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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 educational exchanges, and provision of technical assistance to protected areas. CRNC is a project of the Tides Center.

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Voice from the Wild (Letter from the Editors)

For our last issue of 1997, the year of the 80th anniversary of Russia's first Zapovednik, we received a number of articles that remind us of the rich and turbulent history from which Russia's Zapovednik system arose. In these articles from Bryansk, Kavkazski, and Tsentral'no-Chernozemny Zapovedniks, we learn more about the people and events that influenced Russian nature protection — sometimes by accident. For example, little did the first Tsar of the Romanov dynasty know that by setting aside land in southern Russia for his riflemen and loyal Cossacks, he would be helping to preserve many acres of the botanically rich virgin steppe. A few centuries later, however, people such as Christophor Shaposnikov (the “grandfather” of Kavkazski Zapovednik) and Semenov Tyantshanski were not leaving conservation to chance. Driven by purpose and conviction and armed with a deep scientific knowledge of ecosystem processes, these people designed and implemented a protected areas system which still survives.

Today these protected areas remain intact on paper, but in reality they are imperiled. Articles from Odessa and Komi attest that the pressure of industrial development still threatens to destroy some of the world's most precious — and recognized — natural areas.

Other problems also threaten the state of protected areas. As this issue of RCN was going to press, we received a letter from a Russian colleague who manages one of Russia's oldest and best-known nature reserves. He wrote: "The Federal Budget for Zapovedniks was cut by the government at the end of the summer. It was very small and has become smaller, almost nothing. We have no money to cover our debts for gas, electricity, water, or to finish construction of the boiler-house. People have no heat in the apartments. Snow lies round the houses...."

This letter is a startling reminder that we in the west must do more — and we must act quickly — to directly assist those people who are on the “front lines” of conservation in northern Eurasia. Russia's Lake Baikal holds one-fifth of the world's fresh water; Russian forests account for almost a quarter of the world's timber supply and serve as home to countless species. These resources are important to all of us around the world, and we must do everything we can to protect them before it is too late.
They Were Awaited for 200 Years

(excerpts from a news release provided by Bryanskii Les Zapovednik)

From the editors: The following article demonstrates the efforts of one Zapovednik manager to provide his community with something more than rules and regulations. Taking an interest not only in the natural world under his care, but in the human history of the Bryansk Region, be reached out to some famous emigres from the area — members of the pre-revolutionary Russian nobility — and encouraged them to visit their ancestors’ home. The local community welcomed the descendants of medieval princes. The Zapovednik’s efforts no doubt increased local esteem of the town and natural areas surrounding it, as well as local appreciation and respect for the Zapovednik.

Downstream from Bryanskii Les Zapovednik, where the Nerussa River (on which the Zapovednik is located) flows into the Desna River — one of the few remaining free-flowing rivers on the European continent — the Troitskii Cathedral looms on the horizon. Perched on steep slopes above the Desna, the cathedral signals to river travelers that they have reached the town of Trubchevsk.

Trubchevsk has a fascinating history which stretches back a thousand years. This town is the burial site of more than 40 members of the Trubitsky family, whose princes headed a vast family principality from the twelfth through the seventeenth centuries and were among the favorites of Moscow’s royalty. In the early 17th century, when a tsar was to be chosen to rule Russia, three candidates were discussed: Trubitsky, Romanov and Golitsyn. But Dmitri Timofeyevich Trubitsky pointed out that he was without an heir and withdrew in favor of Mikhail Romanov. The director of the Trubchevsk Regional Museum, Nikolai Tikhonov, wrote in his book, The Famous Knights of Trubchevsk, “the Trubitsky family produced one Bohemian king, four great princes, seven appanage princes, one ruler of Trubchevsk, eight military commanders, 12 boyars, seven tsarist governors, three field marshals, ten generals, two admirals, ten senators, six ministers, seven members of the State Council, one founder of an academy, one university rector and 25 monks and nuns.”

Today the 190 descendants of the Trubitsky family are scattered around the world.

Although they gather at an international congress every five years, about forty of them live in Moscow, but most live abroad — in Canada, the United States, France and elsewhere. Until this year, not one member of the Trubitsky family had visited their native Trubchevsk since the end of the 18th century.

Recently the Trubitsky family was reunited with Trubchevsk — a celebration which brought alive the town’s rich history. The reunion took place in large part thanks to Zapovednik Director Igor Shpilenov, who has long been interested in the history of the Trubitsky family. Last year, during a business trip to the United States, Shpilenov decided to telephone the 90-year-old patriarch of the Trubitsky family, Sergei Grigoryevich Trubitsky. Trubitsky, a resident of New York City, had long dreamed of returning to his native land. Shpilenov’s phone call resulted in a visit by two family members to the region.

Aleksei Sergeyevich and Andrei Alekseyevich Trubitsky — son and grandson, respectively, of Sergei Trubitsky — finally arrived in the land of their ancestors by train from Moscow. The first thing they did was drop in on the Bryanskii Les Zapovednik’s visitor center at Nerussa Station. At the Zapovednik, they were able to see the natural setting almost as it would have appeared during the time of the Trubchevsk principality. The Zapovednik staff took the Trubitsky family members to Trubchevsk by automobile.
Conserving Moldova's Flora

by Tatiana Izverskaya and Pavel Pynzaru

Centuries of human activity in Moldova have greatly disturbed and changed the country's floral cover, represented by forest and steppe. Agricultural lands, populated areas and factories now occupy 90 percent of the land. The clearing of forests, plowing of steppes and meadows and overgrazing by livestock have changed the structure of the aboriginal vegetation and the floral composition and productivity.

Nevertheless, despite the country's small size, its flora and vegetation are fairly varied. Currently there are 1,895 types of higher plants belonging to 55 genera and 101 families. 160 types of mosses, 130 different lichens and 300 varieties of hooded mushrooms. The country is notable for the presence of a significant number of species that are rare or endangered in Europe.

Many plants, particularly those that are not adapted to transplantation, are defenseless against irresponsible and uncontrolled human activities. For other plants, there are very few new, suitable sites for them to grow and reproduce. Therefore the primary method of conservation is through the creation of new reserves and the expansion of those that already exist.

The first edition of the Red Data Book of Moldova (1978) included 26 types of plants. The second edition, currently at press, includes 131 species, among them nine hooded mushrooms, ten mosses, 16 lichens, nine ferns, one gymnosperm and 86 flowering plants. Rare varieties include the once common Feathergrass (Stipa), certain types of medicinal plants such as Yellow Adonis (Adonis verna) and Everlasting (Helichrysum arenarium), and decorative plants such as the Pasque Flower (Pulsatilla grandis), Angeleascu Knapweed (Centaurea angelescui) and Turk's Cap Lily (Lilium martagon). Species that have disappeared over the past 50 years include the Chickweed (Cerastium perfoliatum), Larkspur (Delphinium fassum), Nodding Wintergreen (Orthilia secunda), Common Wintergreen (Pyrola minor) and Green-winded Orchis (Orchis morio).

To preserve the gene pool and biodiversity in the ecosystem, a state reserve fund of 50,000 hectares has been established. The fund includes five Zapovedniki [strict scientific nature reserves] totaling 16,851 hectares, 30 protected natural landscapes (22,436 ha.), ten protected groves (2,927 ha.) and 32 nature monuments (1,002 ha.).

Conditions in the protected areas have permitted the preservation of the Lily-of-the-Valley (Convallaria majalis), Perennial Honesty (Lunaria rediviva), [Narrow] Snake's Head (Fritill-
Protected Areas

laria tenella) and others. Moldava's Zapovedniki protect species of many habitat types, including forest, steppe, littoral and limestone plant communities.

For example, Codrii-Zapovednik was created to preserve the Beech (Fagus sylvatica), Sessile Oak (Quercus petraea) and English Oak (Quercus robur) communities that are typical for Central Europe. There are more than 800 species of vascular plants, including 60 rare varieties and 23 species listed in the Red Data Book. This is the only site where great Tussock Sedge (Carex paniculata), Early Purple Orchis (Orchis mascula ssp. signifera) and Square-stalked St. John's Wort (Hypericum tetrantherum) can be found.

Plaiul Fagului Forest Zapovednik is home to 639 plant species, of which

Prutul de Jos Zapovednik protects the marsh fauna and flora of the lower Prut River, which is a tributary of the Danube, and Lake Beleu. In all, 160 species of vascular plants grow there, of which three have been included in the Red Data Book of Moldova: White Water Lily (Nymphaea alba), Water Chestnut (Trapa natans) and Floating Moss (Salvinia natans).

Yagorlyk Zapovednik was created to protect aquatic, steppe and limestone plant communities. The flora numbers 719 species, 50 of which are rare.

Among them, Moldavian Koeleria (Koeleria moldavica), Lavender-Leaved Juniper (Juniperus scopulorum), Vetch (Astragalus exiguus) and Genista tetraptera have been included in the Red Data Book.

Despite the decline in manufacturing due to the prolonged economic crisis, the threat to the plant world in Moldova has in fact increased. Serious threats to biodiversity arise from the nearly unregulated grazing of livestock and the destruction of forest undergrowth, the clearing of forests and forest strips, the frequently unsupervised privatization of land, and the collection of primrose and other medicinal plants. The preservation of biodiversity requires expanding and improving the regimen of restrictions on protected territories; creating new Zapovedniki, particularly in the southern steppe regions, and repatriating lost varieties, as well as creating collections and seed banks in botanical gardens, their reproduction in vitro and in vivo, and their return to the wild.

Tatiana Izverskaya and Pavel Pynzar are members of the BIOTICA Ecological Society.

Opposing Sides in Altai Establish a Dialogue

by Armen Grigoryan

This April the Biodiversity Conservation Center (BCC), with support from the British Environmental Know How Fund, started implementing a project to improve the management of three federally protected areas — Katunski and Tsentral'no-Lesnoi Zapovedniki and Smolenskoe Poozero National Park — through the development of specific management plans for each. To train the BCC staff in management planning, British technical advisor Jonathan Rudge heads up the working group of the pilot project.

One of the Zapovedniks included in the planning process is Katunski Zapovednik (Please see the related box on page 7). Katunski Ridge, with Belukha Mountain, Siberia's highest peak, is an intact area of wilderness representative of Altai's flora and fauna. Belukha Mountain also possesses great cultural value as a religious sanctuary and pilgrimage site for indigenous people.

In its short five-year existence, Katunski has faced a number of problems. For example, the Zapovednik's inability to become integrated into the socio-economic development of the Ust-Koksa region has created a source of tension in the local community. These tensions were exacerbated last summer, when part of the reserve's buffer zone was transferred to Belukha Nature Park, a locally administered park.

We consider it inappropriate to divide management of this single natural complex between two nature protection structures with different ranks and concepts. Disharmony in management will result in failure to develop a single conservation strategy for the entire area, thereby decreasing as well the reserve's effectiveness in nature protection. Furthermore, the area surrounding Belukha Mountain has been proposed for designation as a UNESCO World Heritage Site, and that requires unity in the management and protection of the territory.

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The special qualities of Altai Republic and the potential of its future development were recognized back in 1991, when it received the status of an ecological-economic region with numerous tax and customs privileges designed to attract investments. Sustainable use of natural resources, as well as the potential for recreation and tourism in Altai Republic in general, and of Katunski Ridge in particular, are considered the main directions for regional development. In this context Katunski Zapovednik could play an important role. The urgency of identifying priorities for the Zapovednik’s development stems from the necessity of solving economic problems and offsetting the likely increase in anthropogenic impact on the natural ecosystems, and the need to preserve indigenous culture and customs. The biosphere concept of protected areas may offer one path for the Zapovednik to follow in its attempt to become an integrated part of the regional economy.

In mid-September a workshop was held in Katunski Zapovednik to identify development priorities and management objectives for the next five years. At the meeting, organizers (BCC and the management plan working group) aimed to provide the administration of Gorny Altai Republic, regional environmental protection agencies and local people with a better understanding of the reserve. An attempt was made to coordinate the interests of various parties with the Zapovednik’s goals and objectives.

Along with BCC employees, participants in the workshop included staff of the State Committee on Environmental Protection and the regional Committee of Altai Republic, the administration of Altai Republic and Ust’-Kokska district, the Altai Republic Forestry Nature, the Zapovednik Environmental Education Center, Ecological Travel Center, several Zapovednik directors, representatives of adjacent Kazakhstan, some local residents and the mass media.

After extensive discussions—particularly between the managers of Belukha Nature Park and Katunski Zapovednik—it was determined that one goal for the Katunski Zapovednik management plan should be to achieve the status of Biosphere Reserve, with the Zapovednik’s buffer zone and part of Belukha Nature Park included in the Biosphere Reserve.

Katunski Zapovednik will continue monitoring and research in the territory of Belukha Park; it will also control ecological tourism and recreation in Ust’-Kokska district. In addition, Katunski Zapovednik was assigned the leading role in developing the system of protected areas and elaborating a single program for all nature protection activities in the region. This work is to be conducted in close collaboration with the head of the regional administration, who will coordinate and supervise all nature conservation activities.

The seminar’s goals to preserve unity in management of the protected areas of Katunski Ridge and identify priorities in the Zapovednik’s development was accomplished. The main result, however, is that opposing sides have begun a dialogue that can further grow into cooperation.

Armen Grigoryan is Protected Areas Management Advisor at the Biodiversity Conservation Center in Moscow.
Christopher Shaposhnikov: Back From Oblivion After 60 Years

by Yuri N. Spassovski

"The sight of snowy mountains covered with milky mist caresses my eyes. Here I have feasted my eyes for more than half a century! Dear to my mind and heart, my own mountains! And I feel with delight that I have done a lot for you, my beloved mountains! All the joy you gave me, all that I perceived in your ravines and on your summits, I compressed into one great idea — and now we have a Zapovednik!"

— Christopher Shaposhnikov (1928)

The name of Christopher G. Shaposhnikov (1872-1938) is currently little known to the scientific community, because it has long been buried in oblivion, undeservedly forgotten.

Armenian by nationality, Shaposhnikov was born in Maikop (now capital of the Adygeya Republic in the western Caucasus) in 1872 to a wealthy merchant's family. Christopher graduated from Riga Polytechnical Institute with a degree in agronomy in 1901 and then was sent to Berlin University. He had been interested in collecting insects, especially butterflies, since adolescence, and during his studies in Berlin, Christopher wrote several scientific papers on butterflies which were acclaimed in his field. Thanks to his success, he was offered a trip to northern Africa for research, from which he brought a large collection of tropical insects.

When he returned to Maikop in 1907, Christopher Shaposhnikov began working as a ranger in a local forestry unit. From his first days there, upon seeing the local residents' consumeristic attitude towards the forests, meadows, rivers, animals and plants surrounding them, Shaposhnikov actively promoted a careful, rational approach to the unique natural riches of the western Caucasus. The status of the mountain area between the Belaya and Laha Rivers was his main concern. This area had initially been designated as a royal game preserve for the Romanov family and preserved the wilderness nearly intact. However, the lease was about to end, and the territory was supposed to be divided among local communities, which would mean human intervention and development of the area.

Shaposhnikov was the first to raise the idea of protecting this area; he sent a proposal for protected status for the territory to the Imperial Academy of Sciences. A special commission inspected the area and discussed the idea of creating Kavkazki Zapovednik. However, at that time the idea did not find further support and was abandoned because of bureaucratic obstacles.

The First World War (1914) postponed all plans for creation of a Zapovednik; its main promoter, Shaposhnikov, was mobilized to the Turkish Front and could return to his plans only in 1917, a year that thundered with the Revolution. Shaposhnikov made a presentation on "Establishing a Zapovednik in a mountainous belt for conservation of natural monuments of the plant and animal worlds" at a meeting of rangers and forestry engineers in October 1917. However, his suggestions encountered sharp opposition and attacks from most of the rangers. Later, Shaposhnikov wrote in the journal "Okhrana prirody" [Nature Protection] in 1928, "An attempt to conserve the mountainous area through state regulations failed." Shaposhnikov tried to inspire some wealthy citizens to lease the territory for hunting game and thus reduce destruction of the area. But at that time the fire of the Civil War in the Caucasus was leaping into flame...

When divisions of the First Cavalry entered Maikop in March 1920, Shaposhnikov addressed his proposal for creation of a Zapovednik to the Revolutionary Military Council of the Caucasian

Above: Christopher G. Shaposhnikov, "grandfather" of Kavkazki Zapovednik, circa 1907. Photo courtesy of G.Kh. Shaposhnikov's personal archives.

Right: Shaposhnikov (mounted, at left) departs from Maikop on a field trip to the nature reserve, 1930. Photo courtesy of Kavkazki Zapovednik.
Protected Areas

Front, a temporary power structure during the Civil War. The idea found support among the new authorities, and in May Shaposhnikov was ordered to do all of the preparatory work; an official decree issued by the Revolutionary Military Council to establish a high-mountain Zapovednik followed in December.

This decision engendered a whole series of problems, mostly due to interagency disorder. In particular, many disagreements were related to the established borders of the Zapovednik, which many agencies did not acknowledge at all. For example, the Game Union of Maikop announced that the territory of the Zapovednik would now be subordinated to the Union, whose members claimed rights to hunt marten, deer and other animals.

Shaposhnikov persistently appealed to all the possible authorities in an effort to demonstrate the unscientific character and imprudence of intervention on the territory of the Zapovednik. Moreover, he advocated creating two more protected areas of a lesser size on the Main Caucasus Ridge, as well as a small nature reserve in Kuban' region to protect marshes, steppe and forest tracts. In "Okhrana prirody" he wrote, "The value of the Zapovednik is in the integrity of particularities: geological, botanical and zoological; in the significance of protecting this forested mountain area for the region's economy, and in the amazing opportunities for research of natural and historical sites. In addition, the territory of the Zapovednik is unique in its opportunities for tourism, excursions and aesthetic sightseeing." Long before the concepts of Biosphere and Biosphere Reserves were postulated, Shaposhnikov suggested and formulated the idea of a Biosphere Reserve in relation to Kavkazski Zapovednik.

