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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.

This issue of Russian Conservation News was produced with support from the Weeden Foundation, the Morrison Family Foundation, the Global Forest Program of World Wildlife Fund, and many individual donors.

Special thanks to Andrea Williams, Charles Dewey, Jonathan Sachs, Andrey Sablin and Rodney Cole for their generous support of this journal.

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ISSN 1026-6380
Printed on recycled paper.
Voice from the Wild (A letter from the Editor)

In this issue of Russian Conservation News, we bring you our characteristic mix of news from the field, highlighting key issues in biodiversity conservation. On one hand, our readers might be daunted by the accounts of various conservation crises threatening Eurasia’s water, forests, and wildlife. We have distressing reports from the Aral and Caspian Seas, two wetlands suffering the effects of development and overexploitation. An article on illegal forestry explains the tremendous pressures on the vast and vulnerable forests in Russia’s Far East. We also bring you a historian’s view on Russia’s perilous plans to import nuclear waste for profit.

Nonetheless, readers should be inspired and awed by descriptions of the mysteries and wonders of Russian nature and the scale and scope of conservation activities in Eurasia aimed at saving this unique heritage. We invite you to travel with us to remote Wrangel Island, a unique polar landscape where surprising discoveries continue to intrigue and beguile scientists. Then follow researchers as they track endangered mountain sheep through the rocky slopes of the Altai Mountains in southern Russia. In a special section on forests you can gain insight into the future of Russia’s forests in light of the threat of privitization and changes in forest management structures.

Just as American environmentalists now face new challenges under a new president, so do conservationists in Russia struggle to adjust their approach and strategies to protecting the environment. Russian Conservation News remains dedicated to discussing new ideas in the nature protection community, such as the need for economic mechanisms to fuel conservation in Russia. Several articles on ecotourism explore this controversial subject, examining whether and how ecotourism can benefit the nature reserves in Russia, which are unique in the world for their long tradition of strict isolation and scientific research.

And indeed, for all the debates and struggles conservationists in Russia grapple with, they are rewarded with hard-fought victories. In this issue we include an article about an agreement that Russia and the United States concluded on the conservation of polar bears last fall. The agreement symbolizes many “firsts,” such as the inclusion of Russia’s indigenous people in managing a wildlife population. And to complement these first steps is a great milestone in the history of Russia’s system of protected areas: the founding of Russia’s one hundredth zapovednik, a hopeful sign that nature protection will continue to be a priority in Russia in the next century.
Wrangel Island, the Arctic Enigma

by Mikhail Stishov

When people think about Wrangel Island, located in the Arctic Ocean 140 kilometers from the Siberian mainland, one thought usually comes to mind: the polar bears’ maternity ward. Indeed, the island is home to the world’s highest concentration of denning female polar bears (Ursus maritimus), hosting 300-500 annually.

Mountains cover nearly two-thirds of Wrangel Island’s total area, with the highest point peaking at just over 1,000 meters above sea level. The rugged landscapes are filled with high ridges and summits, expansive and level plateaus, cirques, and majestic river valleys. Mountains protect the southern part of the island from the harshest of the Arctic winds, leaving it open to warm ocean winds. This climate provides expansive mating grounds for walruses (Odobenus rosmarus) and supports great aggregations of birds in the Chukchi Sea. The island is the only place in Eurasia where the lesser snow goose (Chen hyperboreus) still nests year-round after losing much of its habitat, which once stretched throughout the tundra of Chukotka and eastern Yakutia. Wrangel is a valuable molting region for the Brant goose (Branta bernicla), which travels to the island from Chukotka and even various parts of Alaska. Populations of Arctic foxes (Alopex lagopus) and snowy owls (Nyctea scandiaca) are surprisingly dense, and in autumn the island’s shores feed thousands of Ross’ gulls (Rhodostethia rosea) during their annual migration. Musk oxen (Ovibos moschatus) reintroduced from Canada in the 1970s have established themselves remarkably well in an ecosystem without natural predators. To protect these and other species, in 1976 Wrangel Island Zapovednik was founded on two million hectares encompassed Wrangel Island and the nearby Herald Island.
Many envision the island as a cruel and uninhabitable kingdom of ice, iron seas, morose skies, and lifeless expanses of snow. There is some truth in this portrait, but it is far from a complete picture. Over the past three decades, scientists in various fields have made quite a few surprising discoveries that have shaken scientific opinion about the island to its foundations. Unfortunately, neither the environmental community nor the government specialists responsible for conservation strategies in the region have embraced this new knowledge.

Wrangel Island is an enigma, at once a model of natural arctic ecosystems and a radical anomaly of nature. When all the information is gathered together, Wrangel’s composite portrait is of a completely different island, far more diverse, interesting, and valuable than earlier imagined.

Since its discovery in 1867, Wrangel Island has offered multiple wonders and mysteries for its observers. The crown of these discoveries came in the mid-1990s, when a zapovednik employee named Sergei Vartanyan uncovered the remains of a mammoth that had lived on the island between 3,500 and 7,000 years ago. Prior to the discovery, worldwide scientific opinion held that mammoths had died out 10,000 to 12,000 years ago. With Vartanyan’s find, however, scientists learned that the frozen remains belonged to an individual of a pygmy subspecies that lived on Wrangel Island at a time when the pyramids of Egypt had already stood for years, and died out only during the reign of Tutankhamen and the flowering of Mycenaean civilization.

Beyond its value to paleontologists, Wrangel is remarkable for its great wealth of species diversity in both flora and fauna. Located in the subzone of Arctic tundra where July temperatures average one to five degrees Celsius, Wrangel shares many properties with the islands of the Canadian Archipelago, the New Siberian Islands, Spitsbergen, and others. Spitsbergen’s flora, which has been thoroughly studied, includes 160 species and subspecies of plants. In comparison, an astounding 415 species grow on Wrangel Island, surpassing the plant diversity of all of northern Canada, and surpassing by nearly three times that of any region of the Arctic comparable in size to Wrangel Island.

Invertebrate life is likewise diverse, particularly in spiders and insects. Wrangel Island’s astonishing wealth is clearly visible when compared to other Arctic regions, such as the Taimyr Peninsula, a peninsula on mainland Siberia. For example, eleven species of snout beetles and seven species of gold beetles make their home on the island, while only three species of the latter and no snout beetles live on Taimyr. In the most southern regions of Taimyr’s tundra, only ten species of butterflies and spiders can be found, a mere third of the 33 species of butterflies and 30 species of spiders that live on Wrangel Island.

Analogous tendencies, though not as marked, appear in the Arctic’s avian kingdoms. Researchers have firmly established the existence of at least 43 species of terrestrial birds that nest on the island, and the existence of another six is entirely possible. Only 25 to 35 bird species nest on most arctic islands of similar size. With an additional seven species of sea birds, the island falls in a category with the richest sea bird areas of the Arctic, on par with Novaya Zemlya and Greenland.

This sharp anomaly in species diversity in turn reflects the presence of multiple and unusual ecosystems. As in most arctic regions, circum-polar species, are common on the island. But Wrangel Island is unique in its trans-Bering species (those spread throughout Chukotka and/or Alaska); in general, Bering Sea ecosystems tend to be dominated by one set of species, Eurasian in Chukotka, North American in Alaska, but on Wrangel Island the two sets of species are equally represented.

Another mystery of Wrangel Island is the presence of plants and animals not usually found in the Arctic. Various boreal-steppe and true steppe species, such as several species of moss, wood fescue, astragalus weevil, and others inhabit the island. All of these species live in the steppes of Mongolia, Burjatia, and Yakutia, where they are often dominant. Wrangel Island is the only place in the Arctic subzone and among Arctic islands where these higher boreal species have been found. Moreover, the island is unusual in its abundance of drought-loving grasses, sedges, and mosses that tend to grow not in coastal arctic regions, but in continental regions with saline soils. All of these species are associated with steppe ecology and are more endemic to arid and desert climates than to the Arctic.

The final element contributing to the exceptional wealth of the island’s ecosystem is endemism. Local endemism is as a whole uncharacteristic for the Arctic’s young landscapes, although on certain islands and archipelagos there are specific species and subspecies of plants and animals that are particular only to these regions. But Wrangel Island is an exception to this rule. Nearly 40 species and subspecies of vascular plants, insects, birds, and mammals that live on Wrangel Island have no analog anywhere else on earth. An example may be the Vinogradov lemming, a close relative of the widely spread Arctic lemming (Dicrostonyx torquatus) and the Portenko lemming, a subspecies of Siberian lemming (Lemmus sibiricus). As a result of isolation from lemmings widely spread on the continent, these Wrangel Island lemmings are now considered a separate subspecies.
Another aspect of endemism on Wrangel Island is the presence of paleoendemics, or relict endemics. These are species that were more or less widespread in the past, but then died out on major portions of their ranges, and today are preserved only on Wrangel Island. Recently researchers discovered several species of paleoendemic plants on the island, all of which grow as micropopulations within one intermontane basin on the center of the island, and nowhere else in the entire world. One of the world’s rarest plants, Wrangel sweetgrass, has been found only in six points on the island, where the colonies occupy an area of one to twenty square meters.

The island’s unique nature also appears in relation to the feeding specialization of several species. Several plant-eating invertebrates feed only on a specific group of plants, such as legumes, willows, and crucifers (mustard family). One of the endemic weevils of the island feeds on only one species. Similarly, some bumblebees and flies pollinate only a specific group or species of plants. This phenomenon of specialization is quite an exception for the Arctic, and is unquestionably connected to the wealth and biodiversity of the island’s flora.

Wrangel Island’s natural history offers a theory to explain the island’s unmatched wealth of flora and fauna. In the Pleistocene Era (1.8 million to 10,000 years ago), the Arctic shelf dried out several times following the concentration of water in the polar ice caps. During these droughts, a bridge known as the Bering Land Bridge connected Chukotka and Alaska. Animals and plants alike actively migrated between the two continents across this land bridge. And as the territory that today is Wrangel Island was part of this land bridge, it was the crossroads of global migrations.

Periglacial conditions (a cold and dry climate) reigned across a gigantic expanse stretching from Central Asia to the arid regions of North America to the high Arctic. In these conditions, particular tundra-steppe landscapes formed in which both species unique to the Arctic and to the dry steppes lived together. This trend allowed many species of Central Asian origin to expand north. As the glaciers melted and the ocean level rose, the Bering Land Bridge gradually became the ocean floor, and the global climate changed to one similar to that which we see today. This process probably repeated itself three to four times during the Pleistocene, meaning Wrangel Island may have experienced several waves of settlement by various groups of organisms punctuated by several periods of isolation. This process both enriched the ecosystem as well as formed endemic elements within it.

Meanwhile, in contrast to the majority of the other Arctic territories, Wrangel Island was never covered by glaciers during the course of the entire Pleistocene, but had only small mountain glaciers. Thus the island’s ecosystems were constantly developing without interruption, at least from the late Pliocene, when other regions were covered or sunk by glacial shelves. The island was a refuge, an ark of sorts, in which a number of plants and animals could survive while their populations were becoming extinct over vast portions of their ranges.

These factors make the island unique and valuable both to science and to the preservation of biological diversity, in particular the many endemic species and relict communities that have been preserved from the time of the Pleistocene. All of this undoubtedly places Wrangel Island on par with the most valuable nature areas of the world, and makes it deserving of further study and protection.

Mikhail Stishov is the former Assistant Director of Scientific Research at Wrangel Island Zapovednik. He currently works as an expert for the Global Environment Facility.
Russia Continues Down the Soviet Union’s Treacherous Nuclear Path

by Paul Josephson

The ongoing effort to rejuvenate Russia’s nuclear power industry is fraught with dangers to public health and the environment. A recent example is the Russian Duma’s vote to approve the import of radioactive waste—in this case spent fuel—into Russia. This action is not the first violation of national conservation efforts, and will certainly not be the last. Rather, both history and current events suggest that should the Ministry of Atomic Energy (MinAtom) earn billions of dollars through long term storage of foreign spent fuel, it will continue on a path of injudicious nuclear power management, including the building of dozens of new and unproven reactors. The new MinAtom reactors, their waste, and other nuclear technologies will consume vast stretches of land, leach into the ground and water, and put Russia’s rich biodiversity at risk. Thus the danger of the new bill is twofold: first, the storage of nuclear waste poses a serious threat to Russia’s environment, and second, the bill will transfer funds into the hands of a ministry that has given every indication it will expand—perhaps recklessly—Russia’s nuclear power capabilities, multiplying the threat to the environment and public health.

The bill permits used fuel rods from nuclear power stations in fourteen countries in Europe and Asia to be imported for storage but not permanent disposal, and returned after fifty years. About 14,000 tons of an estimated 200,000 tons of the world’s used fuel rods are currently stored in Russia; Russia now stands to import another 20,000 tons of waste. The new bill represents a significant change from earlier laws that banned the import of nuclear materials for storage, although allowing Russia to accept spent fuel rods from Ukraine, Bulgaria, Hungary and Slovakia for reprocessing under a program set up in Soviet times.

Of particular concern for conservationists is MinAtom’s plan to store the imported wastes in some of the most important areas for Russia’s biodiversity, such as the Russian Far East and the Altai Mountains as well as in some parts of the Arctic. While the storage of nuclear waste in these remote locations has the important benefit of being safer for Russia’s people, it threatens to ruin some of the last remaining pristine landscapes on the planet. What of the unique Ussuriskaya taiga, home to the Siberian tiger, or the fragile ecosystems of the polar north? What of the majestic beauty of the Altai region, which harvests endangered snow leopards and mountain sheep, and parts of which have been named a UNESCO World Heritage Site? Even MinAtom’s most advanced facilities have been plagued by accidents that have entered the lexicon of the modern world as symbols of technological failure: Chernobyl, Chelyabinsk, Kyshtym, the Kursk submarine. Decades of haphazard storage and dumping of waste on an unsuspecting public and unforgiving environment have released radiation on a level comparable to the Hiroshima and Nagasaki atom bombs.

About $10 billion of the $31 billion revenue expected over the next ten years has been earmarked for “special ecological programs for the rehabilitation of radioactively polluted regions,” according to the bill. The remaining $21 billion, a vast sum considering that Russia’s 2001 federal budget totals $60 billion, will be considered a general source of funds, but many observers believe it will likely be used by MinAtom to retool and embark on an aggressive new nuclear power program. Evgeny Adamov, MinAtom’s former head, saw the billions of dollars of earnings as crucial to rebuild Russia’s nuclear industry and overcome the decade-long break in modernization and production brought about by Russia’s economic decline. Alexander Runyan-tsev, Adamov’s recent replacement, has yet to make his plans clear, but has publicly announced that developing the nuclear industry will be a priority. Unfortunately, MinAtom’s inability to break decisively with past Soviet reactor development programs and mindset make the rebuilding of the nuclear industry a grave concern to the Russian conservation movement.

