

**ECORA : AN INTEGRATED ECOSYSTEM MANAGEMENT APPROACH TO CONSERVE BIODIVERSITY
AND MINIMISE HABITAT FRAGMENTATION IN THREE SELECTED MODEL AREAS IN THE RUSSIAN ARCTIC**



Acknowledgements

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- Aleut International Association (AIA)
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UNEP/GEF ECORA Project

An Integrated Ecosystem Management Approach to Conserve Biodiversity and to minimise habitat fragmentation in the Russian Arctic

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1. Introduction

ECORA is a Global Environment Facility (GEF) project initiated by the Arctic Council Working Group on the Conservation of Arctic Flora and Fauna (CAFF), UNEP/GRID-Arendal, and the Russian Federation that uses an integrated ecosystem management approach to conserve biodiversity and minimize habitat fragmentation in the Russian Arctic. The main phase of the project was initiated in 2004 and is scheduled for completion in 2009. The following report presents an overview of the project and a summary of major results to date. A full project report will be prepared upon completion of the project.

Although the project is scheduled for formal completion in 2009, it is anticipated that the work will continue beyond this time as the relevant administrations adopt and begin the full implementation of the IEM plans. As part of the sustainability strategy of the project, a number of activities are already planned to continue beyond the project period.

The Russian Arctic constitutes approximately 40% of the circumpolar Arctic as defined by the Arctic Council Working Group on the Conservation of Arctic Flora and Fauna (CAFF). The vast ecosystems and landscapes of Arctic Russia are still relatively undisturbed compared to more southern areas of the Russian Federation and are among the last remaining wilderness areas of the globe - large enough to allow

ecological processes and wildlife populations to fluctuate and the biological diversity to evolve and adapt naturally. The Russian Arctic is furthermore well recognised as a major driver of global climate systems, atmospheric gas exchange, and ocean current systems. The contribution of the Russian Arctic to the stabilisation and proper functioning of these systems is, therefore, crucial.

Although the Russian Arctic is one of the least impacted areas on the globe by human activity, there are serious pressures threatening to disturb habitats, fragment ecosystems, and disrupt the ecological balance, especially in lowland tundra, forest tundra, and coastal and nearshore marine areas. The ultimate result may be irreversible habitat destruction and fragmentation that reduces the total area of Arctic wilderness from 75% today to less than 50% in 50 years.

To address the challenges facing this region, CAFF, UNEP/GRID-Arendal, and the Russian Federation initiated a Global Environment Facility (GEF) project in the Russian Arctic, ECORA: *An integrated ecosystem management approach to conserve biodiversity and minimize habitat fragmentation in three selected Model Areas of the Russian Arctic* (<http://www.grida.no/ecora>). The project will help to secure the integrity of some of the world's last remaining pristine areas and



support livelihoods of indigenous and local peoples.

The development objective of ECORA is the conservation and sustainable use of biodiversity in the Russian Arctic. The immediate objective of the project is the adoption and initial implementation of integrated ecosystem management (IEM) strategies and action plans in three Model Areas representing different ecosystems and anthropogenic pressures: Kolguev Island, Kolyma River Basin, and Beringovsky District. By building on national policies and priorities, ECORA is implementing activities to demonstrate how IEM can be used to achieve ecological, economic, and social goals for local and global benefits.



Yaroslav Nikitin

Major outcomes of the project include approved IEM strategies and action plans in the three Model Areas. Project activities are structured around four main interventions:

- Strengthening the enabling environment for IEM;
- Strengthening the knowledge base for planning, implementing, and evaluating IEM plans;
- Development of IEM plans and strategies in Model Areas; and
- Pilot projects to test IEM implementation strategies and action plans.

The project is scheduled for completion in 2009.

2. Environmental Impacts of Human Activities in the Russian Arctic

Environmental impacts from human activities are already evident in the Russian Arctic to one degree or another: habitat fragmentation and destruction by roads, off-road tracks, surface pipelines, mining activities, and logging; unsustainable reindeer herding and grazing, with up to 20% of the tundra zone severely affected and severe damage observed in the forest tundra zones; illegal hunting and fishing, and misuse of other natural resources; and local pollution connected with prospecting, extraction, processing and transportation of oil, gas, and mineral resources. Furthermore, the impacts of climate change are becoming of increasing importance to all areas of the Russian Arctic.

3. The Socio-economic Situation in Arctic Russia

The centralized management under the former Soviet system was often combined with a lack of expertise in nature management and partially dysfunctional institutions that resulted in uncertain futures for maintenance of important natural resources, biodiversity, and socio-cultural heritage. Initiatives related to indigenous peoples' rights and roles on sustainable use of natural resources were also few.

The societal transformations that the Russian Federation faced after the collapse of the Soviet Union involved demanding processes relating to the integration of environmental and socio-economic considerations into planning frameworks. National and global market demands have intensified pressures on natural resources and related infrastructure development. Powerful interest groups have the capacity to influence decision-making, whereby indigenous peoples' rights to land and resources as of legislation and regulations may be ignored. Local institutions are often weak, and enforcement of laws that should protect poor and marginalized local people is often lacking. It is often difficult for indigenous people to pursue their traditional use of land and natural resources for subsistence whilst there are few alternative income opportunities. As a result, poverty, disillusionment, and suffering have been rampant.

Political commitments towards poor and marginalized indigenous peoples are, however, reflected in the

Russian Federation government's current willingness and ability to delegate and support local stewardship and user rights via legislation and regulations.

4. ECORA and Integrated Ecosystem Management

Integrated ecosystem management for sustainable development is already endorsed by a number of international processes, e.g., the Johannesburg Plan of Action, the United Nations Millennium Declaration and the Millennium Development Goals, United Nations Development Programme's Human Development Report 2005, etc. They all recognize the important relationships between poverty reduction, natural resource management, and good governance. IEM is thus in harmony with the Convention on Biological Diversity's three stated objectives: 1) the conservation of biodiversity, 2) the sustainable use of its components, and 3) the fair and equitable sharing of benefits arising out of the use of genetic resources.

IEM is still a relatively new way of managing natural resources. By definition, it necessitates a fundamental shift away from traditional sectoral management toward one involving multiple stakeholders working together in an open and transparent environment. It also usually requires a significant amount of capacity building, both individual and institutional, to create the necessary enabling environment. A key element for success is a recognition and appreciation for the time, complexity, and effort needed to design and establish an IEM program.

There are a number of common elements shared by successful IEM programs. These include clear identification of issues, stakeholder involvement and public participation, community capacity, acknowledgement of and respect for cultural differences, open and effective communications, information sharing, and regular evaluations of progress.

It must be recognised, however, that although good results can be achieved, there are also important constraints and pitfalls. There is often reluctance in central government institutions to delegate power to local institutions. At the same time, deep scepticism can exist in local institutions towards national governments. Interest groups and stakeholders vary in capacity to influence power and decision-making. Many projects, which promote this synergy have been based on naïve assumptions, were over ambitious, or failed to become self-financing after the donor support ended. All of these considerations have been recognised by ECORA and an attempt has been made to address them in the project design.

Regardless of where it is implemented, integrated ecosystem management follows roughly the same steps¹:

- issue identification and assessment including assessing main ecological and socio-economic issues, identifying stakeholders and their interests, and defining goals for the IEM initiative;
- preparing an IEM plan including documenting baseline conditions, conducting public

1. Olsen, S.B, Lowry, K., and Tobey, J. 1999. A Manual for Assessing Progress in Coastal Management. Coastal Management Report #2211. Coastal Resources Center. University of Rhode Island, Narragansett, RI. 61 p.



ECORA's cooperation with indigenous peoples through their organizations

ECORA works closely with the Russian Association of Indigenous Peoples of the North (RAIPON), which was established in 1990 with the objective to unite the regional indigenous peoples' associations. RAIPON has considerable authority and influence with the Russian authorities as well as in the international arena. Although RAIPON does not have a vote in adopting legislation, it plays an active advisory role in the development of indigenous rights legislation. RAIPON also plays an educational role in the sphere of legal and ecological education which has helped to raise self-awareness among Russia's indigenous peoples. Through its bottom-up approach, ECORA works directly with local indigenous communities.

education, holding public consultations, creating individual and institutional capacity, and testing implementation strategies through pilot projects;

- formal adoption of an IEM plan including endorsement of policies and plans by relevant authorities, and obtaining funding to implement IEM plans;
- implementing the IEM plan including promoting compliance with program policies, strengthening legal, institutional, and administrative capacity, implementing mechanisms for inter-agency cooperation, sustaining stakeholder participation, and monitoring progress and ecosystem and societal trends;
- evaluation including assessing impact on management issues, adapting the program based on experience gained and changing environmental and social conditions, and conducting external evaluations.

local and indigenous peoples' and their institutions. The final selection of Model Areas was made based upon advice from ECORA international Expert Task Team (ETT), consultations with regional authorities and other stakeholders, and feasibility reports prepared in 2000 - 2001. Three Model Areas were eventually selected for the main phase of ECORA: Kolguev Island (Nenets Autonomous Okrug²), Lower Kolyma River Basin (Sahka Republic³/Yakutia), and Beringovsky District (Chukotka Autonomous Okrug⁴) (Figure 1).

