Promoting Biodiversity Conservation in Russia and Throughout Northern Eurasia

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The mission of the Pocono Environmental Education Center is to advance environmental awareness, knowledge, and skills through education in order that those who inherit the planet may better understand the complexity of natural and human-designed environments.

The mission of the Center for Russian Nature Conservation (CRNC) is to promote the conservation of nature in Russia and throughout the former Soviet Union, and to assist conservation groups in that region through information exchange, coordination of professional and education exchanges, and provision of technical assistance to protected areas. CRNC is a project of the Tides Center.
Voice from the Wild (A letter from the Editor)

This summer Russia looks back on an event that changed history: ten years ago, the failed August coup marked the beginning of the downfall of the Soviet Union. But in addition to recalling images of the blackened shell of the Russian Parliament Building or a young Boris Yeltsin standing atop a tank, this is a time for reflecting on the changes in the environmental movement over the past ten years. The wave of changes that swept over the Soviet Union in the wake of the coup has left no aspect of life - economic, social, political - unaffected, and conservationists active in northern Eurasia have both relished the new freedoms independence brought and struggled to forge a new strategy for nature conservation under the chaos that followed the crumbling of centralized planning.

In this issue of Russian Conservation News, come travel with us to the frozen tundra with a Dutch ornithologist as he recalls the history of cooperation between the Netherlands and Russia in researching and protecting the Russian Arctic. Then meet the endangered lesser white-fronted goose, one of the migratory birds that first drew international attention to its Arctic nesting grounds. Watch the steppes burst into bloom in Russia’s Tula region, where scientists are working with the local community to restore a historic battlefield to its natural condition at the time of the battle in 1380.

As we look back over past achievements, this is also a time for looking ahead. In this issue we focus special attention on new strategies for nature conservation in Russia, such as Muraviovka Park, Russia’s first non-governmental nature park and a model for developing sustainable agriculture. Furthermore, we examine a new approach to biodiversity conservation for the next century: the ecoregion. Based on the idea that ecological systems regularly cross political boundaries, the ecoregion approach examines large, transboundary regions and promotes cooperative work across political borders to ensure the long-term preservation of the ecoregion.

Worldwide, earlier conservation strategies often focused on protecting a single species without fully encompassing the ecological systems supporting it, or focused on protecting a region without concern for the region’s human residents. Ecoregion conservation takes a broad approach to protecting a region’s biological diversity and ecosystem processes by setting ambitious biological targets while also recognizing the needs of local communities and involving them in conservation efforts.

In a special section devoted to examining this new strategy, we invite you to explore the Altai-Sayan ecoregion, a mountain region that encompasses parts of southern Siberia, Mongolia, China, and Kazakhstan. From the snow-covered peak of Mount Belukha to the expanses of steppe that surround the mountains, we offer an in-depth look at the region and the challenges it faces. Moreover, we analyze the scope and effectiveness of conservation efforts in the region in hopes that cooperative work can secure the future of this unique wilderness.

Looking to the future across Russia and northern Eurasia, we also bring news of a new plan to save the sturgeon of the Caspian Sea, a fish whose rich caviar has made it coveted throughout the world, and as a result, fished nearly to the brink of extinction. And finally, remembering the past ten years of conservation history in Russia, we await the next ten, including a promise from Russia’s Ministry of Natural Resources to found 21 new protected areas by the year 2010.
For many years Sergei Smirenski, the director of Muraviovka Park, dreamed of finding a place in which people and wildlife could live together in harmony and at the same time test out new technologies and ideas for ecosystem protection, environmental education, and sustainable development. The nature of the Amurskaya Oblast, its broad, green valleys, wetlands, gently sloping mountains, and vast expanses of untouched wilderness greatly impressed Sergei. In 1991, working in cooperation with the International Crane Foundation (ICF), he launched the Socio-Ecological Union's Amur program in hopes of realizing his dream. In 1993, Muraviovka Park leased about 6,000 hectares from the government for 50 years for the development of sustainable land use, becoming the first nature park in Russia since 1917 that is not owned and operated by the government. At that point, Sergei had nothing else to start with but well-intended ideas and enthusiasm.

“We came to realize rather quickly that abandoning certain projects and simply protecting certain valuable sites was not a solution to the problem,” says Sergei Smirenski, “Our plan to create a park aimed at sustainable use of natural resources is an attempt to solve a problem. We're trying to understand how to use the natural resources of a unique territory. When we speak of sustainable development and sustainable use of natural resources, we mean not only stability for today and tomorrow; but for a much greater length of time. Stability requires interaction between three factors: ecological, economic, and social. We gave ourselves a task that included not only studying and protecting the territory, but also renewing and managing the land and its resources. One of the challenges was to introduce forms of sustainable use of natural resources, such as sustainable agriculture, ecotourism, and production and sale of local handicrafts.”

The territory of the park is quite diverse, including meadows, brush, lakes, and sections of forest, but most of the park is occupied by marshes. The park protects the habitat of more than 200 species of birds, including the Siberian Crane (Grus leucogeranus), White-naped Crane (Grus vipio), and Red-crowned Crane (Grus japonensis), as well as other migratory birds. Indeed, the park has had an important influence in protecting these and other species: since the time the park was formed in 1993, the population of rare birds has doubled. Already the park has become one of the cultural centers of the Russian Far East. Hundreds of local

children and teachers have attended summer camps in the park and become passionate advocates of the park. Even wedding parties, which traditionally visit war memorials, now come to the park, to be photographed by the Education Center building decorated with beautiful crane murals.

Just five years ago few people believed that the first non-governmental park would be able to develop according to plan, especially considering that an integral part of that plan was the implementation of self-sustaining and ecologically clean agriculture. Muraviovka Park is working on a model program to introduce this kind of agriculture. The park's deputy director Sergei Shalagin, a qualified agronomist and a born farmer, is leading the program.

Under his direction, workers have cultivated soybeans in the park for the past several years. Although herbicides and chemical fertilizers are not used in the park, crops are fruitful, and the park is able to subsist partially on the profits made by selling the harvest. A model farm was created, where workers test new varieties of soybean and other grain crops. They have already obtained and repaired farm equipment, and completed construction of a granary; work on the construction of a heated garage has already begun. The park staff are also preparing a business plan for a beef farm and an application for an international organic (ecologically pure) production certificate. At the same time, they are studying the soils in areas under cultivation as part of long-term environmental monitoring.

“One of our challenges was to build an economically effective, self-sufficient system,” says Sergei Smirenski, “And it’s not even because we don’t like to ask for grants, because in many cases grant money come from the companies that damaged nature. The fact is that there are many ways to earn money. Right now we are almost self-sufficient. We have electricity in the park, our refrigerators, computers, and printers run on energy from the solar panels. We’re finishing the ‘construction stage’ and are organizing various visual materials accumulated in the park over the years, which we hope will be of interest and help to many. We hope that next year we can begin bringing more visitors to the park and have more public discussions.”

According to Sergei Smirenski, many of the problems of protected areas, such as poaching and fires, are simply provoked by the strict delineation between the nature reserve’s employees and the local population, and their respective and contradicting interests. Often the organization of a protected area means some loss of income for local residents, be it directly through prohibitions on hunting and farming or through the long-term obstruction of economic development in the region. Park employees decided to try to combine the interests of the protected area’s wilderness and the interests of local residents. Most of the locals are now proud of their wetlands and, naturally, do not start fires. Even poaching has fallen significantly. All of this became possible because of the model programs and numerous friends of the park. Relations between the park and the local population continue to improve.

Muraviovka Park protects many species of cranes, including the endangered white-napped crane (Grus vipio). Photo by V. Andronov.
Protected Areas

Park hosts free summer camps in which children learn about and play in nature. At the present time, park officials are working to establish a Teen Social Adaptation Center for 15-17-year-old orphanage graduates. A two-story building of the former day-care center in Muraviovka village will be contributed by the district administration to this charitable project.

Park staff are also preparing informational materials and environmental education curricula. These materials can be used for regular classes with schoolchildren and park visitors. Park employees have prepared expositions and led seminars devoted to the classics and founders of global and Russian ecology, game management, and conservation. One of the park employees leads a year-round class in home economics for various grades in Kuropatino school near the park. An exposition of handicrafts was held, and the best works were sent to an international traveling exhibit in the United States, Japan, China, Nepal, and other countries. In 2000, the park held three sessions of summer camp and a seminar in ecology, agriculture, and arts. More than 180 students and teachers from the Tambovsky District (including more than 30 kindergarten teachers from the village of Kresovozdvizhenka), the province of Heilongjiang (People’s Republic of China), and the State of Wisconsin (USA) took part in these projects. Four summer camps with bunk beds were built specially for the children’s camp, a soccer field was set up, as well as a shelter to hold outdoor classes and activities, rain or shine. This was the first time the park had welcomed a group of teachers, students, nature reserve workers, and state farm workers from the People’s Republic of China. In turn, this was the Chinese’s delegation’s first opportunity to take part in an environmental camp. Indeed, the interest Russia’s Chinese neighbors took in the park and its programs was so great that an international agreement was reached between China and the Amurskaya Oblast to hold cooperative environmental meetings and to establish regular exchange for students and teachers in 2001-2005.

During the summer camp, six American teachers of agriculture led classes instructing students to choose directions and methods for farm management on the basis of soils, climate, and the local and world market for agricultural products. The students received a general picture of the advantages of cooperation in sustainable development and took an initiative to establish a local branch of the “Future Farmers of Russia.”

To date, the ten Russian-American environmental camps that have been held at the park have helped 460 children develop their interests in nature and its protection. An understanding and love of nature are the hardest things to teach, especially to local children. Poverty, depression, alcoholism and crime are a way of life in many in this part of the world. Children need to understand that they do have some power to change their future. The park helps them to find a hope, and the environmental camp solidifies it. In turn, the park and its programs have a direct effect on the lives of children who live across the ocean: more than 50 American elementary, middle, and high school teachers, as well as college students visited the Muraviovka camp since 1994. The Americans, who tend to know Siberia more as a place of exile and punishment, returned home with a different view of this place, and with the memory of the beauties of the Siberian wilderness, and of people striving for a brighter future.

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Sergei Smirenki and Nikolai Formozov lead an early morning swamp walk for teachers and students. Photo courtesy of E. Smirenki.
He is strong but gentle, a man of few words but many deeds. He is a learned agronomist, an engineer, a mechanic, an economist, a carpenter, a blacksmith. He is both a genius and a hard worker. At the age of 15, he was one of the few high school students from his native Amur Region to be selected for a full scholarship to travel halfway across Russia to attend a special academy in Novosibirsk for children with special gifts and talents in physics and mathematics. He is a devoted husband and a great father to his two children. Meet Sergei Shalagin, 42, the born farmer, the Manager of the Muraviovka Park Demonstration Farm.

Shalagin earned his reputation as a brilliant farmer through the agricultural reforms initiated in Russia as the Soviet Union collapsed. In 1987, under Gorbachev’s reforms, Russian agricultural workers were granted the right to leave their collective farms to begin private enterprises at their own risk, with no government support. Shalagin was one of five people in his village of Otvazhnoye who dared to take the risk, receiving a poor tract of land from the local government in 1991 to begin his own family farm. Before the reforms, Shalagin had worked as chief agronomist at a local collective farm and dreamed of becoming a producer of elite seed: soybeans, wheat, oats, barley, and more. By 1995, he was not only surviving, but had become the most successful private farmer in the entire district. He and his family were producing crops equal to the sixty workers on the local collective farm.

Around this time, Sergei Smirenksi, the Director of Muraviovka Park, was preparing to open a demonstration farm in the park and needed the right person to manage it. After his meeting with Sergei the Farmer, Shalagin seemed interested, but not interested enough to leave his home village and the land into which he had poured such effort. Quitting his own farming venture and moving 200 miles west to develop abandoned crop lands in a place that many considered a doomed venture seemed an unneeded risk. He also had to consider his family’s needs: his wife’s job, proximity to relatives, his children’s school and friends. Pulling up deep roots is never easy, perhaps even more so in Russia, where connections and friends mean everything.

Sergei the Director, however, was likewise never known as a quitter. For a year and a half he worked to convince Shalagin to move to Muraviovka. Finally in July 1996, Sergei the Farmer, together with his wife Irina, agreed to visit the park. They saw rich soils and vast, weed-covered fields awaiting them. They saw a house with a spacious apartment and a garage, ready for them to move in, and plenty of land for the garden, but none of that could convince them. Then they saw the unfinished three-story Education Center and the tent camp where adults and children, Russians and Americans were happily working and playing together, communicating through interpreters or hand gestures, all looking excited about this camp! They were having outdoor classes in biology, ecology, water chemistry, agriculture and soils.

This was the turning point for Sergei the Farmer. He loves children, and is at heart a teacher. In his home vil-
In Muraviovka village, there were no young people (except his son) to whom he could pass on his passion for farming and his knowledge and skills. The fact that farming in Russia was still considered the lowest possible occupation had always been painful for Shalagin. He knew he could make a difference, but how, where, when? Now, watching the Muraviovka camp activities and listening to the Smirenski's fantastic plans, he suddenly realized: here, now. Smirenski was his man.

We will probably never know exactly how Sergei the Farmer managed to convince his wife Irina, teenage children Olga and Sasha, and - most importantly - his mother-in-law Iraida Markelovna to move to Muraviovka. But the next February, while it was still relatively safe to cross the Bureya River on ice, the family began their move. Altogether, it took four months and 11 truck trips across thinning ice for the family to move their lives to Muraviovka. By late April of 1997, the most needed machinery, tools and house wares were in the park, and Shalagin set to work breaking the soil. The family was separated for six months as Sergei, his son, and his mother-in-law lived and worked in Muraviovka while Irina and daughter Olga stayed in the old village to tend the garden and animals while they tried to sell their house.

In November 1997, Sergei the Farmer came to Wisconsin for four weeks of training. Usually first-time visitors from Russia experience culture shock at seeing beautiful roads, cars, and private homes, and supermarkets stuffed with all kinds of items. Sergei the Farmer had his own severe shock after three days of working with American tractors and combines. Upon his return from the fields, he was unusually quiet and looked depressed. When asked, he answered, “In Russia, we’ll never have such machinery. Never!” and asked for an aspirin. But showing the character that brought him as far as he had come, the next day he was talking about how to use some of the techniques that he saw on American farms in Muraviovka.

