

WHC-98/CONF.202/INF.5

Convention Concerning the Protection of
the World Cultural and Natural Heritage

***Documentation on
World Heritage Properties
(Natural)***

Bureau of the World Heritage Committee
Twenty-second Extraordinary Session
27-28 November 1998- Kyoto, Japan

Prepared by

International Union for Conservation of
Nature and Natural Resources
1196 Gland, Switzerland

10 October 1998

**Site evaluations extracted from Document WHC-
98/CONF.203/INF.10 for twenty-second session of the World
Heritage Committee**

WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

RAVINES OF THE SLOVAK PARADIS AND THE DOBSINSKA ICE CAVE
(SLOVAKIA)

1. DOCUMENTATION

- (i) IUCN/WCMC Data Sheet (6 references)
- (ii) Additional Literature Consulted: Lalkovic, M. 1995. On the Problems of the Ice Filling in the Dobsina Ice Cave. **Acta Carsologica**. Krasoslovni Zbornik XXIV; Courbon, P., C. Chabert, P. Bosted & K. Lindsley. 1989. **Atlas of the Great Caves of the World**; Waltham, T. 1974. **Caves**. Macmillan; Juberthie, C. 1995. **Underground Habitats and their Protection**. Nature and Environment No. 72. Council of Europe Press; Middleton, J. & T. Waltham. 1986. **The Underground Atlas: A Gazetteer of The World's Cave Regions**. St Mattin's Press; Watson, J. *et al.* 1997. **Guidelines for Cave and Karst Protection**. IUCN World Commission on Protected Areas' Working Group on Cave and Karst Protection. IUCN; Stanners, D. & Bourdeau, P. Eds. 1995. **Europe's Environment The Dobris Assessment** European Environment Agency; Esping, L. 1998. **Potential Natural World Heritage Sites in Europe**. Report on Parks for Life: Action for Protected Areas in Europe Priority Project 14a. IUCN-WCPA Europe/FNNPE-Europarc Federation.
- (iii) Consultations: 22 external reviewers, Slovensky raj National Park staff and Slovak Government Officials.
- (iv) Field Visit: J. Marsh and R. Hogan, May 1998

2. SUMMARY OF NATURAL VALUES

The Ravines of the Slovak Paradis and the Dobsinska Ice Cave (RSPDIC) are located in the Western Carpathians of eastern Slovakia. The site proposed for inscription on the World Heritage list covers 4,350ha of the Slovensky raj National Park (19,763ha). The nominated area is divided into 16 separate sub-areas which consist of 15 ravine areas, and the subterranean area of Dobsinska Ice Cave/Stratenská Cave. The 16 separate sub-areas are grouped in four clusters. The largest cluster is made up of 11 contiguous ravine areas. Due to their inaccessibility, the nominated ravines are in relatively pristine condition while much of the Slovensky raj has been managed for timber in the past and consists mainly of monoculture forest stands.

The Slovensky raj is an extensive karst plateau made up of Mesozoic limestone, dolomite, and schist, with some Paleocene conglomerates and sandstone occurring in the north. The plateau is intersected by numerous deep ravines, waterfalls, surface karst phenomena and caves containing speleothems and ice. Several types of karst valleys occur: late tertiary solution valleys, ravines, open V-form karst valleys, canyons and dry cylindrical karst valleys. The territory encompasses 210 caves and chasms, of which the Stratenská cave system, which includes the Dobsinska Ice Cave, is the most significant. The area is a typical example of late Tertiary and Quaternary geological and geomorphological landscape evolution, with a variety and concentration of ravines within a small area.

The Dobsinska Ice Cave/Stratenská cave network has been filled and partially cleared by sands and gravels on several occasions and is locally plugged by "breakdown" (limestone blocks fallen from the roof). One such plug isolates the Dobsinska chamber from the rest of the Stratenská Cave below, trapping cold air and permitting the accumulation of ice. Cold air flows into the cave in winter and remains during the summer. The natural opening of the ice cave is north-facing and shaded by forest so the cave is protected from warming. An ice mass with a maximum depth of 26.5m and a volume of approximately 110,000m³ fills a considerable part of the cave. The upper surface of this underground glacier, or *glacière*, is decorated with ice stalagmites and columns of conventional water ice from the freezing of local drip waters. The ice mass is stable in that the rate of ice accumulation in winter is in equilibrium with the rate of basal melt and lateral sublimation. Dobsinska Ice Cave contains one of the largest *glacières* known at a very low altitude (969m). It is considered a "textbook example" of an ice cave.

The plateau and ravines of the nominated area are predominantly forested with spruce, fir, mountain maple, limestone beech groves and relic pine forests. There are 470 species of vascular plants, 281 species of moss, and 86 species of lichen. Two globally endangered plant species occur in the area as well as 13 Carpathian endemics. Fauna is also diverse with over 4,000 invertebrate species and 200 vertebrates, including 100 bird and 40 mammal species. The nominated area is famous for some 2,162 species of lepidoptera (butterflies and moths) and Dobsinska Ice Cave is a nationally important location for bat hibernation. The region of the park is also notable for the number of top predators found including stable populations of: wolf, brown bear, lynx, golden eagle and lesser spotted eagle. Globally threatened species include: Hungarian lamprey, great water newt and wolf.

3. COMPARISON WITH OTHER AREAS

3.1 Karst Areas

Karst cave systems are found in many parts of the world (see attached map for significant cave regions in Europe). Three sites have been inscribed on the World Heritage list for their karst features alone: Mammoth Cave in Kentucky, Skocjan Caves in Slovenia and the Caves of the Aggtelek and Slovak Karst World Heritage site in Hungary/Slovakia. Significant caves are associated features of other natural World Heritage sites such as the Canadian Rockies, Nahanni, Grand Canyon, Huanglong, Tasmanian Wilderness, and the Australian Mammal Fossil Sites. Other world class caves exist in Sarawak at Gunung Mulu and in Australia at Nullabor.

Mammoth Cave is notable for its enormous length (530,000m) and large level passages. Skocjan is famous for its awesome river canyons and textbook portrayal of karst hydrology. The Caves of the Aggtelek and Slovak Karst (approximately 30km from the nominated site) are distinguished by a great variety of karst features and their concentration in a relatively small area (712 caves of different types); and the area contains the world's largest stalagmite (32m). The paleokarst features of Aggtelek also show a rare combination of tropical and glacial climates. Carlsbad Caverns is noted for its huge chambers and decorative mineral features including rare and unique speleothems such as the world's largest and most diverse bacterially assisted "biothems" and helictites which are forming under water.

The Nahanni World Heritage site (Canada) contains ravines but these have been formed by the action of a large river in a different climatic belt (above 60° latitude). Ravines are found in four European World Heritage sites: Plitvice Lakes, Skocjan Cave, Durmitor National Park and Pyrénées-Mont Perdu. The ravines of Plitvice Lakes and Skocjan are genetically and morphologically different from the Ravines of the Slovak Paradis in that they are small and steep and formed by a different process of erosion. The Pyrénées-Mont Perdu contains a high mountainous karst with deep ravines. Durmitor contains one large ravine which is considered to be one of the largest in Europe. The ravines of both Pyrénées-Mont Perdu and Durmitor are of a different type and scale to those of the Slovak Paradis.

Limestone gorge profiles displaying rejuvenated valleys are quite common in the humid extra-glacial regions of Europe and North America (e.g. Appalachians of Virginia and West Virginia) and many are larger and deeper than those of RSPDIC. However, the RSPDIC is notable for the density (22 ravines in 43.5km²) and the variety of landforms in a relatively small area.

3.2 Caves/Ice Caves

Stratenská is one of the longest caves (16,700m) entirely on Slovak territory and contains the largest underground chamber (79,017m³) in the country. However, the 25,000m Baradla-Domica Cave System (part of the Caves of the Aggtelek and Slovak Karst World Heritage site), which straddles the Slovak-Hungarian border, is longer than Stratenská, and there are many cave spaces around the world which are measured in millions rather than thousands of meters cubed, e.g. Luse in Papua New Guinea (50Mm³).

Ice caves are relatively common at high altitudes. Small glaciers are found in the Canadian Rocky Mountains and in Nahanni and other karst areas of the Mackenzie Mountains in the Canadian Northwest Territories. There are also ice caves in limestone areas of Europe such as Eisreisenwelt, Reisenhohle and Schellenburger Hohle in the Alps, Scarisoara glacier in Romania, and Kungur Ice Cave in the Urals. There are many other ice-clogged shafts and chambers known in limestone caves in the Alps and Pyrenees.

None of the above is as large and as marked by sublimation as in Dobsinska. Another distinct feature of Dobsinska is its topo-climatic setting. It is only 970m above sea level, much lower than other tourist ice caves. The mean annual external air temperature is +6 °C but the cave is able to conserve a -5 to -6 °C temperature. In contrast the small glaciers in South Nahanni National Park are supported by mean annual external temperatures of -6 °C to -8 °C.

However, in terms of height above sea level, Dobsinska is by no means the lowest ice cave in the region. The mouth of the Silica Ice Cave in Hungary (part of the Caves of the Aggtelek and Slovak Karst World Heritage site) is at 503m and it is considered to be the lowest ice cave in the Temperate Zone. Up to the latitude of 50° all other known ice caves are situated at higher altitudes: the Alps (940m); Bulgaria (830m); Croatia (600m); Georgia (above 1,000m); Poland (between 1010 and 1850m); Romania (840m); Slovenia (758-1090m). In Slovakia the opening to the Demänovská Ice Cave, in the Low Tatras is at 840m, again lower than the Dobsinska ice cave.

However, Dobsinska does display one of the largest glaciers in one of the warmest glacier sites that is known. It is considered by many to be a text-book example of an ice cave. There is also a long history of paleoclimatic research in Dobsinska Ice Cave and the site is important for research on climate change.

3.3 Biodiversity

The RSPDIC has diverse flora due in part to the area acting as a refugium during glacial periods. Extreme hydrological and edaphic gradients, especially thermal inversions, mean that there is a wide variety of modern ecological associations found in the ravines. However, all mid-latitude karstlands show these characteristics though not to the same degree as RSPDIC.

The Middle European Forests Biogeographic Province is well represented by four much larger forested World Heritage sites in: Beloveshskaya Pushcha/Bialowieza Forest, Pirin National Park, Plitvice Lakes National Park, and Durmitor National Park. Durmitor (32,000ha) includes one of the last black pine virgin forest, Beloveshskaya Pushcha/Bialowieza Forest (147,872ha) comprises a vast stretch of ancient, virgin, Palearctic forest with all the major forest associations in that part of Europe. Pirin National Park (40,060ha) has a mixture of central European, Alpine, Balkan mountain and Sub-Mediterranean plant species. It includes endemic Bosnian pine growing on a karst area, unique stands of 500 year old pine species, and approximately 30 local endemics.

