IUCN Conservation Outlook Assessment 2017 **(archived)**
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Volcanoes of Kamchatka

SITE INFORMATION

Country:
Russian Federation
Inscribed in: 1996
Criteria:
(vii) (viii) (ix) (x)

Site description:

This is one of the most outstanding volcanic regions in the world, with a high density of active volcanoes, a variety of types, and a wide range of related features. The six sites included in the serial designation group together the majority of volcanic features of the Kamchatka peninsula. The interplay of active volcanoes and glaciers forms a dynamic landscape of great beauty. The sites contain great species diversity, including the world's largest known variety of salmonoid fish and exceptional concentrations of sea otter, brown bear and Stellar's sea eagle.
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SUMMARY

2017 Conservation Outlook

Significant concern

Conservation outlook for the geological values and also for the scenic values of the site is good as these are very robust against human activities, and because such activities are still relatively localized within the property.
Conservation outlook is worse for the rich biodiversity values, which are protected by the size, remoteness, relative inaccessibility and pristine state of the site. Unsustainable use of natural resources (legal and illegal hunting and fishing) have started to erode these values along the additional threats posed by existing roads and the trend towards infrastructure development and associated with it increasing accessibility which will further increase the threats for biodiversity values.
The institutional framework and management system as well as the staff capacity and the resources of the site administrations (particularly of the components of the property which are designated as regional protected areas) are currently inadequate to safeguard its biodiversity values in the face of the expected increases in pressure from infrastructure and tourism development, as well as increasing legal and illegal natural resource use.

Current state and trend of VALUES

High Concern
Trend: Stable

The geological and scenic values of the property are in a good and stable state, including the ongoing geological processes.
The status of the biodiversity and ecosystem values is mainly stable, but influenced by resource use. However, populations of some key species (snow sheep, wild reindeer) have decreasing significantly and pressures from illegal hunting and fishing on some species remain high.

Overall THREATS

High Threat

The values of the property, particular those related to the biodiversity of Kamchatka, are currently seriously threatened by mining and unsustainable, insufficiently controlled natural resource use (mainly illegal salmon fishing and commercial hunting as well as falcon capture). Construction of new roads and improvement of the existing ones associated with the development projects in the area provide better access to near-pristine areas of the site and may lead to an increase in illegal natural resources use. The decline of biodiversity may be further accelerated by the planned development projects, particularly new mineral exploration/mining projects.

Overall PROTECTION and MANAGEMENT

Some Concern

In spite of progress in administration structure and legal framework, and some further success in the field of ecological education, ecotourism development and research in some component sites, low staff numbers, lack of equipment and financial resources are hindering the management capacity to safeguard effectively the values of this large and geographically complex site. This is particularly true for the components of the property designated as regional protected areas.

FULL ASSESSMENT

Description of values

Values

World Heritage values

► Volcanoes and associated volcanic features

Criterion:(viii)

34 volcanoes, 19 of which are active and a full range of volcanic features typical for the Pacific Ring of Fire can be found in the site. Together with their associated features, such as calderas, scoriae cones, lava streams, cinder fields, thermal and mineral springs, geysers, solfataras, mud pots and others,s well as a wide range of active volcanic and geo-morphological processes, such as mudslides, they represent an outstanding example of geological processes and landforms (Justification for inscription, 1996; UNEP-WCMC, 2012).

► Landscapes of exceptional natural beauty

Criterion:(vii)

The site is a mosaic of near-pristine subarctic and boreal wilderness landscapes of exceptional natural beauty ranging from sea level to 4,686 m altitude, with perfectly pyramidal volcanoess, numerous active glaciers, taiga and tundra landscapes, various coastal landscapes, mountain streams and rivers, mountain lakes, geysers and hot springs and often spectacular gatherings of wildlife (Justification for Inscription, 1996; UNEP-WCMC, 2012).

► A diverse range of palearctic flora

Criterion:(x)

Reportedly 1,168 plant species, 10% of which are endemic (UNEP-WCMC,

2012). Plant diversity is distributed between all main ecosystem types. Groups of particular conservation interest include orchids, coniferous trees, and grasses.