Willingness to minimize risks, ignore dangers, and embrace radioactive waste characterizes the culture that produced the worst of Russia’s and Ukraine’s environmental degradation at Chelyabinsk, Krasnoyarsk, and Novaya Zemlya, which has made tens of thousands of square kilometers unfit for habitation, has changed. History has shown its disastrous environmental effects: at Kyshtym 20,000 square kilometers were polluted; all inhabitants have had to leave. The evaporation of radioactive waste from lake Karachai blew fifty miles, requiring 41,000 people to be evacuated. In Russia’s nuclear “polygons,” death rates from leukemia, lung cancer, and thyroid cancer are five, six, seven times higher than elsewhere. The migration of radionucleides in flora and fauna remains unclear, for state secrecy prevented adequate study.

Nonetheless, the leadership of MinAtom remains committed to a future energy scenario in which nuclear power has a major role, including a number of
The Duma’s decision on importing foreign nuclear waste has sparked a public outcry, such as this Greenpeace demonstration at the Federal Duma in October. Photo by Vadim Kantor, Greenpeace.

foolhardy projects. Nuclear power stations require up to tens of thousand of kilometers of land, and their surrounding regions have come some the world’s most dangerously polluted places. Meanwhile, the $10 billion earmarked on paper for conservation or cleanup projects is wholly inadequate to clean up the Soviet Union’s nuclear legacy or ensure safety in planned reactors. And as building one reactor from start to finish costs $1.5 to $3 billion, there is ample reason for concern that MinAtom’s intention to build new reactors will lead officials to divert funds from cleanup to construction. Instead of promoting safer energy and a healthier environment, the planned development of Russia’s nuclear industry poses an increasing threat to Russia’s plant and animal life.

Some safety mechanisms are in place: in Russia, as in other countries, officials recognized the need to separate promotional from regulatory activities in a variety of industries to ensure public health and environmental safety. But recently MinAtom has been able to weaken considerably watchdog efforts aimed at ensuring that its activities receive extensive public or expert scrutiny. Nuclear specialists who worked in the State Environmental Committee  lost their jobs when President Putin abolished it in 2000. Gosatomnadzor, the government’s nuclear safety inspectorate, has existed only since 1994 and has already lost significant portions of its original power. Today MinAtom wants to eliminate the inspectorate’s right to license and perform safety inspections in the civilian sector altogether. With MinAtom proposing massive expansion of the nuclear enterprise and hoping to avoid decommissioning Russia’s aging reactors, this step is also an attack on environmentalism.

The nuclear industries of Japan, France, the United States and other countries of the world have also had their shares of accidents. Yet they claim that nuclear energy is an environmental savior, for reactors are safe and, rather than burning fossil fuels that contribute significantly to the greenhouse effect, they produce no greenhouse gases. But those engineers who forecast energy “too cheap to meter” have seen capital construction costs much higher than they imagined. Those who predicted early standardization have instead witnessed constant retrofitting of reactors to meet appropriate safety standards. Those who announced that uranium scarcities required a breeder reactor economy still search for justifications for breeder reactors. And those who talk about the compatibility of nuclear power with modern environmental concerns must at long last admit how ill-advised the actions of the Duma and the desires of MinAtom and President Putin’s government are in light of the millions of gallons and hundreds of tons of radioactive waste that remain stored and leach, leak, and migrate into the environment.

Paul Josephson, Ph.D., teaches history at Colby College. He is the author of Red Atom, a history of the nuclear industry in Russia and Ukraine.
Endangered Ecosystems

A Tale of Two Seas

Note from the editors: For thousands of years, the Caspian and Aral Seas have brought life to their surrounding regions. Situated at the crossroads of Europe and Asia along the historic Great Silk Road, both inland seas have sustained major fisheries and other industries on the basis of their great biological wealth. But recent years have witnessed alarming changes in the ecology of these two seas as human demands on their resources have increased. Accordingly, both seas have earned a sinister fame: much publicity has already been given to the desiccation of the Aral Sea and the Caspian’s threatening oil industry. The following set of articles focuses on an often-ignored aspect of the problems these seas face, highlighting the causes and consequences of ecological changes in the two seas and the need for careful management of their biological resources.

The Intrusion of New Species into the Caspian Sea Ecosystems

by Anatoly Tarasov

Note from the editors: In recent years, many have become understandably concerned about the environmental health of the Caspian Sea in light of the ever-expanding oil industry it supports. The following article, however, underscores the ecological and economic threats the sea faces due to unwise management of other resources.

The gleaming waters of the Caspian Sea comprise the largest brackish inland reservoir on the globe, located just east of the Caucasus and west of Kazakhstan and Turkmenistan. Covering an area of about 386,400 square kilometers, its surface lies some 27 meters below sea level. The northern part of the Caspian, where the Volga, Ural, and Terek Rivers, drain into the sea, is shallow; toward the south, the sea reaches its maximum depth of 1,025 meters. Salinity also varies greatly throughout the sea, ranging from 0.2gl-1 in the deltas to 280 gl-1 in the Gulf of Kara Bogaz Gol; salinity through the body of the sea ranges from around 5-10 gl-1 in the northern part of sea to about 13 gl-1 in the south.

This broad variety of hydrological conditions sustains highly biologically diverse ecosystems that house over a thousand endemic brackish-water species. Throughout the first part of 20th century, the Caspian Sea was known as one of the most fish productive reservoirs of the world. The most commercially valuable fish species of the Caspian Sea are the beluga, or great sturgeon (Huso huso), Russian sturgeon (Acipenser gueldenstaedtii), and sturgeon (Acipenser stellatus).

Today, however, the spread of alien species into the Caspian ecosystems threatens the survival of endemic flora and fauna. In trying to alter the ecosystems of the sea for profit and convenience, people have inadvertently put at risk one of the most valuable bodies of

Five nations share the Caspian Sea, and its resources and responsibilities. Map by M. Dubinin
water on the planet. The introduction of new species came in several stages over the course of the 20th century. Looking for a new source of income, between 1897 and 1902 a group of entrepreneurs tried to cultivate alien oysters (Ostrea sp.), mussels (Mytilus galloprovincialis), and two species of fish: Atlantic mackerel (Scomber scombrus) and European flounder (Platichthys flesus). Later on, during Russia’s Civil War (1918-1921) the bivalve mollusk Mytilaster lineatus and several Mediterranean thread worms (Nematoda sp.) penetrated into the Caspian via military boats coming from the Black Sea.

In the late 1920s, government officials began giving approval to the introduction of various plant and animal species into the Caspian Sea as part of Soviet plans to modify nature to support the economic development of the Soviet Union. There were even special directions issued by the Ministry of Fishery to create a schedule for acclimatization between 1930-34. Among the fish species introduced were Black Sea turbot (Psetta maestica) European anchovy (Engraulis encrasicolus) and blunt-snouted mullet (Mullus barbatus ponticus). Two shrimps, Palaemon aderspus and Palaemon elegans, and the diatom Rhizosolenia calcicravis were accidentally introduced with them as well.

In 1952, following the completion of the Volga-Don canal, a waterway about 100 kilometers long connecting two great Russian rivers, at least eight more species penetrated the Caspian from the Sea of Azov. In all, within the last century at least 24 species of marine animals and two species of algae have been introduced into the Caspian Sea. Ironically, none of the species purposefully introduced for their economic value was able to adapt to conditions in the Caspian. On the contrary, it is those species that were accidentally introduced that have thrived in the Caspian, to the detriment of indigenous species.

Indeed, one of the most amazing aspects of the intruding species is how well they have adapted to new conditions in the Caspian Sea. Certain species, such as barnacles (Balanus sp.), tubeworms (Flucopomatus enigmaticus), the bivalve mollusk Mytilaster lineatus, and the diatom Rhizosolenia calcicravis have a tough outer skin or shell that protects them from fluctuations in salinity. Other species, such as the Holland crab (Rhithropanopeus harrisii), sandworms (Nereis diversicolor), and the bivalve mollusks Abra segnmentum and Lenticulium mediterraneum escape unfavorable salinity conditions by burrowing 15-45 centimeters into the sediments on the bottom of the sea. The high mobility of the copepod Acartia clausi and brackish-water shrimps (Palaemon sp.) serves the same purpose.

In addition to adaptation to salinity, the alien invertebrates are characterized by high productivity and hardiness in the face of pollution. Sandworms and Holland crabs in particular are remarkable for their extremely large range of food sources.

Moreover, those species that live 10-30 centimeters within the bottom sediments manage to escape fish predators such as the starred sturgeon, which feeds along the surface of the sea floor, and Russian sturgeon, which collects food at a maximum depth of 5 cm of sediment. Warty comb jellies (Mnemiopsis leidyi) lack these natural defense techniques, but because of the jelly’s low nutritional value, it is of no use to any fish. It is now obvious that the deepwater species purposefully introduced with the intention of extending the available feeding base of valuable fish have not fulfilled their planned purpose.

On the contrary, as a result of the introduction of the mollusk Mytilaster lineatus, two native mussels, Dreissena elata and Dreissena caspia, became extinct. Indirectly this species also was responsible for disappearance of the roundworm Monhystera bulbosa. Similarly, competition for food from the diatom Rhizosolenia calcicravis caused the decline of Rhizosolenia fragilissima and Exuviaella cordata, two species green algae. The Holland crab almost completely eliminated the two seashells, and by 1962 had put the zebra mussel (Dreissena angrus) on the verge of extinction.

The spread of the introduced marine invertebrates also negatively affected certain populations of valuable fish. For example, the introduction and adaptation of sandworms and Holland crabs added new links to the food chain, causing two native species of aquatic worms to decline and causing a chain reaction that reduced sturgeon reproduction by up to 1,290,000 tons per year. Similarly, barnacles and the seashell Mystilaster lineatus result in an annual loss of 300,000 tons of sturgeon, and due to the diatom Rhizosolenia calcicravis, a minimum of 2,900,000 tons per year of herring (Clupeidae)—one of the foundational elements of the pelagic (far from shore) ecosystems of the Middle and Southern Caspian—are lost as well.

The toxicity of the sandworm is well known. Some indirect data indicate that it may cause myopathy in sturgeons, a disease of muscles that only recently appeared. Ten years prior to the onset of the disease, scientists recorded the largest and strongest population of sandworms ever observed. Today 100 percent of Russian sturgeons, 70 percent of starred
Endangered Ecosystems

sturgeons and 30 percent of giant sturgeon suffer from the disease. Interestingly, these percentages correlate directly with the relative portion of sandworms in their respective diets.

Another invader that has been expanding and is likely to induce much disturbance on ecosystems of the Caspian is the warty comb jelly (Aequinota leidyi). According to scientists' prognosis, comb jelly will eventually extend its range all over the Caspian except in parts of the Volga delta where the salinity is too low for its survival, and in the Gulf of Kara-Bogaz-Gol, where the salinity is too high. Moreover, this species is able to tolerate a wide range of temperatures, allowing it to disperse widely from the very bottom of the sea to its surface. In the southern part of the Caspian it is likely to breed year-round, with maximum expansion during the warmest months of the year. Only severe winters and storms will hinder the growth of the population. In 2002-2004, the total mass of the comb jelly population will peak at 3,500,000,000 tons, and will concentrate mainly in bays, gulfs and shore areas of the southwestern part of the Northern Caspian and in the middle of the Central Caspian, where zooplankton accumulates.

The practical implications of the intrusion of comb jelly lie in the fact that in the pelagic zone, comb jelly competes for food with the Caspian seal (Phoca caspica) and giant sturgeon. Comb jelly feeds on the eggs and larva of brackish-water herring and sildet, species that are primary food sources for seals and sturgeon. Although comb jelly does not feed on the eggs of Estuarine perch (Silostomus marinus), Caspian smelt (Atherina caspia), or sculpins (Gobiidae sp.), these species' larvae are vulnerable. Comb jelly also exerts a destructive influence on plankton and other microscopic sea organisms.

Due to a reduced food supply, herring, young mullets, and Caspian smelt will suffer the most direct consequences of the comb jelly's introduction. Russian and starred sturgeons will also reduce their productivity as a result of the comb jelly's influence on their feeding base. Myopathy in sturgeons will become exacerbated and more and more starred sturgeon will become diseased. Caspian salmon (Salmo trutta caspius) and Estuarine perch may completely disappear from the commercial fish industry. Ultimately, all of the members of the food chain, including large fish and seals, will suffer, lowering these populations' reproductive potential and eventually economic value.

Because the kilka (Clupeonella sp.), a small semi-anadromous forage fish — which is also valued commercially — forms the feeding base of the beluga, Caspian seal, and some sea birds, a decline in the kilka population will naturally have a negative effect on these wildlife populations as well. Without adequate nutrition, seals will be unable to maintain a thick enough layer of subcutaneous fat to stay warm in winter, leading to a decline in the seal population. Both seals and beluga will probably turn to feeding on crayfish (Caspiaustacus sp.), creating a threat for that population as well. Similarly, many beluga and seals will migrate to the Volga's delta, where their feeding habits will threaten young freshwater fish. Living conditions in the delta will not be favorable for the beluga and seals, however, since a number of them will perish in fishnets and suffer from poaching.

The influence of comb jelly on the ecosystems of the Caspian is only one of many unfortunate examples of poor management of the sea's rich natural resources. Even before the acclimatization of the comb jelly, immense quantities — too large for the ecosystem to sustain — of fish were caught every year: the percentage of fish over 4 years of age fell from 71.2 percent in 1974 to about two percent in 1997. In 2000, a further decline in fish harvests was observed. Now fish under a year in age dominate in the population. Thus a number of factors, including the record speed of the expansion of the comb jelly and other invaders, combined intensive fish harvesting using fish pumps, will undermine the kilka population by 2004-2006.

If the situation in the Caspian Sea develops in the same way it did in the Sea of Azov and the Black Sea, the fishery industry may completely lose its value by 2012-2025, with annual financial damages estimated at six billion dollars. Even a prohibition on catching sturgeon, which is planned for 2002, will not save their populations. If the prognosis for the distribution of comb jelly proves true, the Caspian Sea will preserve its economic value only as a source of oil and gas, not as the thriving fishery it once was.

References:

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A Summer Epidemic Places the Caspian Seal Population in Further Peril

Note from the editors: One hundred years ago, the Caspian Sea was home to a thriving population of over a million Caspian seals (Phoca caspica). As with their famous cousins, the Baikal seals (Phoca sibirica), how these seals came to live in a land-locked sea remains a mystery. Extensive seal hunting during the Soviet period, particularly in the 1930s, decimated the population, leaving no more than 400,000 seals alive in the 1980s, and landed the seals a place in the World Conservation Union's (IUCN) list of vulnerable species. As anthropogenic stresses continue to alter the ecology of the Caspian Sea, the seal population has steadily fallen, leading scientists to believe there may be fewer than 100,000 Caspian seals alive today. A recurring epidemic has raised fears for the seals' survival to a new level.

In the spring and summer of 2000, thousands of Caspian seals washed onto the shores of the Caspian Sea in Kazakhstan, Azerbaijan, Tajikistan, and Russia, killed by an unknown infection. The source of the epidemic is yet unknown, but some have suggested that either stray dogs or wild animals, such as wolves, which roam the northern Caspian region, might be the reason behind the seals' mass infection. A similar epidemic occurred in 1997, and one of the seals that died was found to be infected with canine distemper virus. At that time, however, scientists were unable to establish a direct link between the virus and the seals' illness, as the connection between infection and illness is notoriously difficult to establish. The presence of an infection in an organism never necessarily implies that the organism or population will become sick with the corresponding disease. Thus confirming that canine distemper virus was the cause of the seals' mass mortality was challenging. When another wave of mass seal mortality came this past spring, a team of international scientists sprung to work to study the seals' high death rate in hopes of determining a likely cause and then taking measures to protect the seal population.