Though RSPDIC contains reasonable biodiversity (470 species of vascular plants including 13 endemics, over 4,000 invertebrates and 200 vertebrate species), it is not outstanding when compared to other World Heritage sites. For example, Beloveshskaya Pushcha/Bialowieza Forest contains over 8,000 insect species, 278 vertebrates and over 900 vascular plant species, and Pyrénées-Mont Perdu contains 3,500 vascular plants, 200 of which are endemic.

In summary, RSPDIC does not have a particular natural feature that is not found elsewhere in the region. The four existing World Heritage sites in the region are all much larger and have higher biodiversity. The two other karst sites in the region have a greater variety of features, many of which the RSPDIC area duplicates, particularly with the nearby existing site of the Caves of the Aggtelek and Slovak Karst.

4. INTEGRITY

Historically, the ravines have been subject to little human interference due to their general inaccessibility. Interest in the area increased considerably with the discovery of the ice cave in 1870. The cave was damaged to some extent during the first fifty years after its discovery, but current management now maintains the cave to a high standard. The area does not have any heavy industry in the immediate vicinity so damage from acid rain does not present a threat.

Most of the park, including the Dobsinska Ice Cave, is owned by the state though 14 % is owned by freehold companies and 3 % is private property. Legal protection of the area is complex. All land in the Slovak Republic is classified under one of five 'degrees of conservation' with the 'fifth degree of conservation' affording the highest level of protection. The nominated area is situated on the territory of the Slovensky raj National Park (IUCN category II protected area) which is subdivided into areas of the third fourth and fifth degree of conservation. All but 2% of the nominated area occur within zones of the fourth and fifth degree of conservation. It appears that the fourth degree of protection prohibits clear-cutting and the building of new wood transport roads but not wood exploitation, while the fifth degree prohibits tree felling.

The eastern border of the Slovensky raj National Park is contiguous with the Nizke Tatry National Park, which is linked to the Tatransky (High Tatras) National Park, which is managed as a transfrontier protected area with the Tatranski National Park in Poland. Larger mammals such as lynx and wolf use this 'biological corridor' to migrate between the nominated area and the High Tatras mountains.

Staffing in the Slovensky raj National Park is minimal. There are currently only three professional rangers working in the National Park which is inadequate for such a large area. Some reviewers raised concerns about the harvesting of wood from the park. The area of the National Park adjacent to the nominated area consists mainly of monocultures managed for forestry.

Dobsinska Ice Cave, is in a separate nominated cluster from the main group of ravines but is in a zone of the fifth degree of protection. Only the caves themselves have been included in the nomination and not their protection zones above ground. The Ice Cave is only open to the public for four summer months and is visited by about 90,000 tourists each year. The trail from the road up to the cave is being upgraded, and interpretative signs are being erected. The rustic facility at the cave is also being renovated. All the boardwalks in the cave appear new, and well designed. At one point the route goes through a short tunnel cut many years ago in the ice, and elsewhere along a ledge cut into the ice, however, public access to the ice is generally prevented. Electric lighting has been installed, but is generally unobtrusive, and designed to prevent excessive heating of the cave and algae growth. In several places instruments have been installed to monitor conditions in the cave, including the temperature of the air and the bedrock. Numerous survey points have been established to enable detailed mapping of the cave and ice, and to monitor changes in the volume and movement of the ice.

The glacière is maintained by the plug or roof-fall which prevents cool air escaping from the cave in summer. Should this plug become damaged dense cool air would quickly flow out of the ice cave causing the glacière to melt. Partly to avoid damage to this plug the Stratenská Cave remains closed to the public.

5. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

The RSPDIC has been nominated under criteria i, iii and iv. Though the RSPDIC contains pristine forest areas of regional conservation importance and many endemic and locally endangered species the flora and fauna of the area is not comparable to existing World Heritage sites in the region. The size of the nominated area (4,350ha) is also much smaller than existing World Heritage forest sites and unlikely to maintain stable populations of higher predators. The area would not therefore qualify under criterion iv.

The RSPDIC a good example of late Tertiary and Quaternary geological and geomorphological landscape evolution, with a large variety and high concentration of ravines within a small area. The concentration and variety of ravines in such a small area is interesting and may be of regional significance but it is of specialised interest and its universal value has not been demonstrated.

In contrast to the ravine portion of the nomination, the ice cave is of greater significance due to its unusually low altitude, the size of its ice mass (110 132 m³) and because it is considered by many to be a textbook example of an ice cave. Extensive research has been carried out in the cave on paleoclimate and the cave is a significant site for the study of climate change. However, although the site is considered by some as a 'type site' ice cave, it is a rather small and specialised and thus its universally outstanding value is lacking.

The ravines and ice cave also have aesthetic qualities but the ravines are surpassed in terms of natural beauty by similar sites elsewhere. The ice cave is a more unusual natural phenomenon but is more of a curiosity than an outstanding superlative manifestation of nature. The majority

of reviewers confirmed that the ice cave portion of RSPDIC had high natural values but noted that the case for the ravines is less convincing.

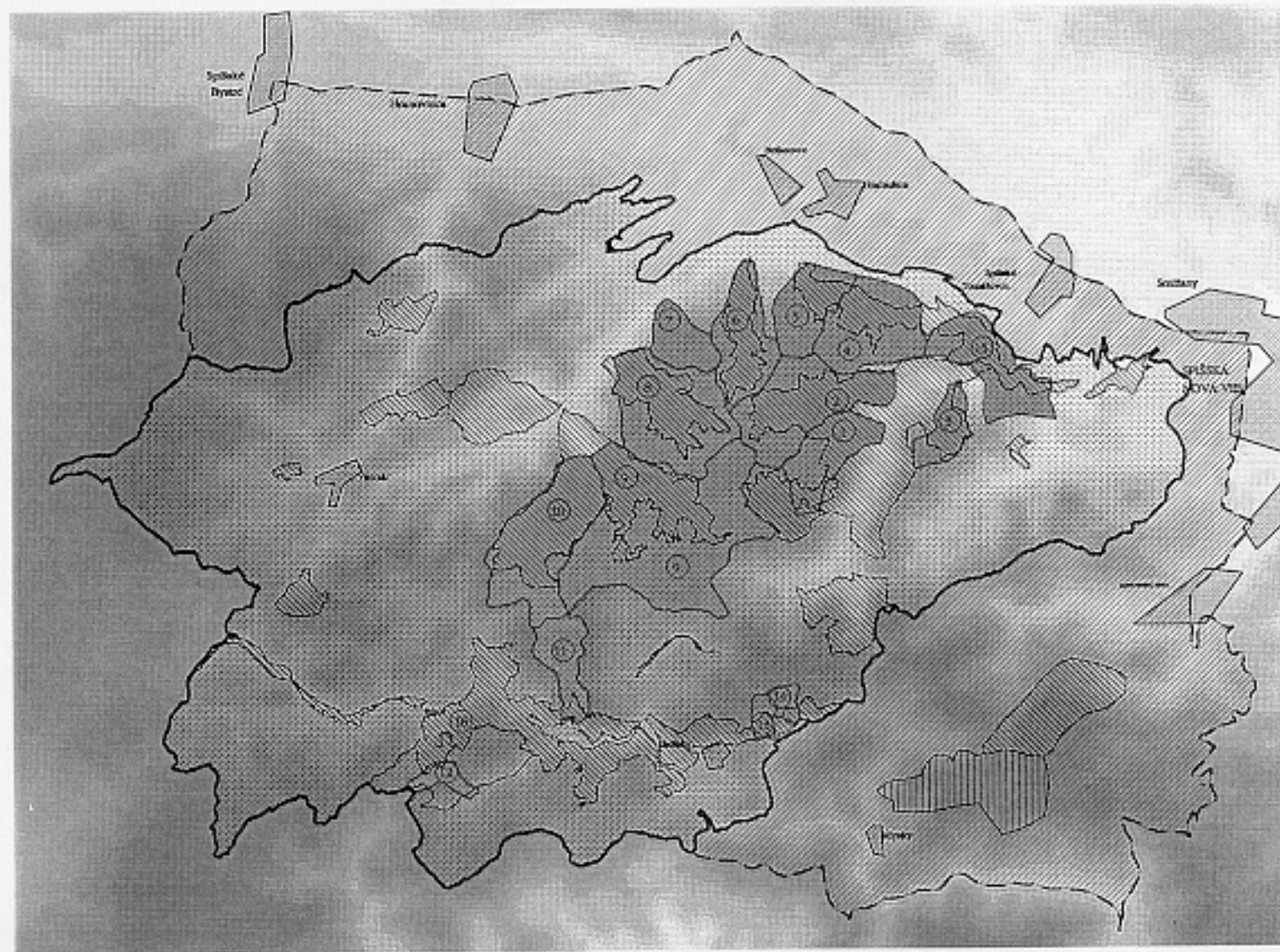
In conclusion, although the RSPDIC nomination is comprehensive and has been well prepared, its natural values are not assessed to be of universal value. However, while the ravine and karst features of the area are judged to be of national and/or regional importance, the Dobsinska Ice Cave portion of the nomination is a relatively unique feature. It would not, however, stand on its own as a World Heritage natural site. It would however, add another natural element to the existing Caves of the Aggtelek and Slovak Karst World Heritage site and its incorporation in that site could merit study.

6. RECOMMENDATION

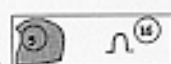
IUCN does not consider the nominated site on its own meets the criterion of "outstanding universal value" to warrant inscription on the World Heritage list. However, IUCN considered that it does have values which would complement those of the existing Caves of Aggtelek and Slovak Karst World Heritage site and recommended that the Bureau **refer** the nomination back to the Slovakian Authorities to consider a proposal that the Dobsinska Ice cave portion be incorporated in the existing Caves of the Aggtelek and Slovak Karst site.

