

World Heritage Sites

Protected
Areas and
World
Heritage



CENTRAL SIKHOTE-ALIN RUSSIAN FEDERATION

The Sikhote-Alin mountain range is one of the world's most distinctive, diverse and unusual temperate forests where the natural ecosystems are almost pristine as a result of its relative isolation, the difficulty of access, its sheer size, the denseness of its forests and over 60 years of protection. In a region stretching from the peaks of Sikhote-Alin to the Sea of Japan endangered subtropical species such as Amur tiger and Himalayan bear live alongside northern species such as brown bear and elk. The site is important for the survival of many endangered species, and for a temperate region the level of endemic plants and invertebrates is extraordinarily high. It has been threatened by logging interests.

COUNTRY

Russian Federation

NAME

Central Sikhote-Alin

NATURAL WORLD HERITAGE SERIAL SITE

2001: Inscribed on the World Heritage List under Natural Criterion x.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

The UNESCO World Heritage Committee issued the following statement at the time of inscription

Justification for Inscription

Criterion (x): The nominated area is representative of one of the world's most distinctive natural regions. The combination of glacial history, climate and relief has allowed the development of the richest and most unusual temperate forests in the world. Compared to other temperate ecosystems, the level of endemic plants and invertebrates present in the region is extraordinarily high which has resulted in unusual assemblages of plants and animals. For example, subtropical species such as tiger and Himalayan bear share the same habitat with species typical of northern taiga such as brown bear and reindeer. The site is also important for the survival of endangered species such as the scaly-sided (Chinese) merganser, Blakiston's fish-owl and the Amur tiger.

INTERNATIONAL DESIGNATION

1978: Designated a Biosphere Reserve under the UNESCO Man and Biosphere Programme (core area: 401,428 ha).

IUCN MANAGEMENT CATEGORY

Sikhote-Alinskiy Nature Preserve (Zapovednik):

Ia Strict Nature Reserve

Goraliy Zoological Preserve (Zakaznik):

IV Habitat/Species Management Area

Verkhnebikinski (Upper Bikin) Landscape Preserve (Zakaznik):

IV Habitat/Species Management Area

Bikin Territory of Traditional Nature Use (TTNU):

Unassigned

BIOGEOGRAPHICAL PROVINCE

East Siberian Taiga (2.4.3) / Manchurian Mixed Forest (2.14.5)

GEOGRAPHICAL LOCATION

This multiple site is in the Primorskiy region of far southeastern Siberia between 400-550 km north-northeast of Vladivostok. It comprises four areas, two on each side of the southern Sikhote-Alin Mountains which parallel the Sea of Japan. It lies within the coordinates 44°48'N x 136°30'E to 47°18'N x 137°06'E and 45°45'N x 135°15'E to 46°40'N x 137°54'E.

DATES AND HISTORY OF ESTABLISHMENT

- 1935: Sikhote-Alin Nature Preserve established under a Decree of the All-Russia Central Executive Committee and Council of People's Commissars; 1951: the area was reduced by 80%;
- 1976: The Reserve's borders confirmed by Decision No.376 of the Primorski Regional Council of Workers' Deputies;
- 1976: Goraliy Zoological Preserve established by Decision No.376 of the Primorski Regional Council of Workers' Deputies to protect goral on the coast;
- 1978: Sikhote-Alin State Nature Preserve designated a Biosphere Reserve;
- 1992: The Bikin Territory of Traditional Nature Use (TTNU) and nut-hunting zone in the lower Bikin valley created under Decree No.165 of the Primorski Regional Governorate. Confirmed by the Small Council of the Primorski Regional Council of the People's Deputies Decree No.31 of 1993;
- 1994: Sikhote-Alin Preserve enlarged by Decree No.344 of the Primorski Regional Governorate; confirmed in 1999 by Decree No.621; and in 1996 by Federal Government Order No.298-p;
- 1998: Verkhnebikinski Landscape Preserve in the upper Bikin valley established by Decree No.468 of the Primorski Regional Governorate.