To this end, scientists began analyzing tissue and blood samples taken from dead seals found on the banks of the Caspian Sea in Kazakhstan, Azerbaijan, and Turkmenistan. Those institutions that took part in the investigation include the Subgroup of Veterinary Sciences of the Department of Agriculture and Rural Development (Belfast, Northern Ireland, UK), the Institute of Animal Health (Pitbrigt, UK), and the Institute of Virusology of Erasmus Medical Center (Rotterdam, The Netherlands). Researchers also came from the Geological Institute of the Azerbaijan Republic Academy of Sciences (Baku, Azerbaijan), the Sea Mammal Research Unit, University of St. Andrews (Fife, UK), the Laboratory of Virus Ecology, Institute of Microbiology and Virology (Almaty, Kazakhstan), Akademgorodok Institute of Zoology (Almaty, Kazakhstan). Specialists from Dandy University (Scotland) and the Veterinary Laboratory of the Scottish Agricultural College (Inverness) conducted an analysis of toxins and bacteriology.

The international group of specialists, working through the Caspian Environmental Programme Ecotoxicology Project (ECOTOX), came to the conclusion that the ultimate cause of the epidemic was indeed the same strain of canine distemper virus found in the seal in 1997. This conclusion was confirmed through both serological (blood serum tests) and molecular methods.

Canine distemper virus falls into the morbillivirus group, which also includes measles, phocine distemper virus, pestes-petits-ruminants virus and rinderpest virus. Between 1987 and 1988 canine distemper virus was the believed cause of mass deaths of Baikal seals (Phoca sibirica) in Siberia's Lake Baikal; there is further suspicion that it was the cause of widespread seal death in Antarctica in 1955. In recent years, morbilliviruses have been the causes of small epidemics within sea mammal populations in various parts of the world.

Other environmental factors may also play a role in the seals' deaths. Water pollution from oil spills, pesticides such as DDT, and organochlorines like PCB all cause an immune deficiency. Scientists also believe these factors lower the birth potential of adult females, leaving as many as 70 percent of females barren. Clearly, these factors are reflected in the population's decline. It is also essential to note the effect of the warm winters in recent years, as a result of which the seals had greatly reduced ice floes for hunting and resting.
Endangered Ecosystems

Moreover, the seals that died in the recent epidemic were almost all severely emaciated. This may be a result of the virus, or it may be a result of an inadequate food sources: in recent years, technological innovations have facilitated a rapid increase in the quantity of kilka (Clupeonella sp.), caught in commercial fishing. In order to resolve this question, it is necessary to monitor the condition of fish stocks in the Caspian Sea, particularly the kilka which comprises more than 70 percent of the seals’ diet. Decreasing quantities of fish will only further oppress the seal population and increase the scale of the problem.

Regrettably, specialists have no current data on the exact size of the Caspian seal population, although many fear it may already have dipped below 100,000 individuals. Whatever the current population, however, given the present death rate and harmful environmental factors affecting the seals, there can be little doubt that severe population decline is a significant threat for the future.

One of the first measures for arresting the seal epidemic is to fight the virus that causes it. Unfortunately, there is no vaccine for canine distemper virus, although scientists are working to create one. In the meantime, holistic preventative measures may be the key to protecting the seal population. Such work begins with reducing the factors that have a negative impact on the overall health of seals, depressing the population, lowering its reproductive potential, weakening the seals’ immune systems, and making them more susceptible to the virus. Such measures include campaigns to decrease the pollution of the Caspian Sea by pesticides—in particular DDT—and other organochlorines. The seal population itself should be protected by stopping or reducing the sale of Caspian seals, and by reducing the number of seals that are caught each year in fishing nets. If the results of fish monitoring reveal that stocks of kilka have fallen, it will be necessary to restore them as an essential part of the seals’ diet. The key to making these measures work is to implement them simultaneously on the regional and national level in all of the countries that use the resources of the Caspian Sea.

The above investigation was supported by the World Bank through a donation by the Japanese Consultant Trust Fund, and by the Offshore Kazakhstan International Operating Company. Details of the results may be obtained from the Emerging Infectious Diseases website at www.cdc.gov/ncidod. For more information, please contact Dr. Susan Wilson, Tira Seal Research Centre, 7 Millin Bay Road, Portaferry, Northern Ireland, BT22 1QD. E-mail: suewilson@marinelifedemon.co.uk. Fax: (0)28-42728600.

This article was prepared from materials provided by the Caspian Environmental Programme Coordination Unit, Room 108, 3rd floor, Government Building, 40 Uzer Hajibeyov Street, Baku 370016. Supplemental data provided by the Seal Conservation Society web page, http://www.greenchannel.com/tmc/species/caspian.htm.

The Destruction of the Aral Sea

by Philip Micklin

The Aral Sea sits amidst the deserts of Central Asia on the border between Kazakhstan and Uzbekistan. A somewhat saline water body that receives inflow from two rivers, the Syr Dar’ya and Amu Dar’ya, the Aral was the world’s fourth largest lake in area in 1960. It supported a major fishery, directly and indirectly employing 60,000 people, and functioned as a key regional transportation route. The huge deltas of the Syr Dar’ya and Amu Dar’ya sustained a diversity of flora and fauna and also had major economic importance by supporting irrigated agriculture, animal husbandry, hunting and trapping, fishing, and harvesting of reeds. Forty seven million people currently live in the sea's drainage basin, which covers 1,800,000 square kilometers and is shared by Uzbekistan, Kazakhstan, Tajikistan, Kyrgyzstan, Turkmenistan, Afghanistan, and Iran.

Since the early 1960s, desiccation of the sea has proceeded relentlessly as discharge from the Amu Dar’ya and Syr Dar’ya has steadily diminished, owing primarily to increasing withdrawals to support expanding irrigation. Over the past 40 years, consumptive use has more than doubled. Consequently, the water level of the sea fell to such an extent that in the late 1980s the Aral divided into two water bodies: the Small Sea in the north and the Large Sea in the south. The environmental degradation that accompanied this desiccation has made the Aral one of the world’s most notorious ecological disaster zones.

Indigenous and economically valuable fishes such as the pike-perch (Lucioperca lucioperca), bream (Abramis brama orientalis), barbell (Barbus brachycephalus Kessler), and roach (Rutilus rutilus Aralensis) disappeared from the sea by the early 1980s as salinity rose beyond their ability to adapt and shallow spawning and feeding areas became dry land. Today these species survive only in the deltas of the Amu Dar’ya and Syr Dar’ya. The demise of the commercial fishery threw tens of thousands out of work. Shipping on the Aral also ceased as costs of keeping ever lengthening channels open to the major ports of Aralsk and Muynak became prohibitively expensive.

The Aral was once home to noisy colonies of a great variety of resident and migratory waterfowl – from coots, ducks, geese, and cormorants to swans, herons, gulls, and pelicans – that have suffered greatly from the loss of food sources and habitat. At particular risk are endangered and threatened species like the pink pelican (Pelecanus onocrotalus), curly pelican (Pelecanus crispus), flamingo (Phoenicopterus ruber), and mute swan (Cygnus olor). Meanwhile the Aral’s population of endangered Kulan, or Asiatic wild ass (Equus hemionus),...
has declined substantially owing to habitat degradation and lack of access to drinkable water.

The reduction of river flow and decline of ground water has profoundly affected the rich ecosystems of the Amu Dar'ya and Syr Dar'ya deltas. Desertification is spreading in both deltas, leading to the replacement of endemic hydrophytic (water-loving) plant communities with halophytic (salt-tolerant) and xerophytic (drought-tolerant) plants. Several endemic hydrophytic species have already become extinct: floating fern (Salvinia natans), shining water lily (Nymphaea candida), yellow water lily (Nuphar lutea), waterwheel plant (Aldroveranda vesiculosa), and greater bladderwort (Utricularia vulgaris).

Moreover, the unique tugai forests in the deltas have greatly diminished. Tugai are forest ecosystems that grow along rivers and wetlands in Central Asia and provide a home for a specific collection of plants and animals, including the badger (Meles meles), wild boar (Sus scrofa), reed cat (Felis silvestris), and the globally rare Bukhara deer (Cervus elaphus bactrianus). As the Aral Sea shrank, the tugai forests it supported also began to disappear, leaving salt field wastelands where forests once flourished. Trees that are common in tugai forests, such as sea buckthorn (Elaeagnus sp.) and Salix songaricae, have disappeared from the Amu Dar'ya delta. Other trees and bushes, such as poplars (Populus sp.), tamarisks (Tamarix ramosissima), small reeds (Calamagrostis sp.), and common reeds (Phragmites australis), are on the verge of extinction. The only plants viable in both deltas today are those halophytic and xerophytic species such as Tamarix ramosissima, Karelivia caspica, and Alhagia pseudalbescens that were directly introduced into tugai ecosystems by human intervention.

Many other problems have accompanied the destruction of the Aral and its ecosystems. Reduced and salinized flow arriving to the delta from upstream has negatively affected irrigated agriculture; leading to declining productivity of crop land and pastures. Desertification has promoted the succession of natural vegetation suitable for grazing by inedible species, harming animal husbandry. Salt and dust blown from the increasingly large former sea bottom are carried as far as 400 km, settling over a considerable area adjacent to the Aral, retarding plant growth and depressing crop yields.

People living in the ecological disaster zone suffer from acute health problems. Some of these are directly linked to the sea’s recession and its consequences, such as respiratory and digestive afflictions and possibly cancer from inhalation and ingestion of blowing salt and dust, but others owe to environmental pollution associated with irrigation and poor medical, health, and hygienic conditions and practices. Widespread bacterial contamination of drinking water is among the most serious problems and has led to very high rates of water-borne disease.

The USSR began various efforts in the late 1980s to improve the Aral Sea situation. In 1991, however, these programs came to a halt as funding and organizational infrastructure fell apart with the collapse of the Soviet Union. Since then
primary responsibility for dealing with the Aral situation has fallen on the five newly independent nations in the Aral Sea basin. These states signed a water sharing agreement in 1992 which continued the allocation scheme for the Amu Dar'ya and Syr Dar'ya among them existing under the USSR, but added the Aral Sea and near Aral region (fundamentally the river deltas) as a unique sixth entity with a right to a share of flow along with the five states. The basin states are also working together through the International Fund for the Aral Sea (IFAS) to develop and implement a program to resolve the Aral crisis.

International help for the Aral began in 1990 when the Soviet government invited the United Nations Environment Programme (UNEP) to provide experts to help prepare a diagnostic study of the situation. In the past decade, the World Bank, United States, European Union, United Nations, and other international donors have given substantial aid to the region. The World Bank has coordinated the most ambitious efforts through its Aral Sea Basin Programme with an estimated ultimate cost of over $400 million USD. Over the course of the last few years, the bank has turned most responsibility for the program over to the five basin states of the former USSR with IFAS acting as the implementing agency. The Aral Sea basin programme is progressing, but behind schedule. Attracting the necessary funding from donors has proven a key problem. Hope exists to alleviate, at least partially, some of the most serious problems of the Aral Sea region, but will require a concerted and cooperative effort among the Aral Sea basin states, and substantial help from the international community. Basin governments and donor organizations and countries are rightly pursuing health and medical improvements and providing clean drinking water as the first priority. Promotion of measures to slow the region's rapid population growth, although politically sensitive, is also necessary. Improving the efficiency of irrigation is a major concern as it is the key to substantial water savings, but will be enormously expensive and require a long period for implementation. Development of a stronger and fairer water sharing agreement among the five basin states of the former USSR, as well as inclusion of Afghanistan in the agreement, is necessary to reduce interstate tension that could even lead to armed conflict.

Efforts to preserve the delta of the Amu Dar'ya should have a high priority as it has tremendous ecological and economic worth. The Amu Dar'ya delta currently supports the largest and most biologically diverse tract of tugai forests in all of Central Asia, containing about 60 percent of all of Central Asia's tugai forests. Because the region lies on the border between the northern and southern desert zones, it provides a habitat for representatives of both boreal and subtropical ecosystems.

Also, partial restoration of the Small Aral Sea in the north is feasible since its level could be substantially raised with relatively small increases of inflow. Such a project has already been approved for implementation. Should it prove successful, salinity would drop to levels tolerable by indigenous fishes, allowing restoration of commercial fishing. Indeed, during periods in the 1990s when the Small Aral's salinity fell, some indigenous fish returned to the sea from the Syr Dar'ya delta. Meanwhile, more salt tolerant types of fishes could also be introduced, as long as care was taken to select species that would not become major competitors to the indigenous varieties. The Black Sea flounder, a fish with higher salt tolerance, was successfully introduced into the Aral in the 1970s.

Restoration of the entire Aral Sea to its early 1960s size would be extremely difficult in the near to mid-term future. Average annual inflow from the Amu Dar'ya and Syr Dar'ya would need to reach 56 km\(^3\), nearly four times the flow for 1990-1998, a period of above average river flow from the mountains. Such an increase would require huge expenditures on irrigation improvement, major reform of the agricultural sector and/or restructuring of the economy away from irrigated agriculture. Drastic reductions in irrigation in the near future, as some have suggested, would cause economic and social havoc for the region.

The desiccation of the Aral Sea has turned a once thriving fishery into a desert. Photo by P. Micklin.
Practical considerations may dictate the Aral Sea can be revived only partially, even in the more distant future. It may prove possible to restore late-1970 hydrologic parameters, which would require an average annual inflow of about 44 cubic kilometers. But assuming discharge to the sea was reasonably clean, indigenous flora and fauna could be reintroduced to the sea from lakes in the Amu Dar'ya and Syr Dar'ya deltas or from other lakes in Central Asia where they still survive. This is a compelling argument for preserving remnants of the original Aral flora and fauna, either in deltaic lakes or in parts of the remaining sea in which habitat conditions of the pre-recession Aral could be artificially maintained.

**Will Lessons of the Aral Sea be Forgotten in Lake Balkhash?**

Lake Balkhash, a unique terminal lake in eastern Kazakhstan, is one of the greatest lakes on the planet. Famed for the Balkhash perch (*Perca schrenkii*), an enormous fish weighing up to 200 kilograms, Lake Balkhash is also renowned for the noisy colonies of pelicans and cormorants, ducks and snipes, swans and geese that settle in the Ili River’s delta. Balkhash is just as much a national treasure for Kazakhstan as Lake Michigan is for the United States, Lake Baikal for Russia, or Lake Issyk-Kul for Kyrgyzstan. In area, Balkhash is roughly the same size as Lake Ontario, but is just six meters deep. Seven rivers - the Ili, Karatal, Aksu, Ataaguz, Baksans, Toktau, and Moinly - flow from the surrounding mountains into Lake Balkhash. Together the mountains, rivers, and lake itself comprise a unique ecosystem vital to the health and beauty of the region.