SÚČASNÉ ZABEZPEČENIE OCHRANY LOKALITY NAVRHNUTEJ NA ZÁPIS DO ZOZNAMU SVETOVÉHO DEDIČTVA
 CONTEMPORANEOUS SECURING A PROTECTION OF LOCALITY PROPOSED FOR REGISTRATION ON THE WORLD HERITAGE LIST

Stav k 31. decembru 1996 - State to the 31st December 1996



Vysvetlivky - Legend

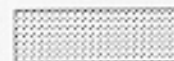


Navrhované objekty predmetnej lokality (vulkány, jaskyne)
 Proposed objects of the locality (gorges, caves)

Stupeň ochrany - Degree of protection



2. stupeň ochrany - ochranné pásmo národného parku
 2nd degree of protection - protective zone of national park



3. stupeň ochrany - národný park
 3rd degree of protection - national park



4. stupeň ochrany - chránený areál
 4th degree of protection - protected area



5. stupeň ochrany - prírodné rezervácie a prírodné pamiatky
 5th degree of protection - wilderness areas and natural sights



0 1 2 3 4 5 km

WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

EAST RENNELL (SOLOMON ISLANDS)

1. DOCUMENTATION

- (i) IUCN/WCMC Data Sheet (6 references)
- (ii) Additional Literature Consulted: Collins, N.M. *et. al.* Eds. 1991. **Conservation Atlas of Tropical Forests: Asia and the Pacific** IUCN/WCMC; Solomon Islands National Environmental Management Strategy. 1993. IUCN/SPREP/ADB 160p.; Davis S.D. *et. al.* Eds. 1995. **Centres of Plant Diversity** Vol. II. IUCN/WWF; Wingham, E. 1998. **Resource Management Objectives and Guidelines for East Rennell.** New Zealand ODA, 22p.
- (iii) Consultations: 10 external reviewers, Solomon Islands government officials, New Zealand Aid representatives, local community chiefs.
- (iv) Field Visit: Jim Thorsell and Les Molloy, February 1998.

2. SUMMARY OF NATURAL VALUES

The nominated site of East Rennell (ER) is located on the southern third of Rennell Island which is the southernmost island in the Solomon Island group. Rennell, the largest raised coral atoll in the world is 86km long and 15 km wide and contains 87,500ha. The size of the area nominated is approximately 37,000ha plus a marine area that extends three nautical miles out to sea. Rennell Island has a tropical climate characterised by high uniform temperatures and humidity. Annual rainfall ranges between 3000-4000mm with a dry season from May to August. The island is subject to relatively frequent hurricanes which are a major factor affecting the island.

Rennell was formed by the uplift of corals which formed on an undersea ridge and then were subject to faulting. The landform is a typical jagged and eroded limestone karst rising to 200m. A major feature of the island is Lake Tegano which was the former lagoon on the atoll. The lake is the largest in the insular Pacific (15,500ha). It is brackish and contains many rugged limestone islands.

Rennell is mostly covered with dense forest with a canopy averaging 20m in height. The three main vegetation types are low scrub forest on the karst ridge, tall forest in the interior and beach flora along Lake Tegano. The lake's flora is dominated by 312 species of diatoms and algae a small number of which are endemic. There are 10 endemic plants on the island and its flora contains elements from the more impoverished Pacific islands to the east and the much richer Melanesian flora to the west.

Wildlife includes 11 species of bats, one of which is endemic, 43 bird species, four of which are endemic. An endemic banded sea snake lives in Lake Tegano. The invertebrate life is rich

with 27 species of land snails and 731 insect species. Very little information is available on the marine area.

Approximately 800 people of Polynesian origin reside in four villages within the nominated area. Subsistence agriculture, fishing and hunting are the bases of the economy. The local people rely on forest products for most construction materials. The land is under customary ownership and the lake is regarded as common property.

3. COMPARISON WITH OTHER AREAS

Currently, 21 islands or portions of islands are inscribed on the World Heritage list including four in the Pacific (Lord Howe, Henderson, Galapagos and Hawaiian volcanoes). Other World Heritage islands are contained within the Great Barrier Reef Marine Park 1000km to the east of Rennell. There are 40 protected areas in the Papuan Biogeographical province, most occurring on the large island of New Guinea and the small islands surrounding it. In the wider context of the region, Rennell can be seen as a stepping-stone to the more distant Pacific islands to the east, all of which progressively decrease in biodiversity along a west to east gradient.

In the 1987 "Review of the protected Area system of Oceania" undertaken for IUCN and UNEP by A. Dahl, Rennell is rated in eighth place overall in terms of conservation importance but the most important one within the Solomon Island group. It is rated second to Guam in terms of conservation importance for raised coral atolls.

The distinguishing features of ER that are not duplicated elsewhere are:

- Rennell is the world's largest raised coral atoll. Throughout the Pacific there are about 25 such atolls, most of which have been significantly modified by human activity (except for Henderson Island World Heritage site which is one-tenth the size of Rennell but is more pristine);
- Lake Tegano is the largest lake in the insular Pacific and contains a number of endemic species (though not as many as the lakes in Palau);
- The forests of the nominated area are mostly undisturbed by humans and display a number of adaptations to the effects of the frequent cyclonic storms;
- For its size Rennell Island has a high number of endemic species, particularly birds. Along with 29 other islands in the Pacific, Rennell is listed as an endemic bird area by Birdlife International (though it is ranked in the third level in terms of priorities);
- Within the Pacific, most oceanic islands have been much modified by human activity. On Rennell, these impacts have been relatively light and invasive predators such as rats and alien land snails which have decimated the faunas of other islands, are absent.

In conclusion, ER has a number of marine, coastal and forest values that are better displayed in other Pacific locations. The fact, however, that ER combines them in one place and in a relatively undisturbed state, makes the island a special place in the Papuan Biogeographical Province.

4. INTEGRITY

There are three issues that need to be addressed regarding integrity: boundaries, customary land tenure, and local support for conservation.

4.1. Boundaries

Several reviewers questioned why the nomination was confined to only a portion of the island. The logic here is that integrity would be better maintained by protection of the entire uplifted atoll as the forest in ER is not sufficiently large (according to a study by J. Diamond) to ensure long-term survival of the endemic birds. Certainly previous proposals for mining and forest clearance on west Rennell would have some serious conservation consequences especially as there is no land use plan for the whole island. On the other hand, the local communities in west Rennell are not favourable to being included in the nomination at this time. Furthermore, the major features (particularly Lake Tegano) are in ER. Currently the prospect of an island-wide nomination is not feasible.

4.2. Customary Land Tenure

As is the case in most inhabited Pacific islands and elsewhere, land in Rennell is owned under the traditional customary system. This situation makes it difficult (but not impossible) for national government legislation to be effective in terms of management. Indeed in the case of ER, the ability of the central government to protect the site is limited. There is a draft World Heritage Protection Bill but no action has been taken to revise or enact the Bill. In any case, the customary ownership pattern in place on many islands can be more conducive to conservation than if the land was under control of a distant government office. This presumes that customary practices in place are favourable to protection and that traditional ownership powers and community support are not being eroded.

The Operational Guidelines for the Convention note that World Heritage natural sites "should have adequate long-term legislative, regulatory or institutional protection" (paragraph 44 vi). ER at the moment does not have this, although work is underway to provide it. First, (but of secondary importance) is expressed interest at the national level to revise and consider the passing of the World Heritage Protection Bill. This Act would not be interventionist but would provide an overarching national framework for heritage protection and reinforce the conservation objectives developed by the customary land owners.

Moreover, it is noted that the Operational Guidelines (para. 24 (b) (ii)) recognise "traditional protection and management mechanisms" as acceptable for World Heritage sites which meet cultural criteria but no similar provision exists for sites which meet natural criteria. Both the Sixth South Pacific Conference on Nature Conservation, 1979 and the Global Strategy Expert meeting in Amsterdam in March 1998 recommended that the Committee recognise traditional protection for sites which meet natural criteria.

Second, and most essential, is the process just begun by the local Management and Conservation Committee (MCC) to prepare a resource management plan

for ER. IUCN's view on this, and other similar situations, is that there needs to be some official document (as would be formally prepared by the MCC as representatives of the local residents), that provides an outline of the management objectives and prescriptions for protection of the site. Until this is available it is not possible to state how customary practices in fact will provide this protection.

4.3. Local Support for Conservation

IUCN was impressed during the field mission by statements from the local chiefs and paramount chief on their desire for sustainable development for ER. The World Heritage initiative is very much linked to the desire of the Rennellese people to encourage ecotourism in the area. This will require a significant amount of education, training and cooperative decision-making. It is expected that the preparation of the resource management plan under the MCC will further strengthen this local awareness and prepare for this economic activity.

5. ADDITIONAL COMMENTS

Much of the effort to promote conservation in ER has been undertaken with support provided by the New Zealand Government's Development Assistance Program. A similar project in the Marovo lagoon area may also result in a natural site nomination and the New Zealand Government should be commended for its assistance in promoting the conservation of such island ecosystems in the Pacific.

One reviewer has suggested that in terms of the history of the interaction of the traditional owners with Rennell that there might be value in considering the cultural landscape values of the site.

With regard to the marine component of the nomination, very little information is available. Further research into this dimension of the nominated area is required.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

As discussed under the above section on comparison with other areas, ER does not particularly stand out for its dramatic scenery, biodiversity or geological values and IUCN considers that a convincing case for criteria i, iii, and iv is not made in the nomination. The main strength of the ER nomination lies in criterion ii, dealing with significant on-going ecological and biological processes that are evident on the island. ER is an important site for the science of island biogeography as reflected in the extensive studies conducted there by the University of Copenhagen and others. These processes relate to the role of ER as a stepping-stone in the migration and evolution of species in the western Pacific and for the speciation that is underway, especially with respect to the avifauna. Combined with the strong climate effects of frequent cyclones, ER is a true natural laboratory for scientific study.

The site is thus considered to meet criterion ii but the conditions of integrity in the Operational Guidelines are not yet met. Although customary land ownership should not preclude a site from consideration, IUCN suggests that an essential requirement would be a formal statement of objectives and management prescriptions. This is particularly required in the absence of any national legal framework that would reinforce the conservation goals of the traditional owners (although this should also preferably be available). Beyond the preparation of a local resource

management document and the passage of a national law, much needs to be put in place in terms of training, education, boundary marking and other basic management activities.