Shaposhnikov was appointed Director of the Zapovednik and began to recruit staff in 1924; however, he managed to stay in this position only four years. It is difficult to say now what the exact reasons for his dismissal were, but the 1920s were very controversial and difficult for people from formerly wealthy families, who were often persecuted and repressed. Despite this fact, Shaposhnikov continued to live with the Zapovednik in his heart and mind. He published a series of articles about the Zapovednik which describe the Zapovednik's nature in amazingly complete detail and have not lost their significance even now. Shaposhnikov continued his studies of the butterflies of the western Caucasus and was preparing several monographs; however, he did not manage to complete his research.

In November 1937 Shaposhnikov was arrested and condemned for espionage and counterrevolutionary activities; he was sentenced to ten years of prison without the right to correspondence, a sentence quite common during Stalin's reign of terror. His family was forced to leave the city, and nobody knew anything about Shaposhnikov's destiny. Only fifty years later did his son find out that his father, Christophor Shaposhnikov, had been executed a year after his arrest, and that his burial place was unknown.

His library and all of his

Kavkazski Zapovednik is located on the Main and Front Caucasian Ridges, with an area of 263,477 hectares, most of which are forested lands. The Zapovednik consists of two sites: a mountainous part of 263,000 hectares, and the Khota yew-box grove of 301 ha. Mountain ridges define the specifics of the Zapovednik's relief; the heights of the mountains increase from west to east, rising above the tree line in the east. The highest peaks here are Tchugushi (3,240 meters) and Smidovich Peak (3,360 m. above sea level). Climate varies from subtropical to severe and arctic-like in the highlands. Numerous brooks and streams of glacial origin created the complex, rugged relief with high cliffs and deep ravines and troughs.

The Zapovednik boasts rich and diverse vegetation; about 1500 species of vascular plants have been recorded here, about 20 percent of which are endemic to the region. Among relics from the Tertiary geological period, one can find Nordmann fir (Abies nordmanniana), which can reach 60 meters high, Oriental beech (Fagus orientalis), endemic spruce species, gigantic chestnuts, yew and box, among others. The alpine meadows are rich in plants of the Umbelliferae and Compositae families. The abundant vegetation provides forage for the numerous ungulates of the Zapovednik: tur (Capra), maral (Cervus elaphus maral), chamois (Rupicapra rupicapra), wild boar (Sus scrofa), roe deer, and the reintroduced Caucasian bison. Large carnivores, bear, wolf and lynx thrive on ungulates. Overall, mammals are represented by 59 species, and birds by 192. Large raptors on the territory of the Zapovednik include bearded vulture, griffon vulture, and golden eagle.

Protected Areas

scientific collections and papers were confiscated during the arrest, and most of the samples were later lost. One extant part of Shaposhnikov's entomological collection is currently preserved in the National Museum of the Adygeya Republic; another part — at the Zoological Institute in St. Petersburg. The library and archive of Kavkazski Zapovednik possess a few books from his library and some negatives. Looking at old photos and reading descriptions of his collections, one can understand how profoundly Shaposhnikov was educated, and how intelligent and devoted to his occupation he was. How much more he could have achieved, if only ....

Kavkazski Zapovednik should never forget the name of its founder, Christophor Shaposhnikov.

Yuri Spassovski is a scientific researcher at the Adygeya branch of Kavkazski Zapovednik.

The author expresses his gratitude to Christophor Shaposhnikov's son Georgi for providing materials and archives.

Does the Future of Tsentral'no-Chernozemny Biosphere Zapovednik Belong to Will, or to Fate?

by Nikolai A. Malesbin

Tsentral'no-Chernozemny Zapovednik, well-named for its location in the "chernozem" or "black earth" region of the fertile Russian plain, has a history of protection which began much earlier than the Soviet regime during which the reserve was established. As early as 1626, Alexei Fedorovich Romanov, the first Russian Tsar, decreed that a large tract of land (which today forms the Zapovednik) be set aside for riflemen and Cossacks from military settlements outside the fortress city of Kursk (in southwest Russia near Ukraine). The tsar's order prohibited ploughing of these lands while permitting the cutting of hay and grazing of livestock. Thus, the tsarist decree — and a bit of fate — preserved the virgin Kursk steppes for 300 years.

At the Congress of Russian Naturalists in 1909, leading Russian scientists of the time such as Semenov-Tyan-Shanski, Anuchin and Borodin began posing the question of "preserving steppe flora parcels that are of botanical and geographical interest." However, when an Interdepartmental Committee in 1932-33 organized an expedition to inspect designated portions of steppe, precisely define the borders of the proposed Zapovednik and reach agreement on all questions with district representatives, it became clear that many steppes had been ploughed up by local collective farms and no longer existed.

Tsentral'no-Chernozemny Zapovednik was officially established by a decision of the Presidium of the All-Union Central Executive Committee on February 10, 1935. Under the leadership of Professor Vasilij Vasilievich Alekhin, it was immediately decided to create Tsentral'no-Chernozemny Zapovednik out of four sections: the "Strelets'ki" (or riflemen) section, located 15 kilometers from Kursk; the Kazatski (Cossack) section, 25 km. from Kursk; the Yamski section, 25 km. from Stary Oskol and the Khrenovski section, located on the territory of Horse-breeding Farm No. 10 in Voronezh Region.

In the 1935 resolution, the Zapovednik's mission was thus described: "Preservation of virgin steppe lands in combination with forests of all types, comprising the set of natural conditions of northern steppes; for the study of various steppe biocenoses, black soil formation processes, forests and steppe interrelationships and the forest's influence in battling drought."

Professor Alekhin named the Zapovednik a "botanical anomaly." Contemporary research shows that the Zapovednik's flora, numbering 1150 species of vascular plants on an area just slightly larger than 6,000 hectares, is representative of the huge Tsentral'no-Chernozemny region.

Thanks to the efforts of former director V. V. Krasnitski, two new sections totaling 597 ha. were added to the Zapovednik in 1969. These sections, Barkalovka and Bukreev Barmy, attracted scientists' attention because habitats for representatives of such relict flora as Rose Daphne (Daphne cneorum) and Dendranthema were discovered there. These areas have been called "the land of living resources."

New Zapovednik sections — Lyuje Gory (Bald Mountains) and Stenki-Izgorye, 170 ha. and 261 ha. in area, respectively — were organized in 1994 and 1995 in Belgorod Region. This year Zorinskie Bolota, a 970-hectare section, has been added to the reserve's land holdings. Thus, thanks to the incredible efforts of the staff and its leadership, the overall
area of the Zapovednik, surrounded by greatly exploited territories, has grown by 31 percent (D), and all of the primary ecosystems of the region are represented in the protected area. At present the Zapovednik consists of eight sections and has an area of 6,281 ha., which comprises 0.15% of the area of Kursk and Belgorod Regions.

Further, Tsentral'no-Chernozemny Zapovednik was certified as a UNESCO Biosphere Zapovednik in 1979. As a distinctive standard of nature protecting primordial, multi-colored meadow-steppes, the Zapovednik has been widely used to carry out research for the international "Man and the Biosphere" and "Man and the Environment" programs.

In 1995 Tsentral'no-Chernozemny Zapovednik celebrated its sixtieth anniversary. As one of the most interesting nature Zapovedniks in Russia, it has made an enormous contribution to the treasury of scholarly and applied knowledge about the steppe ecosystems of Europe over the long years of its active operations. The sixty-five permanent staff members are responsible for research, cartography, census-taking and protection. More than 180 Ph.D. dissertations and 42 professorial dissertations have been prepared and defended using information gathered at the Zapovednik.

Two international projects which use remote sensing to study the reserve's geology, soil cover, phenology, productivity of the vegetative cover, animal population and other elements of forest-steppe landscape ecology have been carried out jointly with the Institute of Geography of the Russian Academy of Sciences and the U.S. Laboratory of Aeronautics and Cosmonautics. An international congress on soils was conducted. The list of published scholarly works fully or partially based on the Zapovednik's materials includes more than 600 titles, with at least half appearing in the last ten years. Information on the wealth of various steppe grasses preserved in the Zapovednik has been used in numerous botany textbooks, including the latest editions of Ecosystems of the World and Vegetation of the Earth by the aged German scientist Walter.

In just the last year, several important events have occurred which could significantly influence the Zapovednik's future. Tsentral'no-Chernozemny Biosphere Zapovednik has been ranked among the top six Russian Zapovedniks for the level of scientific problems posed, experience with their solution and potential for use of informational resources to analyze global changes in the environment. The reserve's role in conserving natural heritage was recognized with its nomination for a "European Diploma" by the Council of Europe, whose experts visited the reserve in August.

Access to Russian Biosphere Zapovedniks' information on biological diversity is increasing. The American and Russian committees working on the UNESCO "Man and the Biosphere" program, jointly with the American Foundation for Defense of Citizens' Initiatives, the U.S. National Biological Service, the Institute of Systems of Open Data Bases, and the Department of Environmental Studies at the University of California at Davis, are creating electronic communication systems in Russian Biosphere Zapovedniki, to form accessible data bases of the multi-year research conducted there.

Also this year, in March, Zapovednik specialists participated in a seminar in Moscow led by Dr. James Quinn from the University of California at Davis. The seminar trained partici-

pates how to use computer programs to create scientific data bases on flora and fauna, for use in practical work with western colleagues from biosphere reserves (please see RCN 411 for an article on the "MABFauna" program, as well as the related article in this issue). Part of the special computer equipment acquired by the American partners through a $16,000 scientific grant has already been delivered to the Zapovednik and is being prepared for operation.

These scientific achievements and international recognition, active participation in environmental education programs, and collaboration with local communities demonstrate the importance of the Zapovednik. However, material, technical and financial support from the federal and regional budgets is decreasing from year to year. Today the Zapovednik has no money to pay for heating, gas, electricity, water, fuel for cars and tractors, repairs to worn-out mechanical equipment, construction of artesian bore-holes and a boiler house, or repairs to residential and work buildings, museums and laboratories.

Will the 350-year-long activity of enthusiasts give place to a short, terrible period of decline and destruction of everything that was created for future generations? Almost a century ago, Professor V. N. Khitrovo expressed deep concern for the preservation of the steppe, remarking, "Looking at these last remains of the former colorful harmony of this part of the world, a disappointing thought arises: would we really . . . not leave for ourselves, but plough under even the last remnants of steppe vegetation? Will our children only read in books about the former beauty of our area, beauty that was available for everyone's enjoyment?"

Nikolai A. Maleshin is Director of Tsentral'no-Chernozemny Zapovednik.
Protected Areas

Russian Zapovedniki are Introduced to the International Community of Rangers

by Kseniya Pakhorukova and Anya Menner

A

pproximately 300 rangers representing thirty countries converged near San Jose, Costa Rica from September 24 to 29, at the Second International Symposium of Rangers, organized by the International Rangers' Association. A Russian delegation consisting of Sergei Tarkhov, Director of Kostomukshsky Zapovednik, and Sergei Shestakov, Director of Laplandski Zapovednik, came to the meeting for the first time.

Everywhere, beginning with the unusual southern country of Costa Rica, where twenty-five percent of the territory is occupied by protected areas, to the parade of uniforms, was of great interest to the Russian delegation. Most of the participants, including the Russian guests, did not belong to the association, but had been invited to talk about nature conservation and ranger activities in their countries.

"People recognized that we'd come from Russia and came up with questions not only about our system of protected areas, but also about our history and, particularly, World War Two. We felt great interest in all aspects of our country, but unfortunately, insufficient language skills prevented us from extensive explanations and discussions," said Sergei Tarkhov.

The specific goals of Zapovedniki in Russian conservation give the so-called "ranger" different roles from those in many other countries. Russian Zapovedniki have three distinctive functions: conserving valuable natural ecosystems, monitoring and conducting scientific research of those ecosystems, and increasing public awareness through environmental education in the local community. Law enforcement inspectors whose duties include guarding the borders and conducting initial scientific observations most closely match the widespread term "rangers." However, because the Zapovedniki system was established primarily to preserve natural ecosystems, the inspectors' main task became protecting the territory from people, whereas in national parks in the west, rangers work for and with the public, to show visitors nature. This contrast has resulted in differences in responsibilities and qualifications, as well as in the prestige of the ranger's occupation.

Currently, many Russian Zapovedniki suffer from a lack of qualified personnel for law enforcement, and the demand for skilled, honest and reliable staff is acute. The organization of law enforcement in any particular Zapovednik, as well as the personal qualities of the staff, in many ways affects the prestige of the Zapovednik and its relationships with the local community. The opportunity to learn from the experience of ranger services from other protected areas both in Russia and abroad was welcome as a way to help Zapovednik administrators find adequate approaches to making the enforcement service efficient and prestigious.

This was also the first time rangers from all over the world had the chance to become familiar with the nature and conservation problems of Russia. Luis Quiros R. of the Costa Rican Ministry of Energy and the Environment greatly helped Tarkhov and Shestakov in making their presentations. Thanks to his assistance, a film about Laplandski Zapovednik (in the Murmansk Region of northwest Russia) was shown in English.

"The audience was stunned to see our severe northern wilderness, the reindeer and ice and snow covering the land," said Tarkhov. "Most of the rangers were also surprised to find out how many protected areas we have and the total land area they embrace."

Tarkhov said he took home a few lessons for Karelia. "The international community to some extent reimburses the economic losses of Costa Rica for not using its timber, but instead providing oxygen for the whole Earth through its rain forests. Further, farmers are paid for not logging on their forested lands," said Tarkhov. "I compare this with the situation in Karelia, where boreal forests are recognized as important ecosystems for the entire planet. They need to be preserved, but local economies are timber-oriented and will collapse if timber harvesting is banned over large areas. Maybe we could learn from Costa Rican practices."

The invitation of representatives from Russian protected areas to the symposium was arranged by the "Zapovedniki" Environmental Education Center and personally by the energetic efforts of Lyn Rothgeb, Superintendent of the U.S. National Ranger Association. Assistance was provided by Vsevolod Stepanets of the Department for Protected Areas Management of the State Committee on Environmental Protection, with financial support from the John D. and Catherine T. MacArthur Foundation. The staff of the "Zapovedniki" Center express their gratitude to the employees of the MacArthur Foundation for their patience and assistance in preparing documents.

Kseniya Pakhorukova and Anya Menner are Editors' Assistant and Managing Editor of RCN, respectively.
NGOs

The Georgian Center for Conservation of Wildlife

(excerpts from an article by Keti Melikadze, used with permission)

The Georgian Center for the Conservation of Wildlife was established as a non-governmental organization in 1994. Scientists and zoologists created the organization in hopes of doing their work more efficiently. The Center is a youth organization. Ramaz Gokhelashvili (a 30-year-old professional environmentalist and researcher at the Department of Ecology of the State University), the head of the center, admits that the public sector provided possibilities for the Center’s staff to apply their knowledge and experience in the fields of zoology and ecology more effectively. NGOs have greater ability to obtain information and funding than do the research institutions, successors of the old system of the Academy of Sciences.

The organization is comprised of fifteen members involved in various projects. The Center has departments of education, ecotourism, information, administration, and international relations.

Scientific inventory of Georgian fauna throughout the regions is one of the main activities of the Center. Financial support comes from ISAR, the Open Society Foundation and the World Bank. Four to five times a year, members of the Center organize scientific expeditions. While performing their duties, they are supported by interested members of the local population. Later these people become members of the organization and engage in active collaboration.

Educating the population about the issues of environmental protection is one of the central directions of the Center’s activity. Programs encompass educational work with local administrations, as well as with children. Recently the Center developed a cognitive game called “zoological lotto” using pictures of animals; the Center has also produced a brochure about the rare and endemic animals of Georgia. The Center has actively collaborated with Georgian television and is now developing a series of programs about wildlife in Georgia.

In the near future the Center plans to publish an environmental newspaper for children. Children themselves will be involved in producing the publication. The Center has also received support from ISAR for the publication of a newspaper in the Armenian and Georgian languages, which will highlight environmental problems of the Javakheti region in south-central Georgia near the Armenian border, particularly, the status of Khanchali Lake.

Khanchali Lake is the special subject of the Center’s research. This huge lake belongs to the system of Javakheti plateau lakes and is located in the Ninotsmi district. As a result of human interference, only a third of the original lake remains. Draining the lake has changed the surrounding environment, causing the resident birds and animals to disappear. Today, one rarely sees any storks, cranes, geese, pelicans, or ducks.

“We are often reassured that if these birds do not live here any more, they will find other places of residence,” says Ramaz Gokhelashvili. “But that is not true. Other places are already populated by other animals. So when the animals are deprived of their natural habitat, they simply die.” The Center’s newspaper will educate people about the irreversible consequences of draining the lake.

The Center for the

Natural Landscapes in Georgia

(map used with permission from “Natura Caucasica,” by A. Gavashelishvili and D. Tarkhnishvili)

1. Javakheti Lakes and vicinity - mountain steppes
2. Paliastroni Lake and surroundings - subtropical wooded wetland
3. Forests of northern Kakheti - hills with deciduous forest
4. Borjomi Gorge forests - hills with predominating cover of coniferous moist forest
5. Alazani Valley - lowland with moderate subtropical plains and forest, few hills
6. David Gareji Region - steppes, semi-deserts and arid areas, sparsely wooded
7. Highlands of northern Kakheti - relatively dry mountain meadows and subnival formations
8. Highlands of the Oni District - alpine meadows and glacial-nival formations
CONSERVATION MANAGEMENT

A Review of Computerized Inventories of the Biota of Protected Areas in the Former Soviet Union

by Sergei Pushkarev and Dr. Evgeni Shtarts

There are 95 Zapovedniki (strict scientific nature reserves) and 32 national parks in Russia, and approximately the same number in the other newly independent states, the republics of the Former Soviet Union. In most Zapovedniki, faunal and floral inventories have been conducted, but to date just a few of those inventories have been published. Many additional inventories exist in the form of unpublished reports for the federal “Chronicles of Nature,” but these are almost unknown and are essentially unutilized.