5. Model Areas in ECORA

One of the principle aims of ECORA was to test the

implementation of IEM in a few selected areas which could then serve as models for replication elsewhere. During the planning phase for ECORA, twenty-three proposed Model Areas were identified according to criteria developed by Russian stakeholders. Selection criteria included importance to biodiversity, low level of habitat fragmentation, sufficient local capacity to implement the project, and solid support from

5.1 Kolguev Island Model Area

Kolguev Island is located 70 km offshore in the southeast shelf zone of the Barents Sea in the Nenets Autonomous Okrug (NAO), in the northeast of the European part of the Russian Federation. It is an island ecosystem with lowland tundra. It boasts the highest waterfowl density in the Barents region and a unique reindeer population (Kolguev Island reindeer). The total area of the island is 5200 km². The northern part of the island is 60-85 metres above the sea level, while the southern part is no higher than 4-6 metres above the sea level. The island is surrounded by sandbanks and the landscape is predominantly tundra covered with mosses and lichens. There are low bushes of dwarf birch and willow in some places, especially along the rivers and streams. About 300 vascular plant species have been found on the island. The fauna of Kolguev Island is represented by typical tundra species. The island is unique in terms of wetlands and for waterfowl breeding. Unlike most other Arctic islands, Kolguev has no lemmings or other small rodents. The island is characterized by high densities of breeding geese (white-fronted goose and bean goose). The low number of predators provides favourable conditions for the breeding of geese, and also for ptarmigans.

2. "Okrug" is an administrative unit of the Russian Federation.

3. "Republic" is an administrative unit of the Russian Federation.

4. "District" is an administrative unit of the Chukosky Autonomous Okrug.



Fig 1: ECORA's three Model Areas: Kolguev Island (Nenets Autonomous Okrug), Kolyma River Basin (Sakha Republic/Yakutia), and Beringovskiy District (Chukotka Autonomous Okrug)

Nenets Autonomous Okrug is one of the most sparsely populated regions of the Russian Federation. The resident population of Kolguev Island is approximately 450, the majority of which are Nenets (423 as of January 1, 2001). The main activities of the Nenets people are reindeer-breeding, hunting, and fishing. Oil fields cover approximately 10% of the island (500 km²).

Industrial and municipal solid and liquid wastes are discharged directly into the environment without treatment leaving the village and adjacent territory littered and polluted. The quality of drinking water in the village is very poor. Habitat fragmentation and pollution associated with oil development on the island threaten the waterfowl and reindeer populations. Only a very small fraction of the oil revenue is invested locally, and there are no legal agreements between the oil companies and local peoples on resource development, compensation for damage to traditional nature use and island wildlife, or conflict resolution. Taken together, these have a damaging effect on the overall socio-economic fabric of the island community.

Challenges addressed by ECORA on Kolguev Island include:

- Environmental damage and the fragmentation of natural ecosystems as a result of oil extraction. The loss of valuable wetlands and areas of mass nesting of waterfowl, including the species listed in the Russian Red Data Book and Nenets AO Red Data Book
- The loss of reindeer rangelands and traditional nature use by the indigenous population
- The problem of regulating relationships between indigenous population and oil companies
- The need to develop local businesses to help relieve pressure on reindeer grazing grounds
- The lack of clean water and waste management

5.2 Kolyma River Basin Model Area

The Kolyma River Basin Model Area is located in the northeast of Yakutia within the Kolyma lowland and is approximately 87,117 km² in size. The climate is extremely continental. It is a river basin ecosystem, featuring mountain and lowland tundra interspersed with forested river valleys and with a vegetation which is represented by Arctic and Sub-arctic tundra, tundra bogs, northern taiga light larch forests and intrazonal complexes of the valleys. The Kolyma River Basin is

Collaborative management as a tool for IEM

Although far from a panacea, collaborative management models (co-management, community-based natural resource management/CBNRM, etc.) represent viable alternatives in achieving sound environmental protection compared with past approaches. Collaborative management is typically characterised by close contact and dialogue between individuals and institutions, mutual learning, and voluntary participation. It includes participatory planning, conflict resolution, community-based management, local institution building, stakeholder analysis, incentives for sustainable use and equitable sharing of natural resources, etc. Experience exists throughout Western Europe, North America, and in several developing countries but this has rarely been transferred to the former Soviet Union and Eastern Bloc countries.

ECORA and the ecosystem approach

ECORA works with IEM at the nexus of poverty, governance, and environment and is recognizes the ecosystem approach which is endorsed by several international processes and institutions, including the United Nations Millennium Development Goals and the Convention on Biological Diversity (CBD). The ecosystem approach emphasizes the importance of participatory approaches in management of ecological networks, with the overall objective to provide benefits to local and indigenous communities, as well as enabling local communities to be more responsible for the sustainable management of their natural resources. The ecosystem approach seeks to safeguard viable ecosystems and their important components through appropriate and harmonized national legislation and regulations, and with political and institutional support. At the 7th Conference of the Parties (COP) to the CBD, in February 2004, the Parties adopted Decision VII/28, which suggests that Parties “create a highly participatory process, involving indigenous and local communities and relevant stakeholders, as part of site-based planning in accordance with the ecosystem approach, and use relevant ecological and socio-economic data required to develop effective planning processes” See: <http://www.cbd.int/decisions/cop7/?m=COP-07&id=7765&lg=0>

characterised by tundra and river valleys with high biodiversity, which include valuable freshwater fish species (mainly whitefish), the habitat and nesting grounds of numerous waterfowl, including rare and endangered species, and unique relic larch forests. Main migration routes of wild reindeer, calving grounds and summer grounds are located here. Protected areas cover 34% of the Model Area.

The population of the Model Area is 8,147 and is inhabited largely by Yakuts, Russians, and Ukrainians. The indigenous population is made up of Evenks, Evens, Chukchi, and Yukagirs. The living standard of the Model Area's indigenous peoples is directly related to reindeer-breeding and local crafts. The number of domestic reindeer in Yakutia has been reduced twice (from 361,600 in 1981 to 156,200 in 2001). In order to preserve the reindeer stocks, the slaughtering of animals has been stopped, and reindeer breeders are paid guaranteed salaries from the Republic's budget. Many reindeer breeders have quit herding and turned to hunting and fishing, but the reindeer stocks are nevertheless depleted. Catches of fish and fur animals have also dropped substantially. Products are not adequately processed and are sold at low prices primarily due to high transportation costs.

The provision of veterinary services and supplies for reindeer breeders and field workers has also been disrupted over recent years. There is relatively little industrial activity in the Kolyma River Basin Model Area and what development there is, is quite localized.

Some of the vital problems facing this region include the proper management of areas under traditional nature use, removal of wildlife, low waste processing, strategies for distribution and sale of products, logistical support for traditional crafts, reindeer breeding capacity of rangelands, management and protection against wolves of nomadic herds of cattle, training of specialists (e.g., reindeer breeders, hunters, managers, etc.), lack of schools, and education and study resources for children in areas of traditional nature use. Despite the fact that numerous legal acts have been adopted at the Federal level, the local population has not received relevant guarantees of their rights for hunting grounds and reindeer rangelands and is effectively prevented from taking part in natural resource management.

Threats to local habitats and biodiversity tend to be dispersed. They include wildlife poaching, local habitat destruction from gold-mining activities, and changed

river habitats due to hydropower development. Threats to the ecosystem include illegal logging of old-growth valley forests, wildlife poaching and mass slaughter of wild reindeer to supply meat to agricultural enterprises. Current hunting quotas are inaccurate because surveys and estimates of wild reindeer have not been updated due to the lack of funding. There is a need to develop and implement specialized training programmes for reindeer breeders.

Challenges addressed by ECORA in the Kolyma River Basin include:

- Improving the profitability of traditional nature use
- Improving traditional nature use and its associated economic activities
- Improving the status of bioresources and biodiversity conservation
- Minimizing habitat fragmentation
- Improving environmental education
- Improving administrative mechanisms for nature use

5.3. Beringovsky District Model Area

The Beringovsky District, an area of 37,900 km², is located in the Chukotka Autonomous Okrug (ChAO), in the north-eastern part of Russia. The Beringovsky District is a coastal ecosystem featuring tundra shelf and continental slope. The Model Area is in a forest-tundra geographical zone characterized by tundra species, a high diversity of flora, an ichthyofauna

with salmonids as the dominant species, and by a rich avifauna. There are many plant species listed in various Red Books. The area also contains breeding-grounds for marine mammals, and large bird colonies. Mammals include not only common species such as brown bear, moose and ermine, but also rare species (snow sheep, *Ovis nivicola*). The most important areas are the coastal tundra ecosystems where biodiversity values include a high diversity of flora, bird, mammal and fish species, many rare species listed in Red Books, rookeries and calving areas of marine mammals, and large bird colonies. There are three regional zakazniks (game reserves) within the Model Area. There are plans to establish a zapovednik (nature reserve) on the territory of Meinopylginskaya lake-river system, located on the Koryakski coast of the Bering Sea. The area is threatened by poaching and the unsustainable harvest of wildlife as a result of high levels of poverty in the region. Oil extraction poses an imminent threat to important marine habitats and traditional hunting grounds.

The population of the Beringovsky Model Area has sharply decreased from 8,600 in 1992 to 2,872 in 2000. Migration of the urban population is the main cause of this decrease. The indigenous population makes up 89% of rural population, (1,115 as of January, 2000), and they are Chukchee (1,107), Kereks (3), Chuvants (4) and Eskimo (1). The indigenous people work in the traditional economy of reindeer breeding, fishing, and hunting, including marine mammal hunting. All these activities are in crisis due to reforms in the economy (i.e., the change to a market economy). The traditional



handicraft of the Chukchi and Eskimo – dressing and scrimshawing - is of great artistic and commercial value and widely spread throughout eastern Chukotka. The living standard of the indigenous peoples has been extremely low. The nomadic mode of life of these peoples is closely related to insufficient medical care and lack of household and cultural services. The closing of reindeer breeding farms has led to increased unemployment. Many families have no regular income but live on fishing and hunting of sea animals. In the coastal settlements, traditional hunting of whales and pinnipeds help the indigenous population to survive.