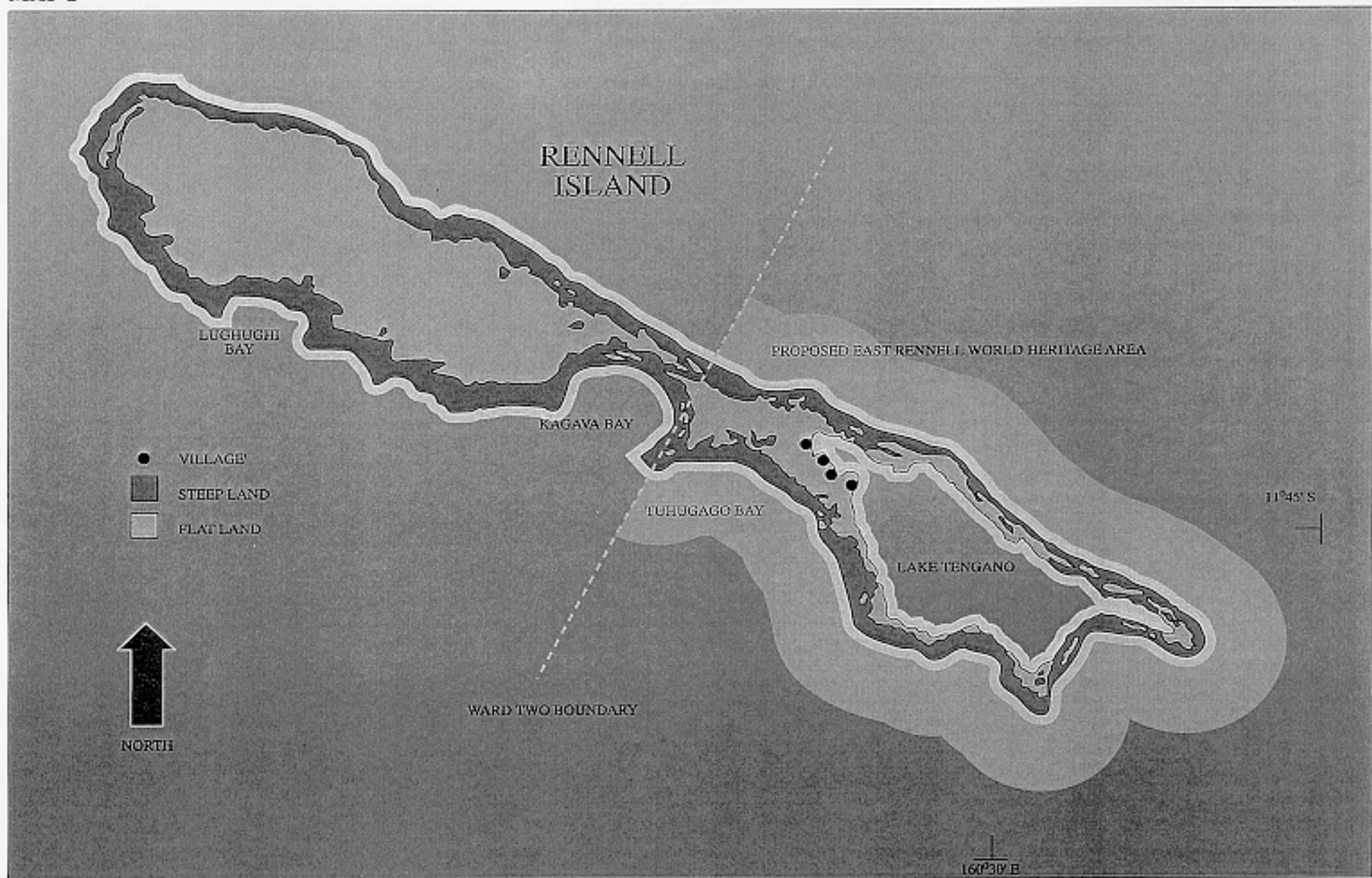
NEW INFORMATION: Subsequent to the Bureau's concurrence with the above conclusions as relayed in a letter from the Centre, the Permanent Secretary of the Ministry of Commerce, Employment and Tourism has responded (September 1) to note that:

- a "Resource Management Objectives and Guidelines" document has been prepared by a New Zealand consultant. This is the first phase in a process that will lead to a management plan that will be prepared by local landowners and institutions over the next three to four years. IUCN considers this document as a strong beginning for a sustainable management regime but there are no indications as to what reaction the local landowners and the MEC have to it.
- The draft World Heritage Protection Bill is not currently being put forward although the Solomon Islands Government is considering a new Environmental Bill. IUCN notes that the rights of customary landowners and customary law is acknowledged in the Constitution of the Solomon Islands but feels that an appropriately worded World Heritage Bill could reinforce those rights while at the same time giving some legal commitment for World Heritage sites at the national level.

7. RECOMMENDATION

The Bureau recognised that the ER nomination breaks new ground in terms of nominating a natural site that is under customary land ownership, that has no formalised legal basis and for which the objective is sustainable resource use. The Solomon Islands authorities have responded to these concerns to note that it will be some time before a plan or national World Heritage legislation is in place.

Considering, however, that the site does meet criterion ii, that there is support among the local landowners for the World Heritage listing, and that the planning process has begun, IUCN recommends that the Committee inscribe the site. At the same time they should reiterate the need for a locally-developed management plan, a national World Heritage Protection Bill, and the suggestion that a mission in three years time to gauge progress be undertaken.



Rennell Island showing the proposed East Rennell World Heritage Area which includes Lake Tegano, the land and the sea out to three nautical miles.

WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

THE BASHKIR URALS (RUSSIAN FEDERATION)

1. DOCUMENTATION

- i) IUCN/WCMC Data Sheet
- ii) Additional Literature Consulted: Williams, M. 1996. Opportunities From Chaos: a New Era for Protected Areas of the Former Soviet Union. **Parks** 6 (3). IUCN;. Stepanitsky Zapovedniks of Russia and the Modern State. **Parks** 6 (3). IUCN; Stewart, J. M. 1992. **The Nature of Russia**. Boxtree Ltd.; Knystautas, A. & V. Flint. 1987. **The Natural History of the USSR**. Swallow Editions Ltd.; St. George, G. 1974. **Soviet Deserts and Mountains** Time-life International; Sparks, J. 1992. **The Realm of the Russian Bear - A Natural History of Russia and the Central Asian Republics**. BBC Books; Chebakova I.V. 1997. **National Parks of Russia**. Biodiversity Conservation Centre. Moscow; Davis S.D. *et. al.* Eds. 1995. **Centres of Plant Diversity - A Guide and Strategy for their Conservation** Vol. II. WWF/IUCN; Middleton, J. & T. Walthman. 1986. **The Underground Atlas**; Walter, H. 1977. **Vegetationszonen und Klima** - Verlaq Euqen Ulmer. Stuttgart; Courbon, P. *et. al.* Eds. 1989. **Atlas of the Great Caves of the World**; Grimmet, R. & T. Jones. 1989. **Important Bird Areas in Europe**. ICBP Technical Publication No. 9.
- iii) Consultations: 11 external reviewers, Bashkirian Environment Ministry Officials, Bashkir State University scientists.
- iv) Field Visit: June/July 1998. Gerhard Heiss and Rolf Hogan.

2. SUMMARY OF NATURAL VALUES

The Bashkir Urals (BU) is located in the Southern Ural Mountains of the Republic of Bashkortostan 230km south-east of the capital Ufa. The site of 195,731ha is comprised of four protected areas in two contiguous units. The larger unit in the west consists of Zapovednik (strict nature reserve) Shulgan-Tash (22,531ha), Zakaznik (wildlife refuge) Altyn Solok (90,850ha - reduced from 93,580ha proposed in the nomination by officials during IUCN field mission), and the strict protected zone of Bashkiria National Park (32.741ha). The small unit, approximately 30 km to the north-east, covers Zapovednik Bashkirskiy (49.609ha).

The site is a forest ecosystem on highlands enclosing four biogeographical provinces (See Map). The most significant landscape features are deeply incised river valleys with rocky cliffs up to 150 m high. The site reaches its highest point on Masim ridge (1,040 m) in Zakaznik Altyn Solok. The nominated area includes lower Permian limestone and gypsum on the slopes of the river Belaya while the mountain ridges Utamysh, Kalau, and Masim, with their karst landscapes, stretch through the western part of the territory. A limestone table land dominates Shulgan-Tash and the strictly protected area of Bashkiria National Park. The National Park also contains 21 speleological complexes including Sumgan the largest speleological complex of the Urals - 10 km in length and 120 m in depth. Zapovednik Bashkirskiy is part of the Southern Kraka massif, made of laccolites. Its ridges were formed by fluvial erosion and rise to

964 m. Three rivers flow through BU for considerable distances: the Nugush (85 km of the 100km from its source to the Nugush Reservoir); the Uzyan (80km); and the Belaya, one of the major rivers of the Southern Urals, (30km including 2km underground).

Though climate is generally continental with warm summers and very cold winters the western slopes receive a mild and moist Atlantic influence while the eastern slopes are cold and dry. The eastern part of BU is dominated by light coniferous forests of pine and larch with steppe woodland and treeless steppe areas above 800 m (about 5% of the Zapovednik) which are relatively rich in relict and endemic species. The western part has summergreen broad-leaf forests of lime, oak, elm, and maple. Birch and aspen occur as secondary forest and as natural woodland between light coniferous forest and steppe. More than 800 vascular species, including 117 of rare endemic or relict character are registered.

More than 60 species of mammal occur in the nominated area including moose, brown bear, wolf, lynx, wolverine, beaver, otter, sable, marmot and ten species of bat. Eleven species of amphibian and nine species of reptile are found. Among 150 breeding bird species are white-tailed eagle, imperial eagle, royal eagle, short-toed eagle, long-legged buzzard, peregrine falcon, Saker falcon, osprey, capercaillie, black grouse, and corncrake. Seven of ten Eurasian woodpecker species live within the reserve. Almost 30 species of fish and 15,000 insects including an endemic Southern Ural bumblebee occur in the nominated area.

Cultural features include traditional bee-keeping which has been practiced in the area for 1,500 years. Local people use artificial hollows in mature pine trees to raise bees. Several thousand of these bee-keeping trees are distributed over the nominated area especially in Zakaznik Altyn Solok. This kind of apiculture has low impact on the forest ecosystems and is believed to be a remnant of a method which was widespread in Europe during the middle ages. Prehistorical paintings (14,500 years old) are found in Kapova cave. Kapova has significance in contemporary Baskirian culture and mud from the cave floor is believed to have rejuvenating properties.

3. COMPARISON WITH OTHER AREAS

BU lies at a junction of four biogeographical provinces, the West Eurasian Taiga, the Boreonemoral, the Middle European Forest, and the Pontian Steppe. The West Eurasian Taiga province reaches one of its southern-most locations in the Southern Ural Mountains and contains two World Heritage sites The Virgin Komi Forest (3,280,000ha), the largest block of undisturbed boreal forest in Europe, and the Laponian Area in Sweden (940,00ha) which includes elements of the Subantarctic birchwoods province. These areas are much larger and better preserved representatives of this province than BU.

The Middle European Forest province is represented by one World Heritage site, the Belovezhskaya Pushcha/Bialowieza Forest (92, 923ha-an extension of over 5,000ha to the Polish side will be evaluated by IUCN in 1999), a lowland forest below 200 m sea level. Though smaller than BU [note the WHS is part of a 150,000ha primeval forest area] Belovezhskaya Pushcha/Bialowieza Forest is considered to be more representative than BU of the Middle European forest province due to its greater species diversity (212 species of birds, 900 species of vascular plant) and variety of major forest associations including elements from East and Central Europe.

Boreonemoral and Pontian Steppe provinces are not represented on the World Heritage list. However, the area of Pontian Steppe in BU is very limited and not representative of the province. The extent of the Boreonemoral province in BU is also limited. So while the site's

most distinctive feature in relation to all mentioned sites above is its location at a junction of four biogeographical provinces its location does not result in an outstanding number of species. There are many natural areas worldwide which include elements of several biogeographic provinces and this phenomenon in itself would not merit World Heritage status.