LAND TENURE

Russian Federation. Three sites are managed by the Federal Ministry of Natural Resources through its Vladivostok branch. The buffer zones are co-managed by the federal and regional governments, with some municipal involvement. The Bikin Territory is managed by the Primorski Forestry Administration.

AREA

Total Central Sikhote-Alin:	1,553,928 ha (UNESCO, 2009)
Verkhnebikinski Landscape Preserve:	746,482 ha
Bikin Territory of Traditional Nature Use:	407,764 ha
Sikhote-Alin Nature Preserve:	401,428 ha (UNESCO, 2001)
Goraliy Zoological Preserve (includes 1 km offshore):	4,749 ha
(Total	1,560,423 ha)
Buffer zone (not part of designated area):	65,250 ha

ALTITUDE

From below sea level to 1,598 (Glukhmanka Peak).

PHYSICAL FEATURES

The sites are located in two separate areas of the southern half of the 1,000 km-long Sikhote-Alin mountains which run south-west to north-east parallel to the Sea of Japan in southeasternmost Russia. The Sikhote-Alin Nature Preserve is in the central southeastern part of the range between the mountain crest and the sea. Goraliy Zoological Preserve is a nearby narrow strip along the coast. The Verkhnebikinski Preserve and Bikin Territory lie further north on the west side of the central ridge in the upper and middle Bikin River valley. The range is a complex of forested rugged ridges, broad mountain plateaus, intermontane depressions, and flat-floored river valleys. Although the mountains are not particularly high, several peaks rise above the tree line, showing alpine tundra and remnants of ancient glaciation. Plateau edges at approximately 650-680m are formed of ancient lava flows cut with deep sometimes canyon-like valleys. For much of its coast the mountains fall directly into the sea, sometime in 100m cliffs. River mouth lowlands have swamps and lakes.

The Bikin River basin on the western slope dominates the northern part of the site and two-thirds of the area has known little human use. It is described as "one of the last large-scale intact watersheds in the Northern Hemisphere" (Zhuravlev, 2000). 70 km south the upper reaches of the west-draining Bol'shaya Ussurka (Iman) River, one of the largest tributaries of the Ussuri River, start in the Sikhote-Alin Nature Preserve and are representative of the rugged character of the region. The Preserve itself runs from the sea coast up to and over the central ridge. The varied landscape possesses clear mountain rivers, bare rocks of a range of rock types, a great number of vertical and horizontal erosion outcrops, wide break breaches and the lush vegetation of many different forest ecosystems from mountain taiga to dense temperate coastal woods.

The rugged peaks that alternate with broad mountain plateaus were formed during the late Tertiary to early Quaternary periods by outflows of basaltic and andesite lavas. Structural movements during the Miocene and Pliocene epochs, and partial valley glaciation in the Quaternary which halted between the Bikin and the Preserve determined a relief that differs distinctly between the northern and southern parts of the site. The upper Bikin catchment contains the region's largest volcanic plateau, the Bikin-Peisk plateau, and the largest intermountain depression, now filled with friable alluvial sediments.

CLIMATE

The climate of the sites is subject to both maritime and continental climatic extremes, dominated by oceanic air masses in summer which are pushed back to the sea by cold air during the winter. The summer weather has two phases: from May to July rainfall is relatively low; from mid-July to September the strong summer monsoon brings 80-85% of the total annual rainfall. This varies widely, with 850-900mm in most of the Bikin basin, rising to 1,000 or 1,500mm in the mountains. The winter weather is more uniform, dominated by dry very cold air masses from eastern Siberia when the minimum absolute temperature in the mid Bikin valley can fall to as low as -50°C. The average number of frost-free days along the coast is 122-150 which decrease inland until on the western edge of the site less than 100 days are frost-free. Snowfall starts in September and covers the mountains from November to April.