► Subarctic and boreal terrestrial ecosystems

Criterion:(ix)

Wide range of near pristine terrestrial ecosystems corresponding to the altitudinal vegetation zones from sea level up to the alpine belt, with associated typical flora and fauna (UNEP-WCMC, 2012). The site contains specific zonal vegetation like deciduous Stone Birch forests (Betula ermanii), deciduous coniferous forests of Larch (Larix camtschatica), subalpine coniferous shrubland of Dwarf Pine (Pinus pumila), alpine grassland and rock vegetation, as well as azonal vegetation complexes like coastal vegetation, riparian forests, thermal spring vegetation, mires, lakes and wetlands. They develop in natural dynamic as ongoing process (restoration cycles of forests, adaptation to changing conditions, succession on lava fields and volcanic ashes.

► Salmon populations

Criterion:(x)

The rivers and associated lake and coastal ecosystems of Kamchatka support the largest concentration and diversity of salmonid fish on Earth, as well as the world’s largest spawning place of sockeye salmon (Oncorhynchus nerka). With all the Pacific salmon species coexisting and strong populations of other fish such as rainbow trout (Salmo mykiss), char (Salvelinus spp.) and whitefish (Coregonus spp.) also present. For example, one watershed within Bystrinsky Nature Park (now part of Kamchatka Nature Park) contains eleven species of salmonids, and several other watersheds support similar diversities and concentrations of this group (UNEP-WCMC, 2012). Current research identified five endemic species of char (Salvelinus spp.) and an isolated population of white-spotted char (Salvelinus leucomaenis).This supports a remarkable piscivorous community, comprising the largest winter aggregations of raptors on Earth, large aquatic and seabird congregations, and several mammal populations including over 15,000 Kamchatkan Brown Bear (Ursos arctos piscator), and Sea Otter (Enhydra lutris) (Justification for

inscription, 1996; UNEP-WCMC, 2012).

► Mammal fauna

Criterion:(x)

Although the site records only a moderate number of mammal species, in the context of the northern palearctic biogeographic realm this is high and a number of species are abundant, including Brown Bear (Ursus arctos piscator), Snow Sheep (Ovis nivicola nivicola), Wild Reindeer (Rangifer tarandus), Sable (Martes zibellina), Wolverine (Gulo gulo), and Black-headed Marmot (Marmota camtschatica camtschatica). Kamchatka has a thriving population of brown bear (about 15,000) of which over one-fifth live within the site (IUCN, 2001). In addition important populations of marine mammals including the globally endangered Asian Sea Otter (Enhydra lutris gracilis), Steller’s Sea Lion (Eumetopias jubatus) and the Kuril Seal (Phoca vitulina stejnegeri) (UNEP-WCMC, 2012). In the marine part of the Kronotsky Reserve a seasonal concentration places of the endangered Grey Whale (Eschrichtius robustus) occur (State Party Report 2015).

► Avifauna

Criterion:(x)

Rich fauna of tundra and coastal birds (total number of recorded species 179) and largest wintering raptor congregation worldwide at South Kamchatka State Reserve, which is one of the component reserves of this serial site (UNEP-WCMC, 2012). Noteworthy birds include Steller's Sea Eagle (50% of world population), White-tailed Sea Eagle, Golden Eagle, Gyrfalcon and Peregrine Falcon. There are numerous seabird colonies and a large part of the global population of Aleutian Tern nest on the peninsula (IUCN, 2001).

Assessment information

Threats

Current Threats

High Threat

The values of the property, particular those related to the biodiversity of Kamchatka, are currently seriously threatened by mining and unsustainable, insufficiently controlled natural resource use (mainly legal and illegal commercial salmon fishing and commercial hunting and falcon capture). Construction of new roads and improvement of the existing ones associated with the development projects in the area provide better access to near-pristine areas of the site and may lead to an increase in illegal natural resources use.

► Mining/ Quarrying

High Threat
Outside site

Two mines have already led to a revision of the boundaries of the Bystrinskiy Nature Park component of the property, thereby reducing the values of the overall property. Information on current ongoing threats is scarce but these probably include toxic contamination of surface waters, air pollution, and deterioration of scenic values. Reports of salmon die-offs near Kamchatka mines were received by the 2007 IUCN/WHC monitoring mission but could not be verified (Debonnet & Mihalic, 2007). No up-to-date information on this matted has been presented in the recent State of Conservation reports (2016, 2015 and 2013).