Challenges addressed by ECORA in the Beringovsky District include:

- Co-management of biological resources that will create stable systems for traditional nature management
- Development of traditional economies and modes of life for the indigenous population under current conditions of industrial development
- Conservation of biodiversity and restoration of flora and fauna
- Conservation of ethnic and cultural heritage of the indigenous population
- Allowing indigenous people to be directly involved in the management and use of biological resources
- Increase of in environmental education for local populations
- Promotion of the use of traditional environmental knowledge of the indigenous population

6. Implementing ECORA: Activities and Achievements

6.1. Strengthening the Enabling Environment for Integrated Ecosystem Management (IEM)

The development and successful implementation of integrated ecosystem management requires a legislative, administrative, and institutional framework, and the associated human competence and capacity, capable of supporting it. With this aim in mind, activities were undertaken to:

- Enhance the regulatory, administrative, and institutional framework in the Model Areas;

- Enhance the capability and capacity of institutions and individuals to participate in IEM; and
- Enhance public awareness of biodiversity and other environmental issues, and integrated ecosystem management.

Activity 1: Analysis of the policy, legal, and regulatory frameworks for IEM in the Model Areas, including assessments of habitat protection mechanisms and species conservation activities and the requirements for establishing territories of traditional nature use.

Results:

- All relevant regional and federal legislation, policies, strategies, and practices relating to environmental protection and the status and rights of indigenous peoples in the Russian Arctic were examined. Overall, the legislation of the Russian Federation is believed to be sufficiently developed so that its proper application should allow for the successful implementation of IEM.
- The basic difference between legislation of the Russian Federation and that of other Arctic countries is the absence of the concept of special land rights for aboriginal peoples in Russia, especially where indigenous peoples are concerned. This makes it difficult to directly carry over the experience of Western countries to Russia. Instead, it demands an elaboration of its own approaches to better meet the ideals of IEM.
- Although there is a federal law regarding the creation of territories of traditional nature use, it lacks a regulatory framework. The analysis, however, also showed that it is possible to develop such areas using other legislation of the Russian Federation.

Status:

- Sakha Republic/Yakutia has passed a law regarding the creation of territories of traditional nature use and intends to create such territories in the Kolyma River Basin Model Area, in the Nizhnekolymskiy ulus or district.
- ECORA has contributed to legislation being developed by the Russian Duma aimed at improving the implementation of rights to land and biological resources for indigenous people



and local people who have been living in the same territory since ancient times. The draft legislation requires one more hearing before being passed into law.

Activity 2: Environmental policy and management for administrative personnel and decision-makers in the Model Areas.

Results:

Training programs were delivered to local administrative staff and decision-makers in each Model Area. The programs focused on:

- Environmental legislation, including a review of Russian legislation, and international laws and conventions;
- Economic and financial mechanisms, including environmental impacts of economic activities, sustainable development, and environmental costs and risks; and
- Environmental management, including natural resource management, and environmental protection in Russia and abroad; and
- Creating markets based on environmental goods and services.
- The accompanying course manual includes all changes in federal legislation relating to natural resources and environmental protection, and is based on the analyses conducted in ECORA.

Status:

In Sakha Republic/Yakutia, additional training sessions have been organized at the request of local and regional authorities with participation of neighboring Arctic *uluses*. Training for conservation officers and local administrative staff has been arranged the

Srednekolymsky *ulus* with participation from Nizhne-, Sredne- and Verkhnekolymsky *ulus*.

Activity 3: Training to restore and support traditional nature use and management, including the development of small-scale economic activities that can support biodiversity conservation.

Results:

- To address the inefficient use of the products of reindeer husbandry on Kolguev Island, training courses were held for local people on smoking and drying reindeer meat, and the processing of reindeer skins. Special equipment for smoking and drying meat was brought to the island and left with the community after completion of the training sessions.
- Training in the Kolyma River Basin Model Area focused on assisting reindeer brigades to assess and accurately report on the condition of their herds to the regional Ministry of Agriculture. Accurate monitoring and reporting is vital as the ministry bases the subsidies and equipment it provides to the herders on this information.
- To improve the physical condition of reindeer, ECORA purchased and provided training in the use of the veterinary device “ZooDENS” in Kolyma. ZooDENS are portable devices for treating a wide variety of medical conditions associated with nervous, endocrine, cardiovascular, urinary, and other systems.
- A program on the economic and legal challenges of organizing and operating a small-scaled business was developed in the Kolyma River Basin Model Area. A series of workshops were held in the settlements of the Model Area.
- In Beringovsky, intensive training sessions were held on the renewal of seal hunting skills, butchering of whale and walrus meat, preparation and preservation of meat from marine mammals, uses of traditional food and herbs, and the manufacturing of traditional Chukchi watercraft (baydar canoes) and their adaptations for marine mammal hunting. Additional training was given on the renewal of skills for creating traditional fur clothes and footwear, and the production of souvenirs.

Characteristics	Kolguev Island Model Area	Kolyma River Basin Model Area	Beringovsky District Model Area
Ecosystem features	Island ecosystem; lowland tundra	River basin ecosystem; mountain and lowland tundra interspersed with forested river valleys	Coastal ecosystem; tundra shelf and continental slope
Nature protected areas (ha, %)	0	2,961,996 ha (34%)	918,000 ha (24%)
Major biodiversity values	<ul style="list-style-type: none"> Highest waterfowl density in the Barents region (geese, willow ptarmigan, tundra swan, ducks, divers) Kolguev Island reindeer Marine mammals 	<ul style="list-style-type: none"> Undisturbed wilderness High diversity of valuable freshwater fish species (mainly whitefish) Habitat and nesting ground of numerous waterfowl, including rare and endangered species Unique relic larch forests 	<ul style="list-style-type: none"> High diversity of flora, bird, mammal and fish species Largely undisturbed wilderness Many rare and Red Book species. Rookeries and calving areas of marine mammals Large bird colonies.
Population number	450	8,147	2, 872
Population density	0.09 person per km ²	0.09 person per km ²	0.08 person per km ²
Indigenous population	423 (Nenets)	1,166 (Evens, Chukchi, Yukagirs, Evenks)	1,115 (Chukchi, Kereks, Chuvants, Inuit)
Life expectancy	53 years for men and 68 for women	Not available	54 years for men and 68 for women
Unemployment rate	25%	3 %	5 % ⁵
Basic economic activities	<ul style="list-style-type: none"> Traditional reindeer breeding Subsistence hunting of waterfowl and marine mammals and fishing Oil extraction 	<ul style="list-style-type: none"> Traditional reindeer breeding Freshwater fishing Small-scale fish farming Subsistence hunting Small-scale mining 	<ul style="list-style-type: none"> Traditional reindeer breeding Fisheries and marine mammal hunting Subsistence hunting and poaching
Major environmental threats and related risks	<ul style="list-style-type: none"> Habitat fragmentation and pollution associated with oil development Demise of unique reindeer (Kolguev Island reindeer) 	<ul style="list-style-type: none"> Logging of old-growth forests Upstream hydroelectric power development Uncontrolled hunting of wild reindeer Habitat destruction related to mining 	<ul style="list-style-type: none"> Potential destruction and pollution of important marine habitats and traditional hunting grounds associated with planned oil development Poaching and egg collecting

5. This is the official figure; it is suggested that it is much higher.



Status:

- Further training sessions will be held on Kolguev Island in the summer of 2009 to help continue the development of reindeer products for local use and export to markets off the island.
- The success of the ZooDENS program in Kolyma resulted in the purchase of more devices for use in all communities, the local college, and the Agricultural Department in the Model Area. There is now a proposal to provide the reindeer herders of Kolguev Island with a similar program.
- Further training sessions will be held in the Beringovsky Model Area in the summer of 2009 for the continued restoration of traditional nature use and the development of marine mammal products for local use.
- Training sessions on small-scale economic activities will be held in the Beringovsky Model Area in 2009 and will incorporate experiences from the Kolyma training.

*Activity 4: Training of conservation officers**Results:*

- The distance of most communities in the Model Areas from regional and national administrative centres makes it prohibitively expensive to train conservation officers in newly emerging fields of sustainable use and IEM. Through ECORA, training was provided locally to conservation officers on the principles of IEM, establishing community monitoring programs, relevant conservation legislation, and codes of conduct.
- The training manual developed for this course provided the legal basis of regulations for environmental protection and the conservation of biological resources, as well as detailing the penalties for violations.

Status:

- The course training manual has been adopted as a guidebook by conservation officers in the Model Areas.
- The training manual has also been used for programs beyond the immediate ECORA Model

Areas. Training for conservation officers and local administrative staff has been arranged by ECORA in Srednekolymsky ulus with the participation of three other uluses: Nizhne-, Sredne- and Verkhnekolymsky.

*Activity 5: Environmental education for schools**Results:*

- Three textbooks on environmental education have been produced for the primary (8-10 year olds), secondary (12-14 year olds), and college levels (16-17 year olds). The primary school text provides a description of the tundra and seas, biodiversity, the influence of human activities, etc., and is illustrated with children's drawings. The secondary school text focuses on ecosystem characteristics, ecological processes, climate change, etc., as well as a simplified description of the activities in the ECORA project. The college version provides a broader view of the Arctic and includes descriptions of major environmental issues affecting the Arctic (e.g., climate change, pollution, fires, etc.), as well as information about international environmental agreements.
- The environmental programs have been incorporated in the study programmes for many schools in the Model Areas.

Status:

- Based on the success of the first printing, the Educational Department of the Nenets Administration is financing the printing of additional textbooks for schools.
- The Taimyr UNDP/GEF project "Conservation and Sustainable Use of Biological Diversity in Russia's Taimyr Peninsula: Maintaining Connectivity Across the Landscape" is interested in cooperation on this activity. ECORA's Education Task Manager has visited Taimyr to evaluate the application of the program in this region.

6.2. Strengthening the Knowledge Base for IEM

A key component of IEM is developing a solid information base of the environmental and social conditions existing in a given region. Along with



providing the basis for planning and implementing IEM, it also helps identify indicators for monitoring and evaluating biodiversity.