More than twenty species of fish live in the lake, including several species valuable for the commercial fishing: sturgeon (*Acipenser sturio*), carp (*Cyprinus carpio*), catfish (*Silurus glanis*),pike-perch (*Esox lucius*), carp-breum (*Abramis brama*), perch (*Perca fluviatilis*), and roach (*Rutilus rutilus*). Along the shores, boars (*Sus scrofa*), wolves (*Canis lupus*), foxes (*Vulpes vulpes*), hares (*Lepus capensis*), and muskrats (*Ondatra zibethica*) make their homes; geese, ducks, pelicans, swans, flamingos, and seagulls all nest around the lake.

At one time, these fish and animals lived in healthy and sizeable populations. Up to 800 muskrats once lived in the watershed, supporting a local trapping industry. The abundant fish populations sustained a booming commercial fishery: in the 1980s, more than 10,000 tons of fish were caught in Lake Balkhash. In turn, the fishing industry brought significant economic return to the region, as a large portion of the fish caught was canned and sold in many regions of the former Soviet Union.

But today the condition of Lake Balkhash has noticeably changed. Due largely to the diversion of water to the Kapshagay hydroelectric power plant and reservoir, the area and volume of Lake Balkhash has diminished significantly. The constant lowering of the annual flow of the rivers that run into the lake have caused the water level to fall to a critical point: 340 meters above sea level, lower than accepted natural levels. The surface water of the lake has shrunk by more than 2,000 cubic kilometers, with drastic effects on fishes' spawning grounds. Industrial effluents add to the intensive pollution of the lake’s waters, as do runoff from cities and agricultural enterprises.

These changes have left a warning stamp on the lake. The annual amount of fish caught, particularly of the valuable species of carp and sturgeon, has dropped many times over. Moreover, the Balkhash perch has been decimated by fibrosisoma, a cancerous disease. The population of muskrats has also declined severely and lost its economic value. Intensive degradation of the shores continues to progress. Colonies of reeds, the only natural water cleaner, once lined the shores, but have since shrunk significantly, as have the cane thickets and tidal forests, a riparian forest community endemic to Central Asia that provide a home for many species of birds and animals.

About 73 percent of all of Lake Balkhash’s inflow comes from the Ili River, a river that flows into Kazakhstan from China. Currently, the industrial boom and intensive agricultural growth in western China threaten a future reduction in the inflow of water to Lake Balkhash. Should this occur, the tragic fate of the Aral ecological catastrophe will repeat itself with Lake Balkhash. This would have primary effects on the 3,000,000 people who live in the Balkhash basin.

It is also necessary to keep in mind that the surface area of Lake Balkhash is only two times smaller than the original size of the Aral Sea. The disappearance of such a great area of water and replacement thereof with salt-sand desert would completely destroy the ecology of the area.

The ecological catastrophe of the Aral has become global, and Balkhash is prepared to repeat that fate. At the current time, the condition of the lake is the same as the Aral’s in the beginning of the 1960s, that is, at the beginning of intensive agricultural use of the inflowing rivers. In order to prevent the repetition of the tragic fate of the Aral Sea, today the problems currently facing Lake Balkhash must be examined on an international level.

For more information, please contact Mels Eleusizov of the Ecological Union of Associations and Organizations of Kazakhstan "Tabigat," tel: 62-97-05, e-mail tabigat@mursat.kz.

Adapted and reprinted from the electronic bulletin "Kazakh Environmental Forum," No. 102, 8/31/00.

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Special thanks to Nina Nolikova, Institute of Water Problems, and Andrei Pichnikov, WWF-RPO, who supplied additional information for this article.
Endangered Species

The Current Distribution of the Argali Mountain Sheep

by Mikhail Patsyn

Introduction: Planning a strategy for effectively studying and protecting a rare animal species depends heavily on existing knowledge of the animal's distribution. Attempting to gather all the existing data on the present distribution of the Altai argali, the author of this article has collected data from both published and unpublished sources, in particular from observations made by researchers at Altayskii Zapovednik over the past ten years.

In the past large predators and hoofed mammals were plentiful, had vast ranges, and played a significant role in ecosystems. In the past two centuries, many of these animals have become increasingly rare, even endangered. Direct human encroachment, habitat destruction, and changes in the ecosystem resulting from human activity have contributed to the decrease in these animals' ranges and distribution in the overwhelming majority of cases.

The argali (Ovis ammon), a large mountain sheep, is one such species: once spread throughout the low-elevation pastures in the mountains of southern Siberia, Mongolia, and northern China, today the species survives only in isolated high-mountain "islands." Over time, herds of domesticated animals perpetually drove the argali from the plateaus and gently sloping hillsides that comprised the sheep's basic habitat. The argali continues to survive in increasingly isolated regions and high-mountain ridges thanks only to the species' great ecological flexibility.

The largest subspecies of argali, the Altai argali (Ovis ammon ammon) lives in the mountain ranges of the Mongolian and Gobi Altai, as well as on isolated mountain ridges in eastern Kazakhstan, the Republic of Altai, the Republic of Tuva, and Mongolia. In the mid-18th century, the Altai argali's range stretched from the southwestern foothills of the Altai Mountains in southern Siberia to the mountain ranges east of Lake Baikal near the Mongolian border, and included a wide range of habitats, from low-elevation mountain ridges and plateaus to high mountain regions. Increased hunting and cattle pasturing have contributed to the species' decline, leaving the populations in unstable and worsening conditions.

In order to plan a strategy for protecting the Altai argali, it is essential to take into account the condition of various populations spread throughout the subspecies' range. This task is made difficult by the lack of data on the size and location of individual populations, their seasonal migrations and the condition of their habitats. Likewise, data are sparse on genetic variation between these populations and the results of their genetic isolation. Scientists in Russia, Kazakhstan, Mongolia, and China must all integrate their efforts to study and protect the Altai argali, a subspecies with great ecological, genetic, and cultural value.

The Altai argali's range traverses two Russian republics, Altai and Tuva, as well as parts of three other sovereign nations: Kazakhstan, China, and Mongolia. Little to no reliable data exists regarding the size and dispersion of argali populations in China and Kazakhstan. Data on the distribution and size of Altai argali populations in Mongolia are available in the United States Fish and Wildlife Service's exhaustive census "The status of the argali in

Kyrgyzstan, Tadjikistan, and Mongolia. According to the report, about 8,000-8,500 Altai argali are spread throughout the western and northwestern regions of Mongolia in the Mongolian and Gobi Altai and Khangai Mountains. These populations are declining, however, as the Altai argali's range is shrinking significantly in the southeastern part of Mongolia and in the Gobi Altai region.

Within the borders of the Russian Federation, in the Republic of Altai, the rare mountain sheep inhabits only the southeastern Altai in Chikhachev's and Sailugem Ridges, but is occasionally seen on the slopes near and on the Ukok Plateau.

Determining the size of various argali populations in the Republic of Altai is challenging. During a research project in March and April of 1999, employees of Altaiisky Zapovednik counted 80-85 individuals in river valleys in the northern part of Chikhachev's Ridge. Taking into account the high probability that the Altai argali lives in small, isolated regions researchers did not cover during the census, the total population of argali in the area may number as many as 100-110 individuals.

Around the headwaters of several rivers in the Sailugem Ridge, local shepherds have noted mountain sheep on mountain slopes with southern exposure. According to the oral report of E. I. Anisimov, the former Head of the Department of Sciences of Altaiisky Zapovednik, 150-160 Altai argali were counted in this region in June 1995. Small groups of 15-20 argali were registered around river headwaters. According to a border guard stationed along the Altai-Mongolian border, herds of 30-40 mountain sheep can regularly be seen nearby, and all of the best-known authors point out that the Altai argali seasonally migrates to the southern slopes of the Sailugem Ridge in Mongolia during the winter.

At the present time, Altai argali in the Republic of Tuva are believed to live in the eastern slopes of Chikhachev's Ridge, in the Mongun-taiga, in the western arms of the Western Tannu-Ola Range, and in the Sangilen Highlands. Between 1997 and 1998, researchers from Katunsky Zapovednik found 40-45 individuals living near the headwaters of several rivers along the slopes of Chikhachev's Ridge. According to the oral testimony of local shepherds at a collective farm, argali may also be found around the headwaters of the along the slopes of the Mongun-taiga. During fieldwork in the northern part of Chikhachev's Ridge in March and April 1999, researchers did not find evidence of the argali's winter residence in the region. They did, however, find evidence of the sheep from the previous summer. It is entirely possible that mountain sheep live along the eastern faces of these mountains.

These data indicate a need for increased protection of the subspecies, which has been protected as a rare or endangered species in Russia since 1934. Poaching and the growth of seasonal pasturing in mountain regions are the basic factors causing the decline in population size and range of the Altai argali in both Russia and Mongolia. Participants in a Russian-Mongolian expedition saw firsthand the disastrous condition of the Altai argali in the Mongolian Altai, where they found large numbers of cattle and frequent argali hunting by the local population. Cattle even occupy pastures in two Mongolian nature preserves. The intensive privatization of cattle herds that began in Mongolia in 1991 has been accompanied by nearly uncontrolled use of natural resources. Over the course of recent years, the number of shepherds that lead their herds to pasture on lands that used to be protected by the government for the
protection of wild animals has grown significantly.

Neither in the past nor the present have the Altai argali and its habitat been effectively protected, despite a ban on hunting and the inclusion of the subspecies in the Red Data Books of Mongolia and the Russian Federation. Altaisky Zapovednik, with an area of about one million hectares - roughly the size of Yellowstone National Park - is the only nature reserve in Russia that truly protects the Altai argali. Even so, it protects only 40-50 sheep, and therefore cannot secure the future existence of even one population of mountain sheep.

Although in Mongolia, grazing pressure is on the rise, the economic crisis in Russia has led to a noticeable decrease in the herds of cattle in the mountain pastures of Southeastern Altai and Southwestern Tuva. Many of the summer and winter cabins of cattle herders in Chikhachev’s Ridge lie empty, not having been used for many years. This trend signifies a valuable opportunity for Altaisky Zapovednik to expand and for the network of protected areas to grow.

An International Protection Program

In early 1999 the World Wide Fund for Nature (WWF) began a long-term program to institute sustainable development in the Altai-Sayansky Ecoregion. One of the key issues was the development and introduction of measures to protect rare and endangered species, such as the Altai argali (Ovis ammon ammon) and snow leopard (Uncia uncia), in Kazakhstan, the Republic of Altai, the Republic of Tuva, and Mongolia.

Some of the challenges the program addressed included determining the condition of various populations of the Altai argali, expanding existing and creating new protected areas, and searching for long-term sustainable coexistence of people and wilderness in Central Asia.

The creation of several trans-border Russian-Mongolian zapovedniks would help preserve the fragile populations of several mountain-steppe animals and rare species in the region, such as the Altai argali, snow leopard (Uncia uncia), Pallas’ cat (Felis manul), and others. An example of such a territory could be a zapovednik that would protect the population of Altai argali on the Sailugem Ridge. Although plans for this zapovednik have existed since the 1980s, no such zapovednik has yet been formed. Another possible plan would be the creation of an international reserve in the Chikhachev Mountains, which would bring the northernmost population of the subspecies under protection. It would even be possible to allow restricted cattle pasturing, which is the traditional form of land use in the Altai-Sayansky region. The creation of this type of protected area would, without a doubt, partially help resolve the problem of employment for the local population, while the growth of ecotourism would attract additional funds for the poverty-stricken region.

Mikhail Yurevich Palisyn is a science researcher at Katunsky Zapovednik.

The distribution of the Altai argali in Russia. Map by M. Palisyn and M. Dubinin
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Will Russia’s Economic Growth Threaten the Forests?

Note from the editors: In the last issue of RCN, we reported on the repercussions of President Putin’s dissolution and reorganization of several nature protection organizations in May 2000, including the 202-year old Federal Forest Service (FFS). As continuing coverage of these events, Nikolai Malesbin, the managing editor of Russian Conservation News recently spoke with Valery Aleksandrovich Shubin, the former head of the Federal Forest Service, to learn more about recent trends in forestry and the results of the dissolution of the organization.

NM: How did it happen that the Federal Forest Service was dissolved at exactly the moment when President Putin announced a new course to boost the economy?

VS: That’s a difficult question to answer. But fact is still fact: no one ever turned to me, the head of the Federal Forest Service, about this matter. No one ever asked for my opinion or even for any elementary advice on whether or not we needed to rearrange the forestry department, how we should go about it, or what we had learned from prior experience before taking such a serious step.

Our department’s mission and challenge was to manage the forests of the Russian Federation, which include one-fourth of the forest reserves of the entire world, one billion hectares of forest. The Federal Forest Service had several roles on the national level: studying forests through the network of scientific research institutes and appraising the state of forest stocks and forested lands through various organizations within the forest sector. It protected the forests from insects, diseases, and fires, maintained their healthy condition, and replanted after harvesting. It sustained contact with multiple forest users, such as the Ministry of the Timber Industry during the Soviet era, and today with various companies and firms, which became necessary when more than 90 percent of the forest industry sector was auctioned off and given to private supervisors. Work over the course of the past decade has been difficult. It was a period of reforms, when the government and day-to-day life changed in brief spans of time. All the same, in my opinion, the work of the Federal Forest Service was quite sustainable throughout this time of upheaval. The capability of professional employees did not play a minor role in this process. We paid unwavering attention to the competence of our staff. During this period, we rejected industrial logging, the fallout of the Soviet planned economy. We did not set a goal of completely putting an end to forestry, however, seeing as we believed that would have been disadvantageous for Russia. How could we stop reforestation work, fighting forest fires, preparing areas for the most dangerous fire season, carrying out sanitation cuttings, or caring for the forest stands in general? In answering your question, I’d like to say that for all of these years, the forest sector and the Federal Forest Service were not stagnant, but on the contrary were constantly searching for the optimal paths to develop and enter market processes. So if you want to know why the department was dissolved, you’ll have to ask the people who thought up the plan and instituted it. No one asked the advice of scientists, of the public, or of officials. All of it happened momentarily, like a peal of thunder booming from a clear blue sky.

NM: How many people worked in the Federal Forest Service? Did many people lose their jobs after its dissolution?

VS: At the moment of its dissolution, about 200,000 people worked in the management of the Federal Forest Service. The heaviest load, counting both by amount of work and by the number of specialists working, fell upon Russia’s more than 1700 leskhozy, the government-owned forest enterprises. This network still has not been put back together, but I don’t think the situation will remain this way for long. The organizers of the forest management bodies among the states, who were given power from the government to make decisions in the forest sector now play secondary and tertiary roles in the regional committees of the Ministry of Natural Resources. Many highly skilled and knowledgeable specialists left to enter business or other fields. There wasn’t an outbreak of mass unemployment, but 50 percent of employees on the federal level lost their jobs, and no less than 30 percent on the regional level. The local level (leskhozy) has still not been affected. The serious losses came with the exodus of highly skilled employees with broad scope, many years of experience working, and a knowledge of the traditions and specifics of the forest sector.

NM: In your opinion, is the newly organized forest management structure inside the Ministry of Natural Resources adequately equipped to manage and conserve Russia’s forest resources?

