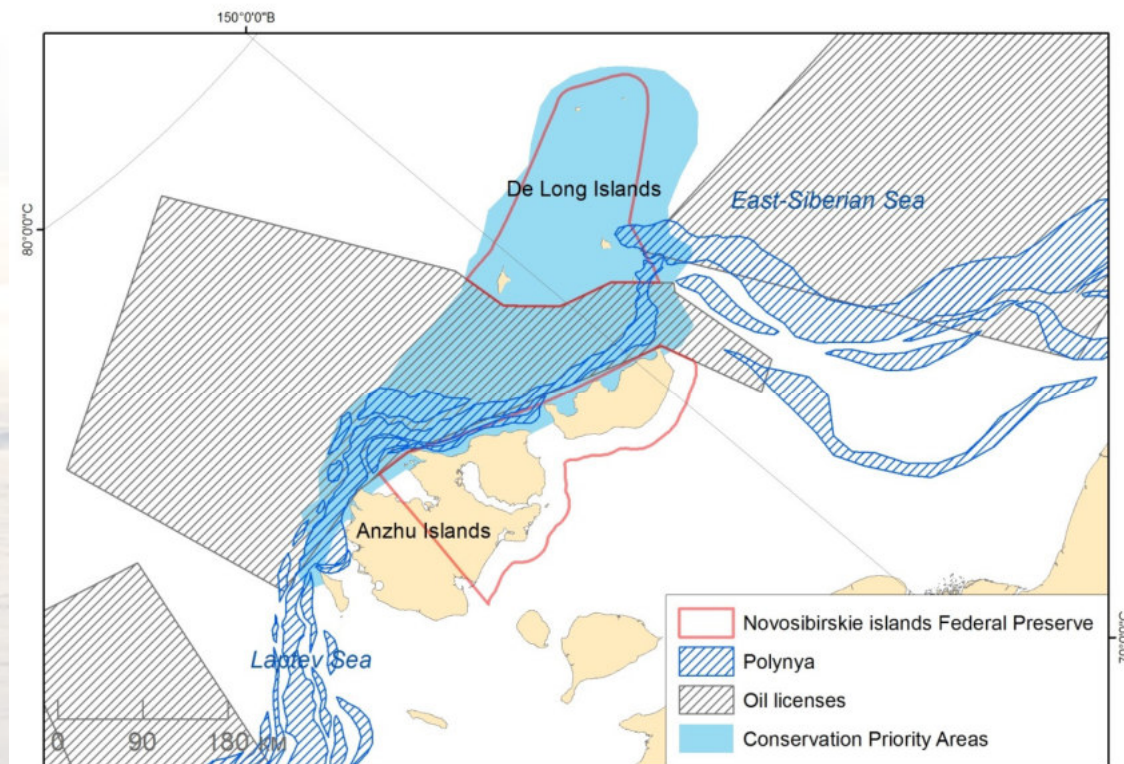
The MPA is the most important for conservation of:
Laptev walrus haul outs