The Karst features of the BU include the largest speleological complex in the Urals, underground river and a cave system 120m deep and 10km long, however, even on a European scale these phenomenon are not outstanding. Ozernaya, north of the Black Sea, is over 105km long and the Snezhnaya system in the Caucasus is 1,370m deep. Skocjan Caves WHS in Slovenia also includes a river flowing through 5km of underground grottos as compared to the 2km of the Belaya river.

The most noteworthy landscape feature is the Nugush river with its deeply incised valley but Karst phenomena are considered of minor importance on a worldwide scale especially when compared to features of existing World Heritage sites such as the ravines of the Nahanni WHS.

In conclusion, BU represents one of the largest blocks of deciduous broadleaf forests in Europe which has not been significantly affected by human influence (the level of human influence is comparable with Belovezhskaya Pushcha/Bialowieza Forest). The notable feature of this sites is its location at the intersection of four biogeographical provinces from continental broadleaf to mountain steppe showing a great variety of forest types, their interlocking and transitions. BU is not as pristine a more northern located areas of the boreal zone but is to be considered one of the most natural forests which still can be found in deciduous broadleaf and boreonemoral regions of Europe.

4. INTEGRITY

The four protected areas of BU form two separate units and there are plans to create a buffer zone connecting both parts. All four protected areas have a management plan. However, what was provided to the IUCN mission in as a management plan was more characteristic of a forest management plan showing dominant tree species and age classes.

Though the nominated area is under public ownership, management responsibilities of the site belong to three different agencies. Zapovedniks are managed by the Ministry of Nature Use and the Council of Environment (Goskompriroda) of the Russian Federation. The National Park is managed by the Forest Ministry of the Russian Federation, whereas the Zakaznik is managed by the Forest Ministry of Bashkortostan Republic.

Four small settlements exist within the nominated area while five others existed until 1992. Agricultural activities (Grazing of domestic stock, hay making, bee-keeping) occur in the nominated area but are limited to some 5% of the total area. Low in intensity, these activities are important socially and economically to the local communities. Forest exploitation has taken place some 150 years ago with recent cuttings (1951-1957) affecting only small areas (130 ha).

Tourist activities have no adverse effects and are concentrated along the Nugush and Belaya rivers on which 5,000 and 10,000 visitors respectively undertake boat trips every year. However, camping with open fires (legal or illegal) were seen along the Nugush river during the mission creating a threat to forests. Of the ten species of bats found in the nominated area, eight species and about 5,000 individuals normally use Kapova cave as a winter refuge. However, there has been a notable decrease in the bat population as the entrance of Kapova cave has been fenced to prevent vandalism.

The area surrounding the Ural mountains is heavily industrialized and the Republic of Bashkortostan is a centre for petrochemical industries making the area vulnerable to air pollution. Pollution is already affecting the eastern parts of Bashkirskiy Zapovednik where a decrease of lichens has been observed.

In terms of adequacy of its boundaries, the BU, as nominated, is not satisfactory and includes the main elements only partially. Continuous transition and close interlocking of existing four biogeographical provinces is not guaranteed by separation into two units and the nomination excludes the headwaters of the river Nugush, probably most noteworthy landscape feature of that area.

The preservation of natural processes is not guaranteed under the present management regime of strict fire suppression and a fire management plan is needed taking into account distinctive risks of fire development in different parts of the nomination area.

Current budgets in Russia are reduced to a minimum and without international support many areas would not be able to keep up day to day functions to say nothing of urgently needed investments. On the other hand, staff levels are substantial and the protected area complex is the largest employer of the district giving nature protection a strong social position which supports the site's integrity.

5. ADDITIONAL COMMENTS

It is worth noting the IUCN evaluation of the Uvs Nuur Hollow/Ubsunur Hollow deferred by the Committee in 1996: "Certainly the existence of so many life zones in one area along with the steep environmental gradients is an interesting biological phenomenon but not sufficient in itself to be considered 'universally outstanding'." This is also the case for BU.

Irrespective of the possibility of World Heritage listing, the nominated property would benefit from attention to the following points:

- a) An overall management strategy would be desirable focused on nature conservation principles to ensure that the area is managed as an entity, rather than separate areas. A fire regime should be addressed in the management strategy while the result of research should be taken into account.
- b) It would be desirable to achieve the greatest possible integration between the western and eastern part of the nominated area, desirably with higher protection status than that of a buffer zone.
- c) The management strategy and/or plans should take into account the area's cultural features, particularly the traditional bee-keeping and the paintings of the Kapova cave.
- d) It would be advantageous if the upper watershed of the Nugush river valley were integrated in the protected area complex.
- e) Research is needed on impacts of pollution on the area and appropriate strategies need to be developed as to how impacts can be minimized.

Finally, the field mission was handicapped by the absence of maps at an appropriate scale showing geographical details of the nominated site and its surroundings. Such information is essential and indeed mandatory.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

Though BU has been nominated under all four natural criteria, the main justification given in the nomination under criterion (i) is that the Ural Mountains represent a mountain chain which has remained geologically stable for 200 million years. Even if this were to be considered adequate justification for inclusion on the list, there is already a more significant area of the Urals included in the World Heritage List (Virgin Komi Forest). In addition, as justification for meeting criterion (i), the nomination refers to the areas karst features including the largest speleological complex in the Urals. The karst features are not considered to be outstanding on a world scale being surpassed by many World Heritage sites. The nomination does not therefore merit inclusion under criterion (i).

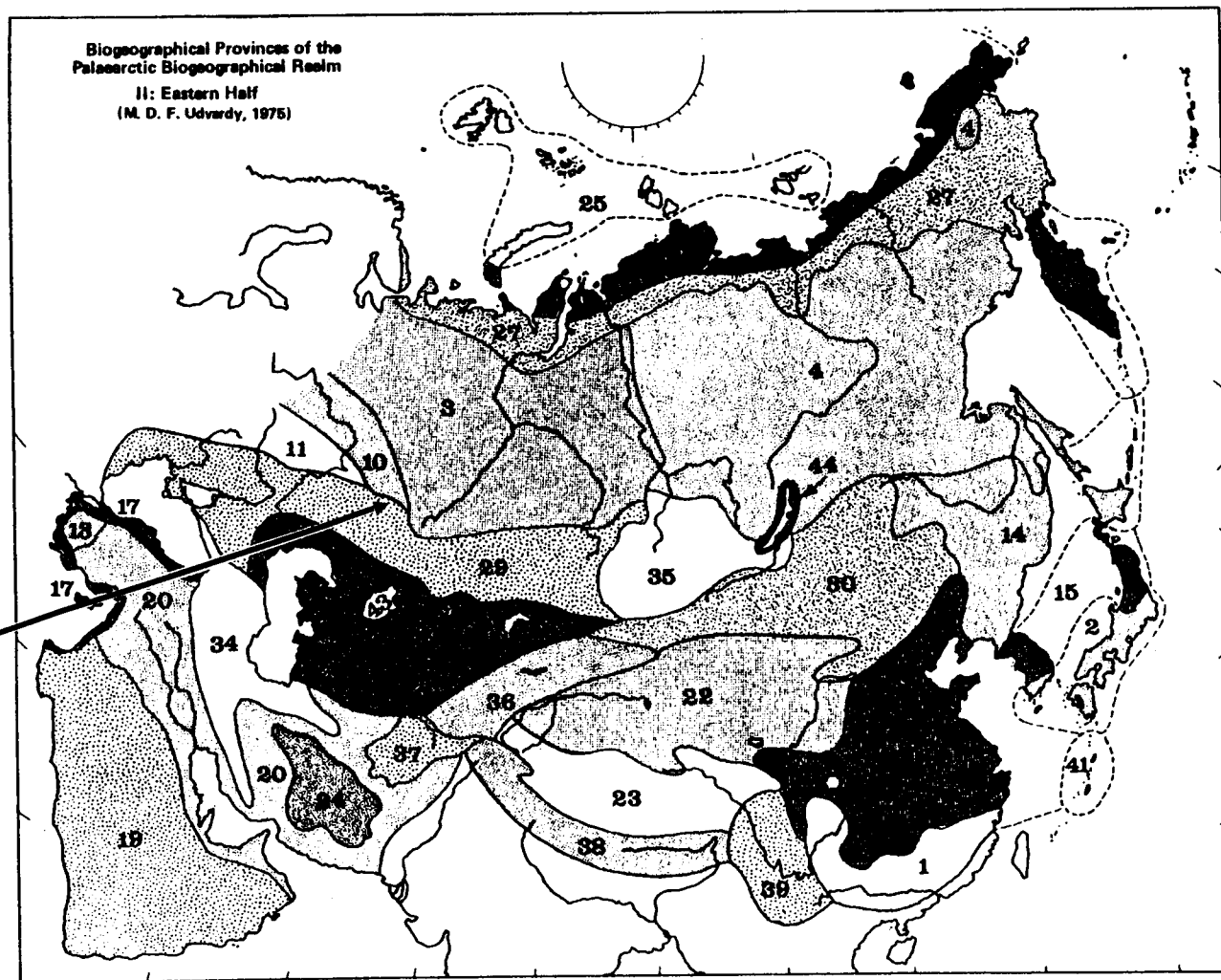
Under criterion (ii), the nomination refers to the intersection of four biogeographical provinces resulting in high biodiversity and offering an opportunity to study the development of ecosystems particularly the climate driven change from forest to steppe. There is no doubt that BU is an important area in a European context to study natural dynamics of deciduous broadleaf forests due to its size, variety of forest types and relatively pristine nature. However, there are many protected areas worldwide located at the intersection of biogeographical provinces and in terms of biodiversity (see paragraph 3), the number of species is not particularly high when compared to other World Heritage sites in the region.

Though parts of the nominated area have high aesthetic value, they are not considered to be of adequate value to qualify the site under criterion (iii).

