

Sikhote-Alin Reserve (Russia)

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Summary

The article briefly describes the history of the Sikhote-Alin Reserve, geography, climate, briefly listed rare and usual plants and animals, summarized the value of the Reserve for nature conservation of the region.

Key words: Reserve, Russian Far East, Amur tiger.

The Abramov K.G. Sikhote-Alin Biosphere Reserve is located in Primorsky Krai (the Russian Far East), in central and eastern parts of Sikhote-Alin mountain range.

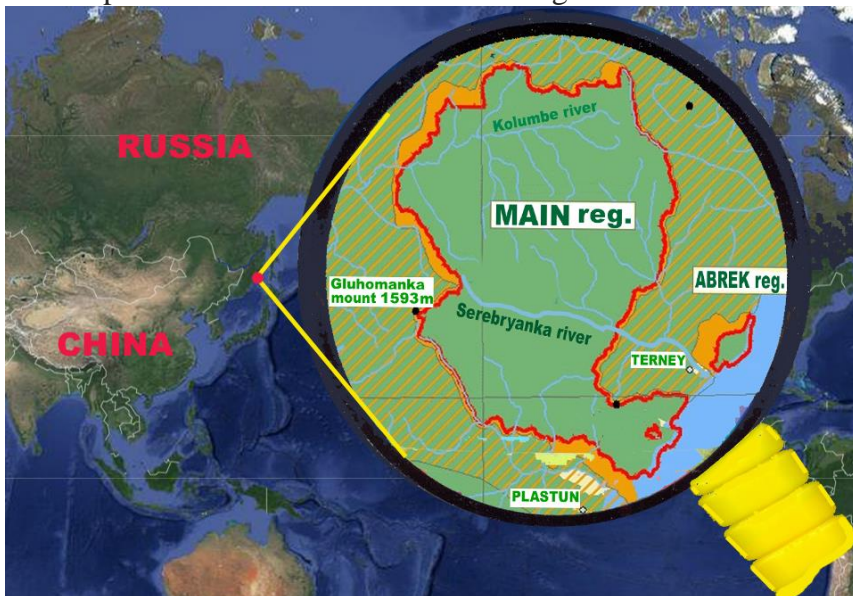


Fig. 1. Sikhote-Alin Biosphere Reserve in Far East of Asia.

Legend: MAIN reg. – the main part of the reserve (397400 ha), ABREK reg. – Abrek urochishche (4200 ha). TERNEY, PLASTUN – settlements within the conservation zone of the reserve [5].

At first the reserve was founded to protect and restore a population of the sable (*Martes zibellina* Linnaeus, 1758, ussuri subspecies *Martes zibellina arsenjevi* Kuznetsov, 1944), but investigations of the expedition under the guidance of K.G. Abramov proved the necessity of comprehensive reserve creation in Central Sikhote-Alin. It was “comprehensive” reserve that was created on February 10, 1935 [6]. The area of the reserve was 1 million ha and the area of the conservation zone was about 800,000 ha. It was the greatest reserve in the world. The main goals of the reserve were determined as follows: “reproduction and restoration of typical southern ussuri fauna and flora: sika deer, Siberian stag, elk, Siberian deer, Siberian roe deer, Siberian musk deer, wild boar, yellow-throated marten, lynx, sable, raccoon dog, glutton, Siberian weasel, ermine, Siberian grouse, pheasant and other animals, ginseng, Manchurian walnut, Amur cork tree and various broadleaved trees of the Far East” [4]. Konstantin Georgiyevich Abramov was one of the founders of the reserve and the first its director. In 2006 the reserve was named after him.

Now the reserve covers 401600 ha, of which area of the main part is 397400 ha, area of Abrek urochishche - 4200 ha, aquatic area - 2900 ha with 1 km width. The reserve territory stretches from the coast of the Sea of Japan extending for 93 km deep into the continent. The area of conservation zones is 67660 ha. The reserve is far from industrial and agricultural areas therefore its natural resources are undisturbed.

At present the primary purposes of the reserve are “To preserve undisturbed Sikhote-Alin mountain range ecosystems that are a mix of natural zones, also rare animals of Primorsky Krai, Siberian tiger and goral in the first place. To preserve biological diversity of Central Sikhote-Alin. To carry out scientific researches, especially ecological monitoring. To realize ecological education and enlightenment, to help high school in conservation experts training.”