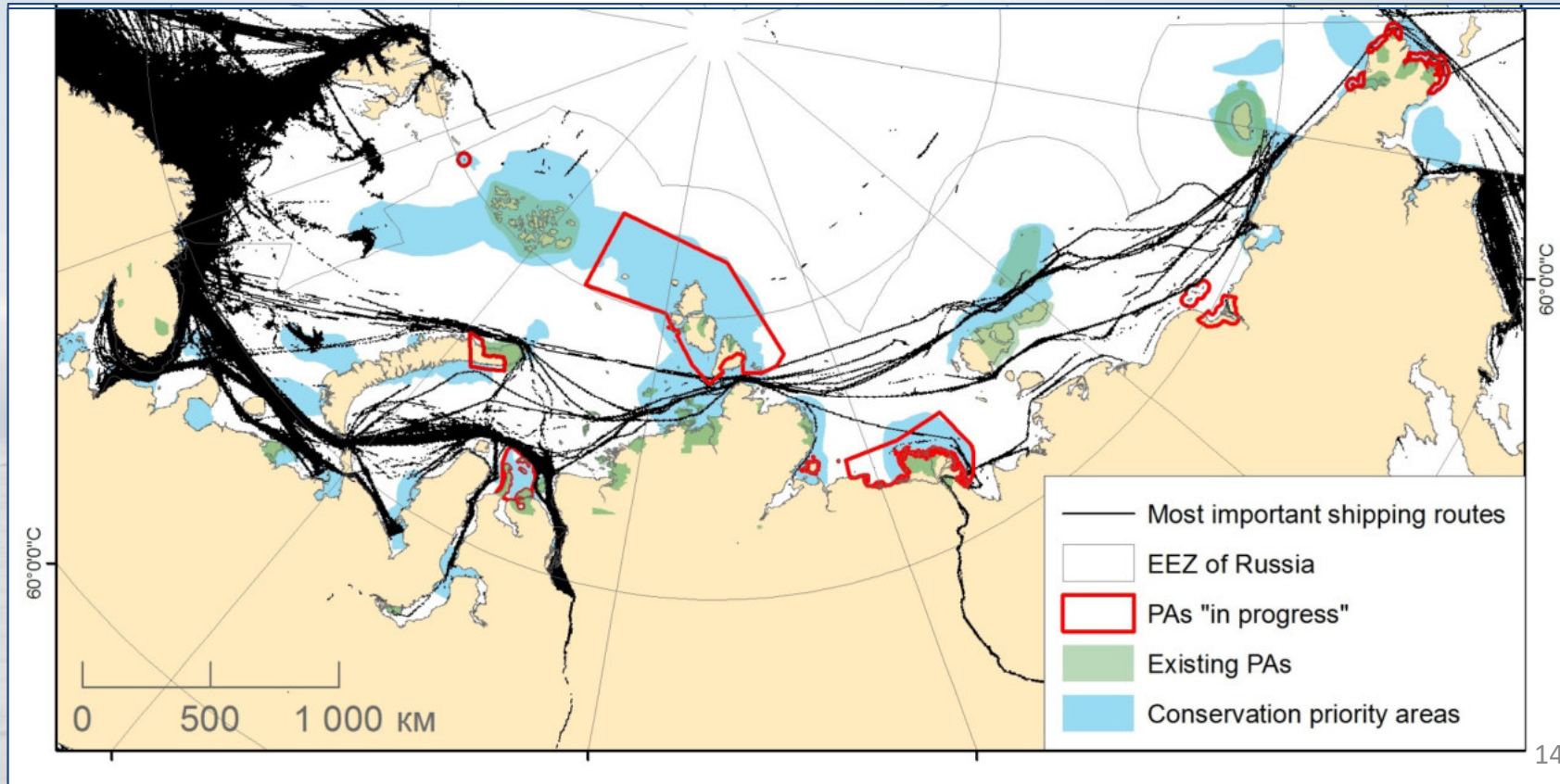Laptev walrus habitats on ice
Ringed seal habitats on ice
Arctogadus borisovi and
Coreogonus autumnalis habitats