VEGETATION

The vegetation of Central Sikhote-Alin is of exceptional importance because its diverse and virtually pristine temperate forest contains all the major ecosystems of a region where boreal and subtropical forests intermingle on a gradient from sea level to mountain top. Over 60 years of protection have been reinforced by the difficulty of access and the forests' relative isolation, denseness and size. In the past the region was only partially glaciated, so an abundance of relict and endemic species survives. Forests cover over 90% of the site. Its dominant vegetation are spruce-fir-larch forest and pine-broadleaf forest, the most characteristic forests of southern far east Russia. The former is known as the *Turgai* flora (divided from European flora by the Oligocene Turgai Sea in present day Kazakhstan). Geobotanically they are classified by Kolesnikov (1961) as within the Terney district of the Far East Province of pine-broadleaf / oak forests of the East Asian coniferous-broadleaf Region; also in the Sikhote-Alin district of the Amur-Sikhote-Alin Province of the South Okhotsk dark coniferous forest sub-region. There are some similarities with the flora of Japan 400 km to the east, especially in the brilliant fall coloring of several maple *Acer* species.

The altitudinal gradation of the region creates distinct vegetational belts, the limits and relative position of which are determined by latitude, aspect, slope and the degree of exposure to desiccating winds. For instance, the limits of growth are generally some 200m higher on the eastern marine slopes than on the western continental slopes. As the mountains rise from the coast, the narrow strip of coastal vegetation gives way to a wide band of Mongolian oak *Quercus mongolica* with mixed deciduous forest and intermittent meadows. Valley floor forests feature Japanese elm *Ulmus japonica*, Manchurian ash *Fraxinus mandshurensis*, Manchurian walnut *Juglans mandshurica* and Japanese poplar *Populus maximowiczii*. Higher up, the dominant Manchurian mixed forest of Korean pine ('cedar') *Pinus koraiensis* - broadleaf species are especially diverse, with multiple layers of vegetation. Many of the deciduous trees are endemic to the area which contains 30-40 wood and scrub species, among them 11 species of birch, and more than 70 grasses. The largest natural such forest is preserved in the Bikin River valley, the lower flood plains of which are covered by vast *marj*, humid and dry meadows. Above the mixed pine-broadleaf forests is the equally dominant Manchurian fir-Yeddo spruce *Abies nephrolepis-Picea ajanensis* forest. The mountain slopes and plateaus are dominated by the hardy larch *Larix kajanderis*, and the dark coniferous Okhotsk taiga of Siberian pine *P. sibirica*. A mosaic of thickets of stone birch *Betula ermanii*, mountain pine *Pinus pumila*, *Rhododendron* spp., and shrubby Daurian juniper *Juniperus daurica*, mountain cypress *J. sibirica*, *Vaccinium vitis-idaea* and fragmentary meadows of alpine tundra covers the mountain tops.

Almost 1,200 species of vascular plants are recorded from the sites, including over 180 species of trees and woody shrubs; also 384 species of mushrooms, 214 lichens and 100 mosses. However, many species are becoming increasingly rare or even locally extinct, a loss which appears to be occurring faster than in any other region of Russia. The River Bikin valley has a particularly high concentration of rare and relict plants. An assessment of only the upper parts of the valley, identified more than 20 species that are included in the Russian Federation Red Data Book [noted *]. The many Tertiary relict species include Korean pine, Japanese yew, *Taxus cuspidata**, Yeddo spruce *Picea ajanensis*, Mongolian oak *Quercus mongolica*, Manchurian ash *Fraxinus mandshurica*, and the ferns *Onoclea*

sensibilis and *Osmunda asiatica*. 34 vascular species are here at their limits of their range, including *Rhododendron redowskianum maxim*, *Microbiota dicussata**, *Ilex rugosa*, *Bergenia pacifica** and *Rhodiola rosea*. The territory contains the following rare vegetation assemblages: the valley pine-broadleaf forest associations - *Pineto koraiensis-Nemoreta vallisus*; the broadleaf-pine associations with *Betuleto costatae-Pineta koraiensis taxosa cuspidatae*; pine forest associations with *Fraxineto mandshuricae-Pineta koraiensis coniogrammosa intermediae*, spruce forests associations with *Piceeta ajanensis-Caricosa schmidtis* and larch forests - *Lariceta kajanderis*. The nomination document lists 31 rare vascular plant species and 12 rare lichens which are listed in the Red Data Book of the Russian Federation and as in need of protection. This includes the medicinally prized *Panax ginseng*.