Activity 1: Thematic maps and analyses for IEM planning

Results:

- A series of thematic maps was produced for each Model Area identifying features such as habitat types and land use (Figure 2). The maps will also assist in the identification of areas requiring special conservation and protection measures, and indicate areas where future research may be required (Appendix 1).
- Some maps (e.g., the value of bioresources, reindeer rangeland grazing capacity, important fishing areas) can be used directly for planning traditional economic activities (e.g., hunting, fishing, reindeer herding) and for assessing the damage from industrial development.
- Additionally, electronic atlases were created of the fish, birds, and medicinal plants of the Kolyma River Basin Model Area. The atlases include features such as species descriptions with photos, species range maps, and bird calls

Status:

All maps have been completed and are currently being used to help guide the planning and implementation process for IEM in each Model Areas.

Activity 2: Assessment of key indicator species

Activity 2.1 Assessment of waterfowl on Kolguev Island

Results:

- Waterfowl are a very important traditional nature resource for the indigenous people of Kolguev Island. The island itself is of significant ecological importance for waterfowl. At least 335,000 pairs of geese have been found to nest on Kolguev Island. White-fronted goose (*Anser albifrons*) and bean goose (*Anser fabalis*) populations have been preliminarily estimated at 150,000-250,000 pairs and 60,000-70,000 pairs, respectively, accounting for almost 30% of the total European population. Barnacle geese (*Branta leucopsis*) have increased from 5,000 to 50,000 pairs over the past ten years, approximately 42% of the total number in Russia (estimated at 400,000 birds). The breeding density of the white-fronted goose is approximately 40 nests/km², approximately 10-20 times higher than elsewhere in the world.
- Hunting has the greatest impact on the goose populations of Kolguev Island. Geese are hunted by local residents in the spring and autumn and by hunters from the mainland in the spring. Studies show that a total of 8,000 geese are harvested annually in the spring hunt, an average of 30 geese per hunter.
- In contrast to hunting, reindeer herding has been found to have a strong but localized effect on goose breeding success, while the oil industry appears not have a significant effect on the goose populations.
- In addition to hunting, the local population collects as many as 2,000 eggs during the breeding season – 45% from barnacle geese, 25% from gulls (lesser black-backed gull, *Larus fuscus*, and glaucous gull, *Larus hyperboreus*), 25% from bean goose, and 5% from white-fronted goose.
- Researchers believe that the pressures placed on these populations from hunting and egg collecting requires tighter enforcement of hunting laws to protect the goose populations of the island.
- Additional studies were conducted on Kolguev Island on the interactions between waterfowl, willow grouse, and Arctic fox. The population density of willow grouse is 94-212 birds per km², the second highest in the world after Newfoundland. The strongest competition is seen

between the three goose species of the island. Neither Arctic fox nor reindeer are believed to be critical factors in the fluctuating numbers of geese and grouse on Kolguev Island.

- The most important areas for waterfowl conservation have been identified through field studies. This information has been used to develop a scheme for zoning the island to provide a basis for organizing a Specially Protected Nature Area with a view to conserving the major breeding goose populations .



Status:

A final report is in preparation and will include information on: the distribution of geese on the island; long-term trends in barnacle goose populations; characteristics of migratory routes of Kolguev with the list of areas of major importance for the maintenance of goose populations; influence of anthropogenic and natural factors on the total breeding success of geese; recommendations for long-term monitoring and use of populations of geese and other waterfowl; results of three-year population density and breeding success studies of geese; characteristics of populations of rare (threatened) species of birds, including an estimate of birds of prey and their effects on goose populations.

Activity 2.2: Waterfowl Harvest Surveys (Kolyma River Basin)

Results:

- The Kolyma River Basin Model Area is an important area for breeding waterfowl and waterfowl hunting is an important traditional activity for the people of this Model Area. Spring hunting is the most popular with 92-97% of all hunters taking part versus 38-69% participation in the autumn hunt. Geese and dabbling ducks are the most important species hunted.
- Favourable environmental conditions in the hunting grounds around the villages contribute to the hunting success for waterfowl. The average number of geese/ducks hunted per person differs among the villages in the model area: Chersky 2.9/39.4; Khalarchinsky ulus 4.8/56.3; and Olerinsky ulus 6.7/41.1.
- Loons are not popular with hunters in the Kolyma basin and most loons that are harvested have been trapped in fishing nets. Hunter surveys found that in 2006, an average of 1.8 loons was taken per hunter with a total of 714 birds harvested in the Nizhnekolymsky region. In a sample of 97 harvested loons, 39.1% of them were Arctic loons (*Gavia arctica*), 30.9% were Pacific loons (*Gavia pacifica*), and 30.0% were red-throated loons (*Gavia stellata*).
- The share of eider ducks in the harvest of the Nizhnekolymsky region is not large, comprising only 3.1% of the duck harvest in the village of Andriushkino, 3.1% in Chersky, 10.3% in Kolymskoye, and 15.7% in Pokhodsk. The average harvest of eiders varies from 0.6 to 4.6 ducks per hunter a year. The harvest is made up of 53.1% Steller's eider (*Somateria stelleri*), 30.5% king eider (*Somateria spectabilis*), and 16.4% spectacled eider (*Somateria fisheri*).
- Because harvesting wildfowl eggs is illegal in the Russian Federation, it is difficult to get reliable information about the scale of this activity, even through anonymous questionnaires. According to unofficial conversations with local elders who know the lower Kolyma harvest well, egg harvesting in the Nizhnekolymsky Region is occasional and not on a large scale. Eggs are usually collected by youth near their family summer fishing and reindeer herding camps in the southern part of the region. It is estimated that not more than 700 eggs per season are harvested within the Model Area. Eggs of greater scaup (*Aythya marila*), tufted duck (*Aythya fuligula*), white-winged scoter

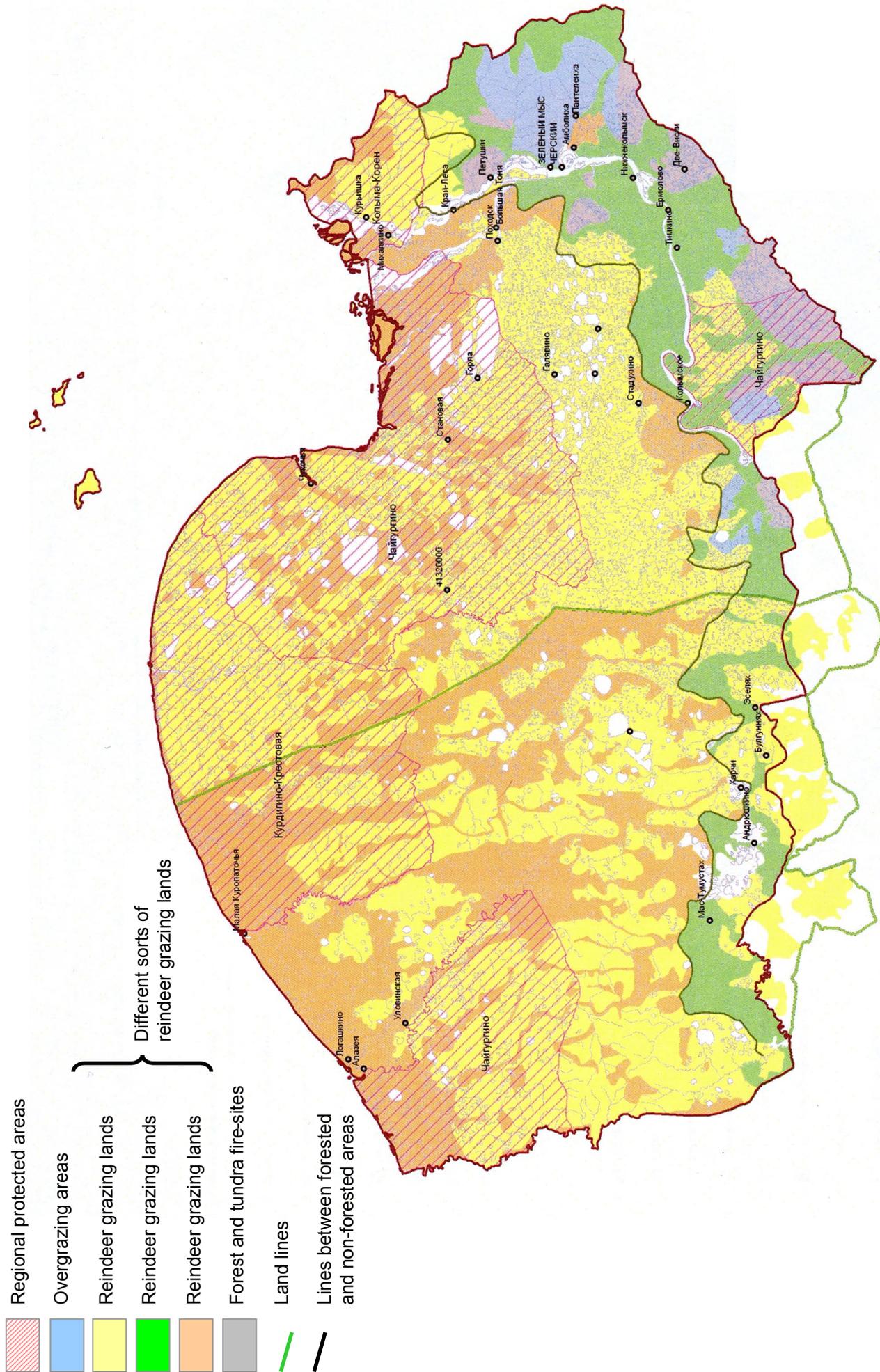


Fig 2: Map of protected areas in the Kolyma River Basin Model Area.

(*Melanitta deglandi*), and herring gull (*Larus argentatus*) dominate the harvest.

Status:

The results from this activity are being used to develop a waterfowl harvest regime for the Kolyma River Basin Model Area, as well as recommendations for the protection of key resting and breeding areas for waterfowl (see Section 6.4, Activity 2).