Nearly three years later, Sergei the Farmer and his team of three workers till 450 acres of cropland, growing organic (but not certified yet!) soybeans, corn, wheat, and perennial grasses. They use seven and nine field crop rotation system. In 1998, the farm produced enough income to make a down payment for a used tractor in good condition, and the income has been slowly but steadily growing ever since. The machinery they use is all Russian-made and therefore, good or bad, tends to break down regularly (for this reason one member of the farm crew is called Andrei the Mechanic). Nevertheless, the team produces as large a harvest as 80 workers from the Muraviovka village cooperative, and the park’s short-term plans are likewise ambitious. The last camp session of the summer 1999 was cut short because of cold and wet weather, and some of the old tents the children slept in were flooded with rain water, resulting in numerous runny noses and sore throats, especially for the undernourished and weakened orphanage kids. Sergei the Farmer swore that children would no longer have to sleep in tattered tents, and promised to build cabins for next years’ campers. “I don’t know yet where the money and lumber will come from,” he said, “But we will build the cabins by next June.” Indeed, in June 2000 campers stayed in four comfortable cabins with bunk beds, and by June 2001 there were six cabins, and a new dining shelter. And so work continues for the man of few words and many deeds.

Elena Smirenski works at the International Crane Foundation in Wisconsin, USA.
At first glance, the wilderness of scattered islands, peninsulas, capes, bays and rugged cliffs in the western corner of the Sea of Okhotsk bears little evidence of human impact. Sheer cliffs pile into the sea, marked by waterfalls spilling from the abundant rivers and streams of this eastern edge of Eurasia. The sweep of birch, larch and tumbling rock cascade to the undulating border of the sea, over which puffins skim, sea-eagles soar, and whales blow. It is difficult to imagine a more intact or abundant natural area. The history of the Shantars, however, has not been without anthropogenic influence. Russian interest in the region emerged in the 1600s, introducing a gradual stream of visitation that peaked in the 1800s as whalers and fur traders began to increase their impact in the area. In the near future, several projects aimed at economic development may severely compromise the integrity of the Shantar ecosystem and its resident species.

The Shantar Archipelago is comprised of the land and water surrounding 15 islands (four large islands, five small islands, and three islets) encompassing 2,540 square kilometers. The region's rich variety of ecosystems include taiga forests, bogs, wetlands, meadows, coastal cliffs, plateaus, and headlands, all of which provide habitats for endangered seabirds, plants, and marine mammals. The Shantar region is noted for high species diversity as well as high endemism due to its historical role as an ecological refuge during past ice ages.

The archipelago contains a unique mix of vegetation as an ecological transition zone between temperate and boreal habitat. Within the region, 480 species of higher plants and 20 rare plant species have been recorded. The large islands and mainland coasts are forested with Siberian spruce (*Picea obovata*), Dahurian larch (*Larix gmelinii*), birch (*Betula* sp.) and mountain pine (*Pinus pumila*). The region contains 9 plant species listed in the current Khabarovsk Krai Red Data Book, most of which are endemic to the region. These rare species, as well as other island native plants, are particularly vulnerable to extinction having evolved in isolated habitats with limited distribution.

The region also contains a wide variety of avian species. The majority of the area's estimated 30,000 seabirds nest in colonies on sheer cliffs on the smaller islands where the threat of terrestrial predators is minimal. Twenty-one bird species in the Shantar region are currently listed in the Khabarovsk Krai Red Data Book, including Blakiston's Fish-Owl (*Ketupa blakistoni*), osprey (*Pandion haliaetus*), Black Stork (*Ciconia nigra*), Red-Necked Grebe (*Podiceps auritus*), Gyrfalcon (*Falco rusticolus*), Siberian Grouse (*Falcipennis falcipennis*), Nordmann's Greenshank (*Tringa guttifer*), Ancient Murrelet (*Synthliboramphus antiquus*), Solitary Snipe (*Gallinago solitaria*), and the Steller's Sea Eagle (*Haliaeetus pelagicus*). Although a series of zapovedniki, zakazniki and natural monuments currently protect many seabird colonies in the Far East, further protection targeted specifically toward seabirds is necessary.

Among the various marine regions of the Sea of Okhotsk, the Shantar region in particular hosts a high marine benthic biomass due to the protection from strong currents and waves afforded by its islands, bays.
and inlets. Numerous invertebrates and fish found in the region include salmon, herring, Pacific sand lance, flounder, cod, capelin, crab, and shrimp species. The waters of the Shantar Archipelago and its surrounding coasts are home to bearded seal (*Erignathus barbatus*), largha seal (*Phoca vitulina largha*), and beluga whale (*Delphinapterus leucas*). The nutrient-laden waters generate abundant concentrations of zooplankton that feed many higher order marine consumers, including the bowhead whale (*Balaena mysticetus*). The Shantar region is the only known summer feeding ground for concentrations of this endangered cetacean, which feeds on zooplankton at the surface and in the water column.

Bowheads were among the first cetacean species to be targeted for commercial harvest and are one of the world's most endangered baleen whales. Prior to the onset of commercial whaling in the Sea of Okhotsk, it is believed that bowhead whales numbered somewhere between 3,000 and 8,000 individuals. Alerted to the numbers of bowheads in the coastal waters of the Shantars, fleets of American whalers from New England began arriving in the Okhotsk Sea in the mid-19th century. They were followed by German, English, Norwegian and Swedish whaling fleets. In a given season, several hundred ships could be found harvesting bowhead baleen, blubber and oil around the Shantar Archipelago. The intensive harvest of the latter half of the 19th century nearly exterminated the Okhotsk bowhead whale population. Indeed, the whaling industry abandoned the area around 1900, believing the population to be extinct. Decades later, however, a remaining population was discovered, which led to several episodes of illegal Soviet whaling in the early 1960s. This illegal harvest ended when, once again, there appeared to be no individuals left to hunt.

In 1967, researchers identified 17 bowheads in the Sea of Okhotsk and from 1967 to 1990 conducted aerial surveys to gather information about the remnant Okhotsk bowhead population. Based on annual observations, a rough picture of the slowly recovering population is beginning to emerge. The current population estimate is between 200-400 individuals. No quantitative data exist to support an exact figure.

A joint Russian-American research expedition was initiated in the summer of 1995 to address questions pertaining to bowhead population dynamics and seasonal distribution. Several dozen bowhead whales were observed during surveys throughout this field season, and research continued in 1996, 1999 and 2000. Genetic analysis of biopsy samples, which are currently underway, may help answer evolution and distribution questions. Researchers are also currently examining fecal samples and prey items to learn more about the feeding ecology and behavior of this population. In turn, these data will contribute valuable information to inform conservation and management efforts.

At present, several projects may potentially endanger the Shantar bowhead population and its habitat. One of the most severe threats is a proposed tidal hydroelectric power station (currently on hold for economic reasons) adjacent to bowhead whale feeding grounds. The
complex would include a dam, port and settlements and would displace massive amounts of land and seafloor to generate electricity using tidal power. Construction is estimated to require the excavation of 13.5 million cubic meters of land and seafloor to remove an isthmus between two bays, with an additional 10 million cubic meters to build the port. The disturbance caused by this project could significantly alter hydrological patterns and hydrochemical regimes. Manipulating large bodies of water in the feeding ground of a slowly recovering, critically endangered cetacean population may be catastrophic to its survival. With a change in the abundance and distribution of prey, bowheads may leave their feeding grounds in the Shantar area. As the population has not been observed to consistently feed elsewhere, it is unknown whether or not another suitable feeding location exists in the Okhotsk region.

Heavy vessel and air traffic associated with the hydroelectric project may prove equally dangerous for the Okhotsk bowhead population by introducing noise, pollutants, and the threat of collision. Research suggests that bowheads are highly sensitive to sound: they typically interrupt normal behavior to swim rapidly away from a sound source, in turn disrupting their surfacing, respiration, and dive cycles. Bowheads appeared highly sensitive to vessels and helicopters surveying the Shantar project in the early 1990s, as researchers observed the population leave their feeding grounds for the duration of the survey and return only after the operation finished. This behavior indicates that increased human presence in the area may lead bowheads to relocate, thereby compromising feeding opportunities.

The incidental take of individuals by the pelagic Japanese crab trap fishery operating in the Okhotsk Sea is another threat to bowhead survival. Though the actual number of casualties is unknown, at least several whales have become entangled in gear and drowned as a result of this fishery. Better monitoring and documentation is necessary to understand how whales become entangled and what can be done to prevent these deaths.

Oil and gas development poses yet another threat. The Shantar region was one of 16 Okhotsk coastal areas surveyed by the Russian Far East Oil and Gas Leasing Program. Petroleum extraction already occurs off the eastern coast of Sakhalin Island within western gray whale feeding habitat. If unchecked, the same fate could befall the feeding grounds of Okhotsk bowheads.

The introduction and persistence of non-native species also may negatively impact the Shantar ecosystem, particularly its resident seabird populations. In the early 20th century, Russian and American fur farmers first introduced the arctic fox, sable, and tundra vole to the coastal islands. Records show that these predators rapidly destroyed many seabird colonies on these islands. Exhausting their food supply, predator populations dwindled, allowing for the return of native seabirds. This situation could repeat itself in the future, however: European mink, recently introduced in the Kuril Islands, is also planned for introduction in the Shantars.

Nonetheless, hope exists to preserve the rich natural treasures of the Shantar Islands.
Endangered Ecosystems

In 1986, the Russian government investigated the possibility of creating a zapovednik in the Shantar Islands, but a strict protected area was never designated. However, five sites in the Shantar archipelago have received recognition as natural monuments for their aesthetic or ecological significance. Some of these sites provide habitat for seabirds including Steller’s Sea Eagles, spectacled guillemots and solitary snipes. Others are noteworthy for their unique botanical characteristics and communities of endangered plants. Although these protected areas indicate attention to conservation, natural monuments have short-term protected status and lack infrastructure (staff, facilities, monitoring, enforcement, etc.) or protection. Therefore these monuments do not offer true insurance against biodiversity loss.

In 1997, Russian biologists submitted a proposal to protect Okhotsk bowhead habitat in the Shantars without response from the Russian government. Given this lack of action, protection for this area and its cetacean population is being sought through international protected status and recognition. Although the impetus for protection is the vulnerability of the endangered Okhotsk bowhead whale population, the true benefits of protected status to the Shantar habitat will reach far beyond ‘single-species’ conservation. The intricacy and integrity of a multi-faceted collection of natural communities is at stake.

References


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Photo by N. Maleshin.


In the heart of the Eurasian continent lies a vast and wild region of fairy-tale beauty: the Altai-Sayan ecoregion. Here dry steppes and lush meadows rise toward steep peaks and impenetrable taiga blankets rugged snow-capped mountains. Nearly 200,000 blue lakes, rivers, and waterfalls are sprinkled across the landscape. The ecoregion lies at the crossroads of the great northern taiga, central Siberia’s Altai and Sayan mountain ranges, and the deserts of Central Asia. As these diverse regions intersect, they create a mosaic of distinct geographical biomes, ranging from tundra to high-mountain taiga, wetlands, steppe, and desert.

The majesty of the nature of the Altai-Sayan ecoregion has long influenced local inhabitants, whose reverence for nature rests in a belief that spirits abide in the mountains and in plants, trees, and running streams. Over time, this system of beliefs led to a tradition of protecting nature and its plentiful resources. Today the people of the region remain tied to the land. The economy is largely based in agriculture, including farming, trapping and fur raising, beekeeping, and herding. The combination of a relatively sparse population and low-impact use of the resources has left many ecosystems intact.

The Altai-Sayan ecoregion plays a key role in protecting these ecosystems not only for Siberia and countries neighboring Russia, but also represents a globally important region for conservation. As a source of fresh water, the Altai-Sayan ecoregion is critical: over 2,000 freshwater springs are found. The ecoregion also contains the sources for some of Russia’s largest rivers, including the mighty Yenisei and turquoise-colored Katun Rivers, as well as the headwaters of the Ob and Yenisei Lake.

Note from the editors: In 1998 the World Wide Fund for Nature (WWF) published a list of 200 ecoregions, large areas of interconnected ecosystems key for preserving the world’s biological diversity. The Altai-Sayan ecoregion was one of these, ranked third in the Russian Federation for biodiversity. The following special section highlights this unique ecoregion, offering a description of the region and threats to its biodiversity, case studies of environmental problems, an introduction to the environmental groups active in the region, and an analysis of ecoregion-based nature conservation in the Altai-Sayan today.
Teletskoye, one of Russia’s deepest lakes (325 meters), is also an important source of water: scientists estimate that the lake holds enough fresh water to provide all of humanity with water for nearly a decade.

Given its position at the intersection of several biogeographical zones, the Altai-Sayan ecoregion encompasses a broad diversity of species, some representative of the individual zones, but others more rare due to this unique mixing of landscapes and ecosystems. Within a relatively small territory in the mountains, for example, one can encounter typical taiga species like the brown bear (Ursus arctos) and musk deer (Mochus mochiferus) living alongside residents of the expansive tundra, such as reindeer (Rangifer taranus) and willow grouse (Lagopus lagopus). More than 2,500 plants grow in the region, including over 200 endemics, comprising half of all the plant species of Siberia. Great pine forests snake through the mountains and their foothills, which are also a refuge for nine species of globally endangered plants.

The region holds some of the last intact habitats of several large endangered mammals, such as the snow leopard (Uncia uncia) and the world’s largest wild mountains sheep, the Altai argali (Ovis ammon ammon). The Mongolian saiga (Saiga tatarica mongolica), an endangered subspecies of the unique saiga antelope, roams through the desert-steppe zone of the region. The Altai-Sayan is home to a number of rare birds, such as the Dalmatian pelican (Pelicanus crispus), Altai snowcock (Tetraogallus altaicus), steppe and golden eagles (Aquila rapax, A. chrysaetos), and the elegant demoiselle crane (Anthropoides virgo).

While many shared species, ecosystems, as well as human cultures unite the diverse realms of the Altai-Sayan ecoregion, political boundaries have separated the region into independent units. The Altai-Sayan crosses the borders of four nations, including eight regions of Russia (Altai Krai, Republic of Altai, Khakassia, and Tyva, as well as parts of Krasnoyarsky Krai, Kemerovskaya Oblast, Irkutskaya Oblast, and the Republic of Buryatia), much of western Mongolia, the northeastern corner of Kazakhstan, and a small sliver of northwest China.