FAUNA

Central Sikhote-Alin has fifteen biogeographical faunal assemblages which include 65 mammals, 241 birds, 7 amphibians, 10 reptiles and 51 fish. A unique feature of the Primorye region is the intermingling of species at their northern or southern limits of distribution. The Sikhote-Alin Mountains are the southern limit for boreal species such as wolverine *Gulo gulo*, and the northernmost limit for subtropical species like the Amur tiger *Panthera tigris altaica* (CR). This is by far the most charismatic species of the region. The total of adult tigers in the Russian Far East was put between 330 and 370 (plus 100 cubs), many of them in the Sikhote-Alin mountains but only some 10-15 tigresses in the Preserve itself, by the Siberian Tiger Project in 2005. Male tigers can have very large territories indeed and their numbers are known with less certainty. However the numbers given in the nomination document in and around the Preserve and Bikin valley from 1994 to 1999 fluctuated between 26 and 52, averaging 38, the most in any protected area. And in 2009 the Phoenix project noted 30-50 tigers were known in the Bikin valley, their home-ranges reaching into the neighbouring Khor and Bol'shaya Ussurka valleys and to the coast. The Bikin valley serves as a reproductive centre for the northeastern group of these tigers.

31 of the 65 mammals are concentrated in the pine-broadleaf forest belt and in the valleys and floodplains of the larger rivers which contain high numbers because of the high density of suitable habitats. These include red squirrel *Sciurus vulgaris*, ermine *Mustela erminea*, sable *Martes zibellina*, Himalayan black bear *Ursus thibethanus* (VU), wild boar *Sus scrofa*, and Manchurian red deer *Cervus elaphus xanthopygus*, all of which are hunted commercially by the local human population. On the mountains northern pika *Ochotona hyperborea*, yellow-throated marten *Martes flavigula* and musk deer *Moschus moschiferus* are found. Other mammals include Manchurian hare *Lepus mandschuricus*, wolf *Canis lupus*, Asiatic wild dog *Cuon alpinus* (EN), brown bear *Ursus arctos*, Eurasian otter *Lutra lutra*, Siberian weasel, *Mustela sibirica*, mink *Neovison vison*, lynx *Lynx lynx*, Amur leopard cat *Prionailurus bengalensis euptilura*, wild hog *Sus scrofa*, Altai maral or elk *Cervus canadensis sibiricus*, Ussuri moose *Alces alces cameloides*, Sika deer *Cervus nippon*, Siberian roe deer *Capreolus pygargus*, and long-tailed goral *Naemorhedus caudatus* (VU). Many of these animals have evolved a close trophic interdependence on the Korean pine-nut. Offshore, harbour seals *Phoca vitulina* are seen.