At present, the problem of publication is best solved through translation from existence on paper to an electronic format. A variety of data bases provide a very useful electronic format. Such “soft” biological inventory data are much less likely to be lost than data on paper, and the data are more easily copied, distributed, and further questioned. Thus they are much more useful to managers as a basis for making informed decisions on how best to conserve natural resources.

To assess the state of public access and response to biological inventory information, we carried out a quick survey. In early June this year, we sent out a questionnaire via electronic mail to 46 addresses (32 of which were Zapovedniki and national parks of the newly independent states), and to 37 additional addresses of periodicals (both paper and electronic) in the former Soviet Union we sent announcements of our survey, soliciting opinions. In five months there have been ten responses to our announce-

ment. Completed questionnaires were received for four sites by mid-October.

At present there are descriptions of 19 software programs (data bases, shells, specialized data base management systems and others) at our site on the Internet. Data is included along more than 1000 parameters (such as taxonomy, biology, phenology, abundance, status of protection, bibliography and value for humankind) for more than 3000 species (including vertebrates, insects, vascular plants, fungi and lichens) in protected areas of different types (such as Biosphere Reserve, Zapovednik, Zakaznik or national park) over territories ranging from individual protected areas to the entire former Soviet Union. Users can go to the site, read the descriptions and decide for themselves which data base is most useful for their own particular purposes. More detailed information can be found at http://cci.glasonet.ru/WIN/BCC/ACI/.

There is no information on such data bases at the Scientific and Technical Center in Moscow, which collects and distributes information on data bases in all fields. However, there is no apparent demand for them: ours was the first request to appear there.

Sergei Pushkarev of the Biodiversity Conservation Center is creating digital ranges of terrestrial vertebrates from across the former Soviet Union and databases on the biota of protected areas.

Dr. Evgeni Shtarts is Chair of the Board at the Biodiversity Conservation Center in Moscow.
Environmental Education for the 21st Century: Shaping the Concept

Introduction

by Natalia Danilina

Around the world, conservation organizations are making plans that will propel them into the next century. For example, the international World Wide Fund for Nature has initiated a “Living Planet” campaign; the U.S. Fish and Wildlife Service has prepared its “Blueprint 2000,” and Britain’s Conservation Foundation publishes a journal named for the next millennium: “Network 21.”

In Russia, however, we are without such a strategy. True, attempts have been made to set forth a federal strategy on sustainable development. During the preparation phase of the Global Environmental Facility biodiversity project, a “Protected Areas Immediate Action Plan” was written with the participation of hundreds of conservationists. But we are still without a set of principles which will guide the development and evolution of our protected areas.

As Russia enters the next century, its system of protected areas will be among the world’s greatest in terms of total area of land and water protected. No other protected areas system in the world contains such a tremendous diversity of temperate, boreal and arctic habitats and species. We have a responsibility to preserve these places for our own children, as well as for the children of other countries and continents who will become adults in the next century.

But how can we fulfill this important goal? To do so, we must clarify the role of protected areas in society. We must understand the values people place on wilderness protection, if we are to influence the next generation of nature protectors. One way in which we hope to shape the environmental values of Russians in the next century is through education.

As mandated by legislation, environmental education is one of the three functions of a Zapovednik. While conservation and research — the other mandates of Zapovedniki — have received more resources and attention in the Zapovednik system in the last seventy years, Zapovedniks are placing increasing emphasis on the development of interactive public education programs. At the same time, the relatively new system of National Parks continues to grow and develop its own approach to education. In addition to education, the National Parks’ mission includes recreation and preservation of cultural and natural sites.

All of this growth and the enthusiasm for environmental education among the staff and managers of protected areas is an exciting sign of change that should...
Environmental Education

be fostered and encouraged. However, the change should be thoughtful and decisions should be deliberate.

At the "Zapovednik" Environmental Education Center, we initiated discourse on this subject. We introduced the idea of a National Concept of Environmental Education which would provide guidance to our parks, nature reserves, teachers, environmental groups, and others. We asked several of our colleagues to draft their version of a "Concept" which we would debate, discuss, refine, and then submit as a final product to the federal government for endorsement.

Below you will read the abridged versions of two specialists who have contributed to the discussion. You will hear from Vitold Yasvin, who maintains that what is needed is a clearly articulated philosophy and direction which can then be used to guide the process. On the other hand, Vladimir Boreiko, our second author, believes that Russia's nature reserves should continue to develop their outreach through a variety of methods, and that this dynamic process itself will steer the reserves. We invite commentary from you and will appreciate hearing about your country's experience in this field at such an interesting time.

Natalia Danilina is the Executive Director of "Zapovedniks" Environmental Education Center in Moscow.

Looking into the Future
(Notes in the course of a polemic)
by Vitold Yasvin

While drafting a concept to guide the educational activities of Russian Zapovednik Strict scientific nature reserves) and National Parks, we need first to understand what a concept is, and how it could be helpful. We have asked ourselves the following questions; my own thoughts follow each one:

What is the purpose of a concept? First, to identify strategic goals for long-term development of an institution (in our case, Zapovednik and National Parks). Second, to establish criteria which will be used to design and assess related activities.

What should be formulated in a concept? A concept should not be a compilation of practical recommendations, a sort of "How To" guide. Rather, it should formulate the goals and objectives of environmental education activities, the philosophy, social and legislative grounds and general principles of the work to be undertaken. Only after these guiding principles have been identified can the actual work begin.

On what should a concept focus? The accent should be made on long-term vision. The problems and hardships of today should not color the potential of the future. As proclaimed in the Law on Protected Areas, Zapovednik and National Parks must be granted ownership of the designated lands in perpetuity. And it is this perspective we should have in mind when developing a concept of activities in protected areas.

The essential feature of this concept is an understanding of the fact that protected areas are federal institutions, and it is the taxpayers who provide for their existence. In their turn, protected areas function to the benefit of the community of taxpayers.

Federal legislation identifies three main functions for Zapovedniks and National Parks: conservation of nature, scientific research and environmental education. Therefore, in order for the parks and reserves to enjoy popular support, they must successfully execute these functions and share their successes with the local population. Only then can the protected areas expect public support.

The Concept postulates that the goal of environmental education in federally protected areas is to develop environmental consciousness and ecological culture among the Russian people. These lofty goals touch upon the need for a sense of integrity as well as practical knowledge about the environment. Therefore, outreach programs should aim to affect the emotional as well as intellectual spheres, promoting the application of knowledge to real practice.

The concept under discussion touches only one of the three functions of protected areas. Certainly, outreach programs should neither harm nor hinder the other two functions, protection and research. Priorities and interrelations of these main functions, as well as activities of Zapovedniks and National Parks, must be clearly formulated in a document that identifies the goals and objectives of protected areas, that is, a strategy for development.

Dr. Vitold Yasvin is a consulting psychologist at the "Zapovedniks" Environmental Educational Center.

Securing Support for Protected Areas Through Communication and Education
by Vladimir Boreiko

Communication and education, essential elements in an integrated approach to interaction between protected areas and local communities, were never the main activities for Zapovednik and National Parks in the former Soviet Union. Thus, protected areas are not to be compared with museums of nature or ecological newsletters, which aim primarily to educate people. However, one should not swing to the other pole and proclaim that protected areas should not engage in environmental education and communication at all.

In their outreach activities, protected areas should not depend upon educational forms of work alone. They should use a variety of approaches to communication and public outreach. The local population can also be influenced through activities that are not directly
Environmental Education

connected with nature protection. For example, when a nature reserve provides certain services to the community, such as transportation or firewood, public opinion is usually positively influenced. Above all, the main goal of environmental education must be to enhance the protection of the particular conservation area. The other two goals of education — to develop a public environmental consciousness, and to encourage local participation in resolving ecological problems, thereby influencing regional policies — we consider minor objectives. Whatever approach is chosen to achieve these goals, it should be guided by the principle that no harm be inflicted upon the protected areas.

We would like to stress that National Parks of the Russian Federation should not blindly copy all forms and approaches used in American or other foreign nature reserves. First of all, Russian parks should be more restrictive for visitors than their foreign counterparts. Otherwise, in Russia’s current conditions of total environmental ignorance, poor legislative grounds, and lack of experience and professionalism in tourism, the natural areas in question could be irreversibly damaged.

Vladimir Boreiko is Director of the Ecological-Cultural Center in Kiev.

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Zapovednik Stories

From the editors: we offer the story below as an example of the efforts Zapovednik staff are making to reach out to their young neighbors. This story, published with support from ISAR, is intended as the first in a series.

by Svetlana Popova (translated by Valentina Tarkhova)

Hello, my little friend!

I want to tell you about a Zapovednik and the people who work there. The world we live in has existed many years. Since ancient times, kind people have been creating Zapovedniki. These are special, large and small, tracts of forest, tundra and steppe. There nature is preserved from misfortunes, catastrophes and wicked people. Plants and animals that have been disappearing because of wicked, stupid people are protected. Clean rivers, lakes and swamps are protected in Zapovedniki, because very little clean water remains elsewhere.

A Zapovednik is a place where all living and non-living things are protected. Forests, lakes, rivers and streams are carefully looked after there. Hunting, fishing and gathering mushrooms and berries are forbidden in Zapovedniki. Trespassers are not allowed.

The people who guard Zapovedniki are called “inspectors for protection of the Zapovednik.” Usually they live in small cabins right in the Zapovednik.

Scientists also work in the Zapovedniki, to observe and study the normal life of nature, and they want to know everything. For example, how many bears or bares are in the Zapovednik, which birds hatch more nestlings, and which less, this year, and why. How much has the water level in the lakes risen and fallen. When the buds open on the birches, and many, many other things.

People who really love nature work in Zapovedniki and have devoted many years of their lives to them. I would like for there to be more of this type of person, and for people to understand how important and necessary it is to protect nature.

And now I’ll tell you my first story.

In a certain forest there lives a kind man with a black beard — Euseich. He wears the uniform that all forest workers wear, because he works in a Zapovednik.

Euseich keeps order in the Zapovednik. He has an old gun that doesn’t shoot. The animals are not afraid of him; on the contrary, they trust him and are friends with him. His best friends are the moose Lyosha and the little squirrel Borya, and not far from Euseich’s small cabin lives his good pal, Sima the magpie.

In the neighborhood of the Zapovednik lived a wicked and greedy Poacher. He wanted to have a lot of meat and the pelts of wild animals. One day he decided to cross the border into the Zapovednik and do some hunting there.

As soon as the Poacher had stepped over the Zapovednik’s border, Sima the
Endangered Ecosystems

magpie flew off screaming, to warn Euseich and all the animals about the approaching danger.

When he heard Sima’s cries, Euseich understood right away that something was wrong in the protected forest. He grabbed his gun and started off in the direction Sima had come from. Along the way he noticed that the magpie’s scream had alarmed many animals, and that now they were trying to hide or get as far as possible from the dangerous spot. A good-natured porcupine was rushing to hide in his hole. The hardworking beaver dove into his underwater hut, to get out of harm’s way. On the nearest tree the mischievous squirrels were racing to their native hollow. Euseich feared for the beasts’ lives, but especially for Lyosha and all the other moose. After all, they are so kind and defenseless, though at first glance they seem big and strong.

Stepping out onto a forest glade, Euseich caught sight of the Poacher near an old oak.

"What are you looking for here?" Euseich asked.

"And what’s it to you? I’ve got a hankering for moose meat," Poacher said impudently.

"Don’t you know this is a Zapovednik? Get out of here!"

"Why are you giving commands?" Poacher says to Euseich. "Are these beasts and trees yours? No, I therefore have complete rights to do whatever I want here."

"No, you have no such rights, because this is a Zapovednik, and everything here is protected by Law. You are breaking the Law and will be punished."

"What can you do to me?" replied Poacher. "I’m not afraid of you."

Meanwhile, Sima’s chattering had alerted Euseich’s friends, Palych and Petrovich, inspectors from the neighboring village. They got into their car and set off to visit Euseich, and on the way they dropped by to see the local policeman, Mikhailysh, and say:

"Listen, Mikhailysh, let’s find Euseich in the woods. For some reason the animals have set up quite a racket; it seems a trespasser has gotten into the Zapovednik."

Soon after, the three of them are driving along the forest road.

And the unpleasant conversation between Euseich and the Poacher continues.

"You ought to go back to your lodge, Euseich," says Poacher. "Sit and drink tea. What brings you to the forest?"

"Don’t tell me what to do. I’m not just taking a stroll," answers Euseich. "I work here to protect the forest and beasts from people like you."

"Well, I don’t know, Euseich," Poacher said maliciously. "I have a gun that’s new and really good, and yours, I dare say, has never been fired even once. Go away, don’t interfere, or I may accidentally shoot you down, and no one will know about it."

Yes, an inspector’s work is dangerous. There have been cases when an inspector went out on his rounds and didn’t come back; he perished at the hands of poachers.

But the Poacher’s threats didn’t frighten our Euseich very much. He’s been working as an inspector for years, and he’d heard crude and intimidating remarks from violators many times.

Just then, Euseich’s friends drove up. They got out of the car and surrounded the trespasser. Mikhailysh asked for the man’s I.D. and hunting license, but of course the Poacher didn’t have them. The inspectors took away the Poacher’s weapon and escorted him off the Zapovednik. Now the violator has to pay a fine for trespassing on the Zapovednik. It’s a good thing he didn’t manage to shoot anybody — otherwise, he would have been punished even more severely!

Euseich thanked his friends for their help and said good-bye. He shouldered his gun and went to his lodge. Sima, after quieting down, was grooming her feathers. And the moose calf Lyosha, not at all suspecting misfortune, chomped his tasty aspen branches. Life in the Zapovednik continues according to its own rules. And Nature herself establishes these rules, and humans here merely observe and study Nature.

Svetlana Popova runs the environmental education program at Bol’shaya Kokshaya Zapovednik in the Mariisky Republic and publishes Zapovedny Vestnik,” a newspaper for protected areas staff.
**ENDANGERED SPECIES**

**Will the Population of the Sakhalin-Hokkaido Herring Disappear from the Industrial Supply?**

*by Galina Pushnikova*

The Pacific Herring (*Clupea pallasii pallasii Valenciennes*) is one of the most common pelagic schooling industrial fish of the North Pacific. Over many years, a variety of local populations of this species has formed across a broad geographic range, spanning the Asian littoral from Korea in the south to the Bering Strait in the north. The size of these local populations has varied greatly. The largest of all those known was the Sakhalin-Hokkaido Herring, whose fluctuations in numbers have served as a textbook example of population flux. In the first half of this century (a favorable time for the population), this fish was especially widely distributed and formed an industrial stock in the northern part of the Sea of Japan, the Sea of Okhotsk (along the shores of Eastern Sakhalin to the Island of Iona, and along the Kuril Islands to the Island of Paramushir) and the Pacific Ocean (along the southern Kurils).

At that time the herring's spawning ground was confined to the coastal waters of Honshu, Hokkaido, Sakhalin and Kunashir Islands. The region presented the grand spectacle of numerous schools migrating through the narrow waters. According to witnesses, the water in the spawning areas would change colors several times: from silvery-gray (due to the abundance of fish) to white (from the high concentration of milt) and yellow (from the large number of roe that had become affixed to coastal vegetation and the soil). During storms a significant portion of the roe would wash up on shore, reaching two meters deep in some places and averaging half a meter in the mass spawning zones.

Despite such losses, for several decades the population was, according to the specialists of the time, "most important" for the fishing industry. The fish were harvested not only using the set net methods that were traditional then, but also using hand nets and one's own hands, gathering the fish on the beach after a storm. Some of the herring were salted and used for fish oil, but most were processed into superior, environmentally pure fertilizer and feed meal. Industrial enterprises took in huge profits even during periods of natural decline in the population.

The most recent decline, however, coincided with the development of more active fishing, the design and creation of acoustic searching devices and the use of airplanes to catch fish in their feeding areas. In the 1950s, set nets continued to be used during the spawning period, but the industry also began using trawling nets to capture fish in the feeding areas. Immature and young fish were caught. The industry's pressure on fish that were just maturing began to increase. The population could not withstand the disproportionate increase of industrial pressure in this period of natural decline in numbers. The result of such an irrational use of supplies during the decline has been a steady, long-term depression.

The following data illustrate this point well: the average harvest of Sakhalin-Hokkaido herring in the first half of this century was 512,300 tons a year; from 1951 to 1960, the average harvest fell by almost 75 percent, to 139,000 tons a year. Since 1961, the average annual harvest has been 21,000 tons. None of the Far East herring populations has produced so very high an annual harvest, up to 1 million tons, but neither have their numbers declined so greatly.

An analysis of multi-year observations, presented in three distinct periods, points to a general decline in the size of generations and, accordingly, in the herring supply and the size of the annual catch (*Please see the related box on page 20*).

Many studies have addressed the reasons for this long-term, continual depression in the Sakhalin-Hokkaido herring population. Some authors have analyzed volumes of data on catches and various abiotic factors to predict when the population would most likely emerge from its depression. Some believed that the 1970s would see an increase in the numbers of herring (Birman, 1973), but in fact, only one generation during the 1970s was comparable in size to two generations born during the population's heyday, 1933 and 1934. However, the generations of those two years were extremely small for the 1930s, while for the 1970s this level was considered quite high.

Historically, Russia and Japan both have harvested the same population of Sakhalin-Hokkaido herring. Due to the significant drop in numbers, Russia has unilaterally taken protective measures on several occasions: banning the processing of spawning and immature herring, establishing a harvesting season and imposing a total ban on harvesting for five years. Unfortunately, this had no positive effect on the population. As reported above, the depression...
Endangered Species

In our research we have also tried to discover the reason for the depressed numbers of Sakhalin-Hokkaido herring. Going beyond the objective reasons that have caused fluctuations in their numbers, we reviewed the effect of a single anthropogenic factor, industrial harvesting, that is, a factor that could and should be subject to regulation.