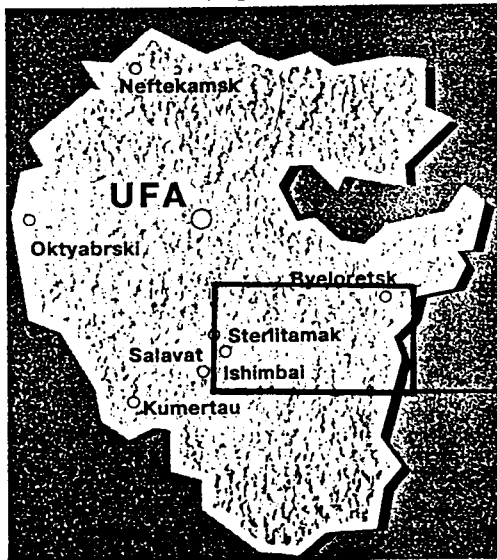
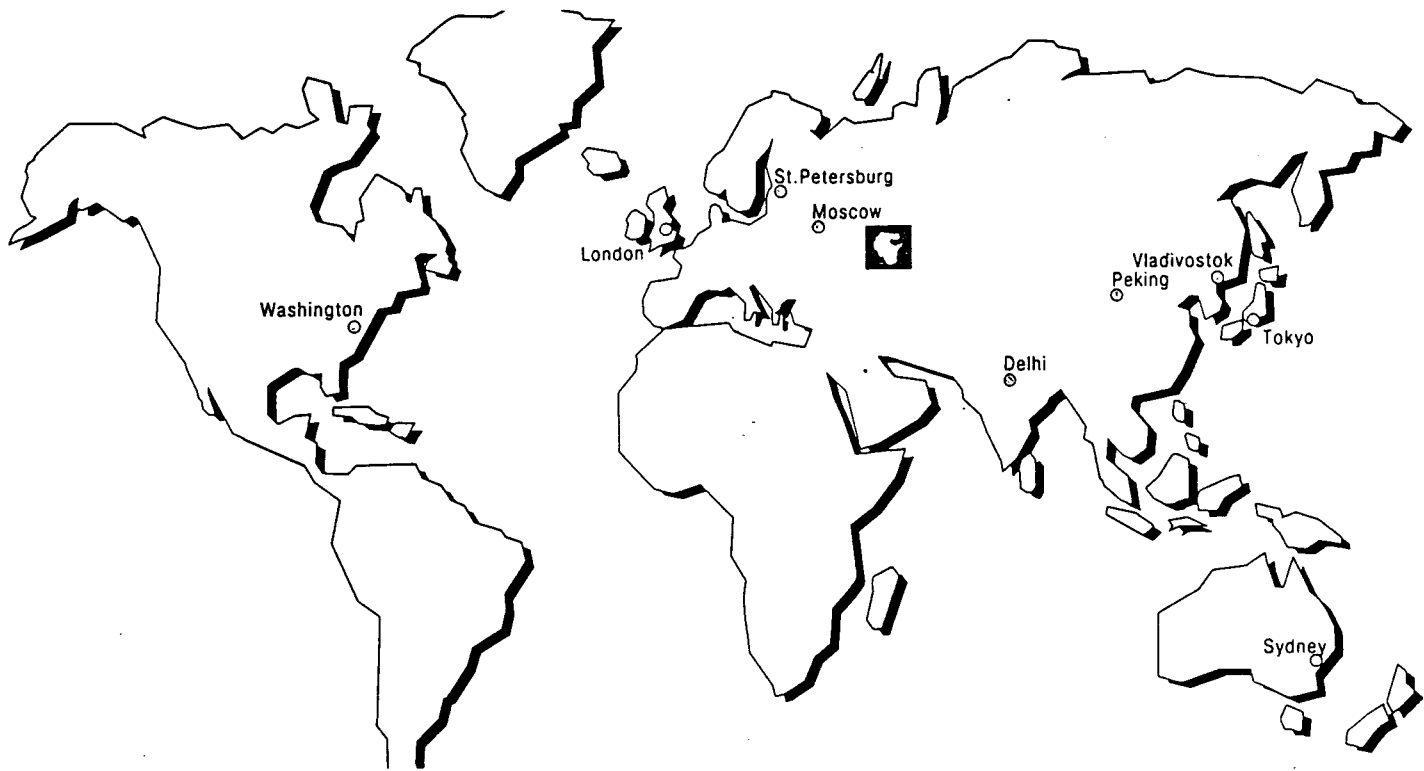
The area is listed as an Important European Bird Area by Birdlife International and contains a relatively high concentration and variety of raptors, three of which are globally threatened. It also contains one of the last habitats in Europe for the sable since the extermination of the North European population of this species. Though clearly of regional importance, neither the diversity of species nor the number of globally threatened species would qualify the nominated area under criterion (iv).

7. RECOMMENDATION

While the nominated area is a valuable one in a European context, IUCN does not consider that it meets World Heritage criteria and inscription on the World Heritage List cannot be recommended. The Bureau may wish to encourage the State Party to improve the area's protection by taking into account the suggestions in paragraph 5.



Biogeographical Provinces of the Palaeartic Biogeographical Realm (From Udvardy 1975).



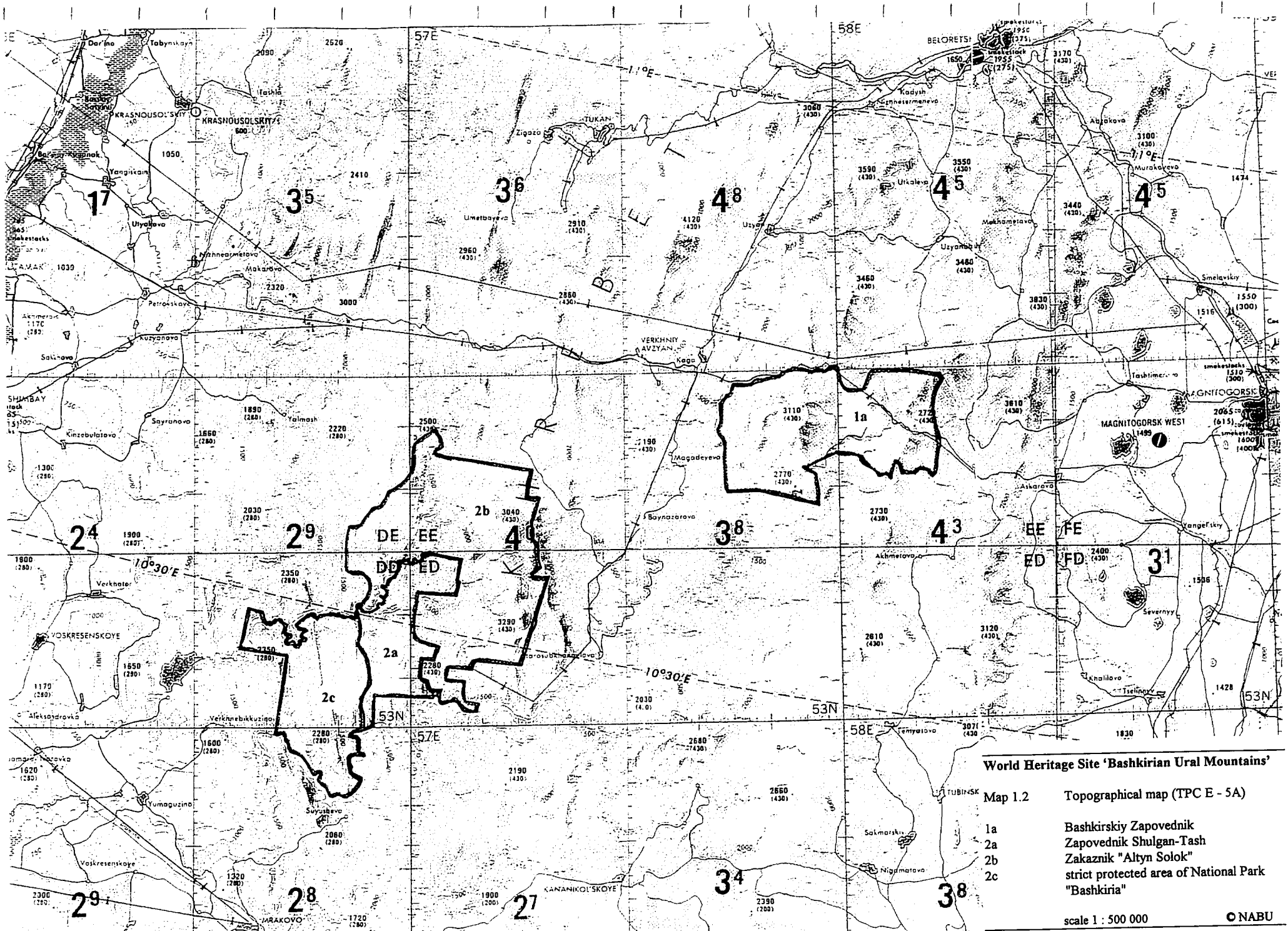
see map 1.1

The Republic of Bashkortostan is located in the Southern part of the Ural Mountains and on the plains of either side of the Urals ridge. The area of Bashkortostan is 143,600 square kilometers. The population is over 4 mln. people.

Республика Башкортостан расположена в южной части Уральских гор и равнин Предуралья и Зауралья. Площадь Башкортостана - 143,6 тыс. кв. км. Население - свыше 4 млн человек.

World Heritage Site 'Bashkirian Ural Mountains'

map 1.1 Location of the Republic of Bashkortostan in the world and position of the World Heritage Site „Bashkirian Ural Mountains“ in general



World Heritage Site 'Bashkirian Ural Mountains'

Map 1.2 Topographical map (TPC E - 5A)

1a Bashkirskiy Zapovednik
 2a Zapovednik Shulgan-Tash
 2b Zakaznik "Altyn Solok"
 2c strict protected area of National Park "Bashkiria"

scale 1 : 500 000 © NABU

WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

VODLOZERO NATIONAL PARK (RUSSIAN FEDERATION)

1. DOCUMENTATION

- (i) IUCN/WCMC Data Sheet: (1 reference)
- (ii) Additional Literature Consulted: Chebakova, I.V. 1997. **National Parks of Russia**. BBC; Volkov A.D., *et. al.* 1997. **Climax forests in the north-western taiga zone of Russia: natural characteristic present state and conservation problems**. Karelian Research Centre of the Russian Academy of Science Forest Research Institute; Williams M. 1995. National Parks in the News. **Russian Conservation News**. Biodiversity Conservation Centre, Moscow; Grimmett R.F.A. & T. Jones. 1989. **Important Bird Areas in Europe**. ICBP Technical Publication No. 9; Antipin, A. & P. Tokarev, 1995. Mire Ecosystems of the Vodlozersky National Park, Northern Russia. Finnish-Karelian Symposium on mire Conservation and Classification. **Vesi-ja Ympäristömallinnon vulkasuja-Sazja A. N207**. Helsinki; Bryant, D. *et. al.* **The Last Frontier Forests: Ecosystems and Economies on the Edge**. Forest Frontiers Initiative. WRI/WCMC/WWF; Wilison, A. & L. Williams. 1997. **Russia - WWF International Country Profile**. WWF; Losekoot, N. 1996. **Nature Conservation in the Russian Federation**. Netherlands Ministry of Agriculture, Nature Management and Fisheries.
- (iii) Consultations: 14 external reviewers, Karelian Ministry of Environment officials, Karelian Scientists, park staff and WWF Russia.
- (iv) Field Visit: July 1998. Gerhard Heiss and Rolf Hogan

2. SUMMARY OF NATURAL VALUES

Vodlozero National Park (VNP) covers 644,340ha in the Arkhangelsk Region (81%) and the Karelian Republic (19%) of Russia's European north-east. The nominated area contains two adjacent protected areas: Vodlozero NP with protected zones (468,340ha) and Kozhozero Regional Landscape Preserve (176,000 ha - note preserve's size on the park's map is given as 183,159 ha). VNP is part of the West Eurasian Taiga province. Most of VNP consists of a flat plain characterised by forests, mires, lakes, and rivers. Elevations vary from 117 m to 317 m with most of the area lying between 150 and 200m asl. VNP stretches 150-160km north-south and 40-50km east-west. The northern boundary of VNP is on the southern slopes of the Vetreny Poyas hills and the southern boundary extends around the shores of Lake Vodlozero.