The challenge for these national and local governments, as well as the non-governmental organizations is to develop and implement a cooperative strategy to protect the Altai-Sayan ecoregion. The natural riches of the region – its pristine lakes and rivers, its mountain forests and meadows, its expansive grasslands, and all the animals that inhabit them – are a shared resource, and must be treated as such. The ability of all these varied peoples and institutions to recognize the value of their natural resources and work together to protect them will ultimately determine the fate of the Altai-Sayan.

Compiled from materials provided by the World Wide Fund for Nature (WWF), the United Nations Development Project (UNDP), and Irina Usacheva, director of the Siberian Environmental Center “Green Expedition.”
Although the Altai-Sayan ecoregion remains one of the more pristine areas of northern Eurasia, the past fifty years have witnessed growing threats on the region’s health as well as to the survival of its many endangered species. As human development encroaches on the forests, grasslands, and mountains of the Altai-Sayan, specific problems have appeared.

Probably the single greatest physical danger to the wilderness of the Altai-Sayan is the expanding mining industry of southern Siberia and northern Mongolia, which threatens plants and animals both with habitat loss and pollution. Existing and planned hydroelectric power plants, which provide energy crucial for the region, also have detrimental effects on the environment. Proposed roads through the area will open up the region to logging, hunting, and other development; poor management of oil and gas pipelines could lead to widespread habitat destruction.

Other problems are more urgent. What must be done to save the snow leopard from poaching when a single pelt sells on the black market for $5,000–15,000? How can populations of the snow leopard's primary species of prey, marals and ibexes, remain stable when government controls on legal hunting and illegal poisoning have fallen drastically? And how can a cap be placed on trophy hunting when it provides desperately needed jobs and income to a poverty-stricken rural population?

Forests, one of the Altai-Sayan ecoregion’s most valuable resources, also face dangers in today’s climate of illegal and semi-legal timbering. The steppes and mountain meadows that have served as pasturelands for thousands of years are heading towards nearly irreversible degradation due to overgrazing. What is to be done about a collapse of traditional reindeer herding that leads to localized over-hunting, over-fishing, and small-scale deforestation?

Some have suggested tourism as an alternative form of economic development for the region, which has plenty of natural wonders to thrill travelers. But if not carefully managed, an influx of tourists and the infrastructure that accompanies them could cause severe environmental degradation.

Ultimately, the greatest threat to the long-term preservation of the ecoregion’s biodiversity is the lack of a vision for coexistence between people and the environment, and the responsible use of natural resources this coexistence will require. Not promoting sustainable development will only prolong and exacerbate the threats that the region’s unsustainable economy already poses to nature conservation.

The Altai-Sayan ecoregion is a natural complex of interwoven ecosystems that provide a home to people who share similar socio-economic conditions. However, the region is a vast and contains an extremely diverse collection both of natural landscapes and of cultural backgrounds and ways of life. Environmental problems that are severe in one area may be light or non-existent in others; similarly, an approach to solving a problem may be effective in one region but not in another.

Gaining a complete picture of the complicated nature of all the environmental threats in the region and the way they play out against the backdrop of each specific locale would take more time and space than one magazine can offer. The following set of articles offers case studies of three problems existent in the Altai-Sayan today: forest conservation, hunting and poaching, and overgrazing.
**Forest Bands of the Altai-Sayan Ecoregion**

By **Mirgalij Baimukanov**

Coniferous forests are a predominant ecosystem throughout the Altai, spreading from southern Russia into Kazakhstan, China, and Mongolia. Typical forests include bands of Scots pine (*Pinus silvestris*) that grow in the sandy soils of the Altai Krai and northeastern Kazakhstan. Called “ribbon forests” in Russian, these tracts of pine forest stretch in long bands throughout the Altai Krai and into Kazakhstan. In northeastern Kazakhstan, they dominate 60 percent of the Irtysh River watershed, playing a key role in an ecosystem mosaic defined also by meadows, wetlands, rivers, and areas recently burned by forest fires.

Forest bands are a valuable type of forest that fall into the category of Group One forests, that is, forests considered important for their role in protecting the environment. These pine forests play an important role in preventing soil erosion, protecting the water balance, regulating the climate, and providing a place of recreation for the local population. The Forest Code of the Republic of Kazakhstan protects these Group One forests from most forms of economic activity; the only timbering allowed in the forest bands is supposed to be aimed at “improving the condition of forest stands and supporting the ecological, water-protecting, defensive, genetic, health-promoting, and other useful natural properties of the forests,” as well as “simultaneously facilitating rational use of mature forest.”

These rules, however, exist only on paper: in reality, a lack of care for the pines has placed these forest bands in danger. The prescribed annual cut in this region of the Altai-Sayan is officially listed at 16,900 cubic meters. Sanitation and other so-called “environmental cuttings” comprise 60,000 cubic meters; the precise amount of illegal timbering remains unknown, but unauthorized cutting is rising steeply. In the year 2000, government officials reported 287 cases of unauthorized logging involving 37,300 cubic meters of timber that was worth more than $500,000. Moreover, illegal loggers are generally outfitted with modern technology and mobile phones while state forest guards lack basic equipment, weapons, communications technology, automobiles, even animal transport. The inspection force is only half the size it needs to be to ensure reasonable security in the forests, and the inspectors receive meager salaries (around $30 per month) and have no guarantee of safety. Although the Ministry of Natural Resources and Environmental Protection of the Republic of Kazakhstan issued a decree on September 15, 2000 banning all forms of timbering in the forest bands, enforcement of the decree is unsatisfactory because of insufficient financial backing.

In recent years, forest fires have become a particularly menacing threat to the forest bands in eastern Kazakhstan and the steppe region of the Altai. Because of the low level of annual precipitation (200-300 mm), the region regularly experiences droughts, hot winds, and fast evaporation rates. This climate creates extreme conditions for forest growth and makes fires a great danger to the forest bands. Inflammability and the high intensity with which forest litter burns, when combined with the density of the forest understory, cause fires to spread quickly. The main cause of these fires has been illegal and deliberate acts by both legitimate logging companies and illegal loggers hoping to increase the area of burned forest. These loggers can then buy the rights to conduct legal sanitation cuts for pennies in forests that have suffered from forest fires. The loggers then receive tremendous profits by reprocessing and selling this lumber at market prices. An unmanaged market with weak controls essentially stimulates arson in the valuable forest bands.

The fires that swept through the Altai Sayan region in 1997 may be considered an ecological disaster: fire consumed 81,500 hectares, or 12.4 percent of the regions forest bands. In all,
fires burned more than 96,000 hectares between 1997 and 2000. Even considering the logging done after these fires, the forest industry of eastern Kazakhstan lost more than $425,000 as a result of the forest fires. Arson provides individual timber companies with swift gains, but causes the region as a whole to lose not only forests, but also the valuable income they provide.

Moreover, forest fires damage forests not only by directly burning trees, but also by unleashing a chain of negative effects. Pine forests on the enormous expanses where fires have burned dry out over the course of one or two years. The groundwater level falls, which in turn expedites the desiccation process. As forests dry out, they become more favorable breeding grounds for harmful insects that then spread to healthy untouched neighboring forests. A current infestation of the moth *Dendrolimus pini* affects 35,700 hectares. In all of the weakened tree stands, a secondary infection of bark beetles and other harmful insects then follows the nesting of *Acantholyda posticalis* currently affects 24,500 hectares of forest. Meanwhile, few funds are available for protecting forests from insect outbreaks. As a result of these negative influences, the forest bands in the Irtysh River region are losing their protective qualities, the ecological balance of the forest is destabilizing, and the sanitary condition of the forest has fallen to an inadequate level.

Furthermore, several factors inhibit natural forest regeneration in the burned areas, such as the extreme climate of the region, and the absence of a seed source and lack adjacent forest stands to encourage forest growth. The surface temperature of the blackened soil rises, the layer of humus burns, and a mixed stratum of earth and ash creates unfavorable conditions for pine seeds to sprout. If special measures are not taken to interrupt the cycle of problems that follows a forest fire, including scientific investigation to determine effective methods for planting and monitoring young trees, the bands of forests of the Altai-Sayan will disappear forever.

The necessity of caring for the forests burned in 1997-1998 has caused considerable alarm. At the end of the year 2000, nearly 60,000 hectares of burned forest required regeneration, but to this day no money in the federal budget has been earmarked for this cause. The first government financing for such work came only in 2000, when local government authorities in Kazakhstan set aside about $40,000 to aid reforestation. Experts have estimated, however, that more than $1,500,000 are required.

Artificial reforestation is possible only with careful consideration to the ecological conditions and the specific microclimates of the forest. The technology of reforestation includes a number of measures: rehabilitation of burned soil, planting and care of young trees, and aiding their natural regeneration. Trees must be planted directly after clearing an area from burned trees, but inadequate financing has sharply reduced the number of actual plantings. In 2000, only 200 hectares were reforested. If reforestation work continues at this pace, it will take 480 years to replant the forests that recently burned; if work speeds up to the levels from the 1980s, the work will take 24 years. The lack of materials needed for replanting also presents a tremendous problem: at one time tree nurseries existed in all of the leskhozy (state-owned forestry enterprises) in the Semey Region of eastern Kazakhstan, covering a territory of 339 hectares. Today only a third of them actually function, covering 104 hectares.

These factors have placed the forest bands in a critical position that demands immediate action. Considering both the low potential for natural regeneration and the enormous ecological and scientific significance of the forest bands, a federal nature reserve with an area of 200,000 hectares should be founded near the city of Semipalatinsk. This may be the only way to increase protection of the forests, implement measures and programs to rejuvenate biological and landscape diversity, and also renew the economic significance of the region.

These plans will require environmentally responsible, socially beneficial, and economically viable management of the forest bands. In the near future, authorities in Kazakhstan and other regions must develop a system of forestry that corresponds to international standards. Beginning plans for carrying out forest certification could be an important step in this direction.

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The Reality of Trophy Hunting in Kazakhstan

By Nadir Mamilov

In September 2000 the legislature of the Republic of Kazakhstan published a decree granting foreigners the right to hunt and capture two endangered species of birds, the saker falcon (Falco cherrug) and houbara bustard (Chlamydotis undulata). In reality, not only these species, but many other endangered species are available for hunting in Kazakhstan, such as the Turkestan red deer (Cervus elaphus bactrianus), djeiran (Gazella subgutturosa), and two subspecies of mountain sheep (Ovis ammon ammon, O. ammon coolium). Several of these animals live in the Altai-Sayan region.

Trophy hunting has significant effects on animal populations. Foreign hunters pay to kill animals not for meat, but for their beautiful horns. This trend implies, first off, that hunters primarily seek the largest and most beautiful individuals: herd leaders. Secondly, they hunt before or during the opening of the sparring season, when males are at their peak of beauty. The result of such hunting is that the new leaders of the herd are no longer the largest and strongest, but those that do not attract hunters' bullets. In other words, the herd undergoes constant degradation. Many species are actually becoming physically smaller, as larger and more robust individuals are singularly removed from the gene pool. A large male Pamir argali (Ovis ammon polii), maral (Cervus elaphus maral), or Siberian ibex (Capra siberica) in Kazakhstan is now a great rarity. Indeed, eager big game hunters are met with increasingly smaller trophies.

But despite the obvious need for scientific research to determine an ecologically safe method for conducting managed hunting, lawmakers in Kazakhstan have ignored the voices of well-informed conservation scientists. To date, neither Kazakh nor international scientists have been able to determine precisely how large the population of a species must be in order to ensure its long-term preservation. Meanwhile, it seems that the government of Kazakhstan has solved this puzzle, ignoring the opinion of professionals and zoologists. The Institute of Zoology recently prepared a study on the biological bases of removing endangered species from the wild in Kazakhstan, in which experts set the maximum quota for capturing the saker falcon at ten young individuals. The Committee of Forest, Fish, and Hunting Management made the same recommendation. Legislation on hunting the saker falcon, however, set the quota at 200 individuals—20 times greater than the scientists' recommendations.

Even worse, the authorities who create legislation display a poor understanding of the complexities involved in hunting management. For example, licenses for so-called "wild cats" sell for nearly $30, while a license for a "lynx" sells for about $200. Meanwhile "wild cats" could be any of a number of species that live in Kazakhstan, including endangered species like the sand cat (Felis margarita), manul (Felis manul), and caracal lynx (Felis caracal michaelis). Two subspecies of lynx live in Kazakhstan, including the Turkestan lynx (Felis lynx isabellinus), a cat listed in the Red Data Book.

A license for any "goose" sells for about $3.50. Meanwhile, four bird species included in this definition are endangered in Kazakhstan: the swan goose (Anser cygnoides), red-breasted goose (Branta ruficollis), whooper swan (Cygnus cygnus), and Berick's swan (Cygnus bewickii). But why does a "goose" cost so much less than the abundant green pheasant (Phasianus versicolor)? Words like "duck" and "sandpiper" open up fields that are just as broad for hunting endangered and rare species. In essence, no distinction is made between non-threatened species and endangered species.
In and of itself, big game hunting can be a positive element in economic development and nature protection. Various forms of safaris have actually helped increase the numbers of certain endangered species. Managed hunting brings considerable income for countries like the United States, Canada, and Finland. In the 1960s, after gaining independence and choosing to make ecotourism a priority in nature protection, zoology as a science and special biology collectives began to grow dynamically in certain African countries.

This rich international experience shows that rationally organized use of wild animals can be a lucrative branch of the national economy, creating numerous jobs and stimulating the growth of science. At the current time, however, the government of Kazakhstan is ignoring this experience, choosing instead an irresponsible and non-sustainable way of using valuable species of animals. This tactic shows disregard for the strategy of sustainable development, care for future generations, and a number of international conventions.

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The Disappearing Saker Falcon

The saker falcon (Falco cherrug), a close relative of the peregrine falcon and numerous kestrels, was once spread widely throughout steppe and mountain regions of Europe and Asia. A reduction in habitat and a decline in the population of ground squirrels and similar prey led to a sharp decline in the population of saker falcons in Europe, but until recently, the Altai-Sayan region held one of the last stable populations of these endangered birds. Trapped during migration or taken from their lofty nests in cliffs or high trees, saker falcons bring a high price on the black market, where they are valued as hunting birds. Although Kazakhstan once had a healthy population of over 2,000 nesting pairs, each year it loses up to 1,000 saker falcons. In Russia, airport customs officials have reported seizing as many as 700 saker falcons in a single year as people attempted to exit the country with the birds.