► Fishing / Harvesting Aquatic Resources

High Threat
Inside site
Outside site

Large scale commercial salmon fishing (up to 200,000t annually throughout Kamchatka including the property – Dronova & Spirodonov 2008) mainly for roe is considered a major threat to the still relatively resilient stocks of the area, which is one of the last Pacific salmon strongholds (Debonnet & Mihalic, 2007; SOC Report, 2012; Dronova & Spiridonov, 2008; Levin, 2010). Above-quota fishing by legal fishermen and Illegal fishing in coastal waters also affects stocks (Dronova & Spiridonov, 2008). No effective control system in

place and salmon poaching is the main income source near rivers. Poaching industry reportedly has the same value as the legal fishing industry (US$ 600 million), with export values of one illegally caught species from the Russian Far East estimated at up to $70 million annually (Clarke et al., 2009). Dramatic decrease in many rivers' stocks reported by Levin (2010). Driftnet fishing in the Exclusive Economic Zone outside the property also likely to reduce stocks (Confidential pers. comm., 2012)

► Oil/ Gas exploration/development

Low Threat
Outside site

Pipeline and parallel construction road crosses and provides access to 266 salmon rivers along the western coast of the peninsula, some of which may be connected to the property. Up to 30-fold increase in turbidity of some affected rivers outside the property reported during construction period. Increase in poaching (Levin, 2010).
Justification of assessment

► Roads/ Railroads

High Threat
Inside site, extent of threat not known
Outside site

Construction of new roads and improvement of existing ones provides access to near-prisitine areas of the site and may lead to uncontrolled natural resource use and visitation. The increase in accessibility provided by the mining roads appears to be limited in comparison to the existing network of tracks for all-terrain vehicles (Debonnet & Mihalic, 2007), but the gas pipeline construction road in West Kamchatka has reportedly lead to a significant increase in salmon poaching in the area (Levin, 2010).

► Hunting (commercial/subsistence), Poaching

Very Low Threat
Inside site, extent of threat not known
Outside site

Small-scale subsistence hunting by local people does not pose a serious threat to the values of the site (SOC Report, 2012).

► Logging/ Wood Harvesting

Data Deficient
Inside site, extent of threat not known
Outside site

Some insignificant damage (approximately 1% of areas affected over 10 years) by forest fires, and illegal and poorly documented logging by locals has previously been reported (SOC Report, 2012). However, no up-to-date information is available.

► Hunting (commercial/subsistence), Poaching

High Threat
Inside site, scattered(5-15%)
Outside site

Reportedly more than 10% of Kamchatka population of brown bear (340-555 individuals) were poached in 2002 (Seryodkin & Pachkovskiy, 2006). Trophy hunting has been declining recently as there are fewer bears left that would be valuable as trophies. Declines in sable and snow sheep populations have been reported in Bystrinskiy Nature Park. Not all of this is caused by poaching since legal hunting is permitted in component sites with nature park status. However no reliable monitoring and quota setting system is in place (Debonnet & Mihalic, 2007). There is also large-scale illegal capture of falcons in Kamchatka in general (TRAFFIC, 2008), and possibly inside the property.

► Fishing / Harvesting Aquatic Resources

High Threat
Inside site, extent of threat not known
Outside site

Illegal natural resource exploitation registered by the security service of the protected areas include arrivals of sea vessels in the PA area and illegal fishing
(State Party Report 2016).

Potential Threats

High Threat

Plans to construct two hydropower stations on the Kronotskaya River inside Kronotskiy Strict Nature Reserve were abandoned in 2012, but there are plans for other hydropower stations outside but near the property that require further examination. However, recently it has been reported by the State Party that the present time the construction of Zhupanovskiye Hydroelectric Power Station was not considered any longer.
Plans for geological prospecting activity and potential mining on the territory of Bystrinsky Nature Park could also lead to the loss of the Outstanding Universal Value on the considerable part of the property's territory.

▶ Tourism/ Recreation Areas

Low Threat
Outside site

The skiing areas are planned outside the site (Ilukhin, 2011) but associated transport infrastructure may increase access and unregulated natural resource use.

▶ Renewable Energy

High Threat
Inside site, extent of threat not known
Outside site

Plans for hydropower stations on Zhupanovaya River (outside the World Heritage property but very near it) have been developed (EPRussia, 2012). This construction could affect the integrity of some natural values of the property, such as the wild Reindeer population that uses Zhupanovskaya tundra as winter pasture. A a final decision on the construction of the stations will only be made after an assessment of the ecological risks (SOC report, 2013). Recently it has been reported by the State Party that at the present time the construction of Zhupanovskiye Hydroelectric Power Station was not considered. The government of Kamchatka Region has been commissioned by the President of the Russian Federation to consider alternative options of providing the region with electric power (State Party

Report 2016).