Of the 241 species of birds recorded in the nomination, 72% are nesting species, the rest are overwinterers, summer migrants or vagrants. 130 breeding species are found in the Sikhote-Alin Preserve, 40-45 species in the pine-broadleaf forest, almost 40 species in the pine-spruce forest and 30-35 species in the fir-spruce forest. The various ecosystems provide habitat for 38 rare species. On the coastal cliffs are the endemic spectacled guillemot *Cepphus carbo* and Japanese cormorant *Phalacrocorax capillatus*, the white-tailed sea-eagle *Haliaeetus albicilla*, Pacific swift *Apus pacificus* and hill pigeon *Columba rupestris*. In the lower reaches of the river, red-crowned crane *Grus japonensis* (EN), hooded crane *Grus monacha* (VU), oriental stork *Ciconia boyciana* (EN), black stork *Ciconia nigra*, yellow-legged buttonquail *Turnix tanki*, far eastern curlew *Numerius madagascariensis* (VU), oriental honey-buzzard *Pernis ptilorhynchus* and grey-faced buzzard *Butastur indicus* are present. The valley forests of the middle reaches are inhabited by osprey *Pandion haliaetus*, mandarin duck *Aix galericulata*, brown hawk-owl *Ninox scutulata*, Chinese merganser *Mergus squamatus* (EN) and Blakiston's fish-owl *Ketupa blakistoni* (EN). The upper river reaches covered by larch, conifer and stone birch forests, provide refuge for capercaillie *Tetrao parvirostris* and Siberian spruce grouse *Falcapennis falcapennis*. The alpine tundra is the home range of white-throated rock thrush *Monticola gularis* and Hodgson's hawk-cuckoo *Cuculus fugax*.

There are 7 species of amphibians and 10 species of reptiles, including the rare and endemic species Amur racer *Elaphe schrenki*, redbacked racer *E. rufodesata*, brown mamushi *Agristrodon saxatili*, the Ussuri mamushi *A. blomhoffi* and the lizard *Takydromus amurensis*. Because the region's river system evolved during the Miocene, subsequent relatively stable environmental conditions have enabled the evolution of specialised populations of fish. Within the Bikin River basin, 51 species from 15 families

have been identified. There are many endemic and valuable species, including the Far Eastern brook lamprey *Lampetra reissneri*. A close trophic relationship exists between Blakiston's fish-owl and its main prey Arctic grayling *Thymallus arcticus* and lenok *Brachymystax lenok*, which in turn rely on the uncontaminated state of the rivers. Of the insect fauna, 28 species are included in the Red Data Book of the Russian Federation, of both southern and northern origins.

CONSERVATION VALUE

The Central Sikhote-Alin Nature Preserve is one of the world's most diverse and unusual temperate forests where the natural ecosystems are virtually pristine due to its relative isolation, the difficulty of access, the denseness of its forests, its sheer size, and over 60 years of protection. The pine-broadleaf forest is the only well conserved relic of the once widespread Ussuri taiga and the Bikin basin retains very high numbers of rare plant and bird species. Preservation of the Amur tiger in one of its last strongholds is of exceptional importance. The site is within a WWF Centre of Plant Diversity, a WWF Global 200 Ecoregion and a UNESCO MAB Biosphere Reserve.

CULTURAL HERITAGE

There are late Palaeolithic monuments of the northern enclave of the Ustinov culture in the middle reaches of the nearby Taiozhnaia River. There is also evidence of Bronze Age settlements, and of medieval fortifications. The territory was opened up by non-natives in the 7th century AD, when Ilou hunters arrived from Zabaikalie. Interaction with the local tribes created a new Tungus-language society. The further influence of ancient Turkic and Mongol peoples resulted in the modern ethnic groupings of the southern Tungus-speaking Manchurians, Udege, Orochi and Nanai. In the 19th century Russians, Ukrainians, Belarussians and Old Believers (exiled dissenters) began to settle in the region, living as hunter-gatherers like the Udege. Relics from the native peoples, by whom the tiger was revered, and from the Old Believers, are stored in a museum at Krasnyi Yar on the Bikin which displays their traditions and local artefacts.

LOCAL HUMAN POPULATION

The Sikhote-Alin Nature Preserve has no permanent population but there are six farms in the buffer zone and in 2000 in the area around the site had a population of about two thousand people, a quarter of whom are indigenous. In the 1930's four groups of the Bikin Udege from 13 camping-grounds had banded into a single collective to form two villages, Olon and Krasnyi Yar, around which agricultural and hunting areas grew up. The Iman sub-group did the same in the upper Bol'shaya Ussurka basin, The valleys of the Bikin and Bolshaya Ussurka (Iman) Rivers are now the last refuges for the very small Iman and larger Bikin groups of Udege. On its southern boundary, the settlements of Terney and Plastun in 2000 had 3,123 and 1,009 people. Two-thirds of the local people use the forests for non-wood resources, wood cutting and firewood; a third work in management and municipal and public services. After 1962 when a state industrial farm was opened on the Bikin hunting grounds they hunted for a co-operative, supplying skins from sable, red squirrel, mink, elk, moose, wild boar, bears, badgers and otters, but the transition to a market economy has caused them acute economic difficulty. The river basin now has only four settlements: Krasnyi Yar (958 people), Sobolinyj (321), Jasenevyyi (128) and Okhotnichiy in the Verhnebikinski Preserve, 15.