VS: I think that as a whole the state forest service as a system is broken not only on
the federal level, but also on the regional level. The MNR created special regional committees that are responsible for various resources – water, forest, raw minerals – as well as geological research, protected areas, environmental monitoring and inspection. It’s difficult to imagine that such complicatedly organized regional committees could work successfully... A fourth new level of management has appeared: the MNR departments that are supposed to coordinate the work of the MNR in the seven macroregions of Russia, each of which contains some ten or more oblasti. So now we have yet another layer of bureaucrats decreasing efficiency and making the mechanisms for decision-making and financing more complicated. Everything would have been clear to the public, and for me as a member of the public, if the reformers of the forest department had had a fully developed plan that had been made public and had been put up for discussion and agreement. But there wasn’t any of that, which bespeaks the hastiness of the decision to dissolve the Federal Forest Service.

NM: What part of the economic or political community in Russia is responsible for promoting the decisions that effected the dissolution of the forest department?

VS: I think big business. Earlier, a portion of the lumber that came from sanitation cutting was exported, especially in the Russian Far East and in the Northwestern region of the Russian Federation. Because government support for the sector was insufficient, net gains went to the development and support of the forestry infrastructure. Meanwhile, the Federal Forest Service never created commercial structures to resell or trade this lumber. At the current time, under the aegis of the MNR commercial structures are specifically being created that force industrial and lumber harvesting upon the leskbozy with the goal of increasing the volume index of lumber preparation. Here we see the special interests of specific groups. If this trend grows in the future, then I think that we won’t be able to call it anything but corruption. Leskbozy will do the actual cutting, but the profits will go to the commercial structures that are “tied by blood” to the MNR....

NM: How do you react to the prospect of privatizing Russia’s forested lands?

VS: A few days ago the Federal Duma passed an amendment to the Civil Law Code allowing agricultural or other land to go into circulation, that is, to be sold, or to be put in the bank. I think that this is the beginning of the process when ownership of private property will knock at the forest’s door. How do I feel about this in the broad scheme of things? Extremely negatively. Any timber company can grow and develop with the help of a 49-year lease on a forest tract. But why not allow forests to be leased for only three to five years with the option to annually prolong the lease up to a hundred years or more provided that the company passes an annual exam to prove laws are not being broken in the logging process. Do we really have to cut up Russia’s forests into little separate plots and turn them into private property? Will that bring us? High incomes for the government treasury? Improbable. The resale of these forests with the goal of speculation? Quite probably. But if that’s the case, what do we do about forest fires, insect epidemics, and flooded forests? There is not a single private enterprise capable of dealing with these problems on its own. So does that mean that the government will have to take responsibility for this? Then what purpose does privatization serve the government? And what about the organization of protected areas? We’ll have to buy territory to create them. This is why the haste with which the reform of the forest sector is progressing is fraught with dangers. Of course it’s possible to privatize forested lands in Russia, but there’s no burning need to do so.

Forest management is not the management of some natural resource that can lie in the ground for millions of years. Forests are a vulnerable covering that people have valued and continue to value every day. This is why any government – not just Russia’s – must respond to the value people place on their environment.
The Progress of Forestry Reform from an NGO Perspective

Based on an interview with Andrei Pichnikov

By and large the fallout of the dissolution of the Federal Forest Service in May 2000 remains unclear: to this day no one knows exactly what kind of changes the new department, the Ministry of Natural Resources of the Russian Federation, has planned for forest management. But with time, certain trends are emerging.

Historically, the central state forest enterprise, called Rosleskhoz, was a peculiar monster in the forest sector, logging about 20,000,000 cubic meters of living forest each year, a total of 20 percent of all of Russia’s logging. Many believed that leskhozy (government-owned forest enterprises) carried out sanitation cuttings not for purely environmental purposes, but to increase income. Meanwhile, distracted by their logging efforts, leskhoz employees were unable to effectively monitor or care for the forests. On the other hand, there were still highly skilled professionals working in the central bureau who forced the leskhozy to follow legislation, submit to regulations, and replant forests.

Today the MNR’s basic plans for forestry reform are defined in a simple challenge: to increase the volume of logging. This view has been reflected in multiple interviews with Boris Yatskevich, the Minister of Natural Resources, and in the government program prepared under the direction of Herman Gref. Today the Ministry of Natural Resources is attempting to exclude environmental restrictions from legislation and even from regulations relating to timbering.

The structure of forest management changed first, which has had certain positive effects. For example, restructuring cut the size of the forest administration in Moscow from around 250 to 30 people, creating a more efficient team to focus on legislation, coordination, and environmental monitoring. Moreover, the seven new macroregions of federal management in Russia, called okrugi, now make independent forest management decisions. Thus the power to determine and allocate financing now belongs to a local presidential representative instead of a commission in Moscow.
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theoretically allowing each macroregion to determine a wise path for forestry based on the specifics of the region.

On the other hand, a strong negative tendency dominates the entire reform process: unnecessary haste. A government decree on forestry reform has drawn on lessons from the positive results of forestry reform in Lithuania, but provides only one year for the complete transformation of forestry in a country as large as Russia. The first steps in reform were to include establishing principles for privatization, but plans are already far behind schedule.

A further complication to the haste for reforms is the present lack of regard for law in the forest sector. New innovations and reforms will take place on a backdrop of weakened government control in the forest sector and a strengthening of organized crime from the Russian Far East to Komi and Karelia.

Currently there are no well-defined lobbying groups in the forest sector in Russia, meaning that no one is willing to take it upon him or herself to develop principles for turning forested lands into private property. Nonetheless, a number of environmental organizations, such as Greenpeace or the Association of Environmentally Responsible Timber Producers, are eager to see forested lands turned over to responsible timber companies with a vested interest in maintaining sustainable forestry.

The Model Forest of the Pskovskaya Oblast provides an interesting example of the dynamics between a leskhoz and private enterprise in the current reform climate. A stock company dedicated to developing principles of sustainable forestry in Russia leases 2,000-hectare tracts of land for reforestation and sanitation cutting. But every year, the local leskhoz fines the Model Forest for violations supposedly incurred during reforestation (intractingly, the amount of the fine is the same amount as the compensation the leskhoz is supposed to pay the stock company for carrying out reforestation in place of the leskhoz). Even when reason would dictate that planting an additional 2,000 hectares of trees beyond requirements would more than compensate for a given violation – such as cutting a transport path through the forest one meter wider than allowed – the mentality of the leskhoz is such that regulations eclipse reason. The history of forest use in Russia has taught accordance to rules rather than holistic care for the forest.

Moreover, the sheer number of regulations is bewildering; in order to cut forests in European Russia legally, over 1000 regulations must be followed. The most qualified forest organizer with 30 years of experience probably understands and utilizes about 300 rules; a specialist with average qualifications about 100, while leskhoz employees only about five or ten.

Indeed, the time is surely ripe for changes in forestry in Russia, but indicators seem to show that the reform process is not progressing favorably. During these critical times when clear and far-sighted thinking is more imperative than ever, there are few professionals left in the Ministry of Natural Resources who would be capable of sophisticatedly developing a plan for forest use. Even worse, the government is rushing to make reforms as quickly as possible. As a result, it seems that local and regional authorities will have to resolve the fundamental issues affecting the future of Russia’s forests. In each varied region, reforms will reflect the choices of individual people and their relation to a specific situation.

Russia’s forests provide a home not just to trees, but many species, such as this fly agaric (Amanita muscaria). Photo by I. Shpilenok.

The silver lining in these threatening clouds may be the private forest enterprises themselves, who will have a vested economic interest in carrying out sustainable forestry in their forests. Having leased a tract of land for 49 years, the management of these companies must ponder the most advantageous path to creating infrastructure and maintaining a healthy forest throughout the duration of the lease. Moreover, NGOs could have a notable affect on forest management by lobbying such companies with regards to environmental protection, landscape consideration in forest management, and forest certification.

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A Spotlight on the Illegal Timber Trade in the Russian Far East


Across all of Russia, the past decade has witnessed a decline in domestic timber production, the collapse of timber processing industries, and a drive to increase timber exports. From 1993 to 1998, total timber production in Russia decreased three-fold, while the export of timber abroad became the sole source of steady revenue for many enterprises. Unfortunately, the threats to Russia's forests have increased as corruption has riddled the timber industry and illegal export has soared.

As a result of political, economic, and social changes in the Russian Far East (RFE) over the past five years, the timber industry in the region has developed to become solely based on raw log exports. Logging companies find it much more profitable to export logs than sell them to local sawmills, which cannot afford to pay high timber prices. In 1997, roundwood comprised 85.3 percent of total production, and at least 60 percent of that was exported to Japan, China, and South Korea. Currently, only about 10 percent of harvested timber is processed locally. In 1992, the industry was much more balanced: roundwood output comprised 40 percent of total industry production; wood processing made up 41 percent, and pulp and paper production 16 percent. At that time almost half of all wood products were used within the region, while one quarter was sent to other regions of the former Soviet Union, and 30 percent was exported internationally.

Since domestic demand has shrunk while international demand has grown, the Russian Far East timber industry is almost entirely export-driven and is therefore at the mercy of fluctuating Asian markets. This fact is particularly significant for biodiversity conservation, as Russian forests are directly affected by demand in Asia for particular species. For example, the increasing Japanese demand for ash for housing construction has led to illegal logging of ash along protected river basins and general overlogging in some areas. A similar trend appeared when Japanese plywood manufacturers shifted preference from tropical luan to Russian larch. As this change in demand from the Japanese market leads to increased logging in the RFE's northern temperate and southern boreal forests where the Russian larch is prevalent, the fragile permafrost ecosystems of those regions may suffer long-term or even permanent damage: logging on permafrost disturbs a delicate cycle of partial thawing, ultimately leading to unnatural warming of the ground, increased release of greenhouse gasses, and even desertification.

By focusing on raw log exports, timber companies are also speeding up logging, thus posing another threat to Russia's forests: as more timber is exported, raw log production must increase. Faced with the growing scarcity of accessible stands, companies begin developing roadless wilderness areas in order to find new sources of timber. Such an industrial structure is not only environmentally destructive, but also economically unstable. When Japanese buyers disappeared during the Asian financial crisis, for example, log export operations in the Russian Far East slowed and logs piled up in ports. The problems of a "boom-and-bust" economy based on raw log exports became clear during the crisis. Local officials began renewing their call for investment in timber processing, which would allow Russia to sell finished wood products with value added, thereby ensuring larger, more sustainable revenues.

Across Siberia and the Russian Far East,

Timber export from the Russian Far East.
Map courtesy of PERC, refined by M. Dubinin.
many timber companies now work in communities experiencing oppressive social and economic conditions. Indeed, a February 1999 investigation by Sakhalin Environment Watch and the Pacific Environment Resource Center showed that Russian-loggers are often forced to work under conditions nearly equivalent to slavery. During a visit to a logging site in the southern portion of Sakhalin Island, the organizations determined that the logging brigade — made up of eight people — earned only 18 rubles, or 75 cents, per cubic meter logged. Thus, each individual brigade member received an average of less than 10 cents per cubic meter logged. The truck driver who transported the logs to a port 40 kilometers away received 6 rubles per cubic meter, or about 25 cents. The wood itself would be sold to Japan for $70 to $100 per cubic meter. Unfortunately, entrepreneurs then send the profits out of the country — part of Russia’s capital flight — rather than reinvesting in the local community. Loggers continue to work for such petty wages because no other job opportunities exist for them.

Production of sawnwood and other finished wood products could help alleviate some of those problems: timber-processing enterprises could provide jobs to local communities, as well as yield more income per tree and reduce waste. Yet timber companies are exporting raw logs instead of investing in local processing, offering few benefits for local logging communities.

Upon this socio-economic backdrop, three simultaneous events — the opening of Asian markets, the privatization of the Russian timber industry, and the decrease in government subsidies for the Russian Forest Service — triggered a flurry of small, illegal timber operations throughout the Russian Far East.

Privatization, development of criminal culture, and the economic crisis of the 1990s forced many large, formerly state-owned logging companies in Siberia and the Russian Far East to cut back on production and lay off workers. In response, many of the newly unemployed workers have started their own private logging firms. There are more than three times as many logging companies operating in the RFE than during Soviet times. In 1997 in Khabarovsk and Primorsky Regions alone, there were 346 and 224 logging companies, respectively. Many of these firms have since gone bankrupt, but local enforcement has not improved, and other firms are likely to spring up in their place. In fact, by early 2000 there were already more than 450 logging firms in the Khabarovsk Region. Using equipment and materials appropriated from the old state-run timber companies, these small companies have capitalized on the current financial crisis and lack of government oversight by falsifying documents and logging and trading timber illegally. Even while the Forest Service was still in place, it was extremely difficult for Forest Service officials to control the huge number of small-scale timber companies. Such companies often exist long enough for only one shipment across the border, conducting their illegal logging and trade activities and disappearing before authorities can catch them.

The Federal Forest Service lacked the funding, equipment, and personnel to control the firms properly. On paper, Russian rules regarding logging methods are extremely strict. Yet due to corruption within the Forest Service, timber companies could easily circumvent any and all of these rules. As a result, illegal logging became common and widespread. With logging rules and regulations routinely ignored, logging has even been documented in nature reserves, game preserves, and protected Group I forests.

Unfortunately, government efforts to control illegal activities have been hamstrung by a number of problems. Underlying them all is the current “Wild East” or “frontier” mentality of the Russian Far East, which means that citizens routinely ignore laws and regulations. Further, economic crisis has forced people to fend for themselves, including loggers, traders, police, Forest Service officials, customs officials, and even government officials in Moscow. Indeed, controlling illegal logging and trade in the Russian Far East has proven to be extremely difficult due primarily to the complicity of the very government officials and structures charged with protecting the forests. Nonetheless, some government officials, NGOs, and journalists have begun to focus the public eye on illegal logging and trade issues. In particular, large global NGOs such as Greenpeace have been able to work with local NGOs and use
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their influence to effect positive changes in local forestry.

Citizens’ groups have worked in alliance with sympathetic police officers to promote better compliance with environmental regulations. Bringing violations to the attention of local administrators or local Forest Service officials can be an effective means for generating corrective action. Local NGO representatives are often allowed to accompany officials on hunting inspections, and may offer support to special law enforcement divisions by paying for gas and promoting environmental education. To further this type of work, effective citizen monitoring programs must be implemented throughout Siberia and the Russian Far East.

But alone, NGOs lack the power and means to prevent further degradation of pristine taiga ecosystems. As long as wholesale disrespect for legislation is combined with hopeless poverty, ordinary citizens in Russia will never become an efficient force to bring about positive change. At the current time, only strong governmental will — including special non-tariff measures to ban raw log export — may stop the total robbery of the forest.

In theory, the situation could be remedied within weeks if police and other corrupt officials in Moscow and the regions would stop taking bribes from this huge shady timber market: reasonable laws exist on paper, but officials must ensure that they are enforced. Meanwhile, NGOs must be responsible for continually reminding them that the forest resources must be properly cared for and valued.

An example of the effectiveness of well organized NGO activities is reflected on the international front in the Japanese government’s recent announcement that it is preparing a legislation package targeted at preventing the import of illegal timber from the RFE. Attacking the problem on multiple fronts may prove the best course to its solution and the preservation of the forests of the Russian Far East.