▶ Mining/ Quarrying

Data Deficient
Inside site, extent of threat not known
Outside site

Information on potential threats is scarce, in the absence of EIAs, but these might include reduction of the size of the property, toxic contamination of surface waters, air pollution, and deterioration of scenic values (Debonnet & Mihalic, 2007). A project of the new Regulations of Bystrinsky Nature Park foresees that the works on the geological survey of subsoil could be allowed on a considerable part of the park territory (Greenpeace Russia, 2012, pers. comm.). Another operation of concern is the Balkhach ore cluster (IMC Montan, 2011). No up-to-date information is available.

▶ Tourism/ visitors/ recreation

Low Threat
Inside site, extent of threat not known
Outside site

The increase of cross-country vehicles owned by local population in the agglomeration close to Nalychevo Nature Park and good transport availability are reported as potential threats (State Party Report 2016).

Protection and management

Assessing Protection and Management

▶ Relationships with local people

Some Concern

Little information is available and no systematic stakeholder analysis has been documented. There have been conflicts between local people and State authorities about the allocation procedure for hunting licenses, which puts local indigenous hunters at disadvantage (Debonnet & Mihalic, 2007), and about the exclusive use rights of indigenous fishing grounds (Indigenous Portal, 2010). Local people near salmon rivers throughout Kamchatka use

poached salmon roe as their main source of income.

▶ Legal framework

Serious Concern

In 2009, Kamchatka Nature Park was formed including four of the six protected areas making up the Volcanoes of Kamchatka serial World Heritage site. The draft regulation for the newly created Kamchatka Nature Park is not publicly accessible. The legal protection status of the parts of the property that are designated as Nature Parks is insufficient for a long-term protection of the site’s values (SOC Report, 2012).

▶ Enforcement

Some Concern

No specific assessment of enforcement capacity is available; however, given overall low human and financial resources and given the large size of the property, enforcement capacity is probably limited.

▶ Integration into regional and national planning systems

Serious Concern

Limited information available. Federal Geological Agency complained that it was not sufficiently consulted prior to the establishment of Bystrinsky Nature Park. Plan to build two power stations inside Kronotskiy Strict Nature Reserve (now suspended) indicates that the safeguarding of the integrity of this site is not well recognized in regional planning.

▶ Management system

Some Concern

This is a serial property which includes several protected areas of different categories. 95% of Kronotskiy Strict Nature Reserve (Zapovednik) and 80% of South Kamchatka Federal Sanctuary (Zakaznik) are under strict conservation management on the base of federal regulations. Management plans for the Federal Sanctuary and Strict Nature Reserve were developed in 2003.
The other four component parts of the serial site were designated as Nature Parks by regulations of the regional government. For two of them management plans were developed also in 2003. The Nature Parks roughly

corresponding to IUCN PA Category V. Until 2010 each of the Nature Parks was an independent state institution on regional level. According to the resolution No.191 “On Reorganizing Certain Kray State Institutions” adopted by the Governor of Kamchatka Kray on August 14, 2009 and with Order No. 78-P “On Reorganizing Kray State Institutions” adopted by Kamchatka Kray Natural Resources Ministry on August 17, 2009 the for institutions were reorganized in one “Kray State Institution Volcanoes of Kamchatka Nature Park” (State Party Report 2015).
The new administration structure was introduced for the joint management of the component parts in regional responsibility. However, an overarching plan for a joint management of the entire World Heritage Site has not developed yet. (State Party Report 2016).

► Management effectiveness

Some Concern

No systematic management effectiveness assessment using standard methodology (e.g. RAPPAM, METT) has been. A biodiversity trend assessment revealed decreasing abundances of most key species in four component sites between 2003 and 2007, suggesting insufficient management effectiveness (Mosolov, 2008).
Management effectiveness of the Kamchatka Nature Park part of the property has been characterized as extremely low by local PA staff (Confidential comment, 2012), primarily because of dramatically insufficient institutional capacity (staffing, resourcing, specialist training, coordination and enforcement powers).
Management effectiveness of the federal PAs of the property is considered somewhat higher (Confidential pers. comm., 2012).
The ban on net fishing in the mouth of the Nalychevo River has had a positive influence on the Pacific Salmon population in the entire river catchment. Regular surveillance activities reduced illegal extraction of aquatic biological resources with positive effects on the populations of predators like Brown Bear, Wolverine, Steller’s Sea Eagle (State Party Report 2016).