VISITORS AND VISITOR FACILITIES

In 2000 very few foreigners visited the territory, at most 10-12 groups a year, but there is considerable recreational use by the local population, hunters and fishermen. Approximately 1,700 local people and tourists used the beaches in the Nature Preserve during the summer, paying an entrance fee of 6-10 roubles. 1,500 of these stay for a weekend, and the rest for a week or more. Occasional tourist boats visit Terney, where there is a lack of local accommodation, so tourists either camp or sleep on the boats, though they can stay in the Preserve's buildings at Blagodatnoye along the coast, and there is more accommodation in the buffer zone. The main bases for tourism in the Bikin valley are the settlements of Okhotnichiy and Krasnyi Yar, where there is the small Udege museum. Summer ecological camps for children are organised as well as excursions with qualified guides. Within the Preserve there are eight of these, ranging from 3 km to 120 km. There are also exotic tours in the Bikin region, travelling by Udege boats, with organised hunting and fishing and accommodation with Udege families. The Sikhote-Alin Nature Preserve is accessible via Plastun Airport with flights from Vladivostok and Khabarovsk, and by the Vladivostok-Plastun road along the coast.

The Preserve administration is working with local farmers who hope to sell their produce to the tourists. Local indigenous associations in cooperation with the Arctic Council and the United Kingdom are also working to promote tourism in the Bikin River basin, focussing on the Udege traditional culture and

aimed at reviving traditional crafts. Scientific institutes and NGOs such as the U.S. Audubon Society, WWF Germany, the Russian Natural Preserve Travel Company (USA), Friends of the Earth-Japan, IUCN and others also wish to develop scientific and ecological tourism in the Udege territory.

SCIENTIFIC RESEARCH AND FACILITIES

The Siberian Tiger Project founded in 1992, conducts the longest running radio-telemetry-based tiger research and conservation project in the world, with aid of the Wildlife Conservation Society (WCS Russia). It has seen a steady recovery in numbers of tigers largely based on meticulous research and tracking, anti-poaching patrols and liaison with local governments on human-tiger conflicts. A report detailing its work between 1992 and 2004 was published in 2005. Scientific monitoring of the ecosystems of the Sikhote-Alin and Goraliy Preserves is carried out at 11 field research stations inside the Preserves and two in the buffer zone. This is currently the responsibility of the Regional Committee for Natural Resources. Among the permanently studied areas, 33 are for research into higher vegetation, 47 for animals, 8 for soils, two for geology, and two to assess anthropogenic influences. These plots are monitored at times varying from monthly to 5-yearly intervals. The results provide indications of the condition and dynamics of the ecosystem although at present no special measures are required to maintain its status. The Wildlife Conservation Society sponsors research in the region and the construction of the Sikhote-Alin Research Center in Terney which finished in 2008.