Activity 2.3: Reindeer (Kolguev Island)

Results:

- Kolguev Island reindeer are a unique breed of reindeer that are important to the local economy. The quality of the reindeer meat from Kolguev Island is very high and is considered superior to that from other areas in the Nenets Autonomous Okrug. There are currently about 8,500 reindeer on Kolguev Island, somewhat exceeding the capacity of the rangeland.
- Between 2006-2008, a detailed analysis was conducted of reindeer husbandry on Kolguev Island that included:
 - capacity and use of reindeer rangeland;
 - physiological, morphological, genetic, and
 - veterinary investigations of reindeer;
 - quality of harvested meat and skins; and
 - economics of reindeer husbandry.
- The main challenges are a shortage of qualified personnel (herders, veterinarians, and managers) for modern reindeer husbandry, changes in climate requiring later butchering times when

the quality of meat is lower (a lack of sufficient freezers requires the use of natural freezers), and high transportation costs to ship reindeer products to market.

- Recommendations regarding organizational, financial, and veterinary aspects of reindeer husbandry on Kolguev were developed and relate to the primary processing of meat, exporting of meat, and processing of the skins on the island for additional local employment and income.

Status:

The detailed analyses have been completed and recommendations for improvement have been made. Training sessions on the processing of meat and skins will be continued in 2009.

Activity 2.4 Reindeer (Kolyma River Basin)

Results:

- Reindeer are very important for the local economy, with both wild and domestic reindeer providing sources of meat. Domestic reindeer husbandry represents an important cultural and social element in the lives of the local indigenous population.
- A detailed analysis of domestic reindeer husbandry was conducted in all villages of the Nizhnekolymsky ulus. Special attention was paid to the social and economic conditions of husbandry and use of pastures for reindeer and horse herding. A complete list of recommendations has been developed.
- An analysis of wild reindeer in Nizhnekolymsky



ulus shows that the number of animals has remained stable at about 30,000 since the 1980s. The number of domestic reindeer has seriously decreased in this same period thus sharply reducing the competition between the wild and domesticated stocks.

Status:

This activity has been completed. ZooDENS veterinary devices have been delivered to all herd and communities and the necessary training has been conducted (see Section 6.1, Activity 3).

Activity 2.5: Whitefish (Kolyma River Basin)

Results:

- Fishing is very important to the local economy

with whitefish being of particular significance. The main commercial species of fish in the Nizhnekolymsky region are broad whitefish (*Coregonus nasus*), Arctic cisco (*Coregonus autumnalis*), whitefish (*Coregonus muksun*), and European cisco (*Coregonus albula*).

- Another species of whitefish, the nelma (*Stenodus leucichthys*), is protected but is regularly harvested as by-catch. The average proportion of the two species (broad whitefish and nelma) during the commercial fishing season is 11:1 and with a total of 2 tonnes of nelma annually. The development of realistic recommendations to protect nelma from by-catch has proved problematic because of the similarity in environmental conditions of both species.



Figure 3. Proposed zoning scheme for Kolguev Island to protect goose populations. Areas 1,2 and 3 are proposed regional Nature Protected Areas with a special conservation regime and where regulated economic activities include traditional nature use. Areas "ТПП" are proposed traditional nature use zones. The shaded areas identifies the area used by the oil companies.

- There has been a rapid increase in the Siberian salmon population as a result of the release of millions of hatchlings in the Kolyma region in 1999-2005. As the mature individuals return to spawn, local fishermen regard the Siberian salmon as a competitor to whitefish.
- Scientists believe that the populations of other fish species are also gradually decreasing but this view is not shared by fishermen who continue to request higher quotas. Fishing is the only occupation available to many people living in this area.

Status:

Field work on fish resources has been completed and recommendations for conservation and management will be prepared in 2009.

Activity 2.6: Marine mammals (Beringovsky)

Results:

- The Beringovsky District has a very high diversity of marine mammals. They are important to the maintenance of traditional lifestyles but also vulnerable to offshore oil and gas development. Twenty-one species of marine mammals live in the waters adjacent to the Beringovsky Model Area, including 13 cetacean species.
- Species observed in the Beringovsky Model Area include Polar Bear (*Ursus maritimus*), Sea

Otter (*Enhydra lutris*), Eared Seal (*Eumetopias jubatus*), Pacific Walrus (*Odobenus rosmarus divergens*), Gray Seal (*Phoca barbatus*), Ringed Seal (*Pusa hispida*), Ribbon Seal (*Histiophoca fasciata*), Bearded Seal (*Erignathus barbatus*), Harbour Porpoise (*Phocoena phocoena vomerina*), Killer Whale (*Orcinus orca*), White Whale (*Delphinapterus leucas*), Baird's Beaked Whale (*Berardius bairdi*), Sperm Whale (*Physeter catodon*), Greenland Right Whale (*Balaena mysticetus*), Gray Whale (*Eschrichtius robustus*), North Atlantic Right Whale (*Eubalaena glacialis*), Humpback Whale (*Megaptera novaeangliae*), Blue Whale (*Balaenoptera musculus*), Fin Whale (*Balaenoptera physalis*), Fish or Sei Whale (*Balaenoptera borealis*), and Little Piked or Minke Whale (*Balaenoptera acutirostrata*).

- Potential threats to marine mammals in southern Chukotka are oil and gas development on the continental shelf, lack of coastal protected areas, uncontrolled development of ecotourism, poaching, and loss of species and habitats from trawling and overharvesting.
- The marine mammal observations support the development of training in traditional marine hunting practices and community monitoring (See Education and Training - Section 6.1, Activity 3, and Community-based Monitoring - Section 6.2, Activity 3).





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Status:

Next steps include:

- Development of community monitoring of marine mammals.
- Collecting information for the creation of a special educational picture album (hard copy and electronic versions).
- Continuing development of training in traditional marine mammal hunting.

Activity 2.7: Threatened bird populations (Beringovsky)

Results:

- A total of 21 species inhabiting or visiting the Beringovsky Model Area are included in the IUCN Red List, the Red Data Book of Russia, and the Red Data Book of Chukotka Autonomous Okrug: White-billed diver (*Gavia adamsii*), Steller's albatross (*Diomedea albatrus*), Brent goose (*Branta bernicla nigricans*), Lesser white-fronted goose (*Anser erythropus*), Emperor goose (*Philacte canagica*), Bewick's swan (*Cygnus bewickii*), Whistling swan (*Cygnus columbianus*), Baikal teal (*Anas formosa*), Osprey (*Pandion heliaetus*), White-tailed eagle (*Haliaeetus albicilla*), Steller's sea eagle (*Haliaeetus pelagicus*), Golden eagle (*Aquila chrysaetos*), Gyrfalcon (*Falco rusticolis*), Peregrine falcon (*Falco peregrinus*), Spoon-billed sandpiper

(*Eurynorhynchus pygmaeus*), Far-eastern curlew (*Numenius madagascariensis*), Red-legged kittiwake (*Rissa brevirostris*), Ivory gull (*Pagophila eburnea*), Aleutian tern (*Sterna aleutica*), Marbled murrelet (*Brachyramphus marmoratus*), Kittlits's murrelet (*Brachyramphus brevirostris*).

- 2006-2008 surveys show a sharp decline in Spoon-billed sandpiper breeding populations at all of the three main known remaining breeding sites, two of which are in the Beringovsky Model Area. Particularly low breeding success has been detected in the Meinypilgyno region. Most recent population estimates indicate that there are only 200-300 breeding pairs remaining.
- In 2008, the status of the Spoon-billed sandpiper was upgraded to critically endangered by the IUCN. The decision was based in part on recommendations made by the ECORA project, as well as by other agencies involved in conservation of the species. The role of ECORA was acknowledged in the International Action Plan drafted for the Convention on Migratory Species by Birdlife International and launched at the CMS meeting in December 2008.
- Data collected in this activity have been included in the Red Data Book of Chukotka Autonomous Okrug, published in 2008 by the Chukotka Administration.

Status:

Data from this activity will be used to identify clusters for establishing Beringia National Park (see Section 6.4, Activity 4).

Activity 2.8: Seabirds (Beringovsky)

Results:

- The huge numbers of sea birds nesting in the Beringovsky Model Area play a key role in the local marine environment. The seabird population is currently estimated to be over 1.2 million birds in this area. Although illegal, the collection of seabird eggs is a source of food for local indigenous people.
- Seabird colonies were investigated by photographic survey, the results of which now form the baseline for future monitoring as



population numbers have been registered in a digital photo data bank. Several new monitoring plots have been established and will be included in the community monitoring program (see Section 6.2, Activity 3). Some of the colonies were only monitored for one season due to poor weather conditions and lack of suitable transportation.

- Low number of breeding birds of Beringovsky populations of Guillemots and Kittiwakes and low breeding success was observed for the past three years, the reasons for which are presently unclear.
- Pelagic surveys (about 500 miles at sea) continued with the objective of clarifying the distribution of non-breeding birds in the Bering Sea coastal waters.

Status:

- The estimated size of seabird populations will be calculated and presented in a report in 2009, the first time that such numbers have been determined for this area.
- The data from this activity will help identify protected area clusters as part of establishing Beringia National Park (see Section 6.4, Activity 4).

Activity 3: Community monitoring

Results:

- A long-term community-based monitoring program was developed focusing on selected key biodiversity components in the Model Areas. The monitoring program will help provide information relating to the status and trends of species, habitat fragmentation, and climate change.
- Twelve questionnaires were developed covering the main biodiversity components, including birds, mammals, and plants; phenology, especially in relation to climate change, reindeer husbandry practices; other traditional wildlife use practices, including consumption of traditional food; and environmental disasters, pollution, and records of illegal use of resources. Observers were identified in Model Area communities and trained to conduct the community monitoring work.
- Data collected by community observers included observations on encounters with polar bears and brown bears around villages, sightings of bird and mammal carcasses, lemming numbers in different seasons, environmental pollutants, mass migration of cranes, harvesting of biological resources, wild foods collected by families, and reindeer herds.
- In Beringovsky, observations by community monitoring observers helped to locate important November concentrations of Ross's Gulls (*Rhodostethia rosea*) and Ivory Gulls (*Pagophila eburnea*). It is hoped that areas important to these species will be included in the Beringia National Park.