The reserve lies in Sikhote-Alin mountain range. The mean height is 800-1000 m. The highest peak is Glukhomanka Mountain,

at 1598 m. The mountain peaks were covered with ice in the past. Central ridge of Sikhote-Alin divides the reserve area into two districts: coastal eastern macroslope of Sikhote-Alin mountain range and continental western macroslope. This provides for high variety of rocks, microclimates, soils, landforms, landscapes, elevation zones, ecosystems, combination of northern (Okhotsk) and southern (Manchurian) species of flora and fauna, many rare, endemic and relict species. Great variety of environmental conditions maintains biological diversity of the reserve. Therefore Sikhote-Alinsky reserve was among the first reserves of Russia (and USSR) to be included in the World Network of Biosphere reserves in 1979.

The parts of the reserve running towards the coast of the Sea of Japan have steep cliffs about several hundreds meters high and narrow boulder-pebble beaches at the cliff bottom.

Central Sikhote-Alin is within the temperate monsoon zone. But the climate patterns vary every year. Eastern slopes have an average January temperature of $-12,4^{\circ}\text{C}$, western slopes – $-22,6^{\circ}\text{C}$, an average temperatures of July are $+15^{\circ}\text{C}$ and $+19,1^{\circ}\text{C}$, respectively. 85% of precipitation is observed from April to November.

The river system of the reserve is dense (0,9 km per 1 km²). Larger rivers of the reserve – Tayozhnaya, Serebryanka, Djigitovka – empty into the Sea of Japan. These rivers have mountain patterns, rifts and waterfalls. There are lagoon lakes Golubichnoye and Blagodatnoye on the sea coast.

The vegetation of the reserve exhibits altitudinal zonation from alpine vegetation to coastal one.

Most part of the reserve area is covered by forests (about 97% of area). The main dominant species of mature forests are Korean pine (*Pinus koraiensis* Siebold & Zucc.), Jezo spruce (*Picea jezoensis* (Siebold & Zucc.) Carriere, 1855); Mongolian oak (*Quercus mongolica* Fisch. ex Ledeb). The main dominant species of subalpine ecosystems are Siberian dwarf pine (*Pinus pumila* (Pall.) Regel, 1859) and birch (*Betula paraermanii* V.Vassil.). Deciduous trees prevail in

ecosystems of valley forests: Maximovichian poplar (*Populus maximowiczii* A. Henry), chosenia (*Chosenia arbutifolia* (Pall.) A.K. Skvortsov), Manchurian Ash (*Fraxinus mandshurica* Rupr.). There are representatives of tropical families and genera in the reserve: Siberian Ginseng (*Eleutherococcus senticosus* (Rupr. & Maxim.), wolfberry (*Oplopanax elatus* (Nakai) Nakai, 1927), Japanese angelica-tree (*Aralia mandshurica* Rupr. Et Maxim.), actinidia (*Actinidia kolomikta* (Maxim. & Rupr.), yam (*Dioscorea nipponica* Makino, 1891), phryma (*Phryma asiatica* (H. Hara) O. Deg. & I. Deg). Flora of the reserve shows relict patterns. Relicts of Paleogene – Neogene occur: spreading yew (*Taxus cuspidata* Siebold et Zucc. Ex Endl. (1846), spruce (*P. jezoensis*), Ukurundu Maple (*Acer ukurunduense* Trautv. & C.A.Mey), abelia (*Abelia coreana* Nakai) and others.

About 1150 species of vascular plants live in the reserve of which 26 are endemic to Primorie and Priamurie, 37 species are included in Red Book of Primorsky krai, 26 – in Red book of Russian Federation.

The primary attractions of the reserve are pine-spruce forests with undergrowth of rhododendrons (*Rhododendron fauriei* Franch. (*Rhododendron brachycarpum*), pine forests with primrose (*Primula jesoana* Miq. 1866), groves of spreading yew (*T. cuspidata*) with wolfberry (*O. elatus*) and steppe-meadow, meadow-swamp, alpine-tundra communities, containing endemic species, rock ecosystems of Abrek urochishche, habitats of serow, lagoon lakes (Blagodatnoye and Golubichnoye), group of Saline lakes, nature saline lands in Kolumbe river basin and at source of Solontsoviy brook, steppe-meadows of Blagodatnoye urochishche, meadow-birch-oak communities maintaining ungulate populations.

More than 600 algae species, about 100 moss species, more than 500 fungus species and more than 600 species of lichens have been identified in Sikhote-Alin reserve.