Current Challenges of FSC Certification in Russia

by Anton Yakovlev

Note from the editors: In summer 1999, Russian Conservation News dedicated a special issue (v20) to examining forest certification, a special tool for conserving Russia’s forests. Since that time, certification has become an increasingly popular topic at environmental conferences and meetings as environmentalists, foresters, and concerned citizens alike discuss its implementation in Russia. In this article, Anton Yakovlev highlights some of the challenges certification faces in the future.

Since its formation in June 1999, the Pan-European Forest Certification Council (PEFC) has become a serious topic of discussion in forestry circles in Russia, influencing the implementation of international schemes for forest certification, specifically Forest Stewardship Council (FSC) certification. Forest certification is far from a new topic in Russia, however: following the breakup of the Soviet Union in 1991, the independent states formed the precursor of an analogous certification council, which was popularly called the Pan-Asian Certification Council. This council’s legal backing came from recognized experts who would sign agreements of mutual recognition of certification. At the time of its formation, the Pan-Asian Certification Council’s major goal was to quickly eliminate one of the multiple trade barriers that had arisen between the newly independent states following the fall of the Soviet Union. Recent developments in Russia’s social and economic climate, however, make the Pan-Asian system of certification a tempting alternative to other certification schemes. Because the Pan-Asian system of certification was based on the State Standard of Russia, or GOSTR, it fits Russian forestry industries far better than other systems, in particular that of the FSC. For the latter to succeed in Russia, its planners and implementers must take careful account of Russia’s history and traditions in forestry.

Despite the many optimistic articles and books on the subject of forest certification, its future development in Russia remains uncertain. Increasingly, the idea of certification across all of Russia seems too complicated, perhaps impossible; more and more frequently conference speakers tend to offer an extremely cautious prognosis for certification in the provinces. FSC certification is spreading across Russia rather quickly, which pleases many, but also raises inescapable questions. What problems are expected to accompany the introduction of FSC certification? Will there be competition between the various systems of certification?

At least two problems arise in connection with these questions. The first is the haphazard approach to fulfilling requirements (criteria) in Russia; the other is the ignoring of the forest enterprises’ mentality, that is, of the tenacious tradition of forest use in Russia. These are serious factors that could discredit the FSC certification process in the eyes of consumers, and they both play out within each of the five processes that affect the entire procedure of FSC certification. These processes include the development of regional or national FSC standards, forest certification consulting, the formation of auditors’ groups, investment and donor support, and competition between auditors/consultants for spheres of influence. Examining the first two of these topics provides a valuable introduction to the upcoming challenges facing forest certification in Russia.

FSC certification standards are developed both on a national and regional level. In Russia, a National Working Group determines general guidelines in various regions, and each region in turn forms a regional group to develop specific regional standards. After passing all of the procedures for FSC approval, these standards are used in the regions for certification. At the present time, four large
regions are developing regional standards and undergoing the consulting process.

The Novgorod region's experience developing standards provides an interesting model for examining various approaches to introducing FSC standards and certification. Following a painstaking examination of the process of developing standards in Russia as a whole and for certifying forestry enterprises in particular, specialists in the Novgorod standards working group compiled a recommendation for FSC standards. In form, these standards are similar to ISO and GOSTR standards, but FSC criteria form their ideological basis. In other words, these standards are designed to produce an end result acceptable to the FSC by means of the kind of conditions and criteria used in ISO and GOSTR standards. This approach has several advantages. Firstly, Russian forest industries have used precisely this structure (GOSTR) for decades and can now use the same regulatory framework for measuring accordance with FSC criteria. Moreover, certification specialists at many Russian forest institutes agree that indeed, Russia's standards ought resemble ISO standards. Russia is a special case for certification because qualitative indicators are often poorly noted on regulatory documents. This means that quantitative indicators must be maximally taken into account. Without a doubt, the workup of standards in an ISO-esque structure (one that features quantitative indicators) demands a great deal of intensive labor, but will ultimately make them more understandable to the forestry companies who are used to specific and clear requirements. In contrast, requirements like "demonstrate improvement" and "strive to preserve" are often taken merely as philosophical suggestions and are never truly implemented.

Up to this point, the regional standards working groups have developed and discussed only the minimum requirements for international FSC auditors, which is not sufficient to improve forest use through the certification mechanism. In essence, the published regional standards of Russian FSC groups are but checklists used for carrying out certification in a specific region. There is nothing surprising in highly educated forestry specialists who have no professional knowledge of certification, not simply to receive a stamp of approval from an auditor.

The topic of consulting in forest certification in Russia in the present day is even more important than the development of standards, but receives far too little attention. Events over the course of the last year showed that many organizers of Russian forest certification lack sufficient understanding of the role of consulting in certification: preparation. In international practice, preparing a company for certification is considered just as complicated and expensive as carrying out the certification audit itself. Moreover, there are well known examples of cases in which the financial expenses of preparing a company for certification were greater than those for the actual audit. It is no accident that specialists who have already worked as auditors also work in consulting: creating an effective system of quality control in an enterprise is more complicated than evaluating it. Unfortunately, forestry enterprises rarely know the full process of certification. In reality, forestry enterprises ought to prepare a minimum of half of the FSC criteria for certification before initially submitting an application to the auditing company.

As the FSC certification process quickens in Russia, the probability of mistakes increases. Through trial and error the tools for developing forest certification across Russia will improve. Certain success stories, such as the work of the Khabarovsk Krai regional standards working group, provide both momentum and a path toward the future. But as conditions become more serious particularly in areas that the World Bank has already identified as key regions for investment—a calm and professional approach may be the best defense against mistakes.

Anton Yakoulev is the Director of the Novgorod Certification Center "Standard-Test."

Russia's forests, including these larches, still await certification.

Photo by V. Yaslov.

Spring 2001, No. 25
Ecotourism in Russia’s Protected Areas

Note from the editors: Tourism in Russia’s zapovedniki has become an important topic of discussion in recent years, particularly as these nature reserves try to subsist on the small budgets the federal governments allot them. Initially, zapovedniki were chartered as strictly protected areas in which nature could flourish untouched by human development. Only scientists were permitted into the reserves to conduct research.

The current economic climate in Russia, however, has forced the staff of many zapovedniki to reconsider their strict stance against public access to the nature they are trying to protect. Today zapovedniki receive about 20-40 percent of the amount of federal funding that they received in Soviet times, not nearly enough to cover basic needs, much less scientific research. In search of new sources of funding, some zapovedniki have considered introducing ecotourism into the regions in and around the protected area.

Ideally, ecotourism would bring much needed income to the zapovednik system. Such activity could also help to boost local economies, thereby building support for conservation among communities that benefit from the reserves’ tourism activities.

Still, Russia is a long way off from attracting large numbers of ecotourists. Political uncertainty and lack of infrastructure is a disincentive for western tourists who like adventure, but with some degree of comfort and security. As a rule, local tourists have little disposable income for tourism. Despite these challenges, zapovednik directors are forging ahead in an era of reserve management, one that requires new methods of building support and generating income. The following set of articles offers varied perspectives on the development of ecotourism and its potential benefits to nature reserves and their surrounding communities.

Developing Ecotourism in Russia’s Zapovedniks

by Natalia Moralyova and Elena Ledovskikh

Just five or six years ago the very idea of introducing ecological tourism into zapovedniki seemed like an intrusion into a sacred place. Today the idea has become fashionable. The first steps toward ecotourism in zapovedniki began with a USAID-WWF (World Wide Fund for Nature) program in the Russian Far East aimed at supporting zapovedniki. The program, which was coordinated by Natalia Moralyova and Elena Ledovskikh, provided several zapovedniki with technical support and management plans, organized unified systems of environmental monitoring, created environmental centers, and facilitated the development of ecotourism. Never were there plans to create a destructive wave of tourists into Russia’s most strictly protected territories. Instead, the hope was that the zapovednik as an institution – an infrastructure of well-educated and devoted staff familiar with the region’s natural riches – to teach and guide visitors interested in the beauty of nature around the zapovednik. While the initial goal of the project was to help the zapovedniki find supplemental sources of finances, the project coordinators’ ultimate dream was that the zapovedniki would become cultural and educational centers in the regions, that they would combine elements of education, culture, and recreation, including museums and children’s clubs, folk art studios, lecture circuits, and forums for the exchange of ideas.

Everything necessary already existed to put such plans into practice. Located deep in the wilderness, far from theaters, museums, and lecture halls, zapovedniki may not seem like cultural centers at first glance. But they are staffed by magnificent people who are well educated, devoted to their work, and romantics at heart. zapovedniki also have great potential as tourist attractions because they hold unique wilderness, interesting sites, and all have some form of infrastructure upon which to build. Travel to Russian zapovedniki means the rare joy of walking on unknown paths and seeing the kind of beauties and secrets of nature that few people manage to see in all their lives.

Beginning in 1996, project coordinators hoped to emulate a successful Academy of Sciences program that had brought foreign university students to Russian research stations with great mutual benefits. Scientists were able to continue their scientific research, meet and spend time with interesting people, gain new scientific contacts, and even receive some funds to improve the infrastructure of their stations. In turn
the students saw the results of many years of Russian scientists' research and had the unique opportunity to spend time in the depths of the taiga. No one saw then that this small project had cut a path for the development of ecological tourism in Russia's zapovedniki.

Among the many accomplishments of the project was the development of ecotourism on Popova Island in Dalneves- tochnyi Morskoi Zapovednik (Far East Marine Zapovednik), a small reserve formed in 1978 to protect the forests, prairies, and ocean ecosystems of twelve islands in the Gulf of Peter the Great in the Sea of Japan. As beautiful as the environment of the zapovednik was, however, the social and economic climate of the region produced serious tensions between the local population and the management of the zapovednik. In 1996 Popov Island, the closest to the mainland, presented a bleak portrait: the industry had fallen, buildings were in disrepair, unemployment was widespread, and the local population was irritable and bitter. The museum "Nature of the Sea" stood in half-ruin, without electric light or heat.

Many believed that under such conditions restoring the museum, founding an ecological center, and developing tourism was a risky undertaking, mildly speaking. The actual achievements, however, turned out to be far more notable than anyone ever expected. To begin, the project's initiators attracted the island's children with environmental and ecological ideas. In turn, the children began serious work, mapping out regions of Popov Island that were covered with trash, and then encouraging their parents to take part in clean up efforts. They also created an ecological theater and founded the movement "Children Teach the Protection of Nature." Simultaneous renovations to the museum, ecocenter, and a summer hotel, children's camps, and advertisements attracted a stream of guests to the island and significantly increased the incomes of the museum and the zapovednik. Over the course of three years, the local population learned to respect the zapovednik and museum, developed the desire to protect nature, and began to hope for an improvement in the socio-economic situation.

Today these hopes are closely connected to the flourishing of the zapovednik and the growth of tourism on the island. The project has ended, but the work it began has grown successfully: increasing numbers of people want to come to the island, see the museum, visit the ecocen-

ter, and walk along nature trails. Notably, the center's financial earnings from one summer of ecotourism and environmental education programs are comparable to the annual budget the zapovednik receives from the government.

Another result of the project was the founding of the Dersu Uzala Ecotourism Development Fund, and a subsequent multiplying of ecotourism projects in Russia. Using experience gained through the ecotourism projects in the Russian Far East, Dersu Uzala's staff turned their attention to promoting ecotourism throughout the Altai-Sayan region in the course of a ROLL (Replication of the Lessons Learned) Program funded by the Institute of Sustainable Communities (ISC) and USAID. Over the course of the past several years, about 20 zapovedniki have actively begun developing environmental tourism.

Today, despite the successes of individual zapovedniki, the issue of developing ecotourism remains a major debate. Many arguments and many opponents. The same questions arise over and over, and few know and understand the basis of the international concept of sustainable tourism. As a result, ecotourism's supporters must return over and over again to...
For Discussion

definitions and recall that if tourism brings
detriments to nature and does not support
its protection, if the local population does
not receive income from tourism, then this
kind of tourism is not compatible with
international principles and is neither
sustainable nor ecologically sound. When
developing ecotourism, we must ask if we
are working within the boundaries of
international principles of sustainable
tourism, or instead creating new problems
to solve? Both proponents and opponents
developing tourism in zapovedniki
ought to understand that sustainable
tourism is not simply a business, and that
its goal is not so much gaining profit as
working to preserve nature and searching
for ways to involve the local population in
this work.

Again, it is necessary to distinguish the
physical protected territory of the
zapovednik from the concept of the
zapovednik as a scientific and conserva-
tion institution with a dedicated staff.
Carefully planned tours through the
abundant beauty of the buffer zones and
adjacent territories of the zapovednik
threaten little harm to the ecosystems
safely preserved in the core of the
zapovednik. And as an institution, the
zapovednik can take an active role in
developing the economy of the entire
region around the zapovednik. This
change relations with the administration of
the region and with the local population:
the zapovednik ceases to be a closed
institution that bow to the will of the
state but has no relation to the economic
or social problems of the region. Instead,
it becomes an advantageous partner
capable of offering the regional adminis-
tration an ecotourism program that will
ultimately increase the flow of visitors to
the region, create jobs, improve the
investment climate, stimulate national
culture, and beget an influx of supple-
mental resources for the region’s
eco.

People begin to take pride in the
zapovednik, which has become a
true regional center of cultural
education.

Of course, seeing these hopes fulfilled
is no easy matter.

But much has
already been
accomplished, and the first
steps in planning
and managing
tourism in accordance with declared
principles has already produced results.
The government of the Republic of
Karachaevo-Cherkessia has accepted one
of Dersu Uzala’s programs for developing
ecotourism and included it in the general
plan for increasing tourism. At the current
time, the first steps are being taken in
negotiations with the local population and
involve collectively issues regarding
ecological tourism. Discussions have
been conducted in settlements near
Kautsky, Sayano-Shushensky, Altaisky,
and Khakassky Zapovedniki. Within the
framework of a tourism development
project in Teberdinsky Zapovednik (ROLL
Program of the Institute of Sustainable
Communities (ISC) and the USAID),
employees are weighing the merits of
producing souvenirs made by local
residents, and also planning a seminar to
discuss possible paths for mutually advan-
tageous partnership. Work in advertising
and marketing has also produced fruit: up
till recently, the only tourists to
zapovedniki were mostly groups of
foreign students and
scholars. This year,
thanks to an adver-
sing campaign, the
opening of a
website,
(www.ecotours.ru),
and an article in the
magazine “GEO”
singing the praises
of travel in Russia’s
wild places, for the
first time ever,
Russians have begun
visiting zapovedniki. Many wish to
combine recreation with education and
consciously want to leave their money in
Russia and do their part to preserve their
native environment. This summer Dersu
Uzala sent about a hundred Russians from
Moscow to various zapovedniki, and
many plan to visit a zapovednik sometime
next summer.

Challenges still loom ahead in the future.
Those who would encourage the develop-
ment of ecotourism must learn not only to
plan tourism, monitor its effects, and work
with the local population, but also think
about the necessity of continuing to
develop principles, rules, and ethics. They
must develop tourism in zapovedniki only
within the boundaries of the rules they set
for themselves. They must work only with
those who are prepared to follow
accepted rules and observe set principles.
Tourism should become an instrument of
environmental education for everyone
involved, from guests to local residents to
the tourism outfit that links the two to the
beauties of Russia’s wilderness.