Legend:
- Novosibirskie islands Federal Preserve
- Polynya
- Oil licenses
- Conservation Priority Areas

Implementation of the designed network

Legend:
- Most important shipping routes
- EEZ of Russia
- PAs "in progress"
- Existing PAs
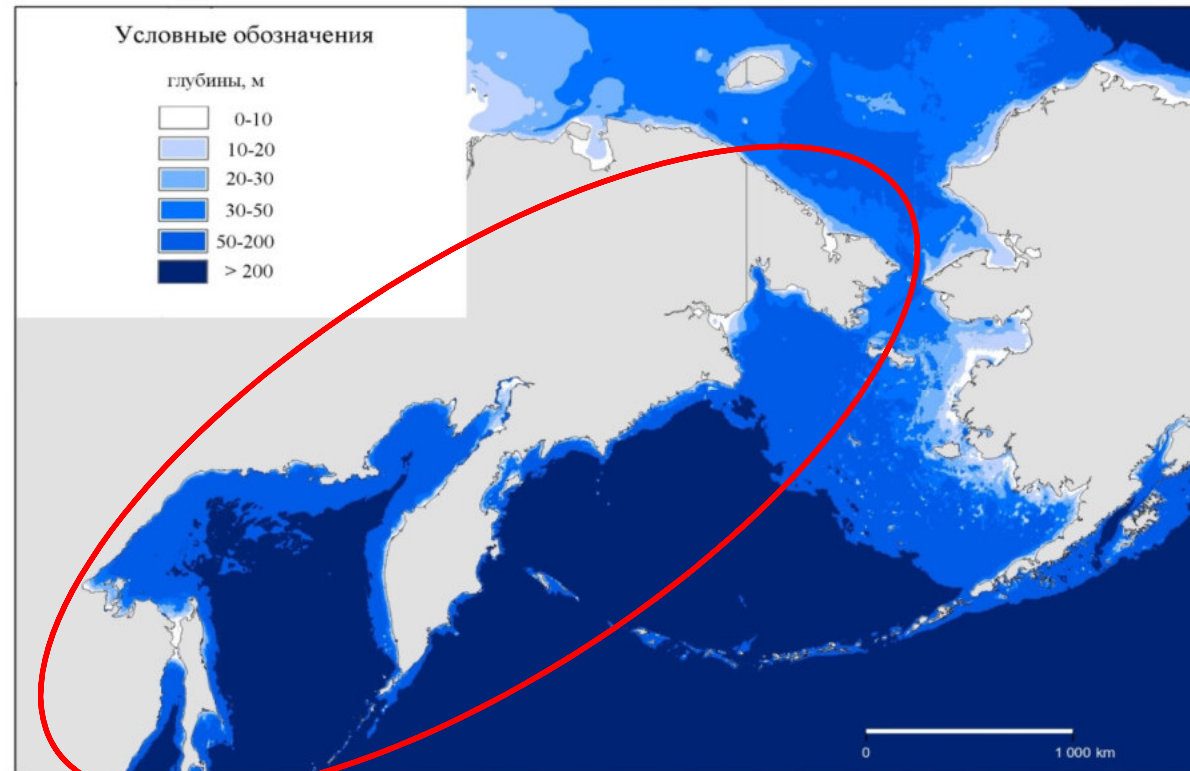- Conservation priority areas

0   500   1 000 KM

Russian Far East MPA Network

Plan to expand the systematic research to the Russian Far East

Status of the project:

Team forming, initial parametres setting
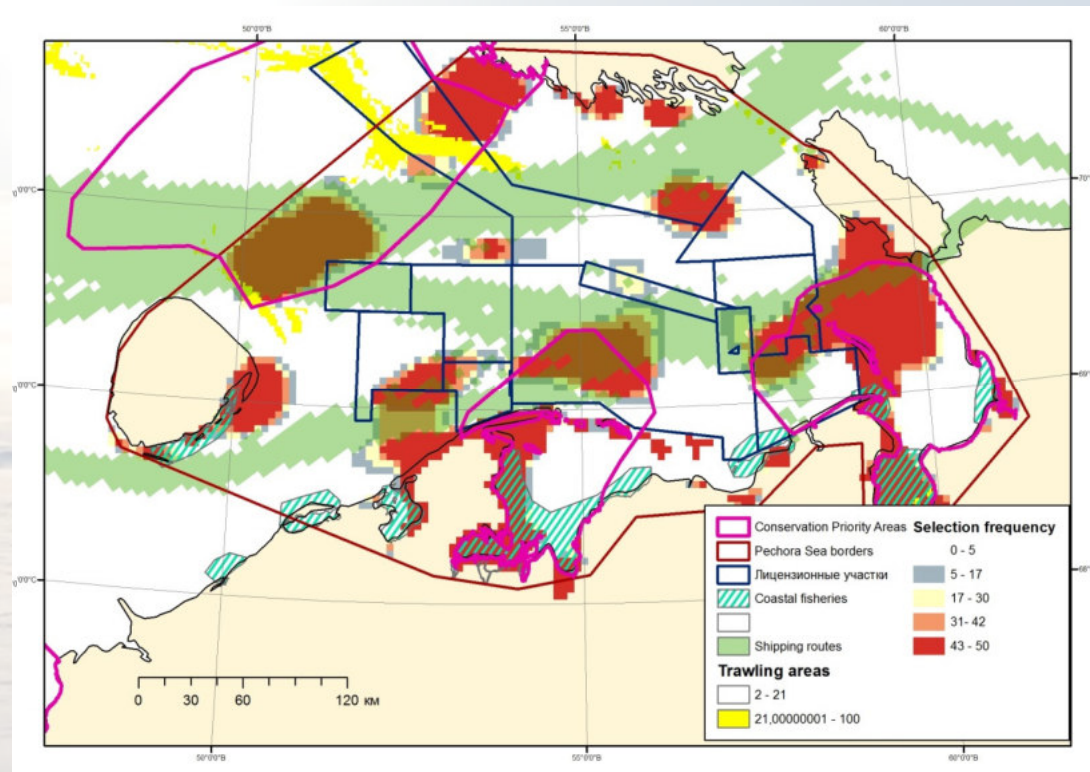