Data analysis showed that Russian harvesting is based on stocks of herring in their fattening stage, while Japanese harvesting is based on wintering and pre-spawning herring. Russia takes about 14.5 percent, while Japan takes 85.5 percent of the average annual catch. As in the early years of harvesting (Probatov), Japan takes significantly more of this fish, which is most clearly seen in the harvesting of productive generations (Pushnikova, 1994). For example, the total industrial harvest of the productive generation of 1983 was 614 million fish, of which Japan took 559.8 million (92.2 percent). This explains why Russia’s unilateral measures to protect the Sakhalin-Hokkaido herring were to no avail.

As far as the age distribution of the catches, 408.7 million herring three years of age and 83.7 million four-year-old herring were harvested by the Japanese fleet in 1986. Thus, 88 percent of the total industrial harvest of this generation took place at the stage of sexual maturity, which had an undoubtedly negative effect on expanding the parental school.

Calculations based on studies of the correlation between parents and progeny show that the optimal size of the parental school should be at least 3 billion herring. In fact, the number of offspring-producing fish during the depression has varied from 41.1 to 352.3 million, and on average was fifteen times lower than optimal. The existing depression in numbers is determined in large part by nonnational (primarily Japanese) industry, which is hindering the normal reproduction of the spawning school.

It is possible that the size of the Sakhalin-Hokkaido herring population will continue to fall. There are very worrisome symptoms indicating this: a trend toward decreasing productivity in successive generations; the extremely infrequent formation of larger-than-usual generations over the past 20 years; the absolute absence of spawning among the Sakhalin-Hokkaido herring in the coastal areas where they historically have spawned; the huge area of potential but currently empty spawning grounds; and the extraordinarily low numbers of reproductive fish.

**Numbers of supply, generations, and annual catch of Sakhalin-Hokkaido herring**

![Graph showing numbers of supply, generations, and annual catch of Sakhalin-Hokkaido herring.](attachment:image.png)
Endangered Species

In order not to allow a continued decrease, but attain stabilization in numbers and then, under favorable conditions, a growth in the population, it is imperative that both Russia and Japan impose an immediate total ban on harvesting the herring. This measure is all the more necessary since there are predictions that abiotic factors will be changing in ways that could effect more favorable conditions for the herring (Shuntov, 1993). It is obvious that in the next few years the survival rate of this species, particularly at early stages of development, will increase, and imposing the proposed protective measures will favorably affect the size of the supply and the productivity of new generations.

If decisive protective measures are not taken, it is quite likely that in the near future the population truly will disappear as a unit in the food supply and will instead enter the Red Data Book.

**Galina Pushnikova** is a Senior Research Scientist at the Sakhalin Institute of Fisheries and Oceanography (SakhalNIRP) in Yuzhno-Sakhalinsk.

**Sources**


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**Imperial Eagle Populations Begin to Recover in European Russia**

by Victor Belik and Vladimir Galushin

The Imperial Eagle (Aquila heliaca) is a powerful, beautiful raptor that fully deserves its European names: "Imperial" (in French, English and Spanish) and "Kaiser-Keizer-Kejs" (in German, Dutch and Swedish). Unfortunately, its Russian name "mojil'nik," which also means "burial ground," reflects neither its appearance nor its habits. This name was given because these eagles were first seen sitting on gravestone mounds in the Kazakh Steppe.

Adult Imperial Eagles are dark brown with marked white "braces" on their shoulders. They are large, with a wing span of about two meters, and heavy (females weigh up to four kilograms). Their breeding range covers the steppe and forest-steppe zones of Eurasia from Hungary to Lake Baikal. Eagles nest in tall trees, and their favorite food consists of large rodents, such as gophers and marmots, as well as birds such as rooks.

In the twentieth century, virgin steppe has been largely transformed into cultivated fields, resulting in a decrease in their primary prey. With human encroachment upon their breeding ground, the numbers of Imperial Eagles have fallen so sharply that the species is now considered "globally threatened," a status recently established by the World Conservation Union (IUCN) and BirdLife International. In the latest lists, twenty-four such species are indicated for Europe and 35 for Russia. In the early 1990s, the total European population of the Imperial Eagle was roughly assessed at 320 and 570 pairs (Tucker and Heath, 1994) including up to 300 pairs in Russia (Galushin, 1994). The latter figure was based on a few fragmented surveys in a few regions; therefore it badly needed to be updated.

In 1996-97 the Russian Bird Conservation Union (RBCU), with financial support from Vogelbescherming Nederland, implemented an Imperial Eagle Project as a relevant BirdLife International Action Plan (Heredia et al., 1996). The project aimed to outline and update the breeding range and assess the size of the Imperial Eagle population within European Russia, in order to develop appropriate measures for conservation of the species and its habitat. Implementation of the project started out shakily, when almost half of the funds allocated by Vogelbescherming Nederland were lost due to the sudden bankruptcy of Tver universalbank. Though threatened with termination, the project was saved thanks to internal RBCU reserves.

More than ten ornithologists from various RBCU branches conducted the Project. Major surveys were undertaken by mobile teams across the entire Imperial Eagle breeding range within European Russia, up to the Ural mountains but excluding the northern slope of the Caucasus (which is understandable, given the military conflicts in the area). The teams covered about 15,000 kilometers of roads, including more than 4,000 km. of mud. These major mobile surveys were supplemented with local

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*Imperial Eagle (Aquila heliaca)*

*(Drawing by Y.V. Kostin from Flints *Birds of the USSR*, 1983).*
Endangered Species

studies performed by specialists from regional RBCU branches such as Uljanovsk, Saratov, Perm and Volgograd, to mention just the most active. Overall, twelve administrative regions of more than 800,000 sq. km. in area were surveyed within the framework of the project. Along with the assessment of the Imperial Eagle, data were collected on other rare birds such as the Greater Spotted Eagle, Steppe Eagle, White-tailed Eagle, Short-toed Eagle and Levant Sparrowhawk. As a result, around twenty new Important Bird Areas have been proposed.

A similar project supported by Vogelbescherming Nederland and implemented in Ukraine in 1996 (with Vitaly Vetrov as coordinator) revealed more than 50 Imperial Eagle pairs nesting there.

Overall, the results are promising: more than 200 Imperial Eagle nesting sites were recorded, including more than fifty active nests. Comparison with previous data has led to the major conclusion that this Eagle’s nesting range has practically not changed for thirty years, while most of the local populations are stable or growing. The number and density of nesting pairs increases from west to east. A large and growing population (more than 200 pairs) inhabits primarily pine woods within the forest-steppe zone, from eastern Ukraine to Bashkortostan at the Middle Volga River. Another population (up to 250 pairs) inhabits some steppe areas from the Lower Don to Lower Volga Rivers. Eagles nest there primarily in isolated trees.

Despite general trends of stability, in some places the number of eagles is decreasing due to the vulnerability of their nests to human disturbance, as well as to a very sharp decline in major food sources such as gophers. According to local studies, many minor populations inhabit the foothills of the Crimea (five to seven pairs) and the Northern Caucasus (20-30 pairs). Total populations of the Imperial Eagle in Russia and Ukraine are most likely to exceed 500 pairs, which is twice as high as previous data for those areas.

From the study it also appeared that local residents have adopted a benevolent attitude towards Imperial Eagles and their nests. When they found out about the importance of birds included in the Red Data Book, they even began to take pride in their famous neighbors. This tendency is very encouraging and must be strongly supported, since the attitude of local people is one of the major factors sustaining conservation of the Imperial Eagle and other rare birds.

To secure the stability and growth of the Imperial Eagle populations, certain conservation measures should be undertaken. The first step is identification of Important Bird Areas to be proposed as protected areas of varied status, such as Zakazniki. Environmental education that would awaken people’s awareness of the threatened eagles is also vitally important for creating a sympathetic atmosphere towards the birds and inspiring people to protect them from occasional disturbance and destruction of nests. Chopping down tall trees with eagle nests in them must be prohibited. Restoration of gopher populations as a major food source is very important, for example, between the Don and Volga Rivers, but such activity demands a great deal of time and money.

There is reason to hope that successful implementation of the Imperial Eagle Project will stimulate further international projects to study and protect other globally threatened raptors in Russia, such as the Lesser Kestrel and Spotted Eagle.

Victor Belik and Vladimir Galushin are Coordinators of the Imperial Eagle Project and members of the Russian Bird Conservation Union.

References


Reappearance of the Dhole in Russia

by Valeri N. Puzanski

Introductory note by Nikolai Formozov, RCB’s Editor on Rare and Endangered Species

Remember how Mowgli in “The Jungle Book” tortured, drowned and slaughtered countless Red Dogs or Dholes (Cuon alpinus)? Unfortunately, Rudyard Kipling turned out to be a prophet: indeed, like the “unthinking young frog Mowgli,” humanity has been conducting a war of extermination against the dholes. Apparently at one time dholes were a most important element of the Asian ecosystems and occupied in them the same ecological niche as African hunting dogs (Lycaon pictus) do in the African savannahs. Their range stretched from Indochina to the Russian Far East, and from the southwestern Siberian mountains to India. Now dholes have nearly disappeared, and extremely little is known about these mysterious, taciturn beasts of prey. In recent decades there have been no announcements of
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sightings of dholes on the territory of Russia.

Zoologist Valeri Puzanski has revealed numerous bits of evidence from hunters about the presence in Chita Region of wolves with red tints in their fur. This researcher believes that the given reports refer to dholes, which at one time were found in this region and have now been rediscovered by him. Puzanski managed, with his own money, to buy four pelts of these animals from the hunters; they do not look like wolf pelts, neither in size, nor in coloration, nor had he yet succeeded in getting more definite data (such as his own observations of this species, or the skulls of animals killed by hunters). Therefore it is still early to confirm with complete certainty that the dhole has reappeared in Chita Region. Indeed, caution is warranted. Not long ago, in the former Soviet republic of Georgia, a wolf-dog hybrid of reddish coloration was mistakenly taken for a dhole, and newspapers even trumpeted the news (personal communication from Jason Badriage). However, if Puzanski's report can be verified, perhaps we will be able to record officially the second arrival of the dhole in Russia.

In the recent past the range of the Dhole (Cuon alpinus) included the southern edges of the Far East and Eastern and Central Siberia, the eastern part of Central Asia, as well as China, Mongolia, the Indian subcontinent and Indonesia. The limit of its range in Russia varied with the animals' migration in search of pasture. It is possible that the Dhole has already disappeared in the Far East (Lavrov, 1983), or even in the countries of the C.I.S. as a whole (Matyushkin, 1984). The most recent oral information about sightings of dholes in Buryatia and Irkutsk Region (the western and eastern shores of Lake Baikal, respectively) were from 1982-85 (Smirnov, 1988; Medvedev, 1993).

E. I. Pavlov wrote in 1949 that in the area east of Baikal, the Dhole is found in the Dauer steppe and taiga regions, but that it is very rarely observed in each place. Shepherds in the steppe districts of Chita Region in southeastern Siberia, east of Buryatia, describe a "jackal" species which, by the sound of it, resembles the Indian Dhole. Thus, for example, in the Zabaikalski district, in the steppe, forested Sharasunka valley, shepherd A.V. Zubkov maintained that "jackals" in the steppe ate eight lambs in 1982. According to A. Tsydylov, in 1983 in the same locality a "jackal," unlike grey wolves, would attack herds of sheep in full daylight, slaughter just one and eat it at once, which is very close to the behavioral characteristics of Dholes as described by Radde (in Pavlov 1949). In that same year and place, shepherd N. Dambaev complained about a "jackal" that was gnawing on sheep.

At this time we have communications about encounters with Dholes from sixteen southern and central districts of Chita Region, including steppe, forest-steppe and taiga areas; these are outlined in the table below.

The numerous reports of sightings of dholes, which have grown more frequent recently, give witness to the fact of the actual habitation of dholes in

### Numbers, biotopes, dates, and types of encounters with Dholes in six districts of Chita Region.

<table>
<thead>
<tr>
<th>District</th>
<th>Biotope</th>
<th>Date</th>
<th>Numbers</th>
<th>Encounter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Petrowski-Zabaikalski</td>
<td>mount. steppe</td>
<td>Sept. 1995</td>
<td>one</td>
<td>20 m. from car</td>
</tr>
<tr>
<td>2. Krasnochokyoski</td>
<td>mount. steppe</td>
<td>before 1994</td>
<td>three</td>
<td>sighted by hunter</td>
</tr>
<tr>
<td>3. Uleotovski</td>
<td>forest-steppe</td>
<td>fall 1994</td>
<td>one</td>
<td>sighted</td>
</tr>
<tr>
<td>4. Kyirnski</td>
<td>forest-steppe</td>
<td>winter 1993-94</td>
<td>five</td>
<td>seen on river ice</td>
</tr>
<tr>
<td>5. Chitinsky</td>
<td>forest-steppe</td>
<td>winter 1993-94</td>
<td>two</td>
<td>killed by border guards</td>
</tr>
<tr>
<td>6. Du'unganski</td>
<td>forest-steppe</td>
<td>1994</td>
<td>six</td>
<td>killed by humans by roadside</td>
</tr>
<tr>
<td>7. Akishinski</td>
<td>forest-steppe</td>
<td>1994</td>
<td>one</td>
<td>sighted</td>
</tr>
<tr>
<td>8. Tungokochenski</td>
<td>steppe</td>
<td>June 1995</td>
<td>one</td>
<td>sighted</td>
</tr>
<tr>
<td>9. Omonski</td>
<td>steppe</td>
<td>Feb. 1993</td>
<td>one</td>
<td>4 to 5</td>
</tr>
<tr>
<td>10. Balezsky</td>
<td>forest-steppe</td>
<td>since 1986</td>
<td>four</td>
<td>sighted in grove</td>
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<tr>
<td>12. Zabaikalski</td>
<td>forest-steppe</td>
<td>1991</td>
<td>two</td>
<td>15 m. from car</td>
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<td>13. Sreetenski</td>
<td>taiga</td>
<td>since 1986</td>
<td>four</td>
<td>sighted</td>
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<td>14. Aleksandro-Zavodskei</td>
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<td>1991</td>
<td>one</td>
<td>seen at 20 meters</td>
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<tr>
<td>15. Gazimuro-Zavodskei</td>
<td>taiga</td>
<td>1991</td>
<td>one</td>
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<tr>
<td>16. Mocgochnski</td>
<td>taiga</td>
<td>winter 1992-93</td>
<td>one</td>
<td>killed by humans</td>
</tr>
</tbody>
</table>
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Chita Region, although, undoubtedly, some of the reports are doubtful and difficult to check. Trustworthy information about the dhole's habitation in adjacent areas of Mongolia is unavailable.

In Chita Region, apparently, dholes can now be found in twenty-nine of 31 administrative districts; the exceptions are the two most northern districts, Kalanski and Tungiro-Olekminski.

Using a survey, we have managed to establish that from 1982 to 1996, no fewer than twelve dholes were caught in six administrative districts; of those, nine were caught within the last five years, in five districts. We have managed to acquire four pelts.

It is unclear in what numbers this species occurred in Chita Region from the 1950s through the 1970s, because practically no one was working on this problem, apparently, until our research, which was begun in 1995; however, the data brought to your attention here (please refer to the table) most likely testifies to some growth in numbers of dholes in the last three years in the area east of Lake Baikal, for reasons that are not entirely clear. The numbers of Grey Wolf (*Canis lupus*) are simultaneously growing, primarily because of the decrease in the human battle with that species.

Since these two species are competitors, it is possible that, with further increases in the numbers of Grey Wolves, the dhole could disappear altogether in Zabaikalye [the area east of Baikal]. The hunter who very kindly left two dhole skulls at my disposal maintains that these animals have been living in his district continually since the 1970s, and he proposes catching a few of them live for preservation in 2005.

Paul Stewart indicates, in a 1994 article, that *Cuon alpinus* still remains in Thailand and Laos. According to the literature, the dhole has almost disappeared in India, except for the southern districts. On the whole, this species is threatened with complete extinction in the twenty-first century. Further study of the possible existence of the dhole in Zabaikalye is needed, as is public education on the species' vulnerability to hunting pressure.

The author is very grateful to Dr. David MacDonald and the editorial board of the journal Canid News for sending issues free of charge, and he will likewise be thankful for reports and articles on the dhole from any part of Asia.

Valeri N. Puzanski works at the Chita Institute of Natural Resources, under the auspices of the Russian Academy of Sciences.

Post Scriptum: Dr. Olga Volsit of the Zoological Museum at Moscow State University told us that she saw Puzanski's skins last summer. On the fore paws of these animals, the pads of the middle fingers are connected at the back. This is a reliable sign distinguishing the dhole from the wolf and dog. Thus, Puzanski really does have in hand dhole pelts from southern Siberia! This research, currently conducted by a lone enthusiast and financed out of his own pocket, badly needs support. (NF)

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Tracking the Bearded Vulture

**by** Alexander Gavasbelisvill

As a student in Tbilisi and later, as a research ecologist, I often dreamt about satellite tracking the Bearded Vulture (*Gyps barbatus*), also known as the Lammergeier, and two endemic birds of the Caucasus: the Caucasian Snowcock (*Tetraogallus caucasicus*) and Caucasian Blackgrouse (*Tetrao mlokosiewiczi*).

Then, years later — this year, in fact — while visiting the United States from April to October as a visiting scholar at the Smithsonian Migratory Bird Center in Washington, D.C., I came across a fascinating article. The article, which appeared in the July issue of the journal "GPS World," discussed a project on tracking and managing Harpy Eagles in Venezuela with the use of the Global Positioning System (GPS), a world-wide satellite navigation system which gives accurate latitude, longitude and altitude anywhere in the world of an object outfitted with a transmitter. The possibility of applying that technology to my studies and conservation work back in Georgia renewed my earlier hopes; the thought that some day this dream might come true thrilled me.

The bearded vulture — this majestic old world bird — is the rarest vulture in Europe. Although the bearded vulture is
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protected on paper, in most of Europe this raptor is almost extinct, and it appears to be declining in the western part of Eurasia. Thanks to efforts made by the Spanish ornithological community, the bird is making a comeback in the Pyrenees. And, in the French Alps this year, after an experimental reintroduction, the bird has bred successfully. Hopefully this program will continue to be successful; however, we should expect increases in the population to be slow and unpredictable, as the European population still remains precariously small.