Natalia Moraytsova and Elena
Ledovskikh are the director and presi-
dent of Dersu Uzala Ecotourism Devel-
opment Fund.

Tour Russia’s Wilderness with Dersu Uzala

Taking its name from the folk hero who guided Russian scientist and explorer
across the taiga of the Russian Far East in the early 1900s, Dersu Uzala leads tours
across Russia’s protected areas. The organization follows broad concept of
ecotourism as “responsible travel to natural areas that conserves the environment
and improves the welfare of local people” (The Ecotourism Society), or in interna-
tional ecotourism specialist Kreg Lindberg’s words, “sustainable nature-based
tourism and recreation.” Accordingly, the Dersu Uzala’s work includes a wide
breadth of activities, provided that they are connected with visiting nature sites
and are performed in an ecologically and socially sustainable way: adventure
tourism (white water rafting, canoeing, mountain climbing, horseback riding),
special interest tourism (birdwatching, botanical, ethnographical and archeological
tours, spelunking), and tourism associated with conferences, special events, visiting
friends and relatives, business trips, etc.

For more information, please log on to Dersu Uzala’s website,
Can Ecotourism Deliver its Promises?  
A Case Study from Astrakhansky Zapovednik

by Lara N. Huetb

At the northern edge of the Caspian Sea, the majestic silt-sullied Volga pours into the clear azure waters of famed inland sea. This is the location of Astrakhansky Zapovednik, one of Russia's most famous bird and fish sanctuaries, and one of the oldest zapovedniki, founded in 1919. In spring the delta teems with sturgeon. In the humid summer, lotus blossoms float lazily upon its tranquil waters. As wild swans fly south in autumn, tall golden reeds rustle in the breeze. But the contrasts of Astrakhan are not limited to changes of seasons: contradiction also exists in the world of human affairs. The emerging ecotourism program at the zapovednik highlights the difficulties of achieving sustainable economic development in a nature reserve.

In this era of insufficient government funding, zapovedniki must find outside sources of income to cover administrative costs, maintain infrastructure, and most importantly, continue the scientific research that has made zapovedniki such unique and important nature reserves. In many ways, ecotourism seems like a perfect solution to the financial burdens of the zapovednik: attract nature lovers, show them a piece of paradise, buy some ecological health. Environmental education would flourish as word spread about the zapovednik and the tours it offered. Local residents—who often live in settlements that are extremely economically depressed—would own and operate the tour company, benefit from increased retail sales, and find new jobs in an expanding service industry. Nature would be saved. That, at least, is the ideal.

But what does eco-tourism actually look like in practice? In Astrakhan, the supply of philantropic nature connoisseurs has yet to satisfy the financial demands of the reserve. Although schoolchildren are plentiful (approximately 1000 annually), only 50-60 true ecotourists visit each year, nearly all of them with the German firm “Albatross.” Efforts to increase those numbers have yielded few results. This stunted development could be temporary, the result of bad marketing or fear of the Chechen War. Or it could be due to an unrealistic hope in the potential for ecotourism. But even if Astrakhan's ecotourism program someday turns into a cash cow, the zapovednik staff, despite their obvious dedication, may not be qualified to milk it. During my experience as an ecotourist and guest in the zapovednik, I began to suspect that tourism—especially considering the potential growth of the industry—probably had a distinctly negative effect on the ecosystems of the zapovednik. My ecotour involved harvesting rare lotus flowers (Nelumbo caspica) and chasing after resting birds in order to watch their flight. At times the zapovednik staff was too busy guiding tourists that they were unable to patrol for poachers.

More disturbing is that little tourist money filters through the local community, leaving no incentive for local fishermen to respect the zapovednik's borders. Poverty, not mis-practiced ecotourism, seems to be the greater threat to the environment. When accompanying guards on anti-poaching patrols, I noted that almost all the poachers apprehended were simple fishermen who admitted to having no employment and no source of income. Unfortunately, Astrakhansky Zapovednik has no plans to use ecotourism as a means to alleviate local poverty. In response to my questions about financial incentives for neighboring residents to respect the environment, I was told, “Education is enough.” On the surface, that statement is aberrant from international principles of sustainable ecotourism, which maintain that the local community must benefit economically from tourism. Unfortunately, the reality is that while many NGOs and grant sponsors claim that local economic development must accompany ecotourism, in practice such development does not seem to be a top priority. Astrakhansky Zapovednik's ecotourism program, for example, seems to make no effort to support the regional economy.

Of course, Astrakhansky Zapovednik's portrait of ecotourism is by far not the only picture: examples of ecotourism in Russia's zapovedniki are probably as diverse as the zapovedniki themselves. In terms of economic potential, the situation is more promising at the Lazovsky Zapovednik, a small reserve...
The rare lotus flower (Nelumbium nucifera) is a symbol of Astrakhansk, Zapovednik. 
Photo by Aleksei Gorbunov.

In the forested Sikhote-Alin mountains of the Russian Far East, nesting in the forest, Sibella 600-600 paying eco-tourists visit annually, not including film crews and nature photographers. Guides are well-informed and conscientious about preventing negative environmental impact. Yet like its counterpart on the Caspian Sea, Lazovsky's Zapovednik has made few efforts to improve the financial situation of surrounding residents.

Instead of hiring locals, Lazovsky's scientific staff sometimes double as cooks. Tour firms contracting with the zapovednik occasionally hire local residents, but townsfolk are often bypassed altogether. Arriving foreigners are greeted and housed by firms based in Vladivostok, while economic necessity forces residents of the village of Lazo to stalk the endangered Amur tiger (Panthera tigris altaica). The

Tourists looking to see the beauties of Belarus's wilderness most frequently visit the country's recreational zones, city green belts, and protected wetland forests. Altogether these protected areas cover an area larger than the state of Maryland. Moreover, many of the valuable natural sites in Belarus have the special status of protected areas. Berezinsky Biosphere Zapovednik, national monuments include a large area of the size of Delaware, 3.4 percent of the country's territory, and were created to protect the unique ecosystems that preserve the biodiversity and habitat of many species of plants and animals. In contrast, Russia's network of protected areas occupies only two percent of the country's total area.

The national park, perhaps the most widely spread form of protected area in the world, has likewise found wide use in Belarus. Belarus's national parks —
Belovezhskaya Pushcha, Narochansky, Braslavskie Ozera, Pripyat'sky—preserve Belarus's wilderness so that anyone can see nature in more or less its primeval state. This commitment to prudent and rational use of valuable natural areas for recreation and tourism makes the national park a particularly attractive use of land.

With the goal of broadening the network of national parks, environmentalists and government leaders plan to create new parks in areas with valuable natural and recreational resources: "Logosky," "Nalibokskaya Pushcha," and "Grodzenskaya Pushcha." Each of these regions have wild landscapes characteristic of Belarus as a whole. Here visitors can see the forests where European bison (*Bison bonasus*), brown bear (*Ursus arctos*) and wolf (*Canis lupus*) – an animal virtually extinct in the greater portion of Europe – still thrive. In these forests, the globally endangered wild tulip (*Tulipa silvestris*) grows, while golden eagles (*Aquila chrysaetos*) and peregrine falcons (*Falco peregrinus*) fly overhead.

In addition to providing economic support for ecologically and historically important areas, tourism is an effective method for renewing culture, drawing people to their historical roots. Centuries of foreign rule have left their stamp on Belarus, but today people are increasingly learning of the unique history of Belorussian culture. There are more than 15,000 sites in the country with historical, cultural, or architectural significance, and many memorable places connected with the names of outstanding representatives of world history and culture. Located on the famous route between the Vikings and the Greeks, Belarus holds the historical capital of the Polotsky Principality, Novogrudok, where the Grand Prince of Lithuania once reigned. In many cities, historic regions with valuable historical sites have been preserved, such as the Cathedral of St. Sophia and the Church of the Transfiguration in Polatsk, both with unique 11th century frescos. Also worthy of note are the Nikolsky Monastery in Mogilev, Kolozhskaya Church in Grodno, the village church in Synkovichi, the numerous castles spread throughout the country.

**A Portrait of a Belarussian Forest Preserve**

On the northern edge of Belarus, a unique forest reserve spans the border between Belarus and Poland. Belovezhskaya Pushcha is one of the largest remaining tracts of the virgin forests that covered all of Europe during the prehistoric era. Over time, the vast majority of these forests fell in the face of expanding human development, leaving only smaller regions intact, such as this forest in the Belovezhsky Region of Belarus. Based on this unique status, in 1992 UNESCO named the 101,603-hectare Belovezhskaya Pushcha a World Heritage Site. In 1993 the forest became a biosphere zapovednik, and in 1997 it was honored with a diploma from the European Council. Today four different zones with various protection plans preserve Belovezhskaya Pushcha's unique nature: a forbidden (zapovednaya) zone, a zone allowing regulated use, a recreation zone, and an economic zone. In addition to these measures, a buffer zone that encircles the park offers additional protection.

Belovezhskaya Pushcha has been known as a protected natural area since the late 14th – early 15th centuries. In 1413, the forest came under Polish control, and was transferred to Russian rule in 1795. Following the Bolshevik Revolution, in 1919 the region once again fell under Polish control, through which in 1921 a forest reserve 4,693 hectares in area, including a protected zone 1,061 hectares in area, was officially organized. When the USSR annexed Polish territory in 1939, the forest became part of the Republic of Belarus, and the area was turned into the national zapovednik "Belovezhskaya Pushcha." Beginning in 1957, restricted hunting was introduced into the zapovednik, and in 1991 the area was reorganized as a national park.

Today Belovezhskaya Pushcha is one of Belarus's major tourist centers, whose attractions include a nature museum, animal enclosures, comfortable hostels and guest houses, a restaurant, recreation facilities, and fishing ponds. Special nature trails to be used by pedestrians, horses, and cars have been set up for people to observe the beauty of the region's virgin forests with a professional guide. Tourists can also visit Viskuli, the location of the signing of the agreement on the liquidation of the USSR and the formation of the Union of Independent States was signed.

The average age of the forests in Belovezhskaya Pushcha is greater than 100 years, and some sections of the forest are 250 to 350 years old. More than 1000 giant trees – 400-600 year-old oaks, 250-350 year-old ashes and pines, 200-250 year-old firs – have been registered in the area. In number of plant and animal species, Belovezhskaya Pushcha has no equal in Europe. Nearly 900 species of vascular plants, 260 species of moss, more than 260 species of lichens, and 570 species of mushrooms all grow in the area. Moreover, 59 species of mammals, 227 bird species, 11 species of amphibians, 7 species of reptiles, 24 species of fish, and more than 9000 species of insects all make their home in this forest. The world's largest population of pure European bison (*Bison bonasus*), which numbers 300 strong and played an enormous role in the restoration of the European bison in many zapovedniki in Russia and Belarus, also lives in Belovezhskaya Pushcha.

Address: 225065, Village Kamenyuki, Kamenets District, Brest Region, Belarus

Phone: 375-0163-5-61-69, 375-0163-5-63-70 Fax: 375-0163-2-12-83
The Riches of Belarus’s Wetlands

In the southeastern corner of Belarus, a 65,400 hectare reserve lies on the right bank of the Pripyat River, in the middle of the Belarussian Polesie, a vast alluvial plain that stretches across southern third of Belarus. In this and previous epochs, the waters of the Valday Glacier flowed into the Pripyat River Valley, forming the peat marshes, floodplains, and more than forty lakes that characterize the reserve’s unique landscape. In spring, expansive floodwaters sparkle on the forested floodplains and the impenetrable moss bogs come alive with the mumbling of black grouse (*Lyurus tetrix*), while in fall the landscape becomes a breathtaking mosaic of autumn leaves.

In 1969, the region was given official protected status in Belarus as the Pripyat Landscape and Hydrologic Reserve to protect the landscapes and biodiversity of the Pripyat River Valley. Pine stands cover more territory than any other tree or shrub, but birch, oak, ash, and hornbeam groves also grow in small quantities in the region. Among the reserve’s flora are 21 red-listed plant species, including the giant horsetail (*Equisetum telmateia*) and broad-leaved spurge (*Euphorbia platypyllis*).

Perhaps even more stunning than the reserve's flora is its extremely rich fauna, which includes 50 species of mammals, 265 species of birds, 7 species of reptiles, 11 species of amphibians, 36 species of fish, and over 200 species of insects. Brown bears (*Ursus arctos*), wolves (*Canis lupus*), lynx (*Lynx lynx*), fox (*Vulpes vulpes*), otters (*Lutra lutra*), and raccoons (*Procyon lotor*) prowl the forests, and beaver and muskrat settlements densely line the rivers and streams. Meanwhile, elk (*Alces alces*), wild bear (*Sus scrofa*), and roe deer (*Capreolus capreolus*) forage in search of food.

The avian life of the floodplains and water meadows also has great diversity. Grey goose, mallard ducks, teals, red-crested pochards and wigeons can all be found in the reserve. Sixty to seventy pairs of common cranes (*Grus grus*), plus the Eurasian curlew (*Numenius arquata*), and other kinds of wood cocks nest in the reserve’s bogs, and black storks (*Ciconia nigra*) and gray herons (*Ardea cinerea*) live in isolated regions of the reserve. Meanwhile, golden eagle (*Aquila chrysaetos*), short-toed eagle (*Circaetus gallicus*), white-tailed eagle (*Haliaeetus albicilla*), osprey (*Pandion haliaetus*), fish eagle (*Circaetus vocifer*), eagle-owl (*Bubo bubo*), great gray owl (*Strix nebulosa*), 35 Ural owl (*Strix uralensis*), barn owl (*Tyto alba*), and several species of falcon (*Falco sp.*) soar in skies above.

In addition to its aesthetic and conservation value, the reserve has high scientific value. Much of the research scientists are conducting at the reserve today involves long-term observation and ecological monitoring, with particular attention paid to water level, plant and animal populations, and the effects of draining wetlands.

Historical monuments, such as this castle in the Grodnenskaya Region, are part of the tourist potential of Belarus. Photo by A. Zakharchenko.

Great attention is given to the growth of tourism in Belarus not only to satisfy the human passion for knowledge: tourism can also be an important resource for supporting a constructive dialogue, and building bridges of mutual understanding, cooperative business, and scientific exchange between various countries. Specifically from the point of view of ecotourism, developing the tourist potential of northwestern Belarus would provide conscientious guests the opportunity to visit some of Belarus’s most valuable and ecologically pure areas. This region includes several national parks—Belovezhskaya Pushcha, Narochansky, Braslavskie Ozera, and Pripiatyski—as well as Berezniki Biosphere Zapovednik. These and other interesting sites in the country already attract great interest among both Belarussian citizens and international guests.