Условные обозначения

глубины, м

- 0-10
- 10-20
- 20-30
- 30-50
- 50-200
- > 200

0   1 000 km

Integration of systematic conservation planning in Marine Spatial Planning/Ecosystem Approach to Management in the Pechora Sea (south-east corner of the Barents Sea)

1. Pechora Sea as a model region: quite well studied, place of the first oil well in the Russian Arctic Seas, coastal communities, Northern Sea route etc.
2. Aim – to develop and to test a methodology, to create community of practice and to bring the elements of EBM/MSP to the Sea

Legend	
Conservation Priority Areas	**Selection frequency**
Pechora Sea borders	0 - 5
Лицензионные участки	5 - 17
Coastal fisheries	17 - 30
	31 - 42
Shipping routes	43 - 50
Trawling areas	
2 - 21	
21,00000001 - 100	

Draft results

Integration of systematic conservation planning in Marine Spatial Planning/Ecosystem Approach to Management in the Pechora Sea: seasonal dynamic
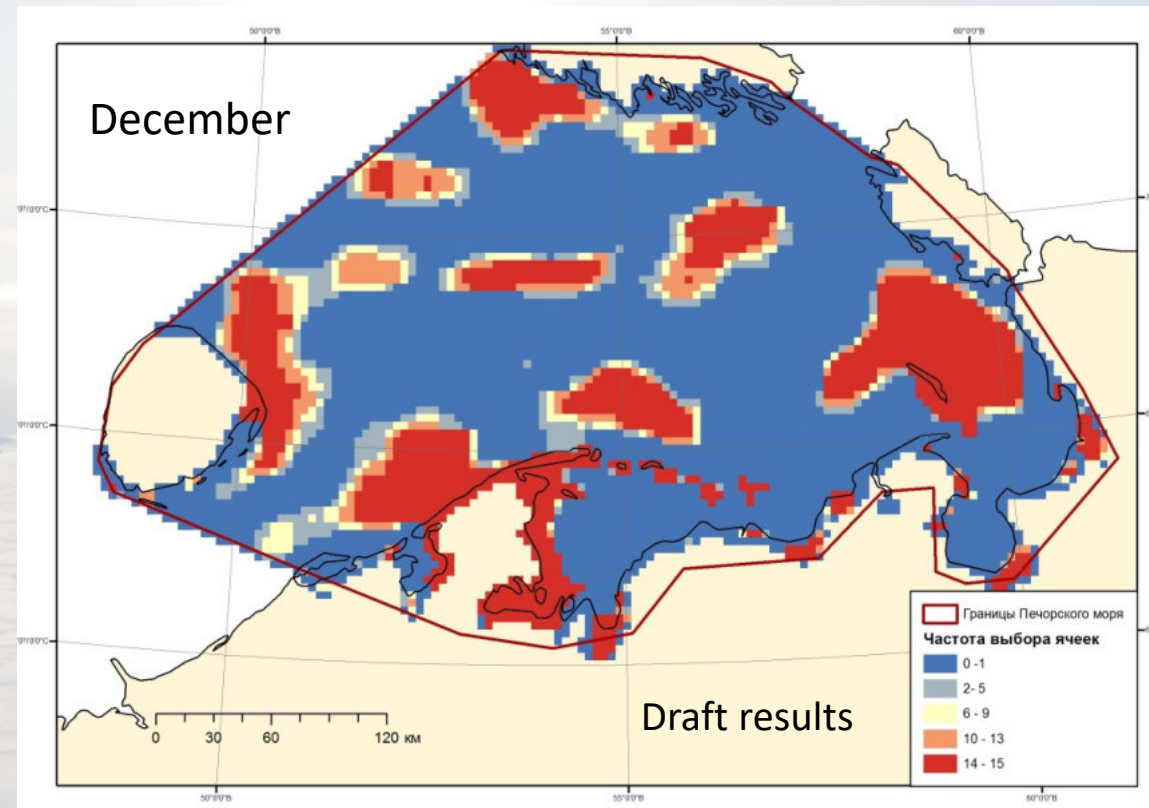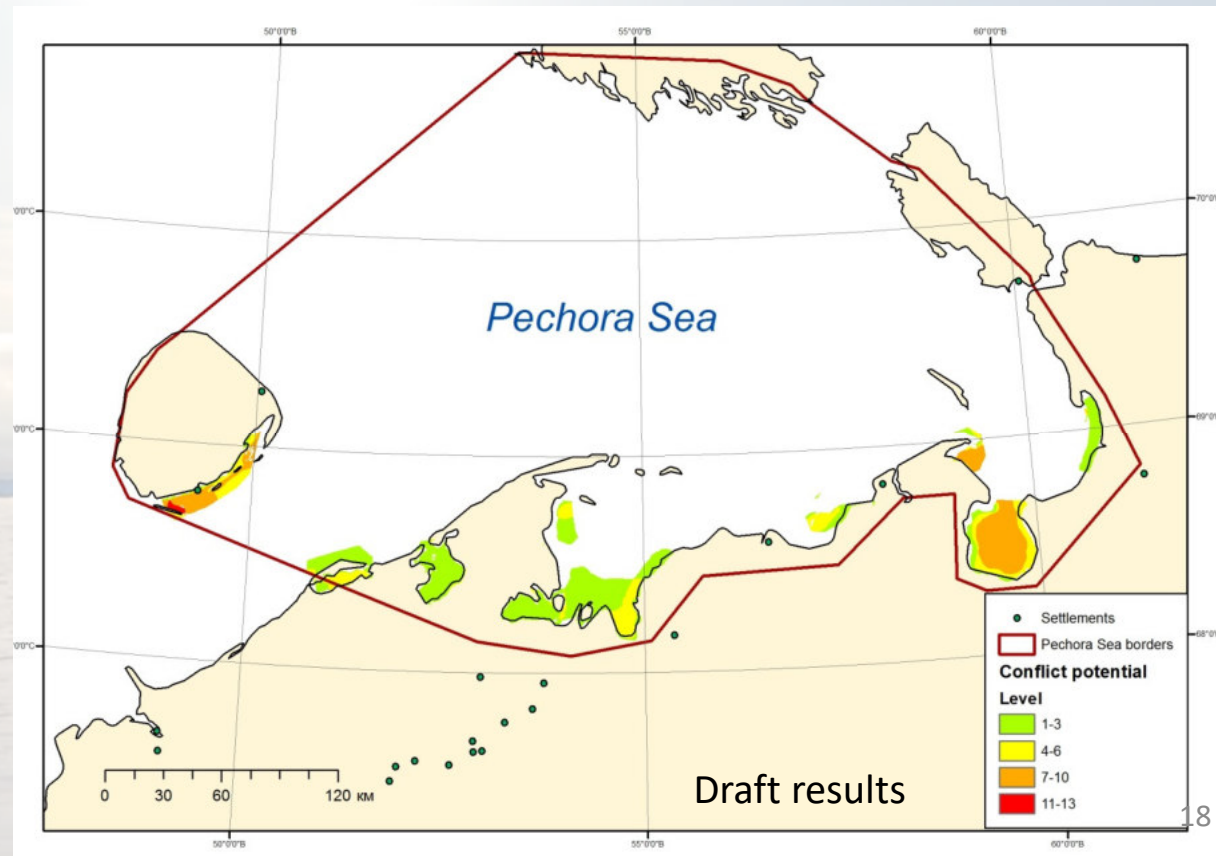