MANAGEMENT

The sites are the property of the Russian Federation which has the authority to determine their use and to protect them. The State also maintains historical-cultural objects and constructions within the sites. The most recent protection measures are the 1995 Federal Law for Nature Preserves, and a number of site-specific regulations. Management of the sites is both directly by the Federal Ministry of Natural Resources and through its local office at Vladivostok. The buffer zones are co-managed by the federal and regional governments, with some municipal involvement. The Bikin Territory is managed by the Primorski Forestry Administration. In 2003 the Directorate for Primorskiy Provincial Natural Resources and Environmental Protection with the Primorski Forestry Service argued (for a second time) for border adjustments to facilitate industrial timber felling of the forests of Verkhnebikinskiy Nature Reserve, and a highway was to be completed through the reserve. Based on the forest's protected status, the rights of indigenous peoples to the lands from which they traditionally draw a living guaranteed by a 2001 federal law, and on public outcry, this was denied by the federal Ministry of Natural Resources. In 2006 the Governor spoke in defence of the Reserve. The support of local people was enlisted and determined anti-poaching patrols were started. Part of this success is funded through the Phoenix project funded by 21st Century Tiger (Phoenix Fund, 2006).

The creation of the Sikhote-Alin Preserve and the later protected territories in the Bikin valley, the total ban on killing the Amur tiger in 1947 and a temporary ban on the hunting of Manchurian red deer, the tigers' main prey, resulted in an increase in the number of tigers until the 1980s when the Siberian tiger population was estimated at about 250 animals (Mattheissen & Hornocker, 2001). With the relaxation of state controls in the 1990s threats to the tiger returned, emphasising the need for an improved system of protection, and conservation strategies that incorporated the economic requirements of the local populations. In 1992 the Siberian Tiger Project was founded. A long-term program for nature protection and the use of the natural resources of the region was developed by scientists in the Far East department of the Russian Academy of Sciences with the WCS and a number of affiliated institutions.

In 2000 Sikhote-Alin Nature Preserve was the only reserve of the four with a management plan, for the period 1995-2000. This outlined a series of key measures, which included increasing the size of the core and buffer zones; expanding the area of water in the territory; organising the biosphere reserve; establishing forest protective measures including in adjoining territories belonging to the Federal forestry service and timber industries; improving the control of forest fires; creating a regional centre for ecological education; establishing GIS databases for the Preserve and its surroundings; and improving the training of its staff. 12-15 forest guards patrol daily. Fire protection of the forests is the responsibility of the fire control service.

MANAGEMENT CONSTRAINTS

The most serious management constraint is the threat of forest fires, which can lead to dramatic changes in the forest. In the oak forest belt these are often provoked by neighbouring farmers. Between 1994 and 1998 there were 15 forest fires in the Preserve, burning areas from 5 to 180 ha. Fires in pine-spruce and spruce-fir forests usually cause more damage and change as in 1998 when these forests were ravaged by fires ignited during thunderstorms in hot dry conditions. Secondary forests mainly of

birch and larch take their place. The main reason for the recent increasing levels and dispersal of fire in the Sikhote-Alin and Goraliy Preserves is a climatic cycle of 10 dry years followed by 10 wet. A lack of funding for the fire service does not help the problem. The most susceptible periods for man-made fires are during early spring and late fall when there is less rain. Lightning-caused fires usually strike in July and August but cause little damage due to the high rainfall during this period. Occasional destructive floods occur on the Bikin River.

There are no economic activities in the Preserve, and very few in the adjoining territories. Low levels of wild animal poaching, and harvesting of valuable plant materials such as ginseng *Panax ginseng*, occur. However, hunting by helicopter and poaching of both animals and timber are on the increase; visiting fisherman can reduce fish stocks during uncontrolled mass visits (Phoenix Fund, 2006). Tourist pollution by human wastes and rubbish is only visible around the outskirts of the settlements

STAFF

In 1999, the total number of staff of the Sikhote-Alin and Goraliy Preserves was 159: the Director's department (5 people); administration and accounts (8); preserve protection (74); scientific department (23); ecological education (6) and support staff (43). Staff of the Bikin Territory include the 'Tiger' detachment' responsible for the protection of the middle basin, plus a manager of the Verkhnebikinski Landscape Preserve. TTNU is managed by the Primorskiy Regional Forestry administration.