► Implementation of Committee decisions and recommendations

Mostly Effective

In 2015 the State Party gave a response “with regard to Resolution No. 37COM 7B.21 adopted by the World Heritage Committee” in Phnom Penh 2013. With the “Report On the State of Conservation of the UNESCO World Heritage Property Volcanoes of Kamchatka (Russian Federation, Nr. 765bis) in 2015” from January 29, 2016 the State Party also gives a response to the Decision 37 COM 7B.21 (Phnom Penh, 2013), recalled by Decision 39 COM 7B.20 (Bonn, 2015).

► Boundaries

Mostly Effective

This is a serial site consisting of 6 components, which increases the border/area ratio and poses additional management challenges. There are no buffer zones apparently. The 2007 monitoring mission recommended to clarify and communicate the site’s boundaries as geographical coordinates as some inconsistencies were noticed (SOC Report, 2012). The State Party Report from January 29, 2016 notes that “the total area of four nature parks of regional significance included in the World Heritage Site “Volcanoes of Kamchatka” is 2,475,036 hectares, and their boundaries have not been changed” The report contains also an overview map of the entire serial property.
Discrepancies between the data given in former reports and currently calculated areas are explained by the use of more precise modern computer technologies for calculating the sizes of land plots. The State Party Report 2015 also contains a table with comparison of the different data and explanations about the calculation methods, as well as maps of the four Nature Park component parts. The total area of the serial property (sum of all 6 components) is 3.7072 million hectares (State Party Report 2015).

► Sustainable finance

Serious Concern

The main funding source is the Kamchatka Kray budget. The financing of the nature parks was considered unsustainable in 2007 (Debonnet & Mihalic, 2007) and had only increased by ca. 20% until 2011, to ca. $1.1 million annually (SOC Report, 2012). The funding of all (regional) Kamchatka protected areas of 29 million rubles per year was considered insufficient in 2012, and is merely meeting staff and some limited operational costs

(Confidential comment, 2012). This suggests that the property as a whole lacks a sustainable financing base (funding gap estimated as $700,000 per year – Debonnet & Mihalic, 2007), particularly regarding the still insufficient number of ranger staff in relation to its size.
There is no information about the overall budget of the entire property. The two component parts in federal administration are financed by the federal budget. The four component parts of the Kamchatka Nature Park are financed by the regional government of Kamchatka Kray. There are differences between the federal and the regional administrated components. The situation of the federal components seems much better, but numbers are not indicated in the State Party Reports 2015 and 2016.

► Staff training and development

Serious Concern

Staffing levels of Kamchatka National Park are considered dramatically insufficient in relation to its size.
The staff number of the Kronotsky Zapovednik, financed by federal budget was 110 employees in 2015.
The Nature Park Volcanoes of Kamchatka with 4 components had only 37 employees in 2015 (State Party of the Russian Federation, 2016).

The State Party Report 2016 indicates several educational events in 2015, e.g. a training seminar “Preparation of guides for specially protected areas of Kamchatka Region”, jointly organized by the Kronotsky Reserve together with the administration of Kamchatka Nature Park, and supported by the regional non-commercial organization “Association of Specially Protected Areas of Kamchatka Region”.

► Sustainable use

Some Concern

While the Strict Nature Reserves and State Sanctuary exclude most sustainable use, management of use for sustainability in Kamchatka Nature Park is only partly within its jurisdiction. Sustainable reindeer grazing at the Bystrinskiy part of Kamchatka Nature Park. Hunting and fishing are mainly unmanaged and unsustainable.

► Education and interpretation programs

Some Concern

There is no education and interpretation programme at the level of the entire site but at least one of the federal component reserves has such a programme (Kronotskiy Strict Nature Reserve, 2012b). Education and interpretation programs were also included in the UNDP/GEF project “Demonstrating sustainable conservation of biological diversity in four protected areas of Russia’s Kamchatka Oblast”. These have apparently not contributed to reduction of unsustainable natural resource use inside the site.