Tiny, seemingly stable populations of the bearded vulture persist in the Caucasus and Turkey. According to 1980 estimates of the central and eastern parts of the Greater Caucasus occupied by Georgia, the bird's population numbered some 15 pairs. Unfortunately, a recent census conducted by the Georgian Center for the Conservation of Wildlife (GCCW) has revealed no more than seven breeding pairs throughout the above-mentioned regions of Georgia. (Please see the article about this organization in the NGO section of this issue.)

GCCW's experience thus far has pointed to several main causes for decline in the bearded vulture populations in the region:

- Intensive herding of domestic sheep in the mountains, especially in eastern Georgia, displaces high-mountain ungulates (hoofed animals), a main source of food for the bearded vulture. Herding also disturbs vulture nesting sites, leading to reproductive failure;
- Overhunting of high-mountain ungulates is depriving the vulture of its main food supply;
- Hunters and armed sportsmen use the vulture for target practice in sharpshooting, or for entertainment;
- There may be still other, unknown factors which are more responsible for the population's decline than all of those mentioned above combined.

As one solution to these many problems facing the bearded vultures, the GCCW proposes using a satellite tracking method similar to that used to track Harpy Eagles. In addition to helping us better understand the movements of this bird, this technology would considerably help eliminate the negative factors. First, "sharpshooters," seeing that the bird is internationally studied and checked by satellites, would be dissuaded from using the bird for target practice. Second, Global Positioning System (GPS)-generated maps could be distributed to shepherds, instructing them where to pasture their sheep and which places to avoid, in order not to disturb nesting sites. Third, the method makes it quite easy to locate nest sites of the vulture, monitor adult pairs, map the dispersal of young vultures; determine its seasonal patterns of occupied habitat areas and do the like; in other words, to gain basic environmental and biological knowledge which is central to identifying threats to the bird.

The information generated with GPS would be a useful environmental management tool for vulture conservation and habitat protection in general. The tool could be used to demonstrate to the government and private sector the need for control of herding, which threatens our sub-alpine forests and causes erosion, thereby contributing to pollution of alpine streams and rivers—an important source of drinking water.

The tool could also be used to identify sustainable land use and to stop the overhunting of wild animals such as endemic wild goats (Capra cylindricornis and C. caucasica), which are the main food supplies for the vulture. These goats are also endangered now, and as animals indigenous to the Caucasus, need to be of great concern. Interestingly, monitoring the vulture's seasonal movements means partly monitoring those of the wild goats at the same time.

I am writing this article with the hope that someone in the U.S. will express an interest in working jointly to use GPS in Bearded Vulture research. Together we will try to obtain resources and funding from various foundations. Upon request, I will be able to provide more details and information about such a project.

Alexander Gavashelishvili is an ornithologist and co-director of the Georgian Center for the Conservation of Wildlife.

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Russian Oil and Gas Industries Continue Damaging the Environment, But Now with Some Consideration...

by Viktor V. Kutsenko and Anna E. Danilina

(Reprinted in abridged form from "Zeleny Mir" newspaper, #17, 1997)

The status of the oil and gas industry and its environmental safety

At present Russia extracts oil and gas in four major regions: Western Siberia; the Volga-Ural region, including Bashkortostan, Tatarstan, and Udmurtiya; the Central and Lower Volga, including the Astrakhan, Volgograd, Saratov and Orenburg Regions; and the Komi Republic. The most productive region is Western Siberia, which yields oil and gas in volumes dozens of times larger than the other regions.

In the Russian continental shelf zone, four industrial regions have been identified, surveyed and explored to a greater or lesser extent: south of the Barents Sea (gas and gas-condensate), the Pechorskoe Sea (oil and gas-condensate), the South Kara Sea and North Sakhalin.

Exploration and exploitation on the shelf will undoubtedly have negative impacts on the environment. Potential oil- and gas-bearing areas coincide with or are located near the habitats of valuable marine mammals and zones of active fishing. Prior to developing shelf regions, they must be ranked according to the relative safety of prospecting and extraction, taking into account the area's significance for fisheries, the presence of spawning grounds and habitats for rare mammals, fish, invertebrates and birds, and proximity to protected areas. Preserving the stability of ecosystems and self-regenera-

Oil and Gas Development: the Statistical Picture (1996)

Oil industry
Boreholes under exploitation: 102,544
Extracted oil (with condensate): 301.4 million tons
Number of oil-extracting companies (foreign and domestic): 16

Gas industry
Number of deposits under exploitation: 69
Pipelines under exploitation: 145,200 km.
"Gazprom," a Russian Stock company, possesses 94.1% of the shares in total gas extraction.

Oil and Gas Transportation
Intra-industrial pipelines: 350,000 km.
Transcontinental pipelines: 200,000 km.
Duration of use: about 60% of the pipelines are more than 20 years old.
Degree of wear of the pipeline network: 63%, while 32.1% of the pipelines are completely worn out.

accidental spills and gas emissions are frequent. For example, in developing the Tyumen North, the total area of reindeer grazing land has shrunk by 12.5% (6 million hectares), and 30,000 ha. of forested lands have been spoiled by oil products. About 24,000 ha. have been contaminated with chemicals and gas leaks.

- Atmospheric pollution

Fuel and energy enterprises are responsible for 48 percent of releases of poisonous substances into the atmosphere. Tremendous losses of gases containing methane and carbon dioxide — which engender the greenhouse effect — are quite common in oil and gas development. For example, more than 190 billion square meters of gas have been released during the last forty years of exploiting Western Siberian deposits.

- Pollution of surface and ground waters

About 70 million square meters of untreated sewage is released annually into bodies of surface water. The whole basin of the Middle and Lower Ob' Rivers and Obsk and Tazskoy Bays (north of Western Siberia, at the mouths of the Ob' River and Taz River, respectively), experience regular oil contamination. The concentration of oil by-products in most bodies of water in Tyumen and Tomsk Regions and the Khanty-Mansi and Yamalo-Nenets National Regions (middle Western Siberia) is dozens of times greater than the maximum allowable limit.

- Damage to vegetation

We lack exact data on damage incurred to vegetation in areas of intensive oil and gas development. However, the scale of damage can be estimated from the results: contamination of four percent of an average forest kills individual trees, while contamination of 42% kills off coniferous forests. When 60% of an area is contaminated, the entire forest tract dies.

- Damage to the animal world

The damage to Western Siberian fisheries due to oil and gas extraction causes annual losses of 20,000 tons, according to the estimates of the Siberian Institute for Fish Studies and Planning. If catches in the Ob'-Irysh River basin...
News of the Day

(central and southern parts of Western Siberia) were about 40,000 tons per year in the 1950s, now they've dropped to only 18,000 tons. Fuel and energy enterprises have taken almost no measures to reimburse losses to fisheries, despite federal directives issued in 1995.

Environmental Policies in an Oil and Gas Economy

Data collected primarily by the State Committee on Environmental Protection and the Ministry of Natural Resources show that developers and exploiters of oil and gas deposits on the land and continental shelf zones of Russia systematically violate nature protection requirements. Moreover, violations were detected at all stages, from project design to construction, from exploitation to transportation and processing of raw materials. For example, recultivation of oil spill sites has almost never occurred; most often, spilled oil is buried off and contaminated areas are blanketed with soil.

Nature protection regimens often are not taken into consideration in project proposals. All of the proposals elaborated by Tomsk Oil Project Design Institute in 1995 were rejected by regulatory agencies because they lacked environmental requirements. A severe problem in oil and gas development is the large amount of untreated drilling wastes that contaminate the environment. No techniques have been developed to process drilling wastes; they are merely stored for future generations to deal with.

Despite the fact that fuel and energy enterprises incur significant damage to nature, a mechanism for reimbursement has not yet been developed. Regulatory agencies work inefficiently at obtaining compensation for damage because of analytical and methodological gaps.

Contemporary federal legislation does not provide an adequate basis for control of oil and gas development. Regulations and economic incentives are needed to stimulate an environmentally safe regimen, and ecological audits must also be conducted.

Generally, the State Committee on Environmental Protection has only poor instrumental and analytical tools for successfully controlling environmental pollution. At the same time, the Committee does not use to the fullest extent its delegated rights to suppress numerous violations of nature protection legislation by oil and gas enterprises. The main principles of environmental policies are postulated in a new federal program, "Fuel and Energy (1996-2000)", however, financial cuts make realization of the program unlikely.

What is encouraging is the fact that in the last few years, oil and gas extracting companies have themselves started developing programs to reduce the harmful consequences of their activities. "Transneft Concern" has developed a program of reconstruction and capital repairs to its main pipelines. "Transneft" and "Lukoil" have formed special brigades for recultivation of polluted lands and are developing biorecultivation technologies. "Rosneft" Stock Company has reduced by 14% the amount of gas to be burned.

Environmental monitoring

The creation of an Integrated System of Industrial Ecological Monitoring (ISIEM) could become the main means for providing environmental safety. This system should regulate the fuel-energy sector's impact on the environment and help make industrial sites sustainable. Further, Gazprom has been creating a system to monitor emissions of poisonous substances and releases of sewage, as well as the status of the atmosphere, waters and soils in regions where the company is working. This system is supposed to be incorporated into the ISIEM. Projects for ecological monitoring of several oil-gas enterprises in Siberia, the Urals and Astrakhan are currently under way. Thus, despite the fact that oil and gas industries continue to harm the environment, there are some positive shifts in their attitudes.

What's next?

Among urgent measures to improve the environmental safety of these industries, comprehensive prognosis of the effects of oil and gas development on the environment of the Russian north and continental shelf is especially important. Tasks yet to be done are the combination of state monitoring via satellites with nature protection monitoring within the industrial agencies, the use of international experience to improve damage assessment and reimbursement, and collaboration with the Ministry of Emergency Situations and Marine Rescuers Service to liquidate oil spills in marine and coastal zones.

Viktor Kutsenko is Superintendent of the Department of Environmental Safety under the State Committee on Environmental Protection.

Anna E. Danilina supervises the subdivision of chemical safety and environmental accidents of the Department of Environmental Safety.

Julia Kazmina, 10 years old, is a member of the children's environmental club of Aleyne in Bisbek, Kyrgyzstan.
American Photographer Explores Russian Landscapes

This summer, one of America's premier landscape photographers made his first trip to a Russian Zapovednik. Robert Glenn Ketchum is known for his striking images of pristine and degraded scenes, from Alaskan icebergs to the Hudson River. He has published six of his own books, including The Legacy of Wilderness, Tongass: Alaska's Vanishing Rainforest, and more recently, Northwest Passage. Ketchum straddles two worlds, combining art with advocacy in order to promote nature conservation. An outspoken environmentalist, Ketchum is an ally to many environmental organizations.

Ketchum's use of art in environmental advocacy is precisely the reason the Center for Russian Nature Conservation (CRNC) invited him to Russia. In June, Ketchum helped the Center to launch the first stage of a new effort to inform the world about Russia's system of strict nature reserves, or Zapovedniki, through photographic images of the diverse landscapes which have remained protected and wild.

On the first leg of the trip, Margaret Williams, the Center's Director, and Ketchum glided down the Nerussa River of Bryanski Les Zapovednik, stopping to swat mosquitoes and capture on film the green giants of the forest, the 300-year-old oak trees lining the river bank. Later in the month, they were joined by John Sachs — also a conservationist and photographer, and the primary donor supporting the project — in the spectacular Kavkazskii Zapovednik.

The Center has invited several Russian photographers to join Ketchum in contributing to what will eventually become a large picture book with bilingual narration. CRNC and Ketchum have agreed that the purpose of the book is not to raise funds, but to raise awareness among western as well as Russian policymakers and citizens. The Center will work with many nature reserves and photographers, as well as the Zapovednik Environmental Education Center, whose Ludmila Ilyina helped to organize the Center's visit to Russia.

Completion of the book will take a couple of years. In the meantime, CRNC is developing a site on the World Wide Web. With the generous contributions of Boston-based Center Media, CRNC will be unveiling the site — "Wild Russia" — this winter. Keep your eyes "peeled" for an announcement about the new web site areas from industrial encroachment.

Congratulations are in Order: Russian Conservationist Recognized with International Award

In recognition for his efforts to preserve nature in the mountainous, remote Altai, Mikhail Shishin recently received the Conde Nast Traveler's eighth annual Environmental Award. Shishin, founder of the Altai branch of the Socio-Ecological Union, has been one of the leading forces to protect the Altai region's forests and great rivers from development. In the late 1980s, Shishin (along with many other environmentalists) fought construction of a dam on the wild Katunski River. More recently, he has been trying to create Katun National Park, which would protect Mount Belukha, Siberia's highest mountain, and to develop economic incentives for nature preservation through ecotourism and use of non-timber forest products, such as Siberian pine nuts and medicinal plants. Shishin founded his own media company to document environmental violations and broadcast his case for conservation to thousands of people throughout Russia.

ENDANGERED ECOSYSTEMS

Odessa Oil Terminal Threatens the Black Sea

From the editors: The Black Sea is often called a crossroads of oil routes because so many countries use its waterways for transportation of "black gold"; however, a "dead dangerous mix of toxic wastes" has become another way to describe the Black Sea's waters. In the previous issue of RCN we drew your attention to the proposed construction of an oil terminal near Novorossiisk (a Russian port on the Black Sea) and the public campaign in defense of the vulnerable nature of that region. At the same time, a struggle against construction of another oil facility in the littoral (tidal) zone is taking place in Ukraine. This fight is one more example of ordinary people's efforts to protect beloved and valuable natural

Will Ukraine Contribute to the Oily Contamination of Black Sea Ecosystems?

compiled by Anya Menner

A combination of biological, geological and other factors has created a unique and fascinating body of water, the Black Sea. Due to its geographic position, the Black Sea has a drainage area that is 4.4 times as large as its surface area; for comparison, the average coefficient for the world ocean is 0.4. The Danube, Dnieper and Southern Bug, major European rivers,
discharge into the Black Sea's northwestern part, carrying wastes from seventeen agriculturally and industrially developed European countries with a total population of 160 million.

The Black Sea is up to two km. deep in places and has an asymmetric profile: a wide continental shelf in its northern part and a narrow shelf and steep slope in the south. The Black Sea connects to the world's oceans exclusively through the narrow Bosphorus Strait, which is 70 meters deep and 700 meters wide. Replenishment of its deep waters with new water from the Mediterranean takes hundreds of years, a fact that makes the Black Sea extremely sensitive to anthropogenic activities in its basin.

The large river supply of nutrients — phosphorus, nitrogen — has made the sea very fertile. However, the Black Sea is virtually dead below a depth of about 180 meters because of a high concentration of hydrogen sulfide; it is the largest anoxic basin in the world. The reasons for this phenomenon are not completely understood, though possible factors are geological (gaseous emanations from the inner parts of the Earth); biological (the increase in organic matter entering the sea, coupled with high rates of decomposition); and anthropogenic (decrease in the water discharged by the rivers, coupled with a higher concentration of organic fertilizers in the waters). The future evolution of the basin is not known.

Despite these conditions, the Black Sea has always supported rich and diverse marine life. The Black Sea was long one of the most productive seas of the world ocean, and fisheries thrived on sturgeon, maasbunker, mackerel, bonito, turbot and trout. However, in the 1990s population totals for various fish species dropped sharply because of overfishing and pollution, which resulted in the collapse of fisheries in many coastal countries.

The world's largest accumulation of red agar-producing algae of the *Phyllophora* genus occupied an area of 11,000 sq. km. on the northwestern shelf of the Black Sea in the 1950s. Its total biomass amounted to 7-10 million tons and served as a mighty oxygen generator, and as a core for biocenosis that included 118 species of invertebrates and 47 fish species. In the last two to three decades, the total area of *Phyllophora* has shrunk to 500 sq. km., and its fauna have practically vanished.

The Black Sea has harbored numerous, diverse benthic fauna. For instance, mussel communities occupied an area of approximately 10,000 sq. km. in the northwestern part of the Black Sea in the 1960s. The area had shrunk significantly by the 1980s, and less than 10 percent of the biomass was preserved.

Thirty to forty years ago the dolphin population in the Black Sea numbered one to two million individuals. Intensive hunting has resulted in a drastic decline in the population, which in 1984 was estimated at just 60-100 individuals.

The list of the Black Sea species under threat of extinction is growing every year. No less than 249 species of plants and animals are proposed for listing in the Red Data Book of the Black Sea now under preparation. Among them are ten species of algae, 40 vascular plants, 69 invertebrates, 86 fish species, 36 bird species and eight mammalian species.

**Will the European Bank for Reconstruction and Development support oil transportation through Odessa?**

The plans for construction of oil terminal facilities in Odessa (a large Ukrainian port on the Black Sea's northwestern coast) were developed in 1992-93, after the dissolution of the Soviet Union, when Ukraine was stricken with a fuel-energy crisis. The design initially provided for oil import-export facilities with an annual capacity of 56 million tons, and it included three components: coastal storage facilities, a marine terminal (two sites) with a pipeline system along the bottom and a pipeline network for transporting oil to processing plants. Since at that time the need for oil products was acute, a temporary oil terminal (site 1) was to be built as close as three to four kilometers from the shoreline, in the vicinity of Yuzhny port, with a capacity of 12 million tons per year. The permanent oil terminal was supposed to be constructed somewhat later, 25 kilometers from the shore and with a 40-million ton annual capacity.

The plans were developed in haste, with a lack of transparency and numerous violations of Ukrainian legislation at all stages of adjustment and approval, and without proper substantiation of the projected economic, social and political consequences. There was no analysis of how much oil Ukraine actually needed, or whether the proposed facilities could satisfy the Ukrainian economy. The site for the temporary terminal was selected by decision of the Ukrainian Cabinet of Ministers in February 1993, and its construction was to be competed by October 1994.