Drawing by S. Podolsky.
The Degradation of Grasslands in Southern Siberia

Adapted from an article by Elvira A. Ershova

People began using the Altai-Sayan ecoregion for economic purposes long ago, making it one of the most important regions for herding in the entire country today. The region's rich natural flora provides a basic source of food for most livestock in the region. Indeed, since ancient times shepherds have pastured their flocks in the feathergrass steppes, which were dominant across the flat expanses of Siberia. And even before domesticated herds spread through the area, antelope, mountain sheep, and ibex grazed on these lands. Steppe ecosystems formed under the influence of constant but low-impact grazing, which, at low levels not only didn't harm, but may have enhanced the natural succession of these areas.

In recent years, however, overgrazing has caused fields where shepherds have pastured their flocks for millennia to start down a path of pasture transformation, significantly changing the appearance and constitution of the steppes of the Altai-Sayan. The problem has become particularly pronounced (and infamous) on the steppes of western Mongolia that rise towards the mountains; the problem also exists and is becoming more evident in the fields and meadows of the Russian side of the Altai-Sayan ecoregion.

For thousands of years, measured grazing held the fields of the Altai-Sayan in the first stage of pasture transformation, in which the grass layer is well developed and produces a bountiful and highly nutritious crop. With the increase of pasturing, plants that were good for feeding but that poorly handled relocation were the first to decline. The change in dominance from feathergrasses (Stipa spp.) to fescue grass (Festuca spp.) marked the change from the first to the next stage of pasture transformation, but in most cases did not change the economic value of the land. Indeed, in many cases, lands in this second stage have the most productive and biologically diverse flora because moderate grazing prevented certain plants from dominating. A study from the early 1990s showed that only 8-10 percent of all fields used as pastures in the Russian side of the Altai-Sayan region remained in the first stage of pasture transformation, while 20-25 percent had already moved into the next stage.

Nonetheless, the first two stages are considered sustainable.

Far more serious problems emerge when a further increase in grazing leads to a basic reformation of plant communities due to an increase in the density of the top layer of soil, a deterioration of the water, air, and temperature cycles, and a decrease in the quantity of free nitrogen in the soil. Damage to the soil properties leads to a change in the type and structure of flora and the rhythm of its development; this implies a decline in the dominant species and productivity, as well as an increase in hardier plants. The fourth and final stage of pasture transformation is characterized by a sharp decline in the protective cover, damage to the horizontal and vertical structure of the grass layer, as well as its economic and biological productivity. In the final steps, the plant communities converge as species diversity falls. The communities become degraded, species hardy to grazing (Artemisia trigida, Potentilla acaulis, Veronica...
incana) dominate the grass layer, and new communities of weeds appear. Bare patches of earth become common. In southern Siberia, desertification often accompanies this final stage.

Steppe transformation progresses with greater speed in the high mountains, a particular danger for the numerous high mountain fields and meadows of the southern Sayan region. Even a small amount of grazing in excess of the carrying capacity of the field leads to significant damage to the structure of the field. Overgrazing brings heavy damage to the sod; livestock trails tear away plants, creating bare paths which serve as temporary streams that carry away topsoil after heavy rains in spring and summer. The brief growing season does not enable plants to regrow. As a result, valuable species decline, become physically smaller, and are preserved primarily in a low-growth, non-flowering state. In the last stages of transformation, the economic value of the field falls sharply, even though the biological production may rise because of an increase in various inedible plants.

Over the course of the past millennium, with the rise in number of domesticated livestock, the area of land used as pastures has also risen. As the number of domesticated herds and flocks have grown and the area of land used as pastures has spread, pasturing livestock in forest and high-mountain regions has become far more common. A rise in domesticated and wild northern reindeer (Rangifer tarandus). There, blanketing the slopes and open alpine mountaintops of the Sayans, grows the staple of the northern reindeer’s diet, a lichen called shulung in the local Tyvan language. It looks like a miniature, pale whitish-green head of broccoli and reaches a height of about 10 centimeters. Local reindeer herders say that shulung requires 10–15 years to regenerate after deer have grazed on it, and for this reason herders in the past migrated 12–15 times a year over great distances and wouldn’t

Where Have All the Reindeer Gone?

Note from the editors: As evidenced from the previous article, overgrazing is a serious problem in certain parts of the Altai-Sayan. But the issue is far more complex than a simple matter of an increase in the number of sheep in the area; these changes are all somehow related to the collapse of a regulatory structure from the Soviet era that supported various kinds of agriculture and industry in the region. While on the one hand the privatization of livestock herds on collective farms has led to increased herd size in many cases, in some cases, such as the story below, the withdrawal of government support has caused herd size to fall, leading to new environmental problems as the local population struggles to find a means of survival.

By Brian Donahoe

The remote Tozhu Province in the northeastern corner of the Republic of Tyva, along with the adjacent Lake Hovsgol Region of Mongolia, represents the southernmost habitat in the world for both domesticated and wild northern reindeer (Rangifer tarandus). There, blanketing the slopes and open alpine mountaintops of the Sayans, grows the staple of the northern reindeer’s diet, a lichen called shulung in the local Tyvan language. It looks like a miniature, pale whitish-green head of broccoli and reaches a height of about 10 centimeters. Local reindeer herders say that shulung requires 10–15 years to regenerate after deer have grazed on it, and for this reason herders in the past migrated 12–15 times a year over great distances and wouldn’t
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Overgrazing ruins grasslands for domestic and wild animals alike. Photo by M. Paltsyn.

return to the same campsite for at least 10 years. Now, however, herders migrate less frequently over shorter distances, and are even building permanent structures at their fall, winter and spring campgrounds, to which they are returning year after year. Yet the ecologist who goes to those campsites expecting to find degradation of the reindeer pastures will be disappointed: despite these pressures, the pastures are healthy and covered with shubulung. But the pastures are healthy because almost no domesticated deer remain in the region.

Experts estimate the carrying capacity of the reindeer pastures in the Tozhu region of Tyva alone at about 25,000 head of deer. The actual number of domesticated reindeer in the entire region, however, herded by four closely related ethnic groups (the Tozhu-Tyvan of Tyva, the Tofalar of Irkutsk Oblast, the Soyot of Buryatia, and the Dukha of Mongolia), has declined from approximately 20,000 in the 1980s to fewer than 2,000 today. This decline is due primarily to the collapse of the state-subsidized collective farm system, which during Soviet times paid the herders a regular salary and provided them with such basic necessities as clothing, tents, guns, and dry foodstuffs (flour, sugar, tea). Now, the herders no longer have a market or distribution network for their products, they have not received basic necessities or veterinary care for several years, and they have not been paid since the early 1990s. This combination of factors has led to a drastic decline in reindeer herds, as livestock have died off from easily preventable or treatable diseases and the herders have been forced to slaughter deer for food or to trade for basic necessities. Finally, the lack of powerful guns and bullets, also formerly provided by the collective farms, has lead to a marked increase in livestock losses due to predation. Indeed, the total population of domesticated reindeer has dropped so low that the herds are nearing the point of no longer being genetically viable due to inbreeding.

At present, the average herd per family is small: fewer than 30 deer per family as compared to 300 per family during Soviet times. And while the families would like to increase their herds to about 100 head per family, there is no sentiment toward rebuilding the herds to Soviet-era levels. This is because, in contrast to reindeer herders of northern Siberia who raise deer for meat, the herders of the Sayan region raise deer primarily for transportation purposes and for their milk products, while hunting wild animals is the principal economic activity. This fact, ignored by most government authorities during the Soviet era, must be recognized in order to understand the herder-hunters’ present lifestyle, their reactions to the institutional upheaval following the collapse of the Soviet Union, and their hopes for the future: understanding a people must precede formulating a nature conservation strategy that will directly involve them and their environment. It also has important implications for any future measures aimed at enabling the cultural survival of the Tozhu-Tyvan herder-hunters.

In the meantime, herds will probably stay relatively small and well within the carrying capacity of the pastures. But there are other threats to the natural resource base that demand attention. As mentioned above, the herders are migrating less frequently and returning to the same camps year after year. Moreover, transportation and communication difficulties encourage herders to move in closer to the villages where their relatives live. These two factors are leading to overhunting and overfishing in those areas closest to villages, as well as small-scale deforestation due to cutting trees for firewood.

External factors also threaten the region’s ecology and the herder-hunters’ way of life. Mineral extraction, particularly gold mining, drives out wildlife and pollutes rivers and streams, leading to declines in the fish population. Lucrative payment for musk glands, elk antlers, bear gall bladders and paws, etc., is luring ever more people into the taiga to meet the demands of the black market in contraband animal parts. In addition to depleting the wild game populations, these poachers contribute to the incidence of forest fires, which annually devastate tens of thousands of hectares of forest in Tyva alone. If left unchecked, these pressures could ultimately expend the region’s natural resources and mark the cultural demise of the hunter-herders in the area.

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In recent years, a number of environmental organizations have begun to look at the Altai-Sayan not as a region encompassing a series of disparate political jurisdictions and distinct ecosystems, but instead as an ecoregion, a large area of interconnected ecosystems largely dependent on one another. Amid the numerous governmental bodies, academic institutions, and environmental organizations throughout the region, two major initiatives in the past five years stand out for their widespread activity: the Association of Yenisei Zapovedniks and the World Wide Fund for Nature (WWF). Other actors play an important role on a more localized level.

At the current time, the most effective nature protection organizations in Russia are the protected areas themselves. Historically the seat of nature protection and the cradle of the modern environmental movement, protected areas, in particular the strictly protected zapovedniks, both preserve natural ecosystems and house varied forms of scientific research, often conservation-oriented. Nine zapovedniks currently exist in the Russian side of the region: another two in Kazakhstan, and six in Mongolia. If on their own these protected areas are a significant means for conservation, then working as a unified ecological network, theoretically they ought to be a powerful institution.

It was exactly with this thought in mind that the Global Environment Facility (GEF) sponsored a program in 1998 to unite zapovedniks regionally. In the Altai-Sayan region of Russia, the Association of Yenisei Zapovedniks brought together Sayano-Shushensky, Khakassky, Stolby, Ubsunurskaya Kotlovina, Azas, Tungussky, Katunsky, and Altaiisky Zapovedniks, as well as Shushensky Bor National Park. The association began holding seminars, discussing local and regional problems and potential solutions, and working together to improve the local network of protected areas. The association has also used its status as a unified environmental organization to win funds for conducting research on specific themes in several different zapovedniks and for publishing this research in books.

A recent decision changed the membership of the association to include protected areas besides zapovedniks and national parks, such as federal or local zakazniki (special purpose preserves), natural monuments, and nature parks. This change recognizes the importance of these smaller reserves in preserving the biodiversity of the region, creating ecological corridors for migrations and protecting the habitats of a number of rare or endangered species.

In the past three years, the Association of Yenisei Zapovedniks has served as a key partner for the World Wide Fund for Nature (WWF) as the latter began instituting a large-scale ecoregion program in the Altai-Sayan. WWF’s initiative in the region is by far the largest, best-funded, and most comprehensive attempt to ensure the preservation of biodiversity in the Altai-Sayan. It is also the only major initiative to
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Ubsunurskaya Kotlovina Zapovednik

Comprised of nine regions spread in the basin of Lake Ubsunur in the southern part of the Republic of Tuva near the Mongolian border, Ubsunurskaya Kotlovina Zapovednik contains some of the most diverse landscapes of the Altai-Sayan region. In the lowest region of the reserve, the saline Lake Ubsunur plays the role of an inland sea, drawing its waters from the entire basin. Higher in elevation, dry steppes cover the sand and loamy deserts. Moving up the foothills and high into the mountains that surround the basin, steppes give way first to forest-stepppe, then to deciduous and cedar forests. At the top of the high mountains, tundra and alpine meadows lead up to snow-covered peaks.

Indeed, Ubsunurskaya Kotlovina Zapovednik is particularly noteworthy for the fact that it protects pieces of nearly all the landscape types representative of the Earth’s temperate zone. Especially in connection with the Mongolian reserve Ubsunursakaya Basin, the 323,200-hectare zapovednik can serve as a transboundary model both of a small biosphere and of an international nature reserve.

Sayano-Shushensky Zapovednik

Sayano-Shushensky Zapovednik was founded in 1976 to monitor the effects of the Sayano-Shushensky hydroelectric powerplant on the mountain ecosystems of the southern Sayan Mountains in Krasnoyarsky Krai. The steep slopes that plunge into the lazy waters of the Yenisei River, as well as the cedar forests that carpet the surrounding mountains, are home to a variety of unique species, including the snow leopard (Uncia uncia), ibex (Capra sibirica), Altai snow grouse (Tetraogallus altaicus), golden eagle (Aquila chrysaetos), and osprey (Pandion haliaetus).

The high mountain peaks of the Sayan Ridge serve as the border between the Siberian taiga and the Central Asian steppes. On one side, the moist air masses from the Atlantic and Arctic spin above the forest; on the other, the dry winds of the Central Asian deserts pound across the plains. This border effect supports a particularly diverse combination of flora and fauna, as species from both regions mingle in the mountains. Although annual changes in the level of the Sayano-Shushensky reservoir can vary by as much as 40 meters depending on the activity of the hydroelectric dam, much of the zapovednik’s nearly 400,000 hectares are nearly free from human impact.

Shushensky Bor National Park

Shushensky Bor National Park was founded in 1995 on a territory of nearly 40,000 hectares to protect a series of unique natural systems in the southern Krasnoyarsky Krai. Located near the village of Sushenskoye, where numerous political prisoners – including Vladimir Lenin – were exiled during Tsarist times, the park now draws hundreds of thousands of visitors from Russia and around the world with the beauty of its untouched forests. Flora ranges from species common in alpine meadows to those common in forest-steppe and steppe regions. The dominant species in these forests are the tall Scots pine (Pinus sylvestris) and birch (Betula pendula), although cedars and firs are also common. The reserve is also important for its role in preserving a number of endangered flowers.

A young moose (Alces alces). Photo by N. Maleshin.

Photo courtesy of Greenpeace/ A. Butorin

Photo by N. Maleshin.
**Stolby Zapovednik**

“The rock faces are high and terrifying... Getting there is difficult: neither horse and rider nor pedestrian can climb these heights, and there is no shortage of wild beasts.” With these words in 1823 the Siberian naturalist Prokhor Seleznov described the region of fantastic cliffs and rock formations in southern Krasnoyarsky Krai. Later that century, the citizens of the nearby city of Krasnoyarsk founded a nature park in the region, which in 1925 became the federal zapovednik “Stolby.”

In this century, the large, industrial city and the nearly 100,000 tourists that visit the zapovednik each year have a significant impact on the ecosystems of the reserve. Nearly three percent of the territory of the zapovednik - 1,300 hectares - have been set aside specifically for tourists, while the rest of the park is theoretically reserved for the animals and plants that were once spread widely throughout the Altai-Sayan.