Status:

- Community monitoring programs have been established in all three Model Areas and work will continue in 2009.
- Community monitoring data collected by the Sakha Republic/Yakutia Ministry of Nature Protection will be used as baseline information for identifying harvest limits for waterfowl hunting.
- The community-based monitoring programs are enabling the Model Areas to participate actively in international projects and programmes, especially in the Barents region and the Bering Sea.

6.3. Development of IEM Strategies and Action Plans

An IEM strategy and action plan will be developed for each Model Area. Each plan will contain overall ecosystem conservation and management objectives, targeted actions to meet the objectives, necessary agreements amongst stakeholders, and an implementation and monitoring/evaluation plan.

Results:

- Final IEM plans for each Model Area will build upon information collected under project activities, information from other relevant research and studies, and input from stakeholder consultations. Each IEM plan will include information on:
 - The principal ecological systems and the overall environmental status in the Model Area;
 - The principal social, economic, and institutional issues in the Model Area and their implications for the IEM plan;
 - Local concerns and development priorities;
 - The current use, constraints, and opportunities of ecosystem services obtained from ecosystems

and natural resources;

- Legislation and regulations that support IEM plans, major stakeholders, and their interests;
- How local communities and other stakeholders will be involved in the planning and implementation process;
- The current institutional capacity for implementing IEM plans, and any plans for improvement; and
- Mechanisms for interagency coordination.
- Each IEM strategy and action plan will describe priorities for actions and will also contain plans for financial sustainability, monitoring and evaluating, conflict resolution approaches, and public participation and consultation.

Status:

Draft IEM strategy and action plans have been developed and are in various stages of approval with the relevant administrative bodies of the Model Areas.

6.4 Pilot Projects

The purpose of conducting pilot projects is two-fold. First, it provides an opportunity to test the strategies for implementing IEM plans and modify them accordingly. Secondly, it allows stakeholders to see some early results from the IEM. This, in turn, helps build support for their continued participation in the implementation of IEM.

An attempt was made to select pilot projects that would:

- Be of a short duration so that the demonstration activities can deliver early results and build confidence amongst stakeholders;
- Produce tangible and measurable results;



- Involve diverse groups to test management techniques that require collaboration between different groups;
- Model desired behaviours for resource use and management;
- Provide positive publicity for the program.

Activity 1: Clean water and waste management on Kolguev Island

Rationale:

In a socio-economic study undertaken in ECORA, the community of Bugrino on Kolguev Island identified waste disposal and lack of a clean drinking water supply as the two most urgent problems facing the island. It is strongly believed that to make any significant environmental gains and promote socio-economic development on the island, these two issues must be addressed. In the short-term, reindeer herding and husbandry are the only important sources to boost income and restore the social fabric on the island.

Currently, there is virtually no removal of municipal and industrial waste in the community. As a result, the entire coastline near the settlement is covered with refuse. An associated problem is the long-term storage of spent diesel fuel in barrels along the coast. Additionally, up to 1,500 reindeer are annually slaughtered in Bugrino, and a large number of the unused skins are often disposed of in the sea.

With respect to drinking water, Bugrino has no centralized water supply system. Water quality is poor by national standards. People draw their water from a reservoir (an earthen dam) which accumulates surface run-off. In winter, water is either obtained directly from the reservoir or melted from snow. There are no nearby alternative sources of drinking water.

A program for improving drinking water supply has been developed and is being implemented in the Nenets Autonomous Okrug. While the program envisions measures to deal with the water supply of Bugrino, its implementation has encountered difficulty because of the island's remote location and large transportation costs. This program relies on underground waters as the main source of municipal water supply. As field surveys have been unable to locate adequate underground sources, the current plan is to treat surface water.

The overall objective of this project is to develop a set of integrated and sustainable solutions to clean drinking water supply and distribution, solid and liquid waste treatment, and sustainable energy generation and its efficient distribution. It is intended that these actions be complementary with the development of sustainable reindeer herding and reindeer meat processing based on recommendations made in the ECORA project. Ultimately, the aim is to prepare actions and projects that will assist in the removal of areas from the NEFCO/AMAP list of Barents environmental hot spots related to sewage discharge and solid waste causing local and marine pollution in the Russian Euro-Arctic region. This pilot project is supported by the Nordic Environment Finance Corporation (NEFCO).

The pilot project will:

- Develop a set of recommendations for integrated sustainable solutions for drinking water and wastewater, solid waste, and energy;
- Identify information gaps, making specific recommendations for collecting missing data;
- Analyze administrative, legal, and financial constraints for further investments;
- Conduct field studies to examine recommended sites for water and wastewater, solid waste, and energy management facilities;
- Develop a detailed proposal for an integrated sustainable solution for drinking water, waste management, and the supply, distribution and final use of energy for Kolguev Island.

Results:

The terms of reference for the technical work and documentation have been completed, and personnel have been identified to complete the work.

Status:

Implementation of this pilot project will continue through 2009.

Activity 2: Waterfowl harvest regime in the Kolyma River Basin

Rationale:

Natural systems along the lower Kolyma River are still



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relatively unaffected by industrial development but pressures are increasing. Good biodiversity data are, therefore, needed including on the abundance and population status of birds, and in particular on game birds and rare species which have their migration and wintering areas in sixteen different countries. The monitoring of wildfowl resources and their use has not been consistent over the last decade. The research under ECORA has resulted in good data, including bird population counts, bird migration studies, and the distribution and population biology of game bird species. Research has also addressed the importance of different species for the local population. This information is now being used to develop a waterfowl management plan.

The objective of this pilot project is to acquire reliable scientific data to support the maintenance of healthy game bird populations and the sustainable use of game bird resources, in particular for traditional use. It help support the protection of traditional harvest regimes and lifestyles of the indigenous peoples of the North, contribute data prior to the implementation of planned major construction projects (e.g., gold mining and development of the Chersky-Bilibino road), and contribute data to addressing health and ecological problems associated with avian flu and other diseases.

The pilot project will:

- Develop a plan of implementation for a bird harvest demonstration project;
- Continue field research on the abundance and biology of game birds with participation from the local population;
- Estimate game bird resources;
- Form a group for public monitoring of bird populations, including staff of local administrations and hunters;

- Prepare and distribute an electronic bird atlas of the region; and
- Develop recommendations for monitoring and the sustainable use of game bird resources.

Results:

- Aerial surveys have been conducted to estimate status of game birds.
- A waterfowl harvest monitoring system has been developed and tested.
- Study areas for long-term observations of breeding waterfowl abundance in the taiga, forest tundra, and tundra zones of the Kolyma River Basin Model Area have been selected and survey routes on lakes and channels have been laid out in these areas.
- A survey of broods and adult individuals of sixteen species, including the rare Baikal teal (*Anas formosa*), has been conducted with the use of canoes. Vegetation, water depths, fauna, and other ecological parameters necessary for monitoring have been described and coordinates for the observation sites have been obtained.
- New key breeding sites of rare species (the eagle owl (*Bubo bubo*) and white-tailed eagle (*Haliaeetus albicilla*) have been found.
- An express-questionnaire has been prepared for community monitoring of bird resources, which includes questions regarding hunting success, breeding birds, changing abundance of important game birds, and perceptions of impacts from climate warming. Information was received about composition of bird harvests, bird breeding periods, bird abundance and their population dynamics, and observations of weather peculiarities and possible consequences of climate warming.
- Game bird resources of the Model Area are estimated at 955,000 individuals, which allows for a harvest of about 286,000 birds annually. Dabbling ducks (*Anas spp.*) and ptarmigans are under-utilized whilst the harvests of geese, long-tailed ducks (*Clangula hiemalis*), and white-winged scoters (*Melanitta deglandi*) are at the limits of what their reproductive capacity can sustain. It has been recommended that



hunting quotas be reallocated to allow for more sustainable harvests

Status:

Implementation of this pilot project will continue through 2009. Scientific and methodical recommendations on monitoring and sustainable use of bird resources will eventually be presented to the authorities of the Sakha Republic/Yakutia to help the sustainability of local people's traditional harvests.

Activity 3: Sustainable reindeer breeding in the Kolyma River Basin

Rationale:

Reindeer husbandry is one of the most important economic activities in the Kolyma River Basin Model Area. Domestic reindeer are crucial for the support of local people's nomadic lifestyles providing them with housing materials, clothes, utensils, food, and transportation. Reindeer husbandry is also essential for culture, social relations, and spiritual life.

Several years ago, a moratorium on domestic reindeer use and a protection of herds had serious consequences. Lack of economic incentives led to wage cuts, declining living standards, and deterioration of equipment and infrastructure. The reindeer population increased in some communities, which in turn led to rangeland deterioration and increased wolf predation. However, lack of access to meat and other products from domestic reindeer also triggered extensive hunting of wild reindeer, with a subsequent drastic decrease of that population.

The development and implementation of a pilot project relating to sustainable reindeer breeding was, therefore, welcomed by the communities, the local administration, and authorities of the Sakha Republic/Yakutia. Major efforts are now being made to restore the domestic reindeer population, improve the living and working conditions of reindeer breeders, and

introduce new technologies which may secure the sustainable development of reindeer husbandry, not only in the Model Area, but also in other regions of the Russian North.

The objectives of this pilot project are to:

- develop recommendations for the sustainable use and long term conservation of reindeer rangelands;
- introduce new, innovative methods for reindeer management;
- secure sustainable reindeer husbandry;
- secure employment opportunities, and provide social and economic security for those involved in reindeer enterprises; and
- develop proper management models in cooperation with relevant Russian and international expertise.