The entire proposal, including all three components and the annual capacity of 40 million tons, has never been submitted for the State Environmental Impact Assessment (EIA) required by legislation. Instead, it was divided into parts, and two parts were submitted as if they were absolutely unrelated to each other. The proposal for a temporary oil terminal
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facilities are available for perusal in London, Kiev and Odessa.

"This might have been a positive example for our people of how to involve the broader public in the decision-making process," says Alla Shevchuk, director of the Odessa branch of the Socio-Ecological Union, "if this discussion had been organized before selecting the construction site. Now it's somewhat strange to discuss a proposal — rather, only a part of a proposal — whose State EIA was completed three years ago with a negative conclusion."

Now EBRD's conclusion is anxiously awaited: will the project get the go-ahead?

### Table: Species Composition of the Black Sea

(Data of Boris G. Alexanderov, Director of the Odessa Branch of Institute of Biology of Southern Seas, Head of the Ukrainian Center of the International Program on Protection of the Black Sea, Bio-diversity division)

<table>
<thead>
<tr>
<th></th>
<th>Black Sea (1990s)</th>
<th>Northwestern part before 1970s</th>
<th>of the Black Sea in the 1990s</th>
<th>Number of northwestern species listed in the Red Data Book of the Black Sea</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unicellular algae</strong></td>
<td>700</td>
<td>372</td>
<td>326</td>
<td>5</td>
</tr>
<tr>
<td><strong>Multicellular algae</strong></td>
<td>292</td>
<td>180</td>
<td>90</td>
<td>41</td>
</tr>
<tr>
<td><strong>invertebrates</strong></td>
<td>1696</td>
<td>1075</td>
<td>405</td>
<td>23</td>
</tr>
<tr>
<td><strong>fishes</strong></td>
<td>154</td>
<td>100</td>
<td>100</td>
<td>4 + 3 shore species**</td>
</tr>
<tr>
<td><strong>mammals</strong></td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

*3 dolphin and 1 monk seal species*  **(European Wild Cat, European Mink and European Otter)**

Among Sturgeon species that inhabit northwestern part of the Black Sea there are beluga (Huso huso), Baltic sturgeon (Acipenser oxyrinchus), Atlantic sturgeon (A. sturio), sturion (A. stellatus) and Black Sea sturgeon. The first three species have already been listed in the Red Data Book of Ukraine, two latter have been proposed for listing.

Local residents say, "No" to the plan.

Since the idea of constructing oil facilities near Odessa first appeared, the Odessa branch of the Socio-Ecological Union (OSEU) has opposed it as ecologically hazardous and economically ineffective. OSEU started an active campaign to stop the construction of oil terminal facilities by recruiting leading experts in biology, navigation, economy, geology and other fields to convey their opinions. Independent public Environmental Impact Assessments have been conducted as alternatives to the State EIA; all of them have unanimously declared the plan a real threat to the northwestern shores and waters of the Black Sea. Nongovernmental organizations discovered violations of national and international legislation at all stages of the plan's promotion, and these materials were used in appealing eight times — to the General Prosecutor. Later they were submitted to EBRD officials.

Six representative sociological surveys conducted in 1993-1994 revealed that 67 percent of the population opposed construction of an oil terminal.

Several alternative plans were presented for discussion in the regional press; however, none was considered by the Ukrainian government.

OSEU and other public organizations in Odessa are ready to continue their struggle for the environment. During the celebrations of "Black Sea Days" this fall, environmentalists issued an appeal to the leaders of all the Black Sea states to take a step toward rescuing the Black Sea: to stop oil transportation via sea routes and create an alternative pipeline network over land.

### Oil Transportation Through Odessa Will Threaten the Vulnerable Ecosystems of the Black Sea

(*based on the public Environmental Impact Assessment, 1994*)

In the shallow northwestern waters of the Black Sea, where the shelf is widest and largest and the water is warmed to the bottom, nature created all the conditions for giving life to numerous animals and plants. The part of the sea on which Odessa is located is considered the most productive area, for the following reasons:

- up to 70 percent of the biomass of the Black Sea is formed on the Odessa bank;
- 60 percent of the total commercial fish stock (species such as sturgeon, turbot,
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anchovy, goby) originate in this part of the sea;

- the Odessa bank is where life is preserved even in periods of mass death of benthic organisms over the northwestern sea (mass death due to low levels of aquatic oxygen has occurred annually in the northwestern waters, over an area of 30-50 thousand sq. km., since the 1980s).

According to data from the Institute of the Biology of Southern Seas, the biological species of the Black Sea are gradually losing their capacity for self-reproduction, which has been depressed by severe pollution of the water. The northwestern littoral zone can accommodate and recycle, without risk for ecosystems, approximately one-fifth of all the oil products that drain into the sea each year. The main source of pollution during oil transportation, however, even when all requirements and regulations are observed, is operational discharges that cannot be avoided. Therefore, mere transportation through Odessa of 40 million tons of oil annually will definitely aggravate the environmental status of the Black Sea littoral. Large-scale accidents (wreckage of a tanker, for instance) causing oil spills will destroy valuable marine and coastal natural complexes.

As was stated in the conclusions of the State EIA of the temporary terminal proposal, the consequences of a large-scale accident are ecologically inadmissible for any location in the Black Sea. It reads: "An accident that results in an oil spill on a large scale should not take place at all; any potential should be drastically minimized." However, world statistics show that in the last 25 years, 26 large-scale accidents with wreckage of tankers and oil spills have taken place in the world ocean, along with countless accidents on a smaller scale. The Black Sea is a region of frequent accidents, and recent tendencies on the part of Russia, Ukraine, Romania, Bulgaria, Azerbaijan, and Georgia to increase oil transportation via marine routes (due to the energy crisis) correspondingly increase the danger of accident.

Experts believe that in the case of a large-scale accident, Ukraine would suffer not only ecologically, but also economically: according to international regulations within the framework of the Convention on Black Sea Protection and the International MARPOL (Marine Pollution) Convention, large penalties should be levied for polluting the sea. Particular traits of the local environment — wind and marine currents, an open sea area — mean that even a small oil spill of about 100 tons could cause significant damage to fish resources and reduce the genetic pool of Black Sea species. Any accidents could undermine Ukraine's ability to benefit from its recreational resources — the curing mud, mineral waters and climate in which the Odessa region is rich.

Anya Menner is Managing Editor of RCN. She gratefully acknowledges the following people and sources: the Black Sea Environmental Program's Internet page and "Spasenie Chernogo Morya," the BSEP informational bulletin, No. 4, September 1996, Alla Shevchuk, director of the Odessa branch of the Socio-Ecological Union, Dr. Boris G. Alexandrov, Director of the Odessa Branch of Institute of Biology of Southern Seas, Alexander S. Shilov, Deputy Chief of the department of social ecology at Russian Academy of Public Administration under the President of Russian Federation, Dr. Elena A. Shushkina, leading scientific researcher at the Institute of Oceanology of Russian Academy of Sciences.

In the Nation’s Interest: Clean Water or Gold?

by Vladimir Chuprov

For the second year now, local and national media are periodically running articles on the controversy involving Yugyd Va National Park and the issue of gold mining in the Komi Republic. This discussion serves as a typical example of the attitude of regional authorities toward national riches and their desire to promote regional development through the traditional method of exploiting resources.

The Beginning of the Case

Today's events can be traced back to the 1960s, when scientists of the Komi Branch of the USSR Academy of Sciences first started discussing the need to create a national park in the European part of the Northern and Subpolar Urals. Even then, at a time when Russia had no practical experience in setting up national parks (the first national park in the Soviet Union was established in the Baltic region in the early 1970s), scientists and public opinion marked the Subpolar and Northern Urals area as a promising region for recreational development. And for good reason.

The Ural mountain range extends for hundreds of kilometers along the meridian and serves as a barrier for the moist Atlantic air. As a result, hundreds of mountain rivers are formed on the slopes of the Urals and carry their crystal-pure water, comparable to that of Lake Baikal, to the Arctic Ocean. In the language of the indigenous Komi people, "Yugyd Va" means "clear water." The taiga forest appears to be a green "sea" that penetrates the "lords" of river valleys like a tide water and splashes islets of forests high into the mountains. The diversity of landscapes includes
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northern spruce and pine taiga, subalpine shrubby forests and meadows, mountain tundra and rocky patches above the tree line. However, the main feature of this territory was, and still remains, its relative lack of human disturbance throughout the entire region, from the Kozhim River in the north to the upper reaches of the great Pechora River in the south.

**Development**

Why are we talking about the “relative lack of disturbance”? For more than half a century the Subpolar Urals, including the drainage of the Kozhim River which is the subject of our article, has attracted geologists. Before that, only the indigenous people, Komi and Khanty, inhabited the Subpolar Urals and herded their reindeer there. The first geological discovery was high-quality quartz. In the 1980s, however, scientists discovered laboratory means of quartz production, and expensive quartz mining ceased to be necessary.

A new page in the geological development of the Subpolar Urals was written by gold prospectors. It was known for a long time that placer gold deposits existed in the Kozhim Valley, but its industrial development started only in the late 1970s, when the first deposits in the Kozhim Valley were mined. By 1987, after ten years of mining, gold was surface-mined on about 700 hectares, which is 0.04% of the existing territory of Yugyd-Va National Park. The technology available at the time for gold extraction led to the formation of a so-called “lunar landscape” in this region. (Please see the related box on this page)

According to researchers from the Komi Science Center, the cloudiness of the water in the Kozhim River has increased to three or four times its original level, while the productivity of the Atlantic salmon in the Kozhim has fallen by 80 percent. Whole populations of the medicinal plant rose-root stone crop have been lost, causing damage valued by experts at between $200,000 and $300,000. Gold is being mined in the Kozhim River Basin in subarctic climatic conditions characterized by permafrost, heightened humidity and sharp drops in daytime temperatures (by 20 to 25 degrees), which means that the work yields little or no profit. Furthermore, the cost of mining placer gold today is $35 per gram, while the selling price on the internal market is only $12 per gram. Mining is done only during the warm period of the year, and the equipment lasts just two mining seasons; the roads are constantly buckling because the ground freezes, and so on. The Terra Company, which did the mining until recently, lost millions. And for all this, only two tons of gold have been taken out over the 15 years that mining has been going on in the Kozhim Valley. By comparison, between 170 and 200 tons are mined every year throughout Russia.

In 1989, in part using revenues from the repeat processing of areas, remediation work was performed on about 300 hectares, primarily using geological methods. However, it must be said that erosion continues along the shore embankments, due to the rapid flow of the river.

This problem remains unresolved because of the high cost of remediation work, despite the fact that the 700 hectares that have been surface-mined are located at a low enough altitude and could sustain the plants necessary to restore the vegetation cover.

So far in the Kozhim drainage, only the gold present in placer deposits (the 700 ha. mentioned above) has been mined, that is, the gold moved by water to the river valleys and riverbeds from the area of its main deposit. The remaining placer gold of the Kozhim drainage, as well as the bedrock gold (i.e. the undisturbed gold lying in the bedrock, in particular in the ancient weathering crusts) in the Subpolar Urals, are located precisely in the areas where, in case of mining, significant erosion is inevitable, and remediation is impossible in principle. These fragile places are the alpine areas above the tree line at an altitude

**How to mine a mountain for gold**

Gold extraction in previously untouched areas entails removal of the soil cover, moving the dirt to a certain spot, building a foundation pit for the water used to wash the ore, setting up the extraction equipment and then actually extracting the ore that is brought to the extraction equipment. The area of land involved is several hectares. The main danger is water-caused erosion, as a result of which the ore washes over the whole of the shoreline. It has become normal practice in the Kozhim Valley to open up branches of rivers to mining directly. To do this, an artificial branch is created and the river is directed around the main branch, while the underlying ores of the main branch are processed. The effect of gold mining on the environment has been seen in a sharp increase in solid drainage into the river, an increase in the cloudiness of the water and the formation of bottom soils that are uncharacteristic for a river bed, which in turn affect the river’s benthic organisms that are a primary food source for fish.
over 600 to 700 meters in the permafrost zone; the talus-covered mountainsides slope at an angle greater than 20 degrees and are dissected by the valleys of rapidly-flowing mountain rivers.

**Creation of the National Park**

The next stage in the story of the Kozhimm was the 1994 decision to create a National Park on the territory of the Northern and Subpolar Urals which also included the Kozhim River drainage and totalled 1,926,500 ha. According to the Protected Territories Act of 1995 and the Yugyd Va National Park Statutes, no geological activities are allowed there. But in 1994, before the Protected Territories Act was adopted, the developers of the National Park retained the gold mining in the 700 ha. already under exploitation by calling it a "traditional industrial activity" — even though reindeer herding had been the only traditional activity ever carried out on this territory.

Despite having permission to mine gold only in the area of "traditional industrial activity," activity which then became illegal in 1995, the Terra gold mining company expanded its mining activities to other areas within the newly established national park. It is interesting to note that the hundreds of hectares of new, previously unmined areas, were handed to the gold mining company by the Government of the Komi Republic literally three days before the Government of the Russian Federation issued its statement on the creation of Yugyd Va National Park. Let us remember that all these areas are located in extreme climatic conditions beyond the remediation limit.

So here we see a double breach of the law. In the first place, mining in the area of "traditional industrial activity" was to have been stopped after the Protected Territories Act was adopted in 1995. In the second place, mining in absolutely new areas, where extreme lands and mountainous formations cover 51% and 42% of the territory, respectively, should never have begun. (This territory is the Subpolar Urals geographic province, which is the highest part of the mountain range, and some of its peaks reach 1800 meters above sea level.

**UNESCO and Komi**

The Komi Republic is rich not only — and not so much — in mineral resources. Its primary wealth is forest lands. Besides forests meant for industrial exploitation, the natural old-growth forests found in Pechoro-Ilychsky Zapovednik and Yugyd Va National Park have also drawn the attention of timber companies. Attempts to begin large-scale clearing served as a stimulus for including those areas on UNESCO's World Heritage List. Joint efforts by Greenpeace Russia, local nongovernmental organizations and the Russian Ministry of Ecology resulted in this area's acquiring international status in 1995.

The highest officials in the Republic of Komi have admitted that the Yugyd Va National Park's international status is all that prevents the Komi authorities from beginning large-scale exploitation of the wealth of the Subpolar Urals.

**Komi's Most Recent Move**

For now, active industrial exploitation of the Kozhimm has been stopped. Terra, which is practically the only company that has mined placer gold, closed down and unable to bear the financial burden of the unprofitable gold. A cooperative association of workers from Magadan (in the Russian Far East) was invited to work in the areas that had already been mined. The first months of this group's work demonstrated the low productivity of those areas. Given the circumstances, the government of Komi placed its emphasis on exploiting the deep gold deposits in the Subpolar Urals, although there are no precise data about the reserves there, and they have not been investigated to the extent necessary for official confirmation of the deposits at the federal level.

**Gold and Politics**

At the beginning of 1997, the head of the Komi Republic issued Decree No. 1, which provided for re-drawing the borders of Yugyd Va National Park. In accordance with this decree, more than 200,000 hectares along the Kozhim River Basin in the north, or twelve percent of the National Park, are to be taken away. While the same amount of land is to be added to the southern part of the park. It is in the Kozhim River Basin that the industrial exploitation of gold deposits is planned. This decree violates the Order for the Creation of the National Park and the international convention on world natural and cultural heritage.

The findings by the Komi Institute of Biology on the value of the park's forestland states that despite the uniqueness of the southern ecosystems that are to be joined to the national park, they nevertheless cannot be traded for the land along the Kozhimm River Basin, since the integrity of the whole Subpolar Urals ecosystem represented in the park would be compromised.

Besides the decree revising Yugyd Va's borders, a draft document was produced under the title, "Program for the Geological Study and Development of Mining Precious Metals and Stones in the Komi Republic from 1996 to 2000, with a Long-Term Perspective through 2005," as well as a draft decree for the head of the republic entitled "On Measures for Government Support of the Mining of Precious Metals and Stones." All this shows how serious the government's intentions are for increasing gold

**Remediation**

Geological remediation means smoothing (or planing) the "lunar" landscape that remains after the gold mining. Biological remediation follows the geological and encourages restoration of the vegetation cover on the section of land in question.

Land remediation becomes increasingly difficult as altitude increases and the terrain becomes complex. There is a limit beyond which remediation is impossible in principle, which means that the "sliding" rocks cannot be stopped.

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production in the region.

Federal authorities are now reviewing the issue of whether or not to change the borders of the park. The next review will be by a UNESCO commission. Greenpeace Russia, together with the Committee to Save the Pechora (a local non-governmental, nature preservation organization), has begun a campaign to prevent the redrawing of the park’s borders. In particular, an appeal is being prepared for financial institutions and industrial companies around the globe, asking them not to support any projects in Komi that will encourage violation of the World Natural Heritage site.

**Epilogue**

What would the Republic of Komi get from a new round of gold mining in the region? The ecosystem in the Subpolar Urals — an area measuring hundreds of thousands of hectares — would be placed on the verge of disaster. The current practice of gold mining puts in doubt the promise of profits; on the contrary, the economic losses could total millions of dollars.

The Komi government would also be ignoring the will of the native people of Komi, who, at a conference in 1995, demanded support for developing traditional types of natural resource usage in the republic and for leaving the national park within its existing borders.

Russia would demonstrate its lack of respect for international obligations, and its economic system would again affirm its adherence to development through the exploitation of minerals and raw materials, rather than through using its great scientific and recreational potential.

**Vladimir Chuprov** is a chief expert at Greenpeace Russia.

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**FOR DISCUSSION**

**Biodiversity Conservation: From Lists of Valuable Sites to Units of Protection and Management**

by Vadim G. Vinogradov

From the editors: As Russia begins to develop its National Strategy on Biodiversity Conservation (please see RCN#12 for more information), one of the major tasks will be producing a national inventory of valuable natural areas and species and criteria by which priorities for protection will be determined. The following article discusses several components which are necessary in such an inventory.