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**Katunsky Zapovednik**

In the pristine mountains that straddle the border between Kazakhstan and the Republic of Altai, the headwaters of the Katun River begin a winding path that will ultimately lead to the Arctic Ocean. Katunsky Zapovednik was founded in 1991 to preserve this wilderness, and earned the status of a biosphere reserve in 2000. Moreover, this 150,000 hectare zapovednik located in the heart of the Altai mountains along the border between Kazakhstan and the Republic of Altai was named part of the UNESCO World Heritage Site “Golden Mountains of Altai” in 1999.

As a biosphere reserve, Katunsky Zapovednik has a special role in supporting the development of the Altai region by demonstrating new methods for sustainable land use. The zapovednik staff divided the reserve into regions with various levels of protection and land use: strict protection, grazing land, commercial hunting, maral herding, agriculture, and recreation. In the future, staff hope to test various economic land uses such as ecotourism, herding maral in semi-captivity, and nurseries for medicinal plants.

In 1998, WWF identified 200 regions across the globe that were key for saving the world’s biodiversity. The Altai-Sayan was one of these 200 regions, and one that attracted the attention of WWF in Russia, Mongolia, and eventually Kazakhstan (the WWF office in China has not yet directed its attention to this ecoregion). Following a year of research and problem identification, WWF leaders outlined four basic goals for its project: to promote the expansion of the network of protected areas, to bring the Altai-Sayan region to international attention as an ecoregion, to develop the necessary structure to ensure long-term biodiversity conservation in the region, and to create pilot projects to demonstrate possible paths for sustainable development in a number of fields. Representatives of WWF also outlined more specific goals, such as demonstrating sustainable forestry in southern Siberia and protecting the snow leopard (*Uncia unciala*) and Mongolian saiga (*Saiga tatarica mongolica*) in western Mongolia.

This ambitious project sought to involve a broad range of people and organizations in the ecoregion project, ranging from political leaders to non-governmental organizations to businesses and the public at large. In reality, however, the results of WWF’s Altai-Sayan project have been far more modest and have not involved the broad spectrum of parties once envisioned. Nonetheless, a number of other organizations have joined in preserving the nature of the ecoregion on a smaller scale.
Azas Zapovednik

The surprising discovery of a population of a rare endemic Tuvian beaver (*Castor fiber pohlei*) in the Azas River became the impetus for founding a small nature preserve in 1962, which later became the 337,300-hectare Azas Zapovednik. Today the territory of the zapovednik includes the Azas River Basin in the Republic of Tyva, extending as far east as the Republic of Buryatia.

The zapovednik is a model of untouched wilderness in the region. Natural collections of minerals in the mountains paint these streams and lakes a beautiful emerald green, and cascades of waterfalls display the wildness of these mountains. Despite the harsh continental climate, deciduous and cedar forests flourish here, and the 909 species of plants found in the zapovednik comprise half of all the plant diversity of the Republic of Tyva. In addition to the beaver that first made the region famous, Azas Zapovednik is also noteworthy for protecting a rare forest population of reindeer (*Rangifer tarandus angustifrons*).

Khakassky Zapovednik

Khakassky Zapovednik protects seven islands of steppe and alpine taiga spread across the Republic of Khakassia, a total area of 131,400 hectares. The multitude of lakes in these territories, which vary significantly in salinity and formation, serve as important areas for birds to rest during their migrations between Russia and Asia. Bele and Ulukh-Kol Lakes in particular are an important component in the Central Asian flyway, drawing eight to eleven thousand birds every year. Among these migrating birds are a number of endangered species, such as the lesser white-fronted goose (*Anser erythropus*), swan goose (*A. cygnoides*), Bewick’s swan (*Cygnus bewickii*), and black stock (*Ciconia nigra*).

Khakassky Zapovednik was formed in 1999 by uniting two independent zapovedniks, both of which were founded in the early nineties. Therefore in many regions, nature is just beginning to return to a healthy state after decades of grazing, farming, hunting, and tourism. The recently formed scientific, educational, and protection divisions within the reserve will support the future health of these steppes and mountains.

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Focusing on large but limited areas within the ecoregion.

It is precisely on this level that government officials and institutions play an invaluable role. Without the aid of government representatives, NGOs and businesses would be at a loss to solve the legal issues involved in nature protection. The Ministry of Natural Resources is responsible both for exploiting and protecting the natural riches of each region, so it is of crucial importance that ministry staff be committed to using natural resources in a sustainable manner. At a forum held in the city of Belokurikha, Altaisky Krai, in October 1999, 12 high level government representatives from political regions of Russia, Kazakhstan, and Mongolia signed the Altai-Sayan Millennium Initiative, a document supporting the need for world attention and cooperation for protecting biological diversity, specifically in the 200 priority ecoregions identified by WWF. It is only with their cooperation on the local-regional level that the network of protected areas has expanded and continues to expand. Moreover, the administrations of various regions have provided financial support to a great number of environmental projects, such as publishing books and sponsoring seminars. Wealthier regions in particular, such as Krasnoyarsky Krai, have provided essential support in this regard.

A wide range of non-governmental environmental organizations are also active in the region. Although lacking the size and infrastructure to implement conservation programs across the entire ecoregion, the local NGOs can be key actors in
ecoregion-level conservation by working directly with the local population on environmental projects. In essence, local NGOs act as the intermediary and executor of conservation policies set for the entire ecoregion.

International attention in the ecoregion have also produced significant results on a local level. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) turned its attention to the Republic of Altai in 1990. Five sites - Altaisky Zapovednik, Katunsky Zapovednik, Belukha Mountain Nature Park, the Ukok Plateau, and the area surrounding Lake Teletskoye - were added to the list of World Heritage Sites in 1998 under the heading “Golden Mountains of Altai.” The Ubsunurskaya Basin in Mongolia and the Republic of Tuva have been considered for UNESCO protection, but of yet have no official status.

In reality, however, legislative and executive powers in the republic have not truly acknowledged the protected status of even the official World Heritage Sites. The Ukok Plateau quiet zone to this day has no official legal status, and plans for building a road and gas line through it pose a significant threat to the region. Federal financing for nature reserves covers only the salaries for zapovednik staff, but does not provide the resources necessary for protecting the reserves. Uncontrolled tourism exerts a significant strain on Lake Teletskoye and Mount Belukha Nature Park.

One notable and worthy party largely excluded from ecoregion-level nature protection is academia. The Russian Academy of Science has a long and respected tradition of research, including research on environmental themes. Similarly, science in Kazakhstan and Mongolia has proven itself in past and present. For example, despite a crippling loss of funding and staff in recent years, the Kazakh school of zoologists has earned a positive reputation by developing and implementing plans for preserving endangered species such as kulans (Equus hemionus), djeirans (Gazella subgutturosa), and Prjevalsky’s horse (Equus caballus).

Moreover, many scientists and economists across the entire ecoregion have devoted their lives to studying problems that could prove crucial to creating a path of sustainable development in the region. By using the research and knowledge these scientists have already accumulated and involving them in ecoregion planning, conservation efforts will be better founded and gain more credibility. Nonetheless, ecoregion-based initiatives have ignored much of academia, involving primarily scientists working in nature reserves.

The future fate of the Altai-Sayan depends heavily on the actions of these organizations and institutions in the upcoming years. With time, however, international attention continues to grow, adding an ever-increasing list of actors in the nature conservation drama of the region. The most ambitious of these new partners is the United Nations Development Project, which has just begun a new project on the ecoregion level to promote the sustainable development of the region.

Based on materials provided by the World Wide Fund for Nature (WWF), local NGO representatives, and regional scientists.

**Altaisky Zapovednik**

Initially founded in 1932 on a territory of more than a million hectares, Altaisky Zapovednik was liquidated twice in 1951 and 1961, and today occupies an area of 881,200 hectares in the Republic of Altai. Nonetheless, the reserve is still the largest in the ecoregion, protecting an area more than twice the size of Rhode Island. Spread across a territory that stretches from steppes just a few hundred meters above sea level to high-mountain deserts and snow-capped peaks, the zapovednik contains an unbelievable wealth of flora, with 1480 species of vascular plants.

The zapovednik is also famous for its beauty. The pure waters of Lake Teletskoye stretch like a thin, sky-blue ribbon between the mountains for 78 kilometers. The largest waterfall in the Altai, whose name means “unapproachable” in Russian, falls 150 meters from gneiss cliffs. Impenetrable taiga provides a home to brown bears (Ursus arctos), roe deer (Capreolus capreolus), and sable (Martes zibellina). Ibex (Capra sibirica) and argali (Ovis ammon ammon) inhabit the rocky crags higher in the mountains.

Lake Teletskoye is the jewel of Altaisky Zapovednik. Photo by A. Lotov.
The Future of Regional Biodiversity Conservation in the Altai-Sayan Eco-region

By Peter Newton

Earlier environmental initiatives in the Altai-Sayan eco-region have attracted the attention of the United Nations Development Program (UNDP), leading the organization to begin a special project focused on supporting biodiversity conservation in the region. In cooperation with the Federal and Regional Governments of the Russian Federation, as well as with the WWF Russian Program Office, the UNDP has developed the UNDP/Global Environment Facility (GEF) project “Regional Biodiversity Conservation in the Altai-Sayan Mountain Eco-region: Phase I.” The long-term objective of the project is to protect the global value of the Altai-Sayan’s biological uniqueness. This project will complement and enhance other initiatives currently being implemented in the region.

The project plans to take an eco-regional management approach, emphasizing the importance of ecological patterns and processes and the need for cooperation across boundaries within the country, as well as with other countries in order to manage these sensitive areas. For this reason, the UNDP/GEF project in the Russian Federation is also linked to similar UNDP/GEF biodiversity conservation initiatives in Mongolia and Kazakhstan. Over a period of five years, the project team seeks to enable people in this large eco-region to plan and implement a development strategy that will not exhaust or harm the region’s biodiversity. In particular, this project aims to demonstrate a widely replicable, integrated approach to the protection and sustainable use of natural resources that will bring global benefit through the conservation of native and endemic wildlife.

To this end, the project will focus on identifying and implementing a matrix of land use practices for various areas in the eco-region: protected areas and their buffer zones, “ecological corridors” for biodiversity conservation between protected areas, and agro-pastoral and forestry areas. The project, currently in a 12-month design and development phase, is now analyzing basic conditions and environmental threats in the region in order to propose a package of activities to foster a sustainable conservation framework for the entire eco-region. A series of studies will begin in the near future to assess the biodiversity, socio-economic, and legal and regulatory conditions in the eco-region, as well as the status of indigenous peoples. In addition to these studies, further analyses and appraisals will measure the transnational nature of the ecological processes in the region, explain the benefits of an eco-regional conservation plan, and underscore the need for the economic sectors to adopt strategies that will not harm the region’s biodiversity.

The design and development phase should result in a project that funds activities in a number of fields crucial to biodiversity conservation and sustainable development of the eco-region. These activities include identifying, establishing or strengthening...
critical protected areas and their buffer zones, both national and bi-national. It also means designing and implementing a biodiversity overlay for the landscape at large and promoting sustainable resource management through the development and demonstration of alternative livelihood options, such as biodiversity-friendly forestry, grazing and eco-tourism. Further activities include strengthening education and raising awareness at local, national, and regional levels and other activities that can help build capacity for sustainable development.

In direct support of the UNDP/GEF project, UNDP is funding a sustainable development initiative in the Republic of Altai through a UNDP-led initiative called Capacity 21. At the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992, Capacity 21 was created to assist developing countries and countries in transition to integrate concepts of sustainable development into national planning and development. The current UNDP/Capacity 21 project in the Republic of Altai is aimed at developing a balanced approach toward local economic and ecological development by promoting sustainable natural resource use and bolstering the local economy through growth in processing and service industries.

Recognizing the need to raise the economic level of the region in the course of implementing sustainable development strategies, the project is focused on those fields that have the most profound impact on the economy and the environment: forestry, pasturing, tourism, small business development, and mining. The goal of the project is to develop long-term, strategic action plans that address local sustainable development concerns in selected municipalities in the Republic of Altai. Three or four municipalities will become the focus of special programs to pave the way for achieving sustainable development, seeking to improve the quality of life for the local population. For this very reason, the planning process will involve a variety of local stakeholders, from municipal authorities to representatives of NGOs, women's and youth groups, indigenous communities, academia, and local businesses.

The future five-year UNDP/GEF project is only a step towards sustainable development in the Altai-Sayan ecoregion. Similar projects in other parts of the world have proven that sustainable conservation is compatible with the rational use of natural resources and economic development. UNDP looks forward to contributing to this process in the Altai-Sayan eco-region.

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UNDP is interested in cooperating with other institutions that are active in related fields in this region. For further information please visit the UNDP homepage http://www.undp.ru or contact us under the following address:

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A maral (Cervus elaphus maral) struggles through deep snow.

Photo by N. Maleshin.
Forging a New Strategy in the Wake of the Soviet Union

By Lisa Woodson and Nikolai Maleshin

Altaiisky Zapovednik is so vast that a person can ride on horseback through the reserve without encountering another person for forty days. These expanses are characteristic of the sparsely populated Altai-Sayan. Indeed, this low population density — and the relatively low demands of this small population on nature - have undeniably played a positive role in preserving the region in such a pristine state to this day. The region’s immense size and remoteness have also, however, left local residents in relative isolation: no unified vision exists that effectively unites all the varied people and organizations of the Altai-Sayan in the work of biodiversity conservation. As a result, nature conservation measures are implemented haphazardly on a local level.

Although an ecoregion-based approach to conservation may be a successful strategy given the dynamic changes ensuing from the collapse of the Soviet Union, the tenacious legacy of nature protection inherited from the Soviet Union keeps conservation initiatives in the region in the previous century.

To understand the nature of environmental protection today, it is necessary to look to the past. An organized approach to nature protection in the Altai-Sayan began during the Soviet period. Scientific ideas popular in Russia in the early 20th century promoted the theory of integrated ecosystems, the need to protect and study pristine models of nature. This theory gave rise to the network of protected areas, or zapovedniks, that became the backbone of nature conservation in the Soviet Union. Large zapovedniks, as a rule located far from cities and heavily populated areas, were an ideal means of fencing off natural areas and preserving the complete ecosystems they contained. Indeed, this network of protected areas was unique in the world and could probably exist only because the extreme centralization of the Soviet government provided the infrastructure necessary to support it. At the same time, this strategy of nature protection had a significant flaw: it seemed to take away the need for environmentally responsible development. Having set aside territories to protect animals and plants, Soviet officials did not hesitate to develop the nation’s economy with little attention to environmental cost.