The use of natural resources in Belarus to develop tourism and create a recreation zone has only recently begun, but is rapidly taking steps forward: tour bases now exist in Grodnenskaya, Breitiskaya, and Minskaya regions of Belarus. Future plans call for the building and expanding of the network of tour bases and the creation of new tourist zones in the Belorussian Lakes Region. The development of recreational infrastructure, the expansion of tourist services (yachting, windsurfing, tennis, horseback riding, trophy hunting, nature trails), acquaintance with architectural sites, folk traditions and handicraft, and tours to the countryside for recreation and education about traditional village life are all important catalysts for the growth of tourism in Belarus.

**Nikolai Arsenevich Chirsky** is a consuliant for the Ministry of Sport and Tourism of the Republic of Belarus, and the President of the Belarussian Society of Tourguides and Translators.
**Russia-US Treaty to Conserve Shared Polar Bear Population**

Concluding several years of negotiations, The United States and Russia signed an agreement in October 2000 to increase the protection of polar bears (*Ursus maritimus*) in the arctic region of northeastern Siberia (Chukotka) and Alaska. Although the polar bear has been considered an endangered species and various bans on hunting polar bears have existed in the Soviet Union since the 1998, poaching and commercial hunting continue to threaten the population, which numbers around 3,000 in Chukotka and Alaska, and about 25,000 worldwide.

The bears range widely across northeastern Siberia, wandering the ice and islands of the Chukchi and Bering seas, and the arctic region of Alaska. They are solitary animals, depending on sense of smell to hunt and guide themselves across the polar ice. With males weighing up to 1,500 pounds, the white bears are the world's largest land predator, feeding mainly on seals. They can spend up to half of their time in the water, and can swim for 100 kilometers through icy seas.

In the remote corner of the world where polar bears make their home, political boundaries would seem to have little effect. Indeed, scientists have long seen the polar bears of Chukotka and Alaska as essentially one population that roams back and forth over the polar pack ice that joins Russia and the United States, but until now, the two countries have approached conservation separately. The new agreement creates joint commissions of scientists and representatives from indigenous communities from both countries that will make bear management decisions together.

For the first time, the agreement will establish quotas on how many bears can be hunted for subsistence by indigenous peoples in both Siberia and Alaska. It also puts polar bear denning areas off limits and prohibits all commercial hunting and the killing of female bears with cubs, bears younger than one year, and the use of aircraft, traps or snares to hunt bears. The polar bear faces multiple threats to its survival. In recent years, poaching has risen significantly; bear hides are worth thousands of dollars, and bear gallbladders, believed to have medicinal value in parts of Asia, have fed an active illegal trade. Threats to the habitat and feeding base from oil spills and overfishing present more long-term challenges for the two countries to grapple.

Negotiators hope the agreement will set a precedent for joint work in protecting polar wildlife. "It brings these two nations together to protect and manage this particular population," said David Cline, a representative of the World Wildlife Fund (WWF), "if we can have agreement on polar bears, why not on walrus and other wildlife?"

Compiled from **Associated Press and WWF press releases and the Red Data Book of Russia.**

The polar bear (*Ursus maritimus*) will gain increased protection under a new Russian-American agreement.
Russia Founds its One Hundredth Zapovednik

Last fall, as Russia’s protected areas faced an unknown future following the reorganization of the nation’s environmental management structures, a joke spread throughout the nature protection community: trying to cheer the former head of protected areas management, employees of the Global Environment Fund (GEF) bought him a small bonsai tree and erected a fence around it with toothpicks. At an annual party celebrating zapovednik employees, they presented their gift to Vsevolod Stepanitsky, calling it Russia’s 100th zapovednik. Fortunately, history has proven more optimistic than both conservationists’ wry humor and fears that Russia’s network of protected areas would stop growing under the management of the Ministry of Natural Resources.

On December 25th, 2000, Russia’s Prime Minister Mikhail Kopyanov signed a decree making Erzi Zapovednik Russia’s 100th state nature reserve. The new zapovednik covers 6,000 hectares in the Autonomous Republic of Ingushetia, a state in the northern Caucasus that borders Chechnya. Located in the basin of two rivers, the Dzheirakha and Assa, the zapovednik will protect a wealth of species instrumental in composing the biological diversity of the Caucasus region. More than 180 rare and endangered plants grow in the small basin. The region is likewise rich in animal life, providing a home not only to bears, wolves, foxes, and boars, but also vulnerable species like the roe deer (Capreolus capreolus), chamois (Rupicapra rupicapra), Caucasian tur (Capra caucasica), badger (Meles meles), European wildcat (Felis silvestris), and lynx (Lynx lynx). Endangered birds, such as the Caucasian snowcock (Tetraogallus caucasicus), golden eagle (Aquila chrysaetos), and Peregrine falcon (Falco peregrinus) are also common in the recently designated protected area. Moreover, the new zapovednik includes unique natural sites such as large stand of hooked pine (Pinus uncinata), the Shoansky Glacier, a sea-buckthorn grove (Hippophae rhamnoides), and the magnificent Assa River canyon. A famed historical and architectural museum zapovednik is located in Erzi Zapovednik’s buffer zone.

Commenting on the continuing progress of nature conservation in Russia, Vladimir Zakharov, a member of the Russian Academy of Sciences and the director of the Center for Russian Environmental Politics, said, “Although much in our country is falling into or already lying in ruin, Russia’s system of protected areas is not only still alive, but actually growing.”

This article was compiled from information posted on the following websites: http://www.priroda.ru, http://www.govemment.ru.

The endangered Peregrine falcon (Falco peregrinus) and European wildcat (Felis silvestris) are both now protected in Erzi Zapovednik. Drawings from the Red Data Book of the USSR, Moscow 1978.

“We will Survive While Nature is Alive”

These are the words of the frequently heard slogan that could be found printed on handouts, repeated in speeches, and chanted in a large group outside the Russian White House earlier this month. On April 12 and 13, the Russian President’s administration building in Moscow was the venue of the Fourth Congress of the Russian Association of Indigenous Peoples of the North (RAIPON). Over the course of these two days, the Congress’s 700 guests and 350 delegates from 29 regions, representing the most influential organization of Russia’s indigenous peoples, drafted a survival strategy for the minority peoples at the turn of the millennium.
Representatives of northern indigenous groups hold a banner outside the Russian white house, which reads, "For us, land is life."

Photo by M. Williams

Two young "ambassadors" from Siberia join a demonstration outside the white house in Moscow during which participants urge the Russian government to recognize property rights of indigenous peoples.

Photo by M. Williams

Many speakers addressing the congress noted that unless nature were preserved, Russia's northern indigenous peoples would have no future. Igor Chestin, Director of the World Wide Fund for Nature's (WWF) Russian Office, noted that "the life of minority indigenous peoples is wholly dependent on the use of natural resources: cooperation with indigenous peoples is a WWF priority around the world because it is these peoples who can truly listen to, sustainably use, and preserve nature." Chestin presented participants with copies of "Russia's ecological doctrine," a document drafted by Russian environmental organizations. The doctrine is now being circulated among the Association's regional offices for discussion.

At a press conference held on the first day of the conference, journalists inquired about the social, economic, and ecological aspects of life of indigenous peoples of the north, such as preservation of territories with traditional uses of nature, development of traditional crafts, allocation of fishing quotas and licenses to hunt wild animals, and compensation for damage by mining companies in areas of residence and economic activity of indigenous peoples.

In addition, questions also arose about the recent abolishment of "Tskhanom," a traditional use area on the Kamchatka peninsula, by the governor of Koryakia in Northern Kamchatka. Tskhanom was innovative in allowing for both conservation and reindeer herding by local people. Environmentalists and indigenous residents are united in their apprehension that annulment of this protected area may signal a new area of hostility toward native rights to manage their own land. Among the social and economic grievances listed in their appeal to the Government, the congress delegates demanded restoration of the Tskhanom traditional use area.

During the Congress, delegates attended a rally, chanting "Say no to bringing spent nuclear fuel into Russia" and "For us, the earth is our life."

Russian Nature Press Brings Russia’s Environmental Literature to English Speakers

by Geoffrey Harper

Russian writers have a long history of nature writing. Unfortunately, most books on the northern Eurasian environment have remained only in their original language, making them inaccessible to the English-speaking world at large and difficult to find outside of Russia. Created to translate such books and make them known to the wider world, the non-profit publishing company Russian Nature Press aims to stimulate interest in and encourage support for nature in the CIS. Some sponsorship has covered printing bills (and more is sought), but the organization relies on selling books to pay translation and other costs. Russian Nature Press has no paid staff.

Russian Nature Press published its first book in 1998, Vadim Ryabistev’s One Season in the Taiga. Ryabistev’s narrative describes an expedition to the North Urals studying taiga nature, in particular Arctic and willow warblers. This narrative is illustrated with the author’s own drawings.

Russian Nature Press’s second book, only recently published, is similar: the Smirins’ Animals in Nature.

Vladimir Smirin’s drawings are well known to RCN readers. His striking portrait of an Arctic fox (Alopex lagopus) lies on the subscriptions envelope, and other drawings have appeared in at least eight issues of the magazine (2, 6-10, 12, and 14). Smirin is one of Russia’s great wildlife artists. Now a book by Yuri and Vladimir Smirin, Animals in Nature, which was initially written in Russian, is now newly available in English translation.

Over the course of their careers the Smirin brothers visited many parts of the former Soviet Union studying mammals. In their book, the brothers describe their expeditions to the Arctic (White Sea, Chukotka), other coastal areas (Kamchatka, Komandor Islands), desert (Kazakhstan), steppe (foothills of the Altai), taiga (Kostroma), and the mountains (Caucasus, Sikhote-Alin). In the last chapter, Yuri describes his observations of small mammals from the Mouse House at the Zvenigorod Biological Station outside Moscow.

Apart from the chapter headings, which Yuri designed, the approximately 400 illustrations are by Vladimir. And these represent only a tiny fraction of the thousands of illustrations he has drawn.

Both Yuri and Vladimir believe in combining art and science with the goal of gaining a fuller understanding of animals. Their book demonstrates this approach, displaying an intimate fusion of text and illustrations, one of several features that made Animals in Nature a strong candidate for translation. Since the text often describes the events portrayed in the drawings on the same page, the book could almost be called a sketchbook-with-commentary. In fact the text is far more substantial, and contains a multitude of observations on animal behavior observed in the wild.

To make the book more accessible to non-Russians, maps and notes have been added, together with a guide to pronouncing Russian.

Plans for Russian Nature Press’s next publication represent a departure from its first two books: Feliiks Shitmark’s History of the Russian Zapovedniks, 1985-1995, the only comprehensive survey of the subject, is slated for publication toward the end of 2001.

Books are sold mainly by mail order, and the order form is obtainable from the website (http://www.rusnatpress.org.uk), which gives more details about the books. Orders may be placed with credit cards by purchasing through NHBS Ltd (http://www.nhbs.com).

Geoffrey Harper is a former biologist and historian who currently translates and publishes through Russian Nature Press.

Smirin artwork provided by Geoffrey Harper
Corrections from RCN #24

In RCN’s last issue (#24), we neglected to credit Stephanie Hitzalter, who aided in translating and editing the issue. Stephanie worked as RCN’s assistant editor for over two years until fall 2000.

Don’t miss the June Issue of Smithsonian Magazine!

For the first time ever, a national magazine in the US has published an article highlighting the importance, diversity and scale of Russia’s zapovednik system. Don’t miss the article by Fred Strebeigh, and spectacular photos by Igor Shipilov, of Brianskiy Les Zapovednik!

http://www.smithsonianmag.com/smithsonian/issues01/jun01/russia.html

New Publication Celebrates Russian-Dutch Cooperation in Nature Conservation in the Russian Arctic

The global importance of the Arctic has elicited ever-growing and permanent interest from scientists around the world. Recently a large volume of the historic and scientific collaborative research of Russian and Dutch scientists in the Russian Arctic has become available in a new English-language book, Heritage of the Russian Arctic: Research, Conservation, and International Cooperation. Materials for the 640-page book were presented at the International Willem Barents Memorial Arctic Conservation Symposium held in Moscow on 10-14 March 1998. The book is intended for researchers, high school teachers and students, and all other readers interested in the exploration and conservation of the natural and cultural heritage of the Russian Arctic. To receive a free copy of the book, which was published in Moscow by Ecopros Publishers, please contact:

The Ministry of Agriculture, Nature Management and Fisheries of the Netherlands
P.O. Box 20401, 2500 EK The Hague, The Netherlands

Keep A abreast of the Development of Ecotourism

Planeta.com announces the creation of an online forum focusing on the 2002 “International Year of Ecotourism.”

The year 2002 has been declared the “International Year of Ecotourism” by the United Nations. Resolution 53/200 mandates the United Nations Environment Programme and the World Tourism Organization to organize a number of events and activities around the International Year of Ecotourism, including the World Ecotourism Summit in Quebec, Canada in May 2002.

Archives will be kept online. Register by visiting the IYE Forum at http://groups.yahoo.com/group/iye2002, or subscribe by sending a blank message to iye2002-subscribe@yahooogroups.com. For more information, please visit Planeta.com’s Resource Guide to Exploring Ecotourism: 2002: The International Year of Ecotourism:

http://www.planeta.com/ecotravel/tour/year.html

Environmental Film Festival in St. Petersburg

From September 13-15th the city of St. Petersburg will play host to the Sixth International Environmental Film Festival “Green Vision.” The festival’s organizers invite all interested parties to take part in the event or to help find new films for the competition. The festival is intended to present new films and television programs that help, though content and artistic achievement, to broaden knowledge about nature and environmental protection. The program of the festival will include not only screenings and judging of films, but also discussions, seminars, and press conferences. The official languages of the festival are Russian and English.

For more information, please contact ECAT – St. Petersburg, ecatsp@spb.cityline.ru.

Application forms are available from Vladimir Levchenko, enwl@lew.spb.org.

New Publication: Together on Earth

The Siberian Environmental News Bulletin has begun publishing a special Russian-language magazine, Together on Earth. The magazine, designed in particular for students and teachers, is devoted to providing current and useful information about environmental educational and teaching materials for ecological curriculum.

Each issue of the journal will focus on a specific theme, examining it from its most philosophical aspects to the most practical methodical materials. The information published focuses on Siberia (the Novosibirsk region in particular), with the intention of creating a forum for discussion among its readers.

For more information or to subscribe to the magazine, please contact Editor-in-Chief Elena Dubynina.

Address: Box 547, Novosibirsk, 630090.
Tel/Fax: +7 (3832) 39-78-85.
E-mail: lenka@ecoclub.nsu.ru.

Seventh World Wilderness Congress this November

Port Elizabeth, South Africa, November 2-8 2001

Organized by the Wilderness Foundation of South Africa and the WILD Foundation (US) this year’s Congress theme is Wilderness and Human Communities: the spirit of the 21st Century. The Afro-Leopold Wilderness Research Institute will be hosting a special Congress Symposium, chaired by the US Forest Service social scientist Alan Watson, entitled Integration of Science and Stewardship to Protect Wilderness Values.

For more information, contact Janet Sproull at jsproull@fs.fed.us or (406) 542-4198 or for more information visit this website:

www.worldwilderness.org
Conservation

Bureau for Regional Oriental Campaigns, Anatoly Lebedev, 17 Uboresvicha Street, apt. 23, Vladivostok, Russia 690091. E-mail: <swani@online.marine.sp.ru>

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