Russia is extremely spacious and much of its territory, in comparison with Europe, has been but poorly studied. If in Europe the problem of preserving all of the remaining natural tracts is primary, in Russia that strategy is possible only here and there (in the steppes, for example). Deciding what to preserve must take first priority, and only later that of how to organize preservation. Therefore over Russia’s enormous expanses, the foremost task is taking inventory of the sites most valuable for their biodiversity and serving as standards of biological diversity. The specifics of conservation policies in Russia mean that creation of one reserve blocks the establishment of another in the same region. Skipping the inventory stage can thereby lead to the destruction of sites that are most valuable and important, while not far away, huge reserves are created on far less worthy and less endangered plots.

Traditionally, reserves have been established in order to protect a certain type of ecosystem or landscape, but the borders are not always drawn broadly enough to be maximally effective. Any reserve that does not fully encompass the watershed of its rivers, streams and lakes and that is likewise subject to windborne air pollution unavoidably experiences anthropogenic influence. To counter these effects, we must be able to manage the reserve’s ecosystems systematically. Inventory-taking must therefore consist not simply of composing lists of rare habitats like those proposed for the “Green Books” (plans for preservation of rare plant communities analogous to the “Red Data Books” for animals), but also of discovering areas that could become units of conservation and management.

Experience has shown that nature conservation projects based exclusively on the preservation of individual, valuable ecosystems (such as AKVA and TELMA, IUCN programs developed in the 1960s and 1970s, for example) remained primarily academic lists of interesting sites, yielding practically nothing for their preservation. The Ramsar Convention only recently acknowledged the need to define wetlands as management and protection units and started considering sites to protect in their entirety.

Let’s consider our approach to biodiversity conservation using the example of the Chertovsko-Chaselski lake system (Taz River basin, Western Siberia). This system includes a set of rare ecosystems: eutrophic lakes amid peatbogs, sparse growth of cedar in the peat, and hilly, tundra-like marshes, among others. But the tract’s biodiversity is of particular value not only due to the presence of rare communities, but also because of a complex set of ecosystems — forest, sparse tree stands, swamp, lake and river, even ordinary pine stands along sandy ridges and dystrophic lakes amid swamps. In addition, the tract is the habitat for a small group of Sel’kupy, an indigenous people who use resources in

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a nearly traditional way — fishing, hunting and reindeer-herding — which, in accordance with the Convention on Preservation of Biodiversity, serves as yet another sign of its great value.

Now oil extractors are approaching the area from three sides. Though in theory it’s recognized that all the elements of biological diversity can be preserved only when all the elements of the landscape — which in aggregate determine its unique wealth — are protected, in practice this is far from being always considered. To preserve this tract intact, therefore, not only is the corresponding protected status needed, but a program of compensation and management of ecosystems as well.

In taking inventory of tracts with particular value for biodiversity, Russia — possessing both a huge, complex territory and strong scientific potential — can and must become the best in this area. Though there are neither means, nor the personnel, nor the theoretical basis for an exhaustive land survey now, we must start collecting all the information available in the literature and official materials and from nature lovers. At the same time, it’s necessary to work seriously in the following areas:

- Elaborating criteria for arranging tracts by degree of significance — international, federal and regional. For instance, the above-cited Chertovsko-Chaselski lake system, as the only example in the world of a eutrophic system on northern taiga plains, should be declared an area of international importance. The remaining expanses of Sayaan Brushes (haloxylon gender) near the Caspian Sea should be declared to be of federal significance. And finally, many sites such as expanses of firs on the Russian plains should be named regionally important.

- Creating a system for classifying valuable tracts and developing principles for their preservation. A tract can be unique, serve as a standard, or be a district of traditional resource use, as well as serving to preserve landscapes or particular stages of succession. Each type is assigned a particular principle of conservation, and federal

- Ranking sites according to the level of existing human threats. This is one of the most complicated problems, especially at the crisis stage of Russia’s development, when the governmental system of regulation of natural resource use has become extremely weak.

- Identifying poorly studied regions that are promising for the potential presence of valuable territories and developing plans for their study. This work must be based on all the available materials — scientific literature, official documents, results of questionnaires filled out by specialists and nature lovers, and analysis of maps and aerial and space photography, among other things. But G.I.S. -modeling of natural conditions must play a special role first and foremost for the little-studied stretches of Siberia and the Far East.

- Preparing plans for various measures to increase the interest and involvement of authorities, local ones first of all, in preserving biodiversity in general and taking inventory of valuable lands in particular. It may be appropriate to prepare designs for typical local laws allowing local powers to stiffen fines and other such sanctions on valuable territories and, on the contrary, to grant privileges to users of environmentally friendly technology — that is, to place real control levers in their hands.

The first stage of inventory-taking will not produce identical results everywhere across the country. If in the center and in most of the steppe zone we get a nearly complete survey of valuable tracts, over the larger part of the country, we’ll get a map of research in progress and degree of study, with a list of individual valuable sites and promising territories. However, this, too, will be a huge step forward for Russia.

Vadim G. Vinogradov is an adviser to the International Fund for Reform.
The Problem of Stray Dogs and Conservation

by Andrei G. Vasiliev

Populations of feral rabbits, dogs, cats, horses, pigs, donkeys, goats, sheep, cattle and buffalo are well-known; however, instances of domestic cats and dogs going wild are the most widespread in the world. Feral dogs began appearing in prehistoric times, from the moment its predecessor, the wolf, was tamed — that is, 15,000 to 20,000 years ago. Ancient man did not keep dogs tied up; dogs were left to get most of their food independently, thereby causing significant harm to wild fauna. Then, as now, feral dogs destroy, injure and upset wild animals and help spread dangerous illnesses, including madness and parasite-borne echinococcus. Every year the acuteness of the problem increases, as stray dogs multiply and spread along with human populations and urbanization.

Yet, society does not adequately appreciate the harm to nature that feral and stray dogs cause. The reason is hidden in the firmly rooted image of the dog as man's best friend, while our attitude to the wolf, based in large part on fairy tales, popular beliefs and rumors, is deeply negative. Therefore, in answer to the question, "Which is more dangerous, the wolf or the dog?" an unenlightened person insists the wolf. This is not so.

I can show that the dog is much more dangerous in nature than the wolf, using concrete data obtained through research on ecology and the behavior of stray and feral dogs in Moldova from 1982 to 1996. If the maximum number of wolves in Moldova this century came to 300 individuals, at present the number of dogs temporarily or permanently living in nature is now 1,000 times greater (!), amounting to about 30,000 animals. At the same time, the probability of discovery and destruction by dogs of the young of deer, roe deer, hares, and the eggs laid by ground-nesting birds and water fowl is increasing manifold.

The problem of stray and feral dogs is acute in other countries of the former Soviet Union as well. They cause especially great losses in densely populated regions and wherever herding and hunting dogs are used. The subjects of attacks by feral dogs are primarily wild ungulates — various species of deer, antelope, wild goats, roe deer, saiga antelope, Persian gazelle and wild pigs. In addition, gophers, gerbils, squirrels, marmots, opossums, raccoons, porcupines, hares, rabbits, geese, ducks, pheasants, willow ptarmigans and other animals also become their victims. In Central Asia a huge number of wild animals perish because of dog attacks during the wild ungulates' breeding period, which coincides with cattle-driving season.

Feral dogs also cause no small damage in Zapovednik [strict scientific nature reserve]. Deaths of wild ungulates have been noted in Borzomsky Zapovednik (in Georgia), Codrii, Padurea Domneasca, and Plaiul Fagului Zapovednik (all in Moldova), Voronezhsky, Khoperski, Laplandksi, Okski, Mordovski, Stolby, Tsentalno- Chernozemny Zapovednik and several other Zapovedniki of the former Soviet Union. In addition, dogs compete for food with wild species of predators and scavengers, and with several species that use burrows — such as foxes, wildcats and badgers — for shelter.

Yet another aspect of the negative influence of dogs on the wilderness is hybridization with the wolf (and with the coyote in the U.S.). The cross-breeding of wolves with dogs leads to "pollution" of the gene pool of wild wolf populations, even so far as to form whole hybrid populations. According to the data of L. Boitani of Italy and H. Mendelssohn of Israel, hybridization has led to threats to the existence of local wolf populations. Just so, the behavior of hybrids differs fundamentally from that of wolves, wrote L.S. Ryabov, who has studied this phenomenon in Russia in detail: the hybrids behave far more boldly than wolves — they attack cattle close to human settlements in daylight, and when humans are present; they form large packs of up to eighteen individuals; and they track their victims for a long time, which is uncharacteristic for wolves.

For example, strategies for hunting roe deer differ greatly between wolves and dogs. While a wolf tracks its victim for 400 to 800 meters on average, dogs track them for four to six kilometers, and sometimes twelve, exhausting the victim with prolonged tracking. Our observations in Codrii Zapovednik showed that in the 1980s only female and young roe deer, that is, the most valuable part of the population, were the dogs' victims. This bears witness to the lack of positive selectivity by the dogs in choosing their victims.

Unfortunately, the number of feral dogs in Moldova is not tied to the number of victims, since there is enough food for them in garbage dumps and cattle graves. In addition,
mating periods is not twelve months, but six to nine. The large numbers of dogs in the natural biotopes of Moldova are enabled by such factors as their unchecked rambling and breeding, the ecological niche in nature left open as a result of destruction of the wolf, and the presence of a large number of open trash dumps and cattle graves.

Stray dogs play a large role in spreading human and animal diseases. A portion of the stray animals migrate to areas outside of human settlements in the summer, but during winter fodder shortages, feral dogs visit cities and villages in search of food. This enables the spread of a series of diseases from natural biotopes to human settlements and vice versa. Among the twenty-one illnesses spread by dogs in Moldova, echinococcus has the widest distribution and greatest economic significance. Around 80% of sheep and 65% of large horned cattle are infected with this illness, which decreases their productivity and the quality of the meat and increases barrenness. More than 4,000 people are being treated for this grave disease, and more than 10,000 people turn to the republic’s medical institutions annually for anti-rabies treatment after dog bites.

All this bears witness to the fact that dogs cannot replace the wolf in nature and are a destructive element. In the Commonwealth of Independent States thus far, the solution has been seen exclusively in the destruction of homeless dogs. However, this is not eliminating the problem. For example, in Moldova, up to 23,000 dog pelts have been taken by hunters yearly, and in Kishinev alone 4 to 7,000 animals were destroyed, but the numbers of stray dogs has not dropped.

The roots of the problem are not in "bad dogs," but in the irresponsible attitude of humans to keeping domestic animals. Therefore, it is imperative to generalize and use the experience of Australia, New Zealand, the U.S., Great Britain and Germany in solving this problem. In those countries they solve the problem by increasing the responsibility of owners for keeping dogs. Humans, and only humans, are to answer for those we’ve tamed.

Andrei G. Vasilev has a Ph.D. in biology and is chair of the Fauna Group for the Study and Preservation of Biodiversity, as well as a scientific researcher at the Institute of Zoology in Moldova.

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**Ecotourism in Baikal’s Protected Areas**

(a response to Gary Cook’s article on Baikal, published in RCN #11)

by Michael Tripp

Since 1993 the Friends of the Russian National Parks Society (FRNPS) has been taking ecotourism groups to Siberia, Lake Baikal and most particularly Zabaikalski National Park. During the two years of planning which preceded our first clients, and from then to now, we have interacted with and had the opportunity to evaluate many other organizations involved in Baikal’s protected areas ecotourism, from entrepreneurs and NGOs to international development agencies. This experience has provided insights to supplement, and in some instances, refute the information provided in Mr. Cook’s ecotourism article (please see RCN #11).

The article’s convoluted postscript gravely exaggerates the essence and extent of ecotourism in Baikal’s protected areas, then uses these “facts” to portray present impacts and future trends. The five ecotour organizers mentioned do not, as one would surmise from Mr. Cook’s description, represent other similar groups but are probably, according to our research, the sum total of their type. Two of the five are actually segments of a single FRNPS project. The statement that “most are non-profit, public interest organizations, so in most cases 100% of the profits wound up in the hands of local people” should be read with this reality in mind. “Profits,” furthermore, have been largely illusory because protected areas ecotourist organizers (including NGOs), burdened by a variety of competing needs and agendas, cannot afford to take a truly “pro bono” attitude towards their efforts.

These comments are not meant to lessen what has been accomplished, just to place it in a realistic, informative perspective. For instance, after FRNPS initiated its program in 1993, it contracted with Recreation Equipment Incorporated (REI) Adventures to market the tour and arrange logistics. As part of the agreement, the travel company’s parent firm, REI, donated equipment to outfit park rangers. FRNPS/Zabaikalski in turn provided the core program — an eleven-day national park tour, for which REI Adventures paid an agreed upon sum per participant. Though modest in size (approximately 50 participants total), gains have been substantial, providing money to buy park vehicles, including a new bus for transporting ecotourists (the #1 complaint of our first group had been poor transportation), “ecotourist quality” tents and other equipment for the camping segment of our program, and extremely important discretionary funds for the park’s immediate needs (i.e., food supplies for firefighters). Housing participants in local homes has extended immediate benefits into the community, helping to legitimize the park’s presence.

This basic development model, using the existing physical and social infrastruc-
For Discussion/Living Arctic

ture, is very effective for putting ecotourism programs rapidly in place and for benefitting and empowering local residents. It is also practical because it is financially viable on a small scale — yet, again, not nearly to the extent mentioned in Mr. Cook's wishful summation. FRNPS has contributed at least as much as any other ecotourism program to Buryatia's protected areas, yet this amount has been just slightly more than half the $1,400 per person attributed in the article. We have been able to accomplish this only by working directly with the park, by not taking on additional partners, and by covering our (quite minimal) overhead costs from other, self-generated, funding sources. Because a major FRNPS goal is to promote just such opportunities and then allow them to move forward on their own momentum, this arrangement is satisfactory. Overstating the local financial benefits falsely implies that ecotourism is inherently positive, when in reality the tendency is for very little of the money generated to remain within the region.

A significant difference between FRNPS's role as liaison and that of other ecotourism developers in the region is in its design, delivery and ongoing support of a specific program. As Baikal ecotourism has continued to slump amidst a great deal of advice and expertise, it has become clear that it is not sufficient, efficient, or even perhaps morally valid merely to purvey "connections" or ideas. The Environmental Resources Management (ERM) report on the potential for ecotourism at Baikal is only the latest and most expensive of the latter exercise. In predating its recommendations on regional legislative uniformity, coordinated inter-jurisdictional planning and large infusions of economic investment, it ignores the sociopolitical realities which largely invalidate its usefulness.

Unfortunately, the "real money" in Baikal's ecotourism market continues to come from being paid to talk about it, set up systems to control it and find means to tax it, if and when it does arrive — all-too-familiar macroeconomic perspectives reflective of their funding sources.

The real challenge for NGOs that offer or act as liaisons with protected areas ecotourism services is prioritizing involvement in focused, result-driven, on-site efforts, despite the allure of other, more high-profile activities. What is "scaring away many ecotourists" is not Cook's "inaccessibility and the high price of transportation" (both prerequisites of "outback" ecotourism), nor ERM's noted weaknesses in infrastructure, but the necessity for attentiveness to ever-changing details. Large scale tourism, "eco" or otherwise, demands low-input replicability, and thus consistency — an impossibility in Siberia at present and for the near future. Non-profit organiza-

tions need not be as troubled by these factors, as their goals can differ in scale and motivation. To be successful, however, one must be willing to take on more programmatic responsibility. Some "upbeat" articles on Baikal ecotourism would also help. Even the most beautiful coffee-table publications — at times by the same NGOs that promote Baikal ecotourism — come with the most depressing descriptions of the region's natural catastrophes and socio-cultural deterioration. Post-tour FRNPS ecotourist surveys (and for that matter, my own experience) show that there are many much more positive aspects of Baikal.

Why has FRNPS continued in the "ecotourism business," despite the difficulties and setbacks? Because in our first meeting at Zabalkalski National Park in 1991, the answer to the question, "What do you need most?" was "to raise money, protect nature, and legitimize our existence." As a self-help measure applicable to all three goals, an ecotourism program seemed most appropriate.

Michael Tripp is a lecturer in the Geography Department of the University of Victoria, British Columbia. Friends of the Russian National Parks and its ecotourism program were established as part of his doctoral thesis work on "The Emergence of the Soviet/Russian National Park System."

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LIVING ARCTIC

Ecological Tourism in the Russian Arctic

From the editors: we are publishing this article as an invitation for discussion among parties involved in the development of ecological tourism in the Russian Arctic.

by N. G. Ousyanikov

Across the world, ecological tourism has become one of the most attractive mass forms of recreation, and its popularity is growing. Accordingly, the organization of tours to remote, intriguing natural areas, where one can admire the beauties of undisturbed natural landscapes and observe wild animals in a state of natural freedom, is a fast developing business.

In the Far North of Russia, ecotourism offers the potential for significant economic development, if properly organized. However, because ecotourism opens up access to the most distant corners of nature, it represents serious danger for preservation of natural ecosystems and the animal world. In Russia, the most obvious destinations for ecotourism are existing protected areas — Zapovedniki (strict scientific nature reserves), Zakazniki (special-purpose nature preserves), National and Regional Natural and Natural-Ethnic Parks. The high ecological value of these areas also makes them extremely vulnerable to development such as tourism.
living Arctic

in the chukotka region [northeasternmost reaches of Siberia, ecotourism has exceptional significance, since it could become a most important part of the district's economy, as it is in Alaska. Both to preserve natural, ethnographic and archeological sites and to make ecotourism sustainable, it must be properly organized for ecological safety.

the conclusions here summarize my research of tours on ice-breaking vessels around the Russian Arctic, including the Bering Sea area, during four cruises in August 1995 and June to August 1996 — the North Pole, Spitzbergen and Franz Joseph Land, and the North Sea route — as well as surveys of managers and biologists involved as organizers, group leaders, service staff and lecturers, and of tourists.

level of professional preparation of staff and the company's conservation concepts

Ecotourism companies differ significantly in professionalism, including the attention they pay to ecological questions and fulfillment of conservation requirements. Nature conservation priorities declared in the companies' informational materials are far from always observed in practice. The most serious and respectable companies take a very serious approach to conservation priorities, considering execution of conservation rules their most important task and one on which their long-term success depends. They support creation of protected natural territories, and the conservation advice for their clients has been developed thoroughly, though more conceptually than as precise instructions for action. Nevertheless, violations occur for the following reasons:

1. The staff working on a specific cruise are insufficiently prepared and do not know the specific places or animal species, or generally how to behave in relation to living nature. As a result, animals are often disturbed, and the plant cover is destroyed.