In some areas, this development called for large, polluting factories, hydroelectric dams, and nuclear power plants. In the Altai-Sayan, a region located primarily in an area of direct or strong Soviet influence, some of these large engineering projects were built, but overall the region was left comparatively undeveloped, as it remains to this day.

Meanwhile, throughout much of Soviet history, conservation scientists worked mainly within the network of protected areas. Isolated on these islands of nature, many scientists were forced to focus solely on the health of their protected areas without considering the environmental state of the nation as a whole. Only during the period of glasnost in the late 1980s did environmental concerns begin to migrate from these closed nature reserves to the rest of the country and its people. The legacy of conserving nature in isolated fragments remained a tenacious force.

In today’s social and economic climate, however, this conservation strategy is less effective than it was twenty years ago. The collapse of the artificial supports of a command economy and strongly centralized government have created an economic crisis across the entire territory of the former Soviet Union. Zapovedniks receive a fraction of the funding they used to, and the local population in these remote regions has been left without support — often without even an occasional glance — from the federal government. A conservation strategy for the 21st century must leave behind the idea that nature can be conserved on isolated islands without regard to the people that live in the region.
Special Section. The Altai-Sayan Ecoregion

The ecoregion strategy has clear strengths in this regard. Designed to focus on large areas and incorporate the needs of local residents directly into nature protection plans, ecoregion-level conservation could both fill in the administrative gap left by the dissolution of central planning and support the sustainable development needed to ensure long-term nature conservation. The practical experience of the past three years, however, has shown the difficulty of moving beyond the entrenched mindset of the past century.

Since the Altai-Sayan first received recognition as an ecoregion of global significance in 1998, increased emphasis has been placed on implementing an ecoregion-level strategy for nature conservation in the region. The most assertive and clearly stated attempts to implement ecoregion-level conservation in the Altai-Sayan have fallen under WWF’s ecoregion project. But despite notable successes, such as identifying certain environmental problems and threats in the region and testing several pilot programs, ecoregion initiatives have not managed to unify conservation efforts or create an effective development strategy.

Part of the problem is a lack of vision for the ecoregion as a whole. The WWF project included general goals to create the infrastructure necessary to ensure long-term conservation of biodiversity, support the expansion of the network of protected areas in the region, promote awareness of the global importance of the ecoregion, and demonstrate models of sustainable development in relevant fields. But there is still no vision for the future that unites conservation work across the ecoregion. At a historic meeting in the Altai Krai in 1999, WWF representatives and government leaders from Russia, Mongolia, and Kazakhstan signed the Altai-Sayan Millennium Initiative, expressing commitment “to the elaboration of a strategy for sustainable development of the Altai-Sayan ecoregion.” The language of the Millennium Initiative, however, is vague, and does not set a clear path or destination for environmental conservation in the region. So even though there are many organizations and institutions that have no objection to ecoregion-level conservation, to date they have not agreed upon a unified set of goals for the region.

Moreover, despite the fact that in word some environmental projects and initiatives call themselves ecoregion-based, in deed they continue to follow a Soviet model of nature protection: they are initiated from the top down without public participation and focus on preserving nature in small areas instead of supporting more holistic conservation.

The continued emphasis on expanding the network of protected areas in the Altai-Sayan is a clear example. The Republic of Altai has led the way in promoting protected areas, setting aside a full 22 percent of the territory of the republic for nature conservation; Mongolia has promised to turn 30 percent of its territory into nature reserves. Proponents of expanding protected areas argue that a large number of species regularly wander outside the borders of existing protected areas, and that in order to ensure the preservation of such species, they must be protected on all parts of their habitat.

The reality of the situation, however, brings this argument into question. Protected areas already in existence are under-funded, and the staff hired to guard the areas from poaching and unlawful pasturing and timbering are often unable to control these problems. Many will rightly point out that the gravest threat to biodiversity conservation may well be not the occasional poacher or shepherd, but the roads, pipelines, and settlements that may eventually be built through the region if no one sets aside the territories for nature conservation. Nonetheless, does it really make sense to create numerous new protected areas that will require new financial resources and new infrastructure when a number of the existing protected areas are unable to fulfill their intended function? Is it humane to fence off even more natural resources from an economically depressed population without...
Special Section. The Altai-Sayan Ecoregion

Ibex (*Capricia siberica*) are common on rocky slopes in the Altai-Sayan.
Illustration by I. Filus.

In many cases, conservation initiatives fail because they do not penetrate layers of bureaucracy and reach the people of the region: throughout most of the Soviet era, conservation directives came from on high without consideration of popular opinion. Thus there is almost no existent structure, mechanism, or tradition of public involvement in organized conservation initiatives, especially in a region as remote as the Altai-Sayan. In essence, today any organization seeking to implement conservation programs with the participation of the local population must navigate uncharted waters.

An innovative pilot project led by WWF to protect the snow leopard illustrates this problem. Recognizing that a decline in the populations of ibex and argali mountain sheep had led the snow leopard to attack domestic flocks, and that local shepherds often protected their animals by shooting the big cats, WWF offered to insure the livestock against leopard attacks on the condition that the offending leopards would be left unharmed. The first leopard attack, however, uncovered a fundamental flaw in the project. A local shepherd guarding his brother’s flocks shot and killed a snow leopard after the cat had killed 48 sheep. Upon investigation, WWF representatives learned that the shepherd knew nothing of the insurance policy. The administrators of the local collective farm had carried out all negotiations with the insurance agency, but had not informed the shepherds of the policy. Despite the broken agreement (the leopard was killed), WWF arranged to pay the shepherd the equivalent of 720 U.S. dollars in order to establish trust with the local population. In other words, even though the project seemed geared directly at supporting the local population economically and involving it in nature conservation, a failure to even inform the local population decreased the project’s effectiveness. What reason does a local shepherd or farmer have for following the standards of a new conservation policy that he had no part in forming, knows little of, and does not understand in the context of a larger picture of the entire ecoregion?

A second distressing feature of attempts to implement ecoregion-based conservation in the Altai-Sayan is a lack of broad scientific support for conservation measures. Although scientists working in nature reserves do have some voice in creating and instituting conservation programs, especially when they involve the network of protected areas, academia at large has been excluded from participating in these programs. For example, after the first three years of the project’s existence, an informal survey of academic institutions in Krasnoyarsk showed that not a single one of the scientists queried had any...
more than a vague notion that one or more organizations were trying to implement nature conservation projects on the ecoregion level. Scientific support is the key to establishing both international credibility and judicious standards for natural resources use, but today, just as in the Soviet period, scientists who have devoted their lives to studying biological and ecological processes all too often find their research and recommendations ignored.

At a time when implementing ecoregion-level change is more important than ever, it is also harder than ever. Twenty years ago, the centralized government of the Soviet Union would have made executive decisions and enforced them with a strong arm in Russia, Kazakhstan, and even Mongolia; today the weakness of government controls in all of these countries makes broad implementation and enforcement of basic and necessary programs, such as anti-poaching initiatives, nearly impossible. Similarly, administrational problems have plagued the management of non-governmental environmental initiatives. Meanwhile, the Chinese government, though centralized and theoretically powerful, is not closely tuned toward environmental projects and does not permit effective grassroots organization.

Moreover, coordinating efforts between all of these countries increases administrative and communication problems four-fold. For example, when China placed a ban on logging in the northwest – at first

\[\text{Illustration by I. Filus.}\]

perhaps the most successful initiatives will be those based within the network of zapovedniks, the historical seat of nature protection in the Soviet Union. Because this network still holds some remains of the infrastructure in which nature conservation was based during the Soviet era, it can play an invaluable role during this time of transition. Although traditionally isolated islands of nature protection, each with its own rules and goals, recently several of the zapovedniks of the region have begun a track of increased communication and coordinated projects. Through the Association of Yenisei Zapovedniks, a number of zapovedniks have begun tourism projects and other initiatives to raise the economic level of the local population without harming the environment. Furthermore, transboundary reserves – particularly transboundary biosphere reserves – can be models for international cooperation and sustainable development. The success or failure of these initiatives remains to be seen.

\[\text{Korbu Waterfall, Altaiisky Zapovednik. Photo by I. Shpilenok.}\]

Indeed, the success or failure of environmental initiatives across the entire ecoregion remains to be seen. Before WWF began its project in the ecoregion, many scientists recognized the area as a region whose natural borders did not coincide with political borders, but this recognition did not lead to any efforts to enact trans-national nature conservation strategies. But with the beginning of ecoregion projects and GEF’s initiative to unite the protected areas of the Yenisei region, a new awareness has begun to grow. The region has developed an international reputation (if not yet a local reputation) as an ecoregion. Moreover, this reputation has attracted increased attention and funding from other organizations, including the UNDP project that is only just beginning. The first steps in concentrating on the Altai-Sayan as an ecoregion have faltered, but they are only first steps. Learning from early mistakes can make future initiatives more effective. The upcoming years will show whether or not an ecoregion approach can be successful in the Altai-Sayan, leaving behind the Soviet legacy of isolated initiatives in nature protection in favor of environmentally sustainable development.

The information in this article is based on written materials and oral accounts provided by representatives of WWF, the UNDP, regional government officials, and representatives of local non-governmental environmental organizations.

Lisa Woodson and Nikolai Malesbin are the Editor and Managing Editor of Russian Conservation News.
As spring dawns over the frozen tundra of northern Scandinavia and Russia, a distinctive high-pitched cry signals the return of the lesser white-fronted goose (*Anser erythropus*) to its summer nesting grounds. The smallest of its relatives, this goose strongly resembles the white-fronted goose (*Anser albifrons*), sharing its cousin's striped breast and white spot on the head. But at close range, its yellow eye-ring, darkish head, and fine proportions distinguish the lesser white-fronted goose from its larger relative. Unlike the white-fronted goose, whose numbers have remained relatively stable over the past twenty years, *Anser erythropus* has seen a marked decline in population.

Since the early 1980s, the world population of lesser white-fronted geese has dropped from 130,000 to no more than 30,000 individuals. Some estimates place the current population between 8,000 and 17,000 birds. The decrease has been particularly catastrophic in Fennoscandia, where a mere 50-60 individuals have been preserved in Finland and Norway out of a population in 1950 of more than 10,000 geese. Though not as dire, the situation in Russia is nonetheless troublesome, as the current population of the geese in European Russia numbers no more than 500-600 breeding pairs in comparison to 3500-5000 breeding pairs estimated in the early 1980s.

Because of its serious population decline, the lesser white-fronted goose has been included in the list of globally threatened species. BirdLife International, Wetlands International, and the IUCN have all recognized that urgent measures need to be taken to restore the global population to a sustainable level. To take countermeasures, however, scientists must first understand the reasons underlying the global population decline, which remain largely unclear.

One obvious problem is hunting. Despite its status as a protected species in the majority of European and Asian countries, the goose frequently mistakenly falls victim to hunters because of the strong resemblance it bears to its larger cousin, the white-fronted goose (*Anser albifrons*), which is not a protected species. One study showed that out of 19 birds ringed in summer 2000, three were killed during migration in November 2000. If these figures are indicative of the population at large, hunting pressure may drive the goose to extinction. Although the lesser white-fronted goose is less

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River banks and cliffs are important habitats for the goose. *Photo by I. Rebrova.*
exposed to the risk of hunting within its breeding range, in certain districts, such as industrial centers in the Russian north, hunting has a considerable effect on the population. Even worse, the goose is still considered a fair game species in Kazakhstan, through which many birds migrate each year.

Another serious threat to the lesser white-fronted goose is habitat loss. A breeding range that once stretched as a continuous band across northern Eurasia has split into several isolated areas in Fennoscandia, the foothills of the Polar Urals, southern Yamal, Taimyr, Yakutia, and the northern Far East region. The goose is now extinct in many regions where it was once common.

Nonetheless, investigations have revealed that breeding areas in sparsely populated and remote regions remain basically undisturbed. The major factors contributing to the species’ decline are more likely the destruction and deterioration of winter habitats combined with disturbance and hunting along migration routes and in wintering grounds. The geese live in the northern tundra only three months of the year, spending six months completing a migration that covers 7,000 to 8,000 kilometers, and about three months in their wintering grounds. During migration the geese make several stops, but regularly fly without rest for 1,000-1,500 kilometers. They spend much time in stopover sites, also called staging grounds, to feed and rest before undertaking further migration.

For this reason, protecting the geese at all points of their migration is crucial to preserving the species. For example, geese habitats in the Volga delta once recognized as significant staging area disappeared when the level of the Caspian Sea rapidly increased; winter habitats on the southern coast of the sea disappeared for the same reason. Loss of wetlands resulting from agricultural development has compromised wintering sites in Turkmenistan and Azerbaijan.

But part of the problem lies in the fact that scientists do not even know the full migration routes of the birds, where their staging areas are, or where exactly they spend the winter: defining a protection strategy depends on understanding the migration patterns and life cycles of the birds themselves. While a small portion of the Fennoscandia population migrates through Poland, Germany and Hungary to Greece, the majority of birds, including the Taimyr population, follow a flyway somewhere through northwestern Kazakhstan to wintering grounds in the Caspian-Black Sea region that remain largely unknown. Some individual observations report birds migrating through European Russia. Meanwhile, no sufficient data exist to outline the precise migration routes or stopover sites of the easternmost populations of the lesser white-fronted goose. Some observations indicate that those populations of geese fly through south central and eastern regions of Siberia and the Russian Far East on their way to winter in southeast China.

Recognizing the importance of ensuring the geese’s protection throughout their entire range, scientists have focused much of their recent research on the lesser white-fronted goose on uncovering the birds’ migration pathways and wintering grounds. To this end, scientists...
have begun projects marking geese with color rings or neckbands and tagging certain individuals with satellite transmitters. Scientists from Russia, Finland, and Norway worked together in two international expeditions in 1997 and 1998 to the most promising regions of the goose's habitat, the South Yamal Peninsula and the Taimyr Peninsula. In total, scientists caught 59 birds, marking all of them with bands and tagging 13 with satellite transmitters.