► Tourism and visitation management

Some Concern

Visitation to the Kamchatka Nature Park component of the property increased by 7% to 24,290 from 2010 to 2011. There are tourism routes and four visitor centres in the parts of Kamchatka Nature Park and another one in the Valley of the Geysers in Kronotskiy Strict Nature Reserve, but there still is no overall tourism strategy, functional ecotourism system (Confidential comment, 2012), approach to explaining the values of the site, or integrated tourism management strategy, as recommended by the 2007 IUCN/WHC monitoring mission (SOC Report, 2012). In the two federal component parts a Plan of educational tourism for the years 2015-2016 was developed and implemented in the Kronotsky Reserve and the South Kamchatka Sanctuary. At the present time there are 12 tourist routes in Kronotsky Reserve (3 water routes, 9 walking tours incl. 1 multi-day tour). In South Kamchatka Sanctuary Sanctuary there are 10 tourist routes (2 water routes, 8 walking tours). Excursions and recreational activities on the territories of the 4 nature park component parts are conducted within the boundaries of the determined recreational areas. There are 25 tourist routes. According to the results of the monitoring no negative irreversible changes of natural landscapes and their components in the areas of recreational activity were found (State Party Report 2016).
Increasing visitor pressure on the property requires an improvement of suitable infrastructure outside the property and effective efforts for the visitor management inside the component parts, to avoid a “wild

development” by private tourism companies (IUCN Consultation, 2017).

▶ Monitoring

Some Concern

There is no monitoring of the state of the natural values of the site (SOC Report, 2012). A simple monitoring system for a few key species was established for 4 component sites as part of the UNDP/GEF biodiversity project (Mosolov, 2008), but a request to provide monitoring data for key species to the World Heritage Commission was not met (SOC Report, 2012), which puts the operation of this monitoring system in doubt. Meanwhile several activities for monitoring of key mammal species (e.g. wild reindeer, marmot, snow sheep, grey whale) are started. First results show, that the most populations are stable and at the natural land capacity level (State Party Report 2015).

▶ Research

Mostly Effective

A range of research projects on ecosystems and species in cooperation with academic institutions has been conducted at Kronotskiy Strict Nature Reserve and South Kamchatka State Sanctuary (Kronotskiy State Nature Reserve, 2012c). Further research activities have been started and first results are available, e.g. about marking activities of brown bear (Seryodkin 2014) and geyser activities in Kronotsky Reserve (Kiryuklin 2016).

Overall assessment of protection and management

Some Concern

In spite of progress in administration structure and legal framework, and some further success in the field of ecological education, ecotourism development and research in some component sites, low staff numbers, lack of equipment and financial resources are hindering the management capacity to safeguard effectively the values of this large and geographically complex site. This is particularly true for the components of the property designated as regional protected areas.

▶ Assessment of the effectiveness of protection and management in addressing threats outside the site

Some Concern

The current conservation regime is insufficient to effectively protect the values even inside the Nature Park components of the site, because of the very low staff number and lack of equipment and resources, and this is also true for protection against threats outside the site. However, these threats are not as serious as those inside the site. Poaching outside the boundaries of the component protected areas poses a significant threat to some species, such as snow sheep (State Party of the Russian Federation, 2015).

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ Volcanoes and associated volcanic features

Good
Trend:Stable

The geological values of the site are highly resistant to human activities and remain in a good state. Volcanic eruptions in 2012/13 of Tolbachik Volcano demonstrate the ongoing geological processes in the site.

▶ Landscapes of exceptional natural beauty

Low Concern
Trend:Stable

The scenic beauty of the property is only marginally affected by the natural resource use related threats. Localized mining and other development projects have only had a limited negative effect on scenic values of the site thus far.

▶ A diverse range of palearctic flora

Low Concern
Trend:Stable

The flora of the property and particularly the terrestrial flora appear to be in a good state in general, although there has been a limited degree of damage due to forest fires and logging.
The very specific flora of thermal springs is threatened by increasing recreational activities.