2. The staff has not been familiarized with rules and regulations in a specific area, because the Russian authorities responsible for enforcing conservation have not provided them with this information.

3. Nature protection rules are not followed by the Russian crew of the ice-breaking ship chartered for the cruise. Unfortunately, incidents such as crew members' throwing trash overboard or deliberately frightening animals occur constantly before the eyes of the amazed tourists.

many, though not all, of the clients of shipboard ecotourism in the Arctic are sufficiently well-versed in questions of nature conservation generally and the animal world in particular. Some tourists take the initiative in avoiding disturbance to animals and are very sensitive to carelessness or incompetence on the part of the staff or company. An absolute majority of the clients are sufficiently disciplined and observe the rules, when they are aware of them.

For example, during a stop at Kol'uchin Island, I had to insist on ending the use of helicopters to bring tourists to shore. Helicopters could be landed no further than 150 meters from some sea bird colonies. The group leader said it would be difficult for elderly tourists to ascend from the shore if they came on "zoalikes" [inflatable motorized rafts]. After I explained that this was a violation of the law, which forbids flying any closer than 500 meters to sea bird colonies, they agreed not to use helicopters. It turned out that the elderly passengers walked up and down the steep slope with no particular problems and even with pleasure.

It is imperative to design routes and elaborate precise instructions regarding specific territories, natural sites and animal species. Company staff must be taught these instructions and exact compliance must be demanded.

conditions for conducting tours

In the Arctic and Far North, weather and ice conditions dictate the means of going ashore on islands or coastal areas, and they can sometimes leave no choice but to relinquish a visit or use some means that seriously disturbs animals. Not infrequently a group leader strives to make a landing by those means which conditions allow, without considering the negative effects on animals and vegetation. Rules of visitation must be established for each group of wildlife which is the subject of the tour's observations; these rules must prohibit any use of transportation or other practices that may disturb animals in mating areas or destroy plant cover.

Priorities

Even when a company has a general conception of nature conservation, group leaders and staff can have different priorities. All the companies share the belief that the clients' comfort and entertainment are most important of all. In practice that means that when a conflict arises between the interests of conservation and the clients' comfort, some leaders give priority to the latter. If the leader is a competent ecologist, he gives priority to conservation, and clients, as a rule, accept the decision with understanding. Unequivocal regula-
Living Arctic

Conditions of Payment for Visitation of Territories

Companies pay for each visit to protected natural territories in Russia; however, there are no fixed prices, nor a single mechanism of payment for lands of the same status — for all Zapovedniki, for example. The size and form of payment is established through direct negotiations by company representatives with administrators, that is, regional and local authorities and administrators of protected territories. This approach is faulty, since it can prompt underpaid nature conservation inspectors (rangers) to compromise and sacrifice conservation interests in exchange for payment. Furthermore, the reputation of protected areas may be threatened: foreign and Russian participants begin to perceive the Zapovednik, Zakaznik or National Park not as a nature-protecting institution, but as a semi-commercial enterprise. Company representatives also continually come up against arbitrary demands by local authorities for unreasonably high payments, just for granting permission.

General Recommendations

1. Thoroughly studying, designing and approving routes before conducting tours is absolutely necessary. The plans for every natural site, which must be designed by professionals, should include detailed instructions regulating the order of visitation and viewing, the permitted routes and specific places to be visited, the allowable means of transportation, the allowable time periods (taking into account the phenology of biological processes), the maximum number of visitors allowed at once and in the course of a season, and the distance for observation.

2. When a company has received permission for a route, it must present its concepts of nature conservation and specific rules for staff and passengers to the federal or regional authorities issuing permits.

3. The group leader and staff must be acquainted with Russian legislative acts regulating visits of territories along the route and receive (from the authorities granting permission) the rules and instructions described in point #1.

4. The company must acquaint all the staff directly taking part in arranging landings with those instructions, starting with the group leader and the ship’s captain.

5. It would be expedient to prepare prospectuses that include full lists of animal species along the route, their distri-

Specific Recommendations for Particular Sites

1. When visiting colonies of sea birds, flying over nesting areas and landing helicopters closer than 1.5 kilometers should be forbidden for the entire nesting period. If it is unknown whether colonies have settled on certain cliffs, then the character of the vegetation should guide you: bright-green growth directly under cliffs is a clear sign that sea birds are nesting on them. When there are eggs or fledglings in the nests and on ledges, mass flights lead to widespread deaths of eggs and nestlings — due to pilfering by Glaucous Gulls (Larus hyperboreus) or falling, as well as from the sharp rise in the colony’s social conflicts when there has been a mass disturbance. Even when there’s no direct threat to fledglings — before the eggs have been laid or after they’ve flown the nest — the use of helicopters keeps birds in the air for 1.5 to two hours, which demands an unnaturally high energy expenditure.

In particular, on Kol’tchin Island, the use of helicopters to transport tourists ashore must be fully banned, irrespective of weather or other factors, and this ban must be clearly stated to tour leaders and ship’s captains when permission is granted for a tour to that area. On Kol’tchin there is no place to land that is the required distance from the sea bird colonies.

2. When small islands (less than 10 sq. km. in area) are being viewed, use of helicopters must be prohibited during nesting periods, since almost all the small islands in the Arctic and Northern Pacific serve as nesting places for sea birds. Viewing from on-board ship or from Zodiacs is possible, but approaching small islands on Zodiacs can be done only if Glaucous Gulls have not gathered around the island.

3. Visiting walrus breeding grounds, even with special permission, can be done only under the leadership of a specialist who knows how to work with this species; otherwise, it is possible to

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frighten the animals and cause mass trampling.

4. In mountainous districts helicopter landings must take place only on dry watersheds, where there's the smallest nesting density and no danger of harming the plant cover.

5. The use of helicopters to bring tourists to land must be banned in the nesting places of Snowy Owls (Nyctea scandiaca). The Snowy Owl is an indicative, noticeable object in the tundra, and one of the most vulnerable of the Arctic bird species to disturbance. When a female has been chased and kept from her nest for more than twenty minutes, the probability of death to eggs and nestlings increases greatly. If the weather is bad, the laid eggs and nestlings can perish in even less time, while landing groups by helicopter usually takes no less than two hours.

6. In the case of special flights for viewing, the helicopter's altitude must be no less than 200 meters above the tundra. When it hovers below this limit, the helicopter's air streams blow out the contents of the nests (lining, eggs and fledglings). A sad example occurred when an MI-8 helicopter was landing on Wrangel Island: adolescent Snowy Owl fledglings weighing about one kilogram were blown off so violently that one nestling completely lost all its quill feathers, and only the bloody stubs remained.

N. G. Ousyanikov has a Ph.D. in biology and is a senior scientific researcher at the Pacific Institute of Geography, Far Eastern Division of the Russian Academy of Sciences. The author gratefully acknowledges supplementary recommendations from I.E. Mornushkina, junior researcher at the Chukotski Department of Natural Resources.

CONSERVATION

Spend the Summer in Siberia and the Sierra Nevada!

The Tahoe-Baikal Institute (TBI) announces its 1998 international environmental exchange. The program, based in California and Siberia, focuses on environmental problem-solving in the Lake Tahoe and Lake Baikal regions.

From late June to the end of August, a team of 16 to 20 university students and young professionals from the United States, Russia, and other countries will carry out projects with specialists and learn from policy-makers who apply interdisciplinary approaches to environmental planning. Drawing from local expertise and research institutions in both countries, the ten-week program emphasizes the scientific, social and regional development issues connected with the preservation of Lake Tahoe and Lake Baikal.

Participants should have a demonstrated commitment to the preservation of the natural environment, as well as a background in environmental science, planning, public policy or Russian or Asian studies.

For more information and an application packet, write:
TAHOE-BAIKAL INSTITUTE
P.O. Box 13587
South Lake Tahoe, CA 96151
phone: (916) 542-5599, e-mail: <tbi@igc.apc.org>
http://tahoe.ceres.ca.gov/tbi

World Wilderness Congress Plans Sixth Gathering

The Sixth World Wilderness Congress will convene in Bangalore, South India, from October 24 to 30, 1998 and focus on the importance of wildlands to a sustainable future.

Delegates are invited to participate in a diverse program which includes at least eight technical symposia on subjects ranging from wilderness research and management to the convergence of Eastern and Western concepts of environmental ethics, to sustainable models of corporate environmental responsibility; a plenary program addressing current needs and actions to enhance sustainability while protecting wilderness and their dependent local communities; and a major east/west cultural program.

The greater Asian region will be the focus of this Congress, but in a global context. Plenary speakers will propose solutions and debate policy, while working sessions will present program details and craft solutions.

The WWC is the only on-going, international public forum on the environment and sustainable living; it has met on five previous occasions, in South Africa, Australia, Scotland, the U.S. and Norway. For further information on the 6th WWC, contact: the Chairman, M.A. Partha Sarathy, 6th WWC, Hamsini, 12th Cross, Rajmahal, Bangalore, India 560 080. Fax (91-80) 354-1674, e-mail:<partha@giabg01.vsnil.net.in>; or The WILD Foundation, ICEC, 2162 Baldwin Rd., Ojai, CA, USA 93023. Fax (805) 649-1757; e-mail:<WILD@fishnet.net>
Fund to Assist Fish and Wildlife Protection

The Russian Fish and Wildlife Protection Assistance Fund, Inc. (RFWP FUND) has been organized to address the protection and equipment problems that arise in managing and protecting fish and wildlife resources in the former Soviet Union. The FUND is attempting to provide support directly to the people in the field who need it the most.

RFWP supports the philosophy of conservation and sustainable use of natural resources. The FUND recognizes the fact that the people living closest to wildlife most often determine its fate, thus the FUND encourages education and training that promotes conservation. The FUND also supports the idea that unless adequate value is placed on fish and wildlife resources for both economic and non-economic incentives, conservation will not be perceived as an issue important enough to warrant local involvement in managing and protecting it. RFWP encourages ecotourism and multiple use; however, while promoting use, the FUND supports monitoring to assure against overharvesting and misuse. No matter how many well-intentioned laws are passed, no program will be successful without local involvement and adequate law enforcement.

The FUND's Board of Directors and Russian Review Board represent a broad spectrum of philosophies and ideologies. In their personal lives, members of the American Board represent such organizations as Safari Club International, The Nature Conservancy, Alaska Department of Fish & Game, Audubon Society, National Parks and Conservation Association and U.S. Fish and Wildlife Service Law Enforcement. Seldom before have individuals and organizations from such varied points of view joined together in a common effort.

The FUND is supported by individual donations and major grants, and it functions as a grant-making and technical assistance organization. Potential recipients of the FUND's resources submit grant applications for screening by the Board of Directors, with the assistance of the Russian Review Board. A RFWP FUND inspection program will be instituted to maintain the integrity of the FUND. One or two major projects are chosen each year for assistance. Currently, the FUND is involved in a brown bear research program on Kamchatka to assist in managing a viable ecotourism industry. The FUND is also involved in an assistance program to the Magadan State Hunting Office. A shipment of donated uniforms has already been shipped; other equipment, including boats and motors, will follow.

To obtain more information about the FUND, write to RFWP FUND, Inc., P.O. Box 81976, Fairbanks, Alaska 99708, Tel: (907) 479-6200, Fax (907) 479-5346, e-mail: <75763.1625@compuserve.com> or visit the web site at:

http://ourworld.compuserve.com/homepages/RFWP

Ecological Travels Centre

The Ecological Travels Centre (ETC) is a non-governmental, non-profit organization created in Moscow in 1997. The main goal of ETC activities is the development of scientific and cognitive tourism in Russian national parks and Zapovedniki, as well as facilitation of contacts among protected areas staff, with Russian and international environmental organizations, scientific institutes, universities and ecotourism associations.

ETC organizes practical sessions for students and ecological trips on the territories of Russian Protected Natural Areas in its most safe and non-invasive form, caring about the ecosystems of protected areas. ETC's collaboration with protected areas staff provides them an opportunity for additional, non-budgetary financing, which is important in the present economic situation.

The activities of ETC today continue the efforts of our staff members to conduct ecological travel for foreign students as early as 1992. Last summer questionnaires meant to identify the possibilities and wishes of protected areas staff regarding ecotourism on their territories were distributed in almost all the Zapovedniki and National Parks in Russia. The support of the Department of Protected Areas, as well as the warm response from National Parks and Zapovedniki, gives us hope for successful further development of ETC activities.

Our plans for next year include:
- organizing ecological trips in ten Zapovedniki and National Parks;
- participating in the Fifth Annual Ecotourism Conference in Anchorage, Alaska;
- taking part in the development of ecotourism in the Altai-Sayan region (together with Barnaul, Novosibirsk and Gorno-Altaiisk State Universities);
- conducting a workshop on ecotourism for employees of Russian protected areas and environmental organizations.

We are interested in collaboration with state and non-governmental organizations to develop joint ecotourism projects and activities that promote the concepts of sustainable development and biodiversity conservation in Russia

Please contact ETC at the following numbers and address:
Nina Sakhrova, ETC Coordinator
Scientific Park at Moscow State University, Vorobyevy Gory, Moscow 119899
Russia Phone/fax: (095) 932-9195, 939-4238; e-mail: <kust@soil.msu.ru> or <sakhrova@nw.math.msu.ru>
**New Fund to Benefit Polar Bear Conservation**

(reprinted with permission from the U.S. Fish and Wildlife Service)

The U.S. Fish and Wildlife Service and the National Fish and Wildlife Foundation have established a fund to enhance polar bear conservation research and management programs in Alaska and Russia. The seed money for the fund comes from fees collected by the Service for permits ($1,000 each) to import polar bear trophies from Canada under the 1994 amendments to the Marine Mammal Protection Act. The fund will be managed jointly by the Foundation and the Service's Alaska Region.

"This kind of public/private cooperation clearly is the wave of the future in wildlife conservation," said Marshall Jones, the Service's Assistant Director for International Affairs. "Working together, the Foundation and the Service will use the permit fees to generate additional support for polar bear conservation efforts here and in Russia."

The Service works with Federal, state, and international partners to coordinate measures for polar bear conservation, sustainable use, habitat protection, and to study Alaska-Chukotka (Russia) shared polar bear populations. These partners include the U.S. Department of State, the Marine Mammal Commission, the Biological Resources Division of the U.S. Geological Survey, the State of Alaska, the Alaska Nanguq Commission, the North Slope Burrough and the Russian Federation.

In addition to existing programs, the Service and the Foundation plan to use the additional resources generated by the fund for activities such as the development of a harvest monitoring management program, aerial den or population surveys, and technical assistance for enforcement programs.

“This innovative approach offers an exciting opportunity for the Foundation, the Service, and other groups to join together to leverage funds and make more money available for these programs,” said the Foundation’s Executive Director, Amos Eno. “During the next few months, the Foundation will let the private sector know of this new way it can help support polar bear conservation.”

The U.S. Fish and Wildlife Service is the principal federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service manages 511 national wildlife refuges covering 92 million acres, as well as 67 national fish hatcheries.

The agency enforces Federal wildlife laws, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitats such as wetlands, administers the Endangered Species Act, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid program that funnels Federal excise taxes on fishing and hunting equipment to state wildlife agencies. This program is a cornerstone of the Nation’s wildlife management efforts, funding fish and wildlife restoration, hunting access, hunter education, shooting ranges and related projects across America.

The National Fish and Wildlife Foundation is a private, not-for-profit conservation organization established by Congress to encourage, accept, and administer private gifts for the benefit of, or in connection with, the activities and services of the U.S. Fish and Wildlife Service.

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**Position Open with Tahoe-Baikal Institute**

The Tahoe-Baikal Institute plans to fill two positions during the first quarter of 1998, including:

**Coordinator, U.S.-Russia Policy-Makers' Exchange**
Position runs from January to September 1998. The coordinator will be responsible for developing and organizing an exchange for Russian and American environmental policymakers. Applicants should have strong leadership, networking and logistical skills, and should have experience in program development and working with higher levels of government in Russia and/or the U.S. We hope to fill this position by January 1998.

**Assistant Director, Summer Environmental Exchange Program**
A three-month position coordinating and leading our exchange program for 16 to 20 university students and recent graduates from the United States, Russia and other countries. (Please see the Bulletin Board for more details about this program). This is an intensive and demanding position which involves working directly with program participants as well as scientists, officials and community members to help design and organize activities and to facilitate students’ understanding of environmental issues in the regions of Lake Tahoe, California, and Lake Baikal, Siberia. This position will be filled by March 1998.

Interested applicants are encouraged to send or fax a resume and cover letter to:

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Karen Smallwood, Program Coordinator  
P.O. Box 13587  
South Lake Tahoe, CA 96151-3587  
fax: (916) 542-5567  phone: (916) 542-5599  
e-mail: tbi@igc.apc.org  
http://tahoe.ceres.ca.gov/tbi
CONSERVATION

Biodiversity Conservation Center, Dr. Evgeni Shvarts - Chair of the Board. P.O. Box 4, Moscow 127276, Russia. Phone/fax: (095) 482-1888; e-mail: <biodivers@glas.net.ru>

BIOTICA Ecological Society, Tatyana Izverskaya and Pavel Pynazar. 4 Tefilin St., Kishinev MD-2043, Moldova. Phone/fax for CIS: (0422) 761-540, for others +373 2 761-540; e-mail: <bio@mdcearn.cmi.md>

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- Tracking the Bearded Vulture
- Eco-tourism in the Arctic
- Oil Development on the Black Sea Coast

Promoting Biodiversity Conservation in Russia and the Former Soviet Union