Much to the scientists' disappointment, a defect in the satellite transmitters caused a number of the devices to fail soon after the birds were released. While those transmitters that continued working brought valuable data about the birds' flyways and staging areas, none of the transmitters worked long enough to provide data about the birds' wintering habitats. Only three of the birds marked with neckbands or leg rings have been recovered to date, but those that were found provided scientists with interesting information. Researchers learned that the lesser white-fronted goose has a high level of fidelity to breeding sites, and thus habitat transformation and hunting pressure in these areas could prove disastrous to the birds' future survival.

Upon completing its international project, the Goose and Swan Study Group of Eastern Europe and North Asia set out on two expeditions in 1999 and 2000 to the Bolshezemelskaya Tundra in northwestern Russia to survey populations of the lesser white-fronted goose that were hitherto poorly studied. The project also aimed to catch and ring geese to reveal their migration routes. Despite the relatively small scale of the expedition, scientists managed to catch and ring 20 lesser white-fronted geese, fitting six of them with colored neckbands. In fall 2000 the scientists recovered three of these birds, providing a better understanding of the location of staging areas in European Russia. The wintering habitats of this population, however, remain unknown. Nonetheless, based on the data received from these studies, scientists believe sufficient cause exists for making efforts to protect those staging areas of the lesser white-fronted goose that are known to date.

Ultimately ensuring the conservation of the species means preserving the birds themselves as well as all of their multiple habitats. The problem will not be solved until the geese's wintering areas are discovered and protected. Further investigation applying satellite telemetry is probably the most effective way to discover wintering grounds, and such research is urgently needed. This method, however, is rather expensive and cannot be implemented without financial aid from international conservation community.

References


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The Development of International Cooperation in the Russian Arctic

It is not without cause that Dr. Gerard Boere has been dubbed the Dutch Knight of the Russian Arctic. Few foreigners have fought such a crusade for preserving the natural heritage of the Russian Arctic: from his first trip to Russia in 1976 to the present day, Boere has continually struggled to protect the natural ecosystems that play a crucial role in preserving the world’s biodiversity. This article, based on an RCN interview with the renowned ornithologist just before he retired from work in Moscow, offers Dr. Boere’s perspective on the development of international conservation efforts in Russia over the past 25 years as well as the challenges the Russian conservation movement faces in the future.

At the height of the Cold War twenty-five years ago, an iron curtain separated east from west. Border guards strictly monitored travel to and from the Soviet Union, allowing not only little movement, but even restricting the exchange of ideas across the iron curtain. Scientific exchange between the Soviet Union and the West was limited, and scientists on each side worked in conditions of relative isolation.

But during this time, there were still ambassadors who crossed the boundaries of nations without passports, without visas, without customs inspections. Paying no heed to political borders, millions of geese, ducks, swans, and other birds passed from Europe to the Soviet Union and back each year in the course of their annual migrations.

The fact that birds from the Russian Arctic wintered in Europe gave Soviet scientists and officials a vested interest in working with European ornithologists: there were many aspects of the birds’ ecology that interested scientists on both sides of the iron curtain. For example, birds can carry and transfer diseases and parasites from nesting ground to wintering location and vice versa. Moreover, conservation efforts could only be effective if carried out throughout the birds’ habitats: information on hunting and habitat destruction in Europe was of great importance to creating protection strategies in the Russian Arctic. Unable to deny the fact that these bird populations were shared commodities and that ornithological research on all points of the birds’ migration routes would bring a fuller understanding of the birds themselves, Soviet officials supported limited contact between Soviet and western ornithologists.

Dr. Boere’s adventures in Russia began in 1976 while the young ornithologist was preparing his Ph.D. dissertation on birds that migrate from the Russian Arctic to the Netherlands in winter. He attended a conference on migratory birds in Novosibirsk. Out of the conference’s 200 participants, only 20 were foreigners, but the conference was an important early step in beginning partnerships and building relationships between Soviet and European scientists. Even so, at the time the many suggestions for joint research in the Arctic were more or less denied.
Over the course of the next ten years, Dr. Boere was occasionally able to visit the Soviet Union for conferences, but was unable to travel freely or conduct research. More significant changes finally began in 1988 under perestroika, when Soviet leader Mikhail Gorbachev ordered the Soviet Academy of Sciences to branch out and form professional ties with their international colleagues. Not all Soviet scientists were eager for these changes, but pioneers, such as Evgeny Syroechkovsky, Sr., paved the way to international scientific exchange and cooperation.

This process was not as simple as it may appear at first glance. Interaction between Russian and western scientists showed that far from being an absolute and impartial discipline free from human error, science is perhaps more akin to the art of uncovering truth about the natural world despite human bias. When Soviet and western scientists began working together, they discovered that each side had its own approach to science and the scientific method. Differing historical scientific traditions combined with fifty years of relative scientific isolation had created vastly different conceptions of science.

Biological field science in the West was based in data analysis and thinking from hypothesis. Researchers conceived hypotheses based on existing data and then tested these hypotheses. Meanwhile, in the Soviet Union, science was far more descriptive. Researchers hoped to learn about the natural world not through analysis, but through meticulous long-term observation. Year after year, scientists would compile lists of data in hopes of gaining a fuller understanding into the workings of the natural world. This scientific tradition developed partially due to a marked oppression on free speech and thought in the Soviet Union that discouraged independent analysis: indeed, with glasnost and the opening of international borders, science in Russia became increasingly analytical.

But western scientists also discovered distinct advantages in the Russian tradition of science. Long before scientists in the West had conceived the theory of biocenesis, the need to protect integrated ecosystems, Russian scientists had been putting the theory to use in their formation and study of zapovedniks. Moreover, the Russian tradition of describing nature year in and year out had created a wealth of systematic data unequalled in all the world.

With their commitment to international scientific exchange Soviet and western scientists like Dr. Boere found a common language despite their differences. In 1989, the first foreigners, among them Dr. Prokosch of the WWF Arctic Programme, traveled to the high Arctic, Russia’s Taimyr Peninsula, as part of a program with the United Nations Educational, Scientific, and Cultural Organization (UNESCO). From this point on, Dr. Boere began making regular trips to the Arctic as part of his work in ornithology and conservation. Meanwhile, in 1990, the first Russian scientist traveled to the Netherlands as part of a scientific exchange program. In 1991, representatives from Goskompriroda cosigned the first official Memorandum on international cooperation.

The study of migratory birds first drew Boere to the Russian Arctic, and later opened doors for international scientific and conservation exchanges. Photos by E. Lebedeva.
At this point, a new trend began to develop in Dr. Boere’s world of ornithology in the Russian Arctic. The first steps in international cooperation had revolved strictly around studying birds and their migrations between the Netherlands and the Russian Arctic. Now using the door this scientific exchange had initially opened, Dr. Boere himself became an emissary between these two lands to promote conservation throughout Russia.

Naturally, his first focus was conservation of Arctic wilderness, the summer habitat of the birds that had first lured him to the Soviet Union. But with time, this focus spread to include many different aspects of conservation in Russia. Working with the Agricultural Counselor of the Royal Netherlands Embassy, Dr. Boere helped develop and facilitate a multitude of programs aimed at preserving Russia’s unique wilderness areas, in the process setting a remarkable example for other nations to follow.

The Netherlands’ investment in Russia’s wilderness is remarkable in its depth and foresight. With funding from the Netherlands, a permanent biological station was founded on the Taimyr Peninsula in 1995. Furthermore, the nation provides substantial financial support to numerous environmental organizations active in Russia, including the Russian Bird Conservation Union, Wetlands International’s Russia Office, the Biodiversity Conservation Center (BCC), and the environmental education center “Zapovedniki.” Indeed, one-fourth of the total annual budget of the Russian branch of the IUCN comes from the government of the Netherlands, as has $650,000 annually in support of publishing species inventories and other publications. In upcoming years, the government of the Netherlands has promised to match part of the Global Environment Fund’s (GEF) spending in Russia. The scope of projects has moved far beyond the Arctic, stretching to include wetlands and forest conservation, the creation of protected areas, and protecting the rights of indigenous peoples.

Though retiring from work in Moscow, Dr. Boere is hopeful about the future of nature conservation in Russia. A key factor, in his opinion, is to keep the window open between Russia and the West so that scientific exchange can continue to progress. This includes translating more information into English, the current language of science, and publishing it abroad while the data are fresh. Startlingly few people know that Russia holds 50-60 percent of the world’s last remaining untouched lands; even fewer know of all the scientific work in nature conservation that has been carried out in Russia.

Maintaining and improving international relations will play an important roll in global environmental conservation. Perhaps nowhere else in the world can people conduct research and found nature reserves at so low a cost. So little wild nature remains in Europe that any effort to protect or restore a natural ecosystem bears a heavy price tag, whereas in Russia, conservation of the world’s biodiversity often requires little more than fencing off an area from future development. Foreign governments and donor organizations looking to contribute to nature conservation on the global level would make wise investments by contributing funding for environmental projects in Russia, but can do so only when they have current data on the environmental situation in Russia.

The past 25 years of nature protection history in Russia have witnessed a multitude of changes and interesting turns. Beginning by studying migratory birds, people like Dr. Boere and his Russian colleagues gradually opened a window between two cultures, bringing the challenges of preserving the Russian Arctic to the international table, and ultimately creating a strong alliance between the Netherlands and nature conservation throughout Russia. As with any historical movement, it was primarily the work of individual people that brought the most profound impact on the development of nature protection. Dr. Boere’s love for the Arctic is visible from the sparkles that appear in his eyes as he describes Arctic landscapes. In the future, it will take people with this kind of love of nature and dedication to international collaboration in conservation to ensure the protection of Russia’s remaining wilderness.

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Restoring Russia’s Historical Landscapes:
A Battle for the Field of Kulikovo

**Note from the editors:** Beginning in the 13th century, the ancient kingdom of Kievan Rus’ fell under the control of the Mongol-Tatar Empire. But the tide changed in 1380, when the tribes of Rus’, united under the Prince of Moscow, Dmitri Donskoi, refused to pay tribute to their foreign rulers. Enraged, the leader of the Golden Horde, Mamai, marched his army north toward Moscow. The two armies met in battle on September 8th on the Field of Kulikovo, an expanse of steppe and forest 200 km southwest of Moscow. The battle was long and bloody, involving over 100,000 people from both sides, but the day belonged to the warriors of Rus’. The battle marked the beginning of the end of two hundred years of servitude and entered history as the mythic dawn of a new Russia.

In recognition of its historical value, the Field of Kulikovo earned a measure of state protection in 1996, when it became a museum-zapovednik. Unlike nature zapovedniks, which are strictly set aside for conservation and study of natural ecosystems, museum-zapovedniks are created to preserve Russia’s historical and architectural treasures, and invite the public to visit and learn of the nation’s past. Even with protected area status, however, the future of the Field of Kulikovo remains uncertain. Efforts to educate and involve the local population in environmental projects may prove the best means to renew and protect this historic landscape.

*By Vladimir Tseplyaev*

The steppe mares fly, fly,
And trample the feather-grass...
Beyond the Nepryadavya swans
cried aloud,
And again, again they cry...

— Aleksandr Blok,
On the Field of Kulikovo

Although the etymology of the word “kulikovo” is uncertain, the name of the field most likely comes from the old Russian word kuliga, which means “neglected pasture.” Translated into modern Russian, the Field of Kulikovo would be “Field of Neglect.” And indeed, this meaning is all the more true today, when the field and all of its historical surroundings - Orthodox churches, nobles’ country estates, multiple villages – have been neglected.

Festivals celebrate the historic battle fought on the Field of Kulikovo.
*Photo by V. Tseplyaev.*
for more than six centuries. Moreover, the historical natural landscape has been neglected, as agriculture and other human activity have transformed this field beyond the point of recognition.

One of the greatest tragedies is that the people who live in the region know almost nothing about the field or its historical significance. The remains of five ancient cities, eight burial grounds, and nearly three hundred ancient Russian villages have been found on the field, making it a true treasure chamber for archeologists and other scholars. Perhaps someday Russian children will see a reconstructed ancient Russian village, but for now this hope remains a distant dream: far more vital problems stand in the foreground.

Multiple abandoned churches dot the landscape, lying in half-ruin, their once-splendid domes long ago fallen. Only two of the twelve churches in the zapovednik are in proper condition: the famed Church of Sergius of Radonezh and the Church of the Nativity of the Virgin, which have been kept in fair repair because of their importance as museum attractions. But even these churches were mute until only recently, when joint efforts between the museum and the Tula Diocese succeeded in hanging a small bell from the Church of the Nativity of the Virgin. After this act, the newly formed team announced a new project, “The Bells of the Field of Kulikovo,” hoping to draw public and government attention to the poor condition of religious architecture in the zapovednik. The museum staff has already received a positive response: one local company donated 10,000 rubles (almost $350) to the project, and another gathered 30,000 rubles (over $1,000) in donations.

Scientists and museum staff have worked together to create concrete plans to develop the Field of Kulikovo Historical and Natural Museum-Zapovednik. These plans make it clear that even though staff will begin by renovating churches and architectural monuments, the most important part of the exhibit is the battlefield itself.

The problem is that very little is left of the natural flora and landscape of the field as it was at the time of the famous battle. Around the museum-zapovednik more than 16,000 hectares of land have been plowed and are under agricultural use. In other words, in the very place where expanses of forests and feather-grass steppes stood during the time of the attack, today rotating crop fields and artificial forest belts meet the eye. The legendary Green Oak Grove, in which the Russian ambush regiment hid before joining the battle and turning the tide in favor of the warriors of Rus’, has disappeared. Twenty years ago state forest service employees tried to reestablish the Grove, but planted an American variety of oak instead of the native species; moreover, they planted the trees in the wrong place. Perhaps this error can be mended in the future.

One of the most challenging tasks before the museum staff in upcoming years will be restoring the natural landscape of the region as closely as possible to its state at the time of the Battle of Kulikovo. Such restoration is extremely complicated and will take more than a generation to see to completion. An esteemed local biologist is currently guiding this unique experiment to restore native steppe vegetation, which began in 1986. He also works with students when they conduct fieldwork in the reserve. The first results have been encouraging, and current plans include expanding the project to cover 400 hectares.

Isolated segments of native forest-steppe fauna have been preserved on the large territory of the zapovednik. Indeed, part of the landscape was named a natural monument and granted the status of a protected area even before the museum-zapovednik was founded in 1996. For the past two years, biology students from the Tula Pedagogical University have come to these regions of the reserve to study these fragments of intact steppe, directing special attention to thickets and wetland communities.