BUDGET

The total budget of Sikhote-Alin Nature Preserve in 1999 was US\$ 240,000, with 35% from the Federal budget and 65% from international and national NGOs. In the TTNU in the middle Bikin the only conservation income is from the Global Security Network in support of the 'Tiger' protective-inspection detachment. The hunting and even logging rights of the Verkhnebikinski Landscape Preserve are currently leased to the Verkhne-Perevalnenski forest enterprise.

LOCAL ADDRESSES

The State Committee of the Russian Federation for Environmental Protection, Goskomecologii,, B. Gruzinskaya, 4/6, 123821, Moscow, Russian Federation.

The Head of Administration, Ministry of Natural Resources, ul. Svetlanskaia, 20, 690110, Vladivostok, Primorski Region, Russian Federation

The Director, Sikhote-Alin Nature Preserve and Goraliy Preserve, Partisanskaya 46, 692150, Terney, Terneyski District, Primorski Region, Russian Federation.

TTNU: Forestry Administration of the Primorski Region, Belinskogo str., 3, 690035, Vladivostok, Russian Federation.

Websites:

Sikhote-Alin National Natural Biosphere Sanctuary: <http://www.fegi.ru/prim/range/zap-sikh.htm>

Russia's Maritime Province: <http://www.fegi.ru/prim/index.htm>

Centre for Russian Nature Conservation: <http://www.wild-russia.org/bioregion13/sikhote/13sikhote.htm>

REFERENCES

The principal source for the above information was the original nomination for World Heritage status.

Hilton-Taylor, C. (compiler) (2009). *IUCN Red List of Threatened Species*. IUCN, Gland, Switzerland and Cambridge UK.

IUCN (2009). *The Red List of Threatened Species*. IUCN, Cambridge, U.K.

----- (2001). *World Heritage Nomination - IUCN Technical Evaluation Central Sikhote-Alin (Russian Federation)*. Gland, Switzerland.

Karyuchi, S. (2003). *Avert the felling of Bikin forest*. RAIPON (Indigenous Peoples' World - Living Arctic) No.13, 2003.

Kobeck, J, Sruyek, M. & Box, E. (eds.) (2000). *Forest Vegetation of Northeast Asia*. Geobotany Vol.28. Kluwer Academic Publications, Dordrecht, Netherlands. 462 pp.

Kolesnikov, B. (1961), Genetic classification of forest types and its problems in the Urals, *Tr. Inst. Biol. UFAN SSSR* 27: 47-59, Sverdlovsk,

Matthiessen, P. & Hornocker, M. (2001). *Tigers in the Snow*. North Point Press, New York. 185 pp.

Pacific Institute of Geography - Far East Branch of the Russian Academy of Sciences (2000). *UNESCO - World Natural Heritage Nomination. Central Sikhote-Alin*. With Greenpeace Russia, Biology Faculty of Moscow State University, Taiga Ecological Group, Primorski region & Bureau of the regional social campaigns. Vladivostok. 29 pp + Appendixes.

Phoenix Fund (2006). *Amur/Siberian Tiger Conservation in Verkhnebikinskiy Nature Reserve. Final Report for 2005-2006*. Vladivostok.

Siberian Tiger Project (2005). *Tigers of Sikhote-Alin Zapovednik: Ecology and Conservation*. Wildlife Conservation Society Russia Program, Vladivostok, and New York, U.S.A.

Wild Russia (n.d.) *Sikhote-Alinsky Zapovednik*. Center for Russian Nature Conservation, Washington, D.C. www.wild-russia.org/bioregion13/sikhote/13_sikhote.htm

WWF & IUCN (1994). *Centres of Plant Diversity. A Guide and Strategy for their Conservation*. 3 volumes. IUCN Publications Unit, Cambridge, U.K.

WWF (2009). Outrage as protected forests go under the hammer in Russia. *Environmental News*.

Zhuravlev, Y. (ed.) (2000). *A Biodiversity Conservation Strategy for the Sikhote-Alin*. Russian Academy of Sciences, Far East Branch, A USAID Project. Vladivostok. 135 pp.

DATE

June 2001. Updated 11-2001, 7-2009, 5-2011, January 2012.