► Subarctic and boreal terrestrial ecosystems

Low Concern
Trend:Stable

The terrestrial ecosystems of the property are largely intact, with only some deterioration in functionality from decreasing abundances of terrestrial key species, such as Brown Bear Ursus arctos piscator, Sable Martes zibellina and Snow Sheep Ovis nivicola (Debonnet & Mihalic, 2007).
Subarctic and boreal terrestrial ecosystems The terrestrial ecosystems of the property are largely intact, with only some deterioration in functionality from decreasing abundances of terrestrial key species, such as Brown Bear (Ursus arctos piscator), Sable (Martes zibellina) and Snow Sheep (Ovis nivicola) (Debonnet & Mihalic, 2007).
The destruction of ecosystems following recent volcanic eruptions with lava flow and ashes precipitation is a natural process, followed by the re-establishment of pioneer plant cover and the following succession.

► Salmon populations

High Concern
Trend:Stable

Stocks of most salmonid species appear relatively resilient if slowly declining. However, up to 95% of the reproductive stock of some accessible rivers is removed by legal and illegal fishing (Dronova & Spiridonov, 2008), which means that there is a reason for high concern. The most recent State Party report (2013) notes that salmon population trends in Kronotsky Reserve are stable; however, poaching near the reserve is of significant concern and patrolling intensity has been increased to address the issue.
Illegal fishing of salmon continues to pose a significant threat and salmon poaching has become widespread in the entire Kamchatka Region (State Party Report 2015).

► Mammal fauna

High Concern
Trend:Stable

Within the two federal component protected areas the populations of brown bear (over 850 and 950 individuals), sable (2,200 to 2,300 individuals in Kronotsky Reserve), sea otter (about 500 and 1,400 individuals), insular seal (more than 300 individuals), sea lion (about 800 individuals) remain stable (State Party of the Russian Federation, 2015). The number of grey whales is increasing in Kronotsky Reserve.
However, the number of wild reindeers is decreasing and does not exceed 750 individuals currently, because of negative human impact outside of the Reserve's boundaries.
The situation of snow sheep has deteriorated dramatically, with no more than 350 individuals remaining in the Reserve because of poaching outside the boundaries.

► Avifauna

Data Deficient
Trend:Data Deficient

The overall status and trend of key bird species of Kamchatka is unclear, because there has been no systematic monitoring in place, but it appears to be stable (Mosolov, 2008). An exception may be falcons (Gyrfalcon and Peregrine) which appear to be under intense capture pressure for falconry (e.g. TRAFFIC, 2008).

Summary of the Values

► Assessment of the current state and trend of World Heritage values

High Concern

Trend: Stable

The geological and scenic values of the property are in a good and stable state, including the ongoing geological processes.
The status of the biodiversity and ecosystem values is mainly stable, but influenced by resource use. However, populations of some key species (snow

sheep, wild reindeer) have decreasing significantly and pressures from illegal hunting and fishing on some species remain high.

Additional information

Benefits

Understanding Benefits

► Fishing areas and conservation of fish stocks

Salmon and salmon roe is currently the main resource used from the site and its surroundings, and the main income source for the local population. It also contributes significantly to the fisheries resources used in the Russian Federation, Japan, China and beyond.

► Outdoor recreation and tourism

Nature based tourism is already a growing activity and income source although its potential is not fully exploited yet.

► Sacred natural sites or landscapes

With its volcanic landscapes, ecosystems and biodiversity, Kamchatka is one of the last great wilderness areas of the planet.

► Livestock grazing areas

Reindeer grazing is practiced in the Bystrinsky part of Kamchatka Nature Park and is an example for natural resource use by indigenous inhabitants that is both traditional and sustainable.

Summary of benefits

The landscapes, ecosystems and biodiversity of the property provide a wide

range of benefits of local, regional, national and global importance which, if used and managed in a sustainable manner, might support a prosperous development of the remote Kamchatka region in the long term and at the same time contribute to the richness of human heritage in general.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	WWF Russia		Ecoregional conservation programme for the Kamchatka-Bering ecoregion (broad programme type approach including PAs, wildlife resource use, engaging mining companies etc.)
2	Wildlife Conservation Society		Kamchatka Brown Bear Program (bear conservation, current activities unclear)
3	Greenpeace Russia		Addressing main threats, education and awareness raising
4	UNDP		Promoting Ecotourism around Kamchatka World Heritage Sites Kamchatka Protected Areas – Phase II
5	UNDP		Protected Area development, Gift to the Earth, reduction of illegal fishery

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	Academic institution / research oriented NGO	Monitoring of salmon and wildlife resources in the Volcanoes of Kamchatka World Heritage property	

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