December

Draft results

Integration of systematic conservation planning in Marine Spatial Planning in the Pechora Sea: exploring potential conflicts

Level of potential conflicts between coastal fishery activities and seabirds in the Pechora Sea

Draft results

Conclusions

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1. To face the changes in the Arctic, we need a reliable and adequate methodological approach, allowing us to address the changes in a systematic and holistic way

2. The systematic conservation planning approach we used and continue to develop in the Russian Arctic Seas, provides us with transparent, replicable and adaptable planning process

3. The systematic approach makes the process of MPA creation faster and cheaper in the long-term prospective; recognised by stakeholders

4. It allows to carry nested analyses; allows to move from CPA identification to MSP

5. To face the changes, we need a community of practice even more than the methods and instruments. Even in the data-poor regions, it is not the lack of data that is critical but the lack of coordination and collaboration

6. This community of practice is being formed in Russia and we are happy to share our knowledge, achievements and enthusiasm beyond the Russian Seas

Thank you for your attention!

Conservation Priority Areas for the Russian Arctic Seas Project:

B. Solovyev, V. Spiridonov., I. Onufrenya, A. Amiragyan, S.Belikov, M. Gavrilo, D. Glazov, M. Grigoriev, D. Dobrynin, K. Klokov, A.Kochnev, Yu. Krasnov, S. Mukharamova, V. Orlov, A. Pantyulin, N. Platonov, F. Romanenko, A. Savelyev, U. Simakova, M. Stishov, N. Chernova, E. Chuprina, G. Tertitsky, M. Tsekina

Integration of systematic conservation planning in Marine Spatial Planning in the Pechora Sea Project:

B. Solovyev, V. Spiridonov, I. Onufrenya, N. Chernova, M. Gavrilo, A. Gebruk, D. Glazov, P. Glazov, N. Platonov, M. Solovyeva, N. Shabalin, V. Ivshin, A. Amiragyan

Research Priority Areas for the Russian Arctic Seas Project:

Solovyev B., Shpak O., Platonov N., Trukhanova I., Kryukova N., Onufrenya I.

Development of MPA network in the Russian Arctic

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SUPPLEMENT ARTICLE

Identifying a network of priority areas for conservation in the Arctic seas: Practical lessons from Russia

Boris Solovyev[1] | Vassily Spiridonov[2] | Irina Onufrenya[3] | Stanislav Belikov[4] | Natalia Chernova[5] | Dmitry Dobrynin[6] | Maria Gavrilo[7] | Dmitry Glazov[1] | Yuri Krasnov[8] | Svetlana Mukharamova[9] | Anatoly Pantyulin[10] | Nikita Platonov[1] | Anatoly Saveliev[9] | Mikhail Stishov[3] | Grigory Tertitski[11]

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SUPPLEMENT ARTICLE

Importance of oceanographical background for a conservation priority areas network planned using MARXAN decision support tool in the Russian Arctic seas

Vassily Spiridonov[1] | Boris Solovyev[2] | Ekaterina Chuprina[3] | Anatoly Pantyulin[4] | Alexei Sazonov[4] | Andrei Nedospasov[1] | Svetlana Stepanova[1] | Stanislav Belikov[5] | Natalia Chernova[6] | Maria Gavrilo[7] | Dmitry Glazov[2] | Yury Krasnov[8] | Grigory Tertitsky[9] | Irina Onufrenya[10]

Aquatic Conservation: Marine and Freshwater Ecosystems. 2017; 27 (S1) 22

Традиционный подход – спросить экспертов
Business as usual - ask experts

36% от площади рабочей области

Legend

Important Ecological Areas

Work area

0   375   750   1 500 km