The region belongs to the Fennoscandian Shield formed of crystalline rocks of the Archean/Proterozoic period. Numerous paleovolcanic and rift formations as well as large intrusive bodies and clastic pipes are found in VNP. A complex of ultrabasic and sedimentary volcanogenic rocks in the southern part were formed 3.46 billion years ago and are considered the most ancient rocks of Europe and one of the oldest formations in the world. A flat mire moraine plain covers a large area of the territory and is broken by water glacial features (lakes, outwash plains), rocks, and lake terraces. VNP's landscape includes characteristic glacial

features: esker ridges, dune fields, and moraine ridges. Glacial ridges form wooded islands surrounded by mire. Forest covers 50% of the VNP, mire 40%, and lakes and rivers 10%.

VNP consists of boreal forest ecosystems of northern and middle Eurasian taiga, 90% of which are in a primeval state. The forests are dominated by spruce (54%) and pine (44%). Secondary birch and aspen forests cover 2% of the nominated area. Mires are mostly of raised or transitional types with a small number of eutrophic mires.

VNP contains 414 species of vascular plants and shows a high diversity of moss, lichen, and fungi, most species are typical of taiga. Thirty eight species are considered as rare regionally, of which three species are listed in the Red Data Book of Russia. Much of the flora consists of Eurasian aquatic species. A large numbers of Siberian species reach their western limit in VNP. Two mire floristic provinces occur in the VNP which results in a relatively high floristic diversity.

VNP has 220 species of terrestrial vertebrates including almost 50 mammals. Noteworthy species are brown bear, wolf, lynx, wolverine, otter and the southernmost population of wild reindeer (approximately 100 animals). There are 176 bird species recorded in VNP of which 41 species are migratory. Important populations of white-tailed eagle (20 pairs), osprey (12 pairs), and golden eagle (8 pairs) occur in the site. The crane has a high population density as do capercaillie, black grouse, and willow grouse which occur at densities 4-6 times higher than surrounding territories. VNP's water and mire ecosystems are important for the breeding and migration of waterfowl. Research shows that the numbers of migrating waterfowl in VNP is comparable with Onezhsky Bay of the White Sea which is of global importance as a northern bird migratory path. The rate of fish reproduction in VNP is thought to be 2-3 times higher than elsewhere in Karelia and the area is important as a spawning ground for Onezhsky salmon. VNP is a refuge for 43 animal species which are locally rare and 19 of which are listed in the Red Data Book of Russia. Animals are believed to disperse from VNP into surrounding areas, thus the site helps to maintain animal populations and biodiversity over a wide area.

3. COMPARISON WITH OTHER AREAS

The Vodlozero National Park (VNP) is located in the Western Eurasian Biogeographic Province which is part of the boreal forest biome. There are four World Heritage sites in the boreal forest belt: Nahanni NP (476,560ha) and Wood Buffalo (4,480,000ha) in North America; and the Lapponian Area (940.000 ha) and the Virgin Komi Forests (3,280,000ha) in Europe. VNP shares similarities with all these sites but in particular with the European sites, in terms of its expanse of conifer, aspen and birch forests, mires, and water systems. The VNP differs from the above sites in that it is believed to contain one of the most extensive and untouched mire complexes of Europe (230,000ha). VNP also contains Vodlozero Lake (33,400ha) which is among the 50 largest lakes in Europe. Similar areas in Russia (Kenozersky NP, Paanayarvi NP, Russki Sever NP) are either much smaller in size or more affected by human influence. The Lapponian Area and the Virgin Komi Forests do not have lakes comparable to Vodlozero (though the Lapponian Areas has a 13,000ha lake it is located in alpine tundra).

VNP's forests are relatively productive due to their southern location on fertile soils. VNP represents the last undisturbed forest complex in the middle taiga subzone of Karelia and the reserve's timber resources amount to 10% of Karelian timber reserves. VNP represents an interesting site for a natural fire management regime due to its relatively large size and densely interlocked mosaic of forests and mires. Neither the Lapponian area or the Virgin Komi Forests

offer similar conditions. Scientific research in VNP is recent as expeditions began in the last century but detailed scientific research only began with the establishment of the park

A recent report by the World Resources Institute (WRI) shows extensive 'frontier forests' (or "large, intact natural forest ecosystems that are relatively undisturbed and large enough to maintain all their biodiversity.") in the Arkhangelsk Region. Though largely unprotected, the significance of these forests for conservation is the subject of ongoing research.

In conclusion, the VNP shares similar forest and mire features with the Lapponian Area and the Virgin Komi Forests but lacks the alpine tundra of the former. It is part of a vast area of frontier boreal forest in north-east Europe. VNP is distinctive its rich forests, its concentration of mires, and its large lake ecosystem.

4. INTEGRITY

99% of VNP is under public ownership. The National Park portion is managed by the Federal Forestry Service, while the Kozhozero Regional Landscape Preserve is managed by the Arkhangelsk regional administration. Protected zones along the eastern border of the National Park in Karelia are managed by the Forest Ministry of Karelia. Both the protected zones and Kozhozero are expected to be integrated into the National Park in the near future.

About 500 people live in the nominated area and because of the inaccessibility of much of the park, habitation is limited to five villages around Vodlozero Lake. Traditional agriculture covers about 1% of the total area and is limited to islands and southern shores of Vodlozero Lake. The impact of this agriculture on the natural values of VNP are believed to be very low. About 10% of the national park which was formerly occupied is now being restored to its natural state.

Vodlozero National Park has 169 staff and a comprehensive management plan. Some 70% of the National Park has been set aside for strict nature protection and public access is prohibited in approximately 25% of the park. Visitor numbers are low, about 3,500 visitors annually, and tourist activities are controlled of the park administration. Most tourism is restricted to less than 5% of the total area of the National Park along the river Ileksa and Vodlozero Lake. No management plan exists for the Kozhozersky Regional Landscape Preserve.

The area surrounding VNP is lightly populated but timber extraction is extensive and in several areas logging has reached the edge of the VNP. The timber industry has also applied to build a road for timber transport through the central area of the national park. Forestry and drainage have led to a significant decrease of wildlife, changes in water levels and pollution in adjacent areas. But despite these activities, a large quantity of forests and mires in surrounding areas remain intact. VNP is also under threat from mining activities. Plans have been drawn up for ore mining, open cast mining and a processing plant close to the southern border. Recent illegal geological surveys have revealed chromic ore and clastic pipes within VNP, and diamonds have been discovered close to the northern boundary.

The boundaries of VNP are not considered adequate for its longterm integrity. The watershed of Vodlozero Lake occupies 520,900 ha and is not adequately protected. Parts of the watershed are under forest exploitation in the Vetreny Poyas hills. However, most of the upper reaches of the Ileksa river, an important element of the watershed, is still in a pristine condition. Though inclusion of the whole watershed within VNP would be desirable, the inclusion of the territory between the current boundary and the ridges of the Vetreny Poyas hills within VNP is considered indispensable for the site's integrity. It should also be noted that Kozhozero

Regional Landscape Preserve has been enlarged by 12,449ha. The enlargement contains the river Kozha running from Kozhozero Lake to the north. Kozhozero Lake is the second largest river system of the area and would also merit inclusion in VNP.

The main outflows of the lake have been damned resulting in water levels up to 1.5 m above natural levels. The high water leaves strips of dead trees along the lake shore. However, influences on natural water ecology are believed to be low (botanists did not find any negative effects on adjacent mires) and white-tailed eagle use dead pines as viewing points and nesting places. Restoration of natural water levels would be desirable though the impact of restoration on the present lake ecology should first be investigated.

If VNP is to reach its true potential as a site to study natural processes of boreal forests it must develop a fire management plan to guarantee natural fire dynamics.

5. ADDITIONAL COMMENTS

If current deforestation rates continue, all natural forest stands outside reserves in Russia will disappear within two decades. Up to 70,000 ha of old growth forest have been cut down annually adjacent to VNL and more than 700,000 ha of marshes have already been drained. In Sweden, Norway, and Finland where old growth forests have been identified, primeval forests of 100,000ha or more only occur in four sites (Lapponian Area, WHS, Vindelfjallen Nature Reserve, Lemmenjokki National Park, Urho Kekkonen National Park). An inventory of primeval forests in Karelia identified two sites of 100,000 ha or more, Paanayarvi National Park (103,000ha) and VNP (645,000ha). Paanayarvi will be part of a future World Heritage cluster site nomination, the "Green Belt of Fennoscandia". The nomination will include more than a dozen remnants of primeval forest stretching from the Barent Sea to the Gulf of Finland along the Russian-Finnish border. None of the proposed clusters are as large as VNP.

Though 90% of the area is unaffected by any human activity, VNP also contains interesting cultural features. The wooden church of Ilinsky Pogost dates back to the 18th century. Its wooden walls and gates are the only remaining structures of this type and were used as a prototype for the reconstruction of Kizhi WHS. Although Kizhi Pogost may be a more characteristic Russian church, Ilinsky Pogost represents wooden clerical architecture of the Fennoscandia's north. Another interesting clerical complex is the stone monastery of Kozhozersky which dates back to the late 16th century. The location of these sites allows visitors to imagine the lives of monks, who chose to live in the wilderness. This once common combination of monastery and wilderness has been lost in most modern monasteries in Europe. The monasteries in VNP are almost unstudied and may provide interesting discoveries. Another cultural feature is the medieval trade route running through VNP which once connected Novgorod to the White Sea.

IUCN noted that no representative of Arkhangelsk region was present on official meetings in Petrozavodsk. It should be kept in mind that two thirds of the nomination area is located in this region. IUCN remains concerned about the commitment of Arkhangelsk authorities towards the VNP nomination.