“The results exceeded all of our expectations,” reports one of the stu-
Environmental Education

students' professors with pride, “We found an amazingly unique and sizeable population of an endangered variety of feather-grass (Stipa pulcherrima), which certainly lives up to its name (which in Russian is ‘most beautiful feather-grass’), especially when in bloom and the wind blows over the steppe. There is no such population in any of the surrounding regions of Russia. In addition to the feather-grass, we also found a species of cotoneaster (Cotoneaster alaniucus) listed in the Red Data Book of the Russian Federation. Moreover, we found quite a few species considered endangered in our region, such as delphinium (Delphinium cuneatum), martagon lily (Lilium martagon), and others.”

Last fall the students collected ten bags of seeds from the endangered feather-grass, a painstaking task that required gathering the seeds and separating them from the chaff. The students gave the seeds to the zapovednik staff, along with sincere thanks for helping to organize their field trips. The following spring, the staff planted the seeds in a special region of the reserve.

One of the students wrote his senior thesis on forming an ecological network for the Field of Kulikovo. Last year the implementation of this project began, falling under the aegis of a Global Environment Facility (GEF) program called “The Heart of Russia.” In order to save the biological diversity of the planet as a whole and specifically of Central Russia, it is imperative to identify intact ecosystems. These will become the basis of an ecological skeleton, or network. Various points in this network must then be connected by protected natural “passageways” by which plants and animals can travel from one point to the next and thereby spread throughout Russia. These “passageways” might be river valleys, ravines, forests, or other landscapes not strongly influenced by human activity. It would seem that within the museum zapovednik, creating an ecological network should be much easier than in other places. In reality, however, this task is challenging because the zapovednik is located in a place that has been greatly altered by human activity.

Creating an ecological network might save some of the endangered species of the Field of Kulikovo, but bringing the field back to its historical form is already impossible. The steppe mare, a wild horse called a tarpan, has been extinct for several centuries. There is no longer any place for swans to nest on the Field of Kulikovo. We can only imagine the animals that must have prowled these steppes and forests, if one of the ravines still bears the name “Lynx.” But feather-grass has been preserved, albeit not on so great a territory as once upon a time. The same is true of forests that have been almost completely razed over the course of six centuries.

“The greatest problem,” according to the director of the zapovednik, “is that of public consciousness, beginning with the local residents and ending with the leaders of our nation. They need to relate to the Field of Kulikovo not just as the place where they live, but as a national treasure; those on the top need to remember and think about the fact that this is a national treasure that needs government attention.”

But the picture is not entirely bleak. The efforts of zapovednik staff to involve the local population in restoring the landscape of the Field of Kulikovo has shown positive results. In September 2000, the 620th anniversary of the Battle of the Field of Kulikovo was brightly celebrated. Several local government representatives came to share in the festivities, as did nearly 50,000 local residents. The holiday program was filled to the brim: in the village of Monastyrshchino the new museum of the Battle of Kulikovo held its grand opening in the restored building of a religious school, and on Krasny Hill a service was held for the warriors and who gave their lives for their homeland in battles throughout history. Meanwhile, various other events were held, such as theatrical performances, concerts, horse races, a parade, and fireworks.

What does the future hold? In the famous words of the renowned poet Aleksandr Blok: “An eternal battle, we only dream of peace!” A victorious battle to preserve the Field of Kulikovo will see peaceful fields of feathergrass and groves of oaks restored to their historic beauty and remind all of their historic significance.

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A Ban on Caviar to Save the Caspian Sturgeon

By Evgenia Burovtseva

The fear that overfishing will drive the sturgeon to extinction recently led to strong international action. On June 19th, 2001 delegates from the United Nation's Convention on Trade in Endangered Species (CITES) met in Paris to issue an ultimatum to four Caspian countries - Russia, Azerbaijan, Kazakhstan, and Turkmenistan - either to make their fishing policy on sturgeon clear and undamaging or else to face a total ban on caviar exports. In response, representatives from Russia, Azerbaijan, and Kazakhstan agreed to place a freeze on sturgeon fishing until the end of the year. Turkmenistan was not represented at the meeting in Paris, but later confirmed the agreement in writing. These four nations have until the end of the year to conduct a thorough inventory of sturgeon stocks and until June 20th, 2002, to develop a comprehensive plan for sturgeon conservation with international assistance. A failure to meet these deadlines will result in a complete ban on caviar export from these countries. In the meantime, these nations may export only fish and caviar that have already been caught and are already in storage.

The CITES ultimatum was not addressed to a fifth country that shares the Caspian sea and its sturgeon. Because Iranian officials presented the CITES commission with a national sturgeon conservation plan in mid-June, CITES executives excluded Iran's caviar export from the ultimatum. As a result, the nation of Iran now has a virtual monopoly on the legal caviar trade. At first representatives from Russia, Azerbaijan, Kazakhstan, and Turkmenistan protested Iran's quota (82 tons of caviar for 2002), an estimated eight percent of the total catch, but more than the total allowed export of the other nations combined. Ultimately representatives at the meeting acknowledged, however, that the problem lies not in the amount of caviar each nation is allowed to export, but in the amount it actually does export. More than any other factor, it is illegal trade in caviar that is pushing the sturgeon toward extinction. According to the new agreement, beginning in 2002, all five Caspian countries will work together on the management, quota distribution, and protection of the Caspian sturgeon.

CITES' 12-month program, directed mainly at curbing illegal caviar exports and setting an effective fishing policy, has caused the Caspian nations act immediately. Mandatory labeling, which makes it possible to identify caviar's source, is an important part of the program. Yevgeny Nazdratenko, the head of the Russian Fisheries Committee, said shortly after the Paris conference that Russia had already created the necessary structures necessary for testing caviar and soon would be able to close off the official market to poachers. Taken alone, however, these measures cannot solve the problem of illegal transport: poachers often bypass the government completely, offering sturgeon caviar at a reduced price and tax-free. Naturally, this makes illegal supplies popular, especially among small restaurants and cafes. Ultimately regular surveys of the source of caviar are needed at all levels to make sure that illegal fishing and transport have not depleted the legal supply of sturgeon.

Indeed, more than environmental factors, such as water pollution, it is the high demand for sturgeon meat and caviar that has put the fish on the edge of extinction: sturgeon caviar, and the fish's firm, white meat, are among the most commercially valuable fish products in all the world. Until the last century, the sturgeon enjoyed a widespread habitat, but in a short period of time vanished from Europe and the Americas because of unsustainable fishing practices. In
1960, the building of the enormous Stalingrad (now Volgograd) dam disrupted spawning grounds and processes, nearly exterminating the last sturgeon population in the Caspian. Only the timely building of hatcheries for artificial breeding and a ban on fishing in the Caspian Sea saved these sturgeon populations. Indeed, until 1991, two nations - Iran and the USSR - controlled virtually all of the caviar market, and were deeply interested in controlling and maintaining fish stocks. With the disintegration of the Soviet Union, however, these tight controls disappeared, the number of Caspian sturgeon began to fall rapidly. Today the three main species of Caspian sturgeon, the beluga or giant sturgeon (*Huso huso*), the sevruga or stellate surgeon (*Acipenser stellatus*), and the oscietra or Russian sturgeon (*Acipenser gueldenstaedti*), are endangered again. Though the official catch level of surgeon in the Caspian countries has decreased nearly 30 times since its peak in the late 1970s, the illegal catch is too high for natural restoration of the sturgeon population. Beluga, the species of sturgeon with the most valuable caviar, must be 20 years old to make a full ripe load. Under current conditions, it has almost no opportunity to reach that age. If drastic measures are not taken against poachers, experts estimate that the giant sturgeon may disappear completely from the Caspian Sea within two years.

The most effective means currently in place for supporting sturgeon populations are government-sponsored fish-breeding farms in the Caspian. Most of these farms and hatcheries are concentrated in the Astrakhan Region of Russia, near the Volga delta. A full 45 percent of the world sturgeon begin their lives at these farms, which are small and inexpensive to run, but ecologically and economically profitable. The Bertyulsky Sturgeon Farm, for example, employs 80 people and expends less than two cents on raising each fish; meanwhile, adult female sturgeon produce 5-50 kilograms of caviar at a price of more than $1,000 per kilogram. This would make profits seem tremendous, but these earnings go directly to the government and disappear into the internal bureaucracy, leaving only about $100,000 per year to cover all the expenses of the hatchery, mainly salaries and fish fodder. Without adequate financing, not even the enthusiastic hatchery staff can protect the lightly guarded farms from poachers. This year, Bertyulsky Farm lost all of the sturgeons from its outside ponds to poachers. Despite these setbacks, the staff are working to develop new and more effective methods of raising sturgeon for caviar. For example, by employing a new technique, Bertyulsky staff preserved many sturgeon by extracting their caviar under anaesthesia and then releasing the fish back into the water.

In 2001, Russia released 60 million month-old sturgeons into the sea. The giant sturgeon swam away first in early June, followed by Russian sturgeon in July and the stellate sturgeon in August. Azerbaijan, Kazakhstan, and Iran have also promised to send a combined total of 60 million fish into the sea. Hopes are high that these 120 million young sturgeons will begin replenishing the populations in the Caspian Sea, especially given the Caspian nations' new accordance with the UN Convention on Trade of Endangered Species. The upcoming year will be a key time for the Caspian nations to determine a successful strategy for saving this valuable fish.

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On May 23, 2001, Russia’s Prime Minister Mikhail Kasyanov signed an edict for plans to create nine new zapovedniks and twelve new national parks by the year 2010. Russia’s Ministry of Natural Resources is responsible for identifying and channeling the necessary funding from the federal budget to organize and create these protected areas.

The proposed zapovedniks and national parks, which spread throughout Russia from Karelia to Chukotka to the Caucasus and the Altai, will protect more than 10 million hectares of land including mountains, forests, steppe, and semi-desert ecosystems. In many cases, the founding of these protected areas will represent the culmination of decades of work local scientists and conservationists have put into organizing reserves.

Skeptics rightly point out, however, that a promise by the Ministry of Natural Resources cannot necessarily be trusted until fulfilled. This notion may be particularly true in the case of the planned protected areas, as in 1994 the government of Russia issued a nearly identical list of planned zapovedniks and national parks, promising to create them in the near future (Decree # 572-r). Kasyanov’s edict of May 23rd acknowledged the failure of the earlier decree and declared it void.

Nonetheless, the new decree represents at least in word a commitment on behalf of Putin’s government to support nature protection measures – specifically the expansion of the network of protected areas – in Russia.

Compiled from information posted on the website of the Russian NGOs’ Forest Club, http://www.forest.ru.
Correction from RCN #25

In the previous issue of RCN, the map on page 19 was printed incorrectly. The map below shows the current distribution of the Altai argali mountain sheep in Russia.

Map by M. Patsyn and M. Dubinin.
Раздел I. Особо охраняемые природные территории

"Первый природный парк в России, который управляется неправительственной организацией". В 1991 Международный фонд охраны животных (Висконсин/США) совместно с Социально-Экологическим Союзом начал разработку программы "Амур" с целью создания региональной модели устойчивого природного и социально-экономического развития.

Созданный в рамках этого проекта парк за эти годы превратился в полном смысле слова модельной организации, развив сложную инфраструктуру, создав систему лесных опытных участков, не только для местных школьников, студентов и учителей, но и для их зарубежных коллег.

"Фермер", Елена Смирновская. На базе парка устойчивого природопользования "Муравьева" действует ферма, возглавляемая Сергеем Шалагиным. Она и единый механизм, с ним всего 8 человек, должны сделать его образовательно, а также получать на экологически чистую продукцию сертификат, который бы признавался на международном рынке.

Раздел II. Экосистемы в опасности

"Что угрожает китам и морю?". Альп Дженис. Шантарские острова - удивительный мир из зелени и воды, затерянный в необъятных просторах Охотского моря. Архипелаг характеризуется высоким эндемизмом фауны и флоры, что является главным признаком его изоляции от материка в ледниковую эпоху. В 17—19 вв. история островов связана с интенсивным промыслом гренландских китами русскими и иностранными китобоями, что привело к почти полному исчезновению в данном регионе. После столетнего перерыва, в 1957 году исследователи обнаружили первое стадо из 16 гренландских китов. Сейчас специалисты отмечают рост популяции и оценивают стадо гренландских китов в 200—400 голов. Тем не менее, эти морские хищники могут снова быть постепенно заложены на грань вымирания, если получат развитие, такие крупные проекты, как строительство промышленной гидроэлектростанции, до сих пор не были приняты.

Раздел III. Специальный раздел: Алтай-Саянский экорегион

В 1990 году Всемирный фонд дикой природы (WWF) разработал и опубликовал глобальную карту 200 экорегионов, к которым относится и Алтай-Саянский экорегион.

"Земля удивительной красоты". Здесь создается представление о сложной мозаике биогеографических групп, в данном регионе и разнообразии географических бионов, которые простираются от высокогорных тундров до болот, степей и пустынь.

"Алтай-Саянский экорегион перед лицом экологической опасности". Неустойчивое экономическое развитие региона несет в себе разрушительные экологические последствия.

"Ленточные боры Алтай-Саянского экорегиона", Миграли Баймухамет. В статье рассмотрена проблема, связанная с естественным возобновлением лесов на гари в ленточных борах.

"Реализация тропфейной охоты в Казахстане", Надир Мамилов. Для привлечения иностранного капитала, что является основой Казахстана угодиях на редкие виды животных, в том числе на виды животных из Красной книги.

"Деградация травянистых экосистем в южной Сибири". Ельвира Ершова. В течение тысячелетий с ростом погона скота увеличивались площади кормовых угодий и велась освоением растительности степного и лесостепного поясов в использовании в качестве лесной и высокооборотного пояса. В настоящее время до 60% земель находится на пределе своей пастбищной емкости.

"Куда ушли лесные северные оленя?", Браян Донахью. Местное население северной зоны борется, чтобы найти средства выживания в условиях, когда нет никакой поддержки от государства.

"Команда для охраны природы". Демонстрирует перечень организаций и описание их роли, как основных участников локальных и международных проектов сохранения природы и устойчивого развития в регионе.

"Будущее региональной охраны биоразнообразия в Алтай-Саянском экорегионе". Питер Ньютон. Начиная с этого года, Прагмата Развития ООН в сотрудничестве с региональными и федеральными властями, российским офисом Всемирного фонда дикой природы и Глобальным Экологическим Фондом, будет осуществлять проект по сохранению биоразнообразия экосистем.

"Новая стратегия в тени советской системы управления". Статья анализирует сложную экорегиональную ситуацию и, в частности, редакторов журнала, многие явления напоминают, что в управлении территорией в советское время...
CONSERVATION

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