The pilot project will:

- Study reindeer husbandry in the region's communities, including the organization and viability of enterprises, work conditions, management issues, etc.;
- Investigate production capacities on the "Turvaugin", "Nutendli" and "Tchaila" rangelands by means of ground surveys in order to develop annual migratory route schemes (these schemes take into account rangeland quality and grazing capacity in different seasons, presence or absence of biting insects, predators, etc. Moving herds will help maintain the health of the pastures and so maintain the physiological condition of reindeer);
- In cooperation with the communities, develop route schemes of reindeer breeding brigades for a better and long-term use of available rangelands;
- Conduct studies of the socioeconomic conditions of reindeer herders;

- Provide technical advice and support for improved reindeer breeding;
- Study reindeer husbandry accounting systems, and make recommendations for improvements; and
- Introduce reindeer brigade-farm contracts for improved management.
- A documentary film about the Kolyma reindeer herders has been produced and has been repeatedly shown on regional television channels.
- Based upon implementation of recommendations from ECORA, there has been an increase in reindeer herds from 13,000 to 20,000 since the project started.

Results:

- An expert in reindeer breeding has visited and advised all communities and their reindeer brigades.
- Training and compilation of documents for reporting and certification have been completed.
- Recommendations have been prepared for improved reindeer husbandry, diversification of production in the village of Andryushkino, and for horse breeding along with reindeer.
- An effective public council for reindeer management has been established in the Nizhnekolymsky administration.
- Results from reindeer rangeland research and estimates of their carrying capacity have been made available to stakeholders.
- The Turvaargin community has started industrial reindeer meat processing and produced 100 tonnes of reindeer meat in November 2008.
- The Turvaargin community received a grant of 300,000 rubles from the President of the Sakha Republic/Yakutia in recognition of being the Republic's best reindeer breeders. The head of the community has been awarded as the Honoured Worker of the Sakha Republic.
- The Nutendli community has received status as the federal livestock-breeding operator for maintaining the Chukchi reindeer breed (*hargin*)

Status:

Implementation of this pilot project will continue through 2009. Research and monitoring results and recommendations related to domestic reindeer management and use will be presented to the ECORA management, to the administration of Nizhnekolymsky Region, and to relevant authorities.

Activity 4: Cluster-type protected areas in the Beringovskiy District



Rationale:

There is currently a regional Beringia National Park which covers a large area of the Chukotka peninsula, in eastern Chukotka. The Russian government is considering upgrading this park to the federal level. A new federal national park will include some areas in the existing regional park but will also incorporate other unique and representative sites in southern Chukotka (Figures 4 and 5). Based on recommendations from ECORA, parts of the Beringovsky Model Area may also be included. A new federal national park for Beringia will, if endorsed by the government, replace the current regional park. This pilot project focuses on the development of ecological and economic documentation for clusters of nature protected areas within the structure of the planned national park.

The objective of this pilot project is to demonstrate that nature protected areas need not conflict with economic development in Chukotka and can instead supplement and support such activities. Several areas which were scheduled for mineral mining in the next decade have been excluded from the planned national park thus effectively protecting ecosystems and biodiversity.

The pilot project will:

- Develop concepts and strategies for National Park cluster structures;

- Define and describe areas and sites to be included in the National Park;
- Define and describe the National Park area and delineation (including zoning);
- Provide scientific documentation which will support the National Park status and support management for nature protection.

Analyses of available environmental information and knowledge have made it possible to identify four large and eight smaller clusters to be included in the national park. They cover key breeding sites for the critically endangered Spoon-billed sandpiper, main seabird colonies, important marine mammal areas, and nearby coastal marine areas. Representative mountain landscapes, as well as typical lowland and coastal tundra ecosystems, are included in the strictly protected areas. Areas nearby each village, which are promising for development of ecotourism, have also been identified.

Beyond strict area protection, community involvement has also been included in this project. Local environmental monitoring is often an important contribution to national park documentation and so incorporation of local knowledge to the national park monitoring system has been planned. Coordination of local monitoring with scientific observations will secure improved and diverse monitoring, especially



Figure 4. Beringia National Park



Figure 5. Proposed clusters of protected areas for Beringia National Park.

in relation to climate change. Beringia is one of the most seriously affected areas by climate change in the Arctic.

Results:

- The cluster approach to Beringia National Park is a result of the work undertaken by ECORA in the Beringovskiy Model Area. This approach has been recognised to be appropriate in efforts to balance conservation against the intensive economic development facing the region.
- Based on results of ECORA, the authorities have agreed to include a number of the clusters identified in the Beringovskiy Model Area into the Beringia National Park.
- The first draft of ECORA's scientific background

report has been submitted to the Russian Federation's Ministry of Natural Resources, the government agency responsible for establishing the Beringia National Park. The draft includes documentation and data for both parts of the park, i.e., the Chukotka peninsula in the east and the southern Beringia Model Area.

Status:

Implementation of this pilot project will continue through 2009.

7. Evaluation of ECORA

ECORA underwent a mandatory Mid-Term Review (MTR) by the GEF in 2007. ECORA received a favourable review, with the evaluators noting,

“...substantial progress in collecting unique biodiversity and other related information in support of an enabling environment for IEM. IEM Action Plans have been drafted in each Model Area and are at different stages of official endorsement. Substantial progress has been achieved on all training activities, including environmental management and policy, traditional nature use, and environmental education. In sum, the project is at the starting point for implementing IEM. The evaluation noted efforts in securing support for IEM from a broad range of stakeholders using a bottom-up approach. Since 2007, major efforts were made by the ECORA team to strengthen top-down linkages to implement IEM on the ground.”

The MTR also provided valuable guidance for the latter half of the project, making recommendations for improving the project. In particular, the MTR evaluators noted the need to improve outreach activities and mainstreaming IEM into economic sectors through work with local businesses and administrations. A number of actions have been taken in ECORA in response to these recommendations. Outreach has increased partly as a result of the implementation of activities such as community monitoring and education programs for schools and local people. ECORA is receiving considerable coverage via local television and publications, as well as through the participation of ECORA personnel in a variety of international meetings. There are also plans to publish the final results of the project in book form aimed at a broad international audience.

Progress is also being made with respect to engaging business and local administrations. As outlined above, training sessions have been conducted in each Model Area focusing on improving business practices in areas such as reindeer husbandry, development of ecotourism, development of small-scale businesses based on traditional nature use, and marketing. These activities enjoy the support of local administrations and are continuing as the regions adopt the training programs developed under ECORA.

8. Next Steps

Over the project period, many changes have taken place, not only in Russia but also across the circumpolar Arctic. One of the most significant changes has been the increasing and alarming

impacts of global warming to this region. During the regional meetings that took place during the Mid-term Review, time and again community members noted the changes they were witnessing and asked how ECORA could be used to address these changes. Modifications were made to some project activities – specifically the community monitoring program – but most activities were too far along to fully incorporate climate change considerations.

Addressing climate change will require a broad, ecosystem-based approach to conservation and management, the type of approach developed and promoted under ECORA. The CAFF Working Group has approved the development of a proposal for a new project in Arctic Russia that will enhance adaptation to climate change in biodiversity management in the Russian Arctic, strengthen the Russian Arctic Nature Protected Area (NPA) system, and support traditional lifestyles of indigenous peoples of the North through protecting traditional nature use. Key project components will include: (i) an assessment of climate change impacts on biodiversity, including traditional ways of life of indigenous people throughout the Russian Arctic in pilot communities from Murmansk to Chukotka, (ii) policy reform to address questions such as how existing policy documents support protected areas in the Arctic and assure their sustainability, whether indigenous communities take part in biodiversity conservation, how climate change considered in planning of biodiversity conservation measures, and (iii) demonstration projects with specific adaptations in selected indigenous communities across the Russian Arctic. While the project proposal is still under development, it is anticipated that the project will be a pilot in the field of biological resources management and traditional nature use, and climate change adaptation in the Russian Arctic.

Central to the project will be the documentation on the extent, impacts, and observations of Arctic climate change in the Russian North by building on the traditional knowledge of the indigenous peoples of the region. This will be linked with natural sciences-based approaches and partners to compare the information and dissemination of the indigenous information and to foster meaningful dialogue between the two forms of knowing to develop climate change adaptation strategies.

This will be an innovative project that for the first time proposes and tests a number of approaches and methods in respect to climate change, including:

- Development of research methods for trend assessment based on CAFF criteria and the Circumpolar Biodiversity Monitoring Program (CBMP) indicators;
- Assessment of biodiversity status and trends based on (i) scientific data, and (ii) traditional knowledge; Assessment of traditional nature use and local community economy status and changes;
- Development of strategic climate change adaptation options for biodiversity conservation, supporting and optimizing the Arctic NPA system and traditional nature use;
- Development of recommendations that take into account traditional knowledge and combine it with scientific data to mitigate the negative impacts of climate change;
- Development and implementation of demonstration project(s) on climate change adaptation for biodiversity conservation, supporting and optimizing the Arctic NPA system, and traditional nature use.
- adaptation for biodiversity conservation, supporting and optimizing the Arctic NPA system, and traditional nature use.



List of ECORAs Thematic Maps for the Model Areas

For Kolguev Model Area:

Landscape map. Scale 1:100 000;

- Geobotanical map. Scale 1:100 000;
- Map of reindeer rangeland grazing capacity. Scale 1:100 000;
- Map of hunting areas Scale 1:100 000;
- Map of disturbed lands and industry. Scale 1:100 000;
- Map of fishing zones. Scale 1:300 000;
- Map of the values of biological resources. Scale 1:100 000.

For Beringovskiy Model Area:

- Landscape map. Scale 1:300 000;
- Geobotanical map. Scale 1:300 000;
- Map of reindeer rangeland grazing capacity Scale 1:300 000;
- Map of hunting areas. Scale 1:300 000;
- Map of fishing areas and wetlands. Scale 1:500 000;
- Map of the values of biological resources. Scale 1:300 000.