Finally, given the wetland and waterfowl values of VNP, it may merit consideration as a Wetland of International Importance under the Ramsar Convention.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

VNP has been nominated under all four natural criteria. The justification under criterion (i) is based on the existence of basalt, sedimentary and volcanic rocks found in the park. There is no doubt that these rocks are very old but they represent different points in time rather than a major stage of the earth's history. Paleovolcanoes and glacial deposits are also relatively widespread phenomenon. IUCN concludes therefore that VNP does not qualify under criterion i.

Although VNP contains one of the largest mire complexes of Europe, an important lake and relatively pristine taiga forest, the complete watershed of the lake ecosystem has not been protected and the main river system is threatened by mining, roads, and clear-cutting. It is not considered an exemplary example of biological processes and thus does not meet criterion ii.

The scenery around Lake Vodlozero with its forested and islands is pleasant but the VNP as a whole does not contain the quality of landscape features deemed to be of outstanding universal value. VNP would not therefore qualify under criterion iii.

Though VNP represents an island of plant and animal diversity which can replenish the surrounding biologically impoverished areas and is a regionally important area for wildfowl migration and breeding, it is not considered to contain sufficient biodiversity or endangered species to qualify under criterion iv.

7. RECOMMENDATION

VNP, on its own, does not meet any natural World Heritage criteria and is thus not recommended for the World Heritage List. Though it is important at the national level, it does not have "universal value".

It may merit recognition as a Ramsar site and due to its cultural values, it may merit consideration as a cultural landscape.

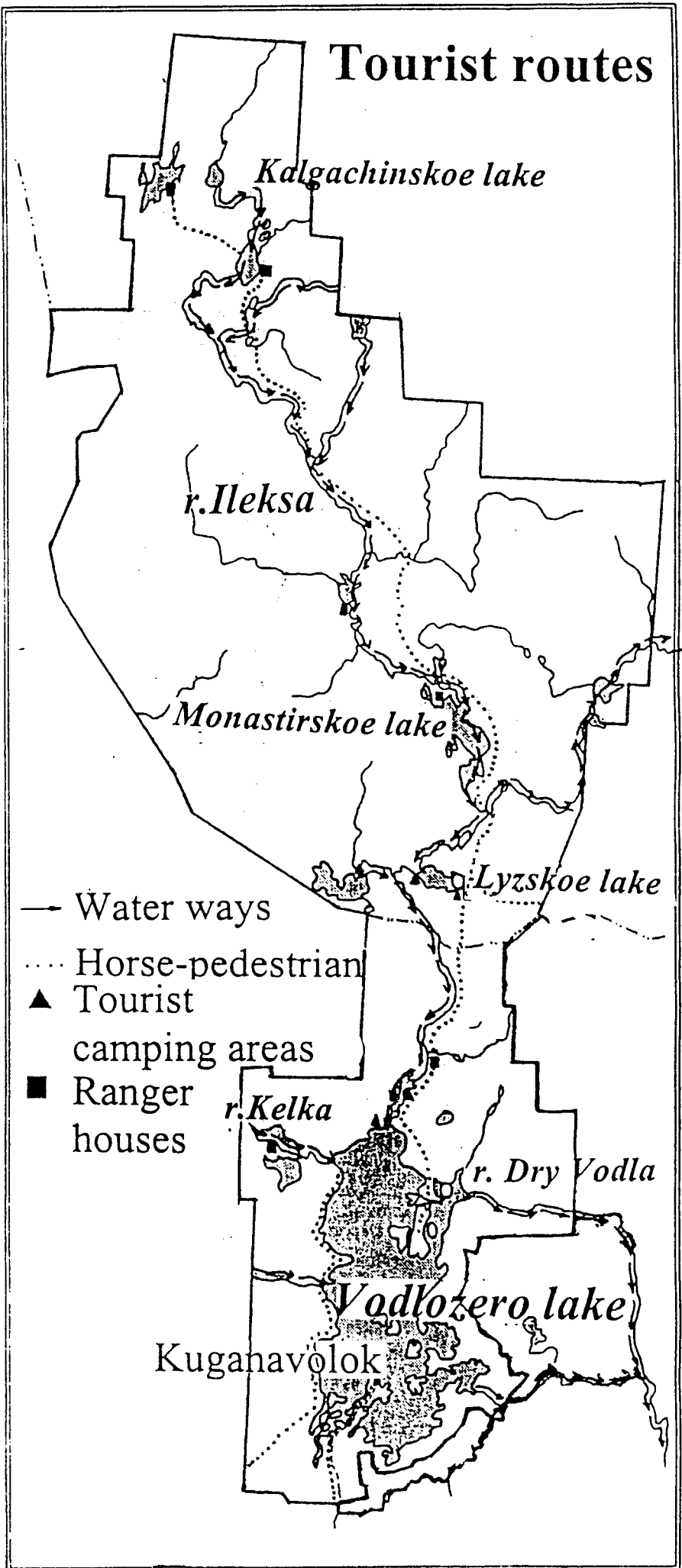
The possibility for establishing a serial site enclosing most pristine boreal forest remnants of Europe is also under consideration. Therefore, the VNP nomination would be better incorporated in the World Heritage proposal for the "Green Belt of Fennoscandia".

Fig. 1 : Location in Europe



Fig. 1

Tourist routes



WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

GOLDEN MOUNTAINS OF ALTAI (RUSSIAN FEDERATION)

1. DOCUMENTATION

- (i) IUCN/WCMC Data Sheet
- (ii) Additional Literature Consulted: Koshevoi, M.D.V. 1989. **Nature Reserves in the USSR**. Progress Publishers. Moscow; Krener, V. *et. al.* 1994. **Conserving Russia's Biological Diversity - An Analytical Framework and Initial Investment Portfolio**. WWF; Koshkarev, E. 1998. Critical Ranges as Centres of Biodiversity in **Russian Conservation News**, Winter (14); Davis *et. al.* Eds. 1995. **Centres of Plant Diversity**. IUCN/WWF. Messerli, B. & J. D. Ives. 1997. **Mountains of the World - A Global Priority**. The Partheon Publishing Group. New York.
- (iii) Consultations: 8 external reviewers, relevant officials from government and non-government organisations in Russia.
- (iv) Field Visit: J. Thorsell & Yuri Badenkov June 1996; D. Sheppard, September 1998.

2. SUMMARY OF NATURAL VALUES

The nominated site is in the Altai Mountains in Southern Siberia on the territory of the Altai Republic, comprising the high mountainous areas of Altai, the headwaters of the Katun and Chulyshman rivers and Lake Teletskoye. The nomination is a cluster which consists of three separate areas: (a) Altaisky Zapovednik (872,000ha) and a buffer zone around the Teletskoye Lake (93,753ha); (b) Katunsky Zapovednik (130,000ha) and a buffer zone around Mt. Belukha (262,800ha); (c) the Ukok Quiet Zone on the Ukok Plateau (252,904ha). The total area is 1,611,457ha. Two of the areas are located along the borders with China and Mongolia. This nomination is a revision of an earlier one deferred in 1996 due to questions about boundaries and levels of support. The new nomination has been renamed and significantly more focused in its geographic coverage.

The Golden Mountains of Altai (GMA) comprises an extensive mountainous area which is the watershed between central Asia and the Arctic Ocean and includes the headwaters of the Katun and Baya rivers. The confluence of these two rivers, beyond the boundary of the nominated site, forms the river Ob at 5,410 kms, the fifth longest river in the world, which flows north into the Arctic Ocean. Typical relief features of mountain peaks, include the 4,605 metre Mt. Belukha, cirques, trough valleys with lake basins, morainal hills and ridges. The origins of the mountains can in general be traced back to the Caledonian-Hercynian period, although rocks of the Pre-Cambrian Mesozoic and Cainozoic periods are found. The single most important factor in the landscape has been the influence of glaciation with five glacial periods in evidence: of 1,499 glaciers in the Altai region, many are within the nominated property, in the south Altai group and the central Altai group. The multitude of lakes is also a particular feature of the GMA.

The Altai region has a continental climate with vast contrast between warm and rainy summers and cold winters with little snow cover in the valleys and canyons and heavy snow in the mountainous areas. During the winter, the Altai is in a region of high pressure of the Siberian anti-cyclone which has its centre over Mongolia, which brings dry, clear weather. During the summer the climate is influenced by the Atlantic, with high rainfall.

The key values of each of the sites within the GMA include the following:

The Altaysky Zapovednik and the Buffer Zone around Teletskoye Lake in the eastern part of the Altai is composed of a mountainous taiga, a glacial zone, mountain meadows, and high altitude tundra and steppes. More than 1,400 vascular plants (70% of the Altai flora) are found in the Zapovednik and of these 17% are endemic species. The area supports a diverse fauna, including 72 mammal species and 310 bird species. The snow leopard and the mountain ram “argali” are also found within the Zapovednik. The Teletskoye Lake is the largest body of freshwater in south-western Siberia.

The Katunsky Zapovednik and the buffer zone around Mt. Belukha is located in the southern part of the Altai. It features a wide altitudinal variation and associated ecosystems, including mountain taiga, alpine meadows, glacial zones, high mountain tundra, and steppe areas. The Katunsky Zapovednik contains many important relic and endemic species. A significant feature is the extensive glaciation in the area.

The Ukok Quiet Zone is located in the south eastern part of the Altai Republic, on a high mountain plateau. The area is dominated by hills, steppe landscapes with marsh, streams and lakes.

3. COMPARISON WITH OTHER AREAS

Evaluation of mountain sites requires not only a comparison with other mountain ranges but also an assessment of uniqueness within their particular environmental context. The Altai Mountains cover an area 650km long and 600km wide with the highest massif reaching 4605 meters. The range is of secondary importance compared with the Caucasus and the Alps but rates higher in terms of extension, height and biological diversity than the Pyrénées in Europe. The Altai mountains have a number of specific natural characteristics of unique importance in relation to other mountain areas:

- The Altai is the major mountain range in Western Siberia biogeographic region (Suslov, 1962) and plays a central role in maintaining the hydrological regime of the Western Siberian Lowlands. The Altai provide the source of the greatest rivers of Western Siberia -- the Ob and the Irtysh – which are of crucial importance in supporting socio-economic activities in the lowlands but also in maintaining ecological processes in lowlands (WWF-IUCN, 1995). It has been estimated that 30% of all water in Eastern Siberia comes from the Altai Republic and this water largely has its origins in the nominated areas. This area compares favourably with other mountainous areas in relation to protection of hydrological values.
- The Teletskoye Lake is the largest body of freshwater in south-western Siberia and Siberia’s second largest after Lake Baikal. From the biodiversity point of view the Teletskoye Lake is considered the third most biologically diverse lake of Central Asia but is in the most pristine state. (WWF-IUCN, 1995).
- From the phyto-geographic point of view the GMA represents the most complete sequence of altitudinal vegetation zones in Central Siberia from steppe, forest-steppe, mixed forest, sub