The reserve is a habitat for 63 species of mammals. The characteristic species are sable (*Martes zibellina* Linnaeus, 1758), yellow-throated marten (*Martes flavigula* (Boddaert, 1785),

Siberian weasel (*Mustela sibirica* Pallas, 1773), American mink (*Neovison vison* Schreber, 1777), Siberian tiger also known as Amur tiger (*Panthera tigris altaica* Temminck, 1844), brown bear (*Ursus arctos* Linnaeus, 1758) and Asian black bear (*Ursus thibetanus* G. Cuvier, 1823), wild boar (*Sus scrofa* Linnaeus, 1758), Siberian musk deer (*Moschus moschiferus* (Linnaeus, 1758); Siberian roe deer (*Capreolus pygargus* Gray, 1821), long-tailed goral (*Naemorhedus caudatus* Milne-Edwards, 1867), sika deer also known as spotted deer (*Cervus nippon* Temminck, 1838).

342 species of birds are found in the reserve. Typical species are hazel grouse (*Bonasa bonasia* (Linnaeus, 1758), Pacific swift (*Apus pacificus* (Latham, 1801), marsh tit (*Poecile palustris* (Linnaeus, 1758), Eurasian nuthatch (*Sitta europaea* Linnaeus, 1758), Eurasian nutcracker (*Nucifraga caryocatactes* (Linnaeus, 1758), scaly-sided merganser or Chinese merganser (*Mergus squamatus* (Gould, 1864), Mandarin duck (*Aix galericulata* (Linnaeus, 1758), osprey (*Pandion haliaetus* (Linnaeus, 1758), Siberian grouse (*Falciptennis falciptennis* (Hartlaub, 1855), mountain hawk-eagle (*Nisaetus nipalensis* (Hodgson, 1836), white-tailed eagle (*Haliaeetus albicilla* Linnaeus, 1758) and Steller's sea eagle (*Haliaeetus pelagicus* Pallas, 1811), black stork (*Ciconia nigra* (Linnaeus, 1758), Japanese cormorant (*Phalacrocorax capillatus* (Temminck & Schlegel, 1850).

10 bird species from the order Strigiformes reside in the reserve: Eurasian eagle-owl (*Bubo bubo* (Linnaeus, 1758), Blakiston's fish owl (*Bubo blakistoni* (Seebohm, 1884), short-eared owl (*Asio flammeus* (Pontoppidan, 1763), long-eared owl (*Asio otus* (Linnaeus, 1758), Indian scops owl (*Otus bakkamoena* (Pennant, 1769), European scops owl (*Otus scops* (Linnaeus, 1758), boreal owl (*Aegolius funereus* (Linnaeus, 1758), Eurasian pygmy owl (*Glaucidium passerinum* (Linnaeus, 1758), Ural owl (*Strix uralensis* (Pallas, 1771), northern hawk-owl *Surnia ulula* (Linnaeus, 1758).

In total there are 44 fish species in the reserve, including fresh water species, sea species and fish migrating between the sea and fresh water. Two families are the most species and genus rich:

Salmonidae and Cyprinidae. Common fish in the reserve is also widespread in various fresh water, brackish water and seawater of Primirsky krai: three-spined stickleback (*Gasterosteus aculeatus* Linnaeus, 1758), sharp-snouted lenok (*Brachymystax lenok* (Pallas, 1773), Pacific herring (*Clupea pallasii* Valenciennes, 1847), humpback salmon (*Oncorhynchus gorbuscha* (Walbaum, 1792), chum salmon (*Oncorhynchus keta* (Walbaum 1792), masu salmon (*Oncorhynchus masou* (Brevoort, 1856), starry flounder (*Platichthys stellatus* (Pallas, 1811), estern redfin (*Tribolodon brandti* Dybowski, 1872), flathead grey mullet (*Mugil cephalus* Linnaeus, 1758); gobies (family Gobiidae), smelts (family Osmeridae). Yambo (*Parahucho perryi* (Brevoort, 1856) is one of rare fish species living in the reserve.

There exist 8 species of reptiles, 5 species of amphibians, 334 species of sea invertebrates and about 3500 species of insects in the reserve.

Sikhote-Alin seems to be the last biggest complete area in the world inhabited Amur tiger. The reserve is the most convenient place to observe the tiger. It has been recorded from 20 to 29 Amur tigers in the reserve [3].

Sikhote-Alin Natural reserve is listed in The World Heritage Sites of UNESCO (2001) and characterized as “Central Sikhote-Alin is the object with important environment for biodiversity conservation including endangered species of the world importance from the point of view of science and conservation” [by 1-5; 7-11].

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