For Kolyma Model Area:

- The database was prepared with the use of ArcGIS/ ArcInfo 9.2 format
- The database includes the following information:
 - Populated towns, villages and settlements
 - Rivers, brooks and lakes
 - Topographic map
 - Regional (republican) resource reserves
 - Boundaries of state farms
 - Boundaries between SLR and SFF (state land reserve and state forestry fund lands)
 - Breeding pastures for horse herds
 - Burned areas
 - Areas with little or no fodder or destroyed by trampling.
 - Reindeer rangelands on SFF (state forestry fund) lands
 - Reindeer rangelands on SLR (state land reserve) lands

- Reindeer rangelands of state farm

Data on Bird Species Distribution

- Hooded crane (irregular observations)
- Sandhill crane
- Range boundaries in 1980-1985
- Range boundaries in 1996-2000
- Irregular observations
- Core area with increased number
- Duck populations abundance
- Siberian crane
- Nesting areas
- Main seasonal migratory flyways
- Areas with increased abundance
- Observations of Siberian crane pairs in the taiga zone
- Bewick's Swan population abundance
- Whooping swan
- Boundary of common distribution
- Summer observations of single birds Population density map
- White-fronted goose and bean goose (population density)
- Brent goose population density
- Capercaillie population density

Data on Animal Species Distribution

- Moose
- Wild tundra reindeer populations
- Population boundaries
- Wintering areas and migratory routes of the reindeer population in the "Sundurun" area
- Wintering areas and migratory routes of the reindeer population in the "Yano-Indigirka" area.

Data on Plant Species Distribution

- Plants included in the Sakha (Yakutia) Red Data book
- Endangered species of plants
- Medical and food plants, animal fodder, and endangered plant species

ECORA Reports

Federal Level

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V.Pererva (Fed) "Assessment of habitat protection mechanisms and species conservation activities" (Act. 1.1.2) 2006

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V.Stepanitsky (Fed) "Activity of state bodies for biodiversity and landscape protection in the Russian Arctic (Report and Educational manual for conservation officers)" (Act. 1.2.4) 2006

K. Klovov (Fed) "Socio-economic indicators" (Act. 2.3) 2006

E.Syroechkovsky (Fed) "Approaches to the elaboration of community monitoring programs in the framework of the ECORA Project" (Act. 2.4) 2006

K.Klovov, T.Krasovskaya (Fed) "IEM plans and strategies (communications / public participation plan, stakeholder participation mechanism, conflict

resolution mechanism)" (Act. 3.1) 2006

Kolguev Island MT (NAO)

O.Petunina (NAO) "Legal analysis and assessment of administrative reforms having an influence on the integrated ecosystem management of MA "Kolguev Island". Legal assessment of mechanism of habitats protection of flora and fauna in connection with reforms passed" (Act. 1.1.1-1.1.2) 2005

U.Berghdal (NAO) "Training in high quality processing of reindeer meat and skins" (Act. 1.1.3) 2008

I.Lavrinenko, O.Lavrinenko (NAO) "Monitoring of key indicators for integrated ecosystem management" (Act. 2.1) 2005

V.Anufriev (NAO) "Assessment of key indicator species: waterfowl, willow grouse and Arctic fox (in the creek of Peschanka River and Bugrino village) in the Kolguev Model Area" (Act. 2.1) 2005

T.Romanenko (NAO) "Assessment of domesticated reindeer: Conservation and development of reindeer breeding in isolated population on Kolguev Island" (Act. 2.1) 2006 & 2008

A.Kondratyev (NAO) "Monitoring of waterfowl population of Kolguev Island aiming at development of recommendations on sustainable nature use" (Act. 2.1) 2006-2007

V.Anufriev (NAO) "Investigations into spring migrations and commercial use of wildfowl (geese, ducks, swans), breeding ecology of Arctic Fox and Willow Grouse" (Act. 2.1) 2006

Ch.Labba (NAO) "Report on reindeer in Kolguev island" (Act. 2.1) 2006

A.Kondratyev (NAO) Waterfowl population monitoring in Kolguev island for the development of recommendations to establishing of sustainable nature use (Act. 2.1) 2009

A.Pustyntseva (NAO) "Financial diagnosis and prognosis of activity of agriculture enterprise "Kolguev" (Act. 2.1) 2008

O. Mikhalev (NAO) "Creation of thematic maps of the territory of Kolguev Island, Nenets Autonomous Okrug" (Act. 2.2) 2007

M.Kokorin (NAO) "Sociological expertise of Bugrino village (Kolguev Island)" (Act.2.3)2006

K.Klokov (NAO) Organization and implementation of community based monitoring in Kolguev island (Act.2.4)2009

G.Mikhailova (NAO) "Development of conflict resolution mechanism" (Act.3.1)2006

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A.Sleptsov (Yakutia) "Legal basis for establishing territories of traditional nature use for indigenous people of the North and in Republic of Sakha (Yakutia)" (Act. 1.1.3) 2006

N.Alexandrova (Yakutia) "Review of the Codes of conduct and social responsibilities of international enterprises (for Kolyma MT)" (Act. 1.4.1)2006

A.Isaev, M.Samsonov (Yakutia) "Training in environment management (Act. 1.2.2) and Environment Bodies' staff (Act. 1.2.4) 2006

A.Isaev (Yakutia) "Environment education in local schools" (Act.1.4.1)2008

A.Degtyarev (Yakutia) "Waterfowl: Bird Species of resource preserve "Chaigurgino" (Act. 2.1)

D.Syrovatsky (Yakutia) "Domesticated reindeer" (Act. 2.1)2006

A.Popov "Status of wild reindeer population in Lower Kolyma" (Act. 2.1)2005

R.Desyatkin (Yakutia) "Assessment of habitat fragmentation in the Kolyma River Basin Model Area" (Act. 2.1)2006

D.Syrovatsky (Yakutia) "Development of plans on domesticated reindeer breeding (interim report of 2006) (Act. 2.1)2007

R.Tyaptirgyanov (Yakutia) "Assessment of fish resources of the Kolyma River Basin" (Act. 2.1)2005

R.Tyaptirgyanov "Development of work plans for commercial fish resources of the Lower Kolyma River" (Act. 2.1)2007

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A.Isaev, A.Egorova (Yakutia) Status of biological resources in Kolyma Lower river (Nizhnekolymskiy district) (Act. 2.1)2009

L.Volkova (Yakutia) "Thematic maps and analysis for IEM planning" (Act. 2.2)2006-2008

N.Tikhonov (Yakutia) «Social and economic indicators» (Act. 2.3)2005

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V.Shadrin (Yakutia) "Development of IEM Plans and Strategies: Development of communication/public participation strategy and Development of mechanism for stakeholder consultations" (Act. 3.1)2006

T.Mustonen (Yakutia) "Review of conflict situations and methods of its resolution in Kolyma MA" (Act.3.1)2006

A.Degtyarev (Yakutia) "Outline of implementation of the pilot project" Development of management plan of harvest of birds in 2007-2008" (Act. 3.1)2006

D.Syrovatsky (Yakutia) "Plan and schedule of implementation of the pilot project "Sustainable domesticated reindeer in Nizhnekolymskiy Ulus in 2007-2008" (Act. 3.1)2007

Beringovsky MT (Chukotka)

V.Scherbanosov (ChAO) "Analysis of regulatory and administrative reforms" (Act. 1.1.1) 2006

V.Scherbanosov (ChAO) "Assessment of habitat and species conservation mechanisms" (Act. 1.1.2) 2006

D.Litovka "Traditional nature use" (Act. 1.2.2) 2008

E.Lappo "Assessment of levels of unfragmented habitats of the Beringovsky Model Area" (Act. 2.1) 2005

E.Syroechkovsky (ChAO) "Assessment of globally threatened species and wide spread species which

- are economically important for indigenous people of the region” (Act. 2.1) 2005
- E.Syroechkovsky (ChAO) “Assessment of seabirds population and development of plans on seabirds for the central part of the “Beringovsky” Model Area” (Act. 2.1) 2005
- D.Litovka (Beringovsky) “Evaluation of the population status and development of the work plan on key indicators from amongst globally threatened species” (Act. 2.1) 2006
- E.Syroechkovsky (ChAO) “Assessment of statement of population and development of work plans on key indicators related to global threatened species in Beringovsky region” (Act. 2.1) 2007
- E.Syroechkovsky (ChAO) “Assessment of key indicator threatened and common birds” (Act. 2.1) 2008
- E.Syroechkovsky (ChAO) “Assessment of population and recommendations on optimization of preservation of sea birds in Chukotka” (Act. 2.1) 2008
- K.Klokov (ChAO) “ Thematic maps and analysis for IEM planning” (Act. 2.2) 2005
- K.Klokov (ChAO) “ Thematic maps and analysis for IEM planning” (Act. 2.2) 2007
- K.Klokov (ChAO) “Assessment of indigenous people interest to different types of traditional nature use” (Act. 2.3) 2005
- K.Klokov (ChAO) “Social and Economic indicators for MT Beringovsky” (Act. 2.3) 2005
- K.Klokov, E. Syroechkovsky, O.Anisimova (ChAO) “Community monitoring:
 Sub-component 1: Assessment of the interest and possibility for the participation of indigenous people in the monitoring of bioresources in the Beringovsky Model Area.
 Sub-component 2: Survey on the use of game birds by different segments of the population” (Act. 2.4) 2006
- E.Syroechkovsky (ChAO) “Community monitoring” (Act. 2.4) 2007
- D.Litovka (ChAO) “Community monitoring and socio-economic study of marine mammals harvest and whaling for indigenous people’s life” (Act. 2.4) 2007
- K.Klokov, E. Syroechkovsky (ChAO) “Development of methods of community monitoring: Start of community monitoring programme” (Act. 2.4) 2008
- E.Syroechkovsky (ChAO) Ecological and economical background for establishing of National Park “Beringia” in Chukotka Autonomous okrug (Act.3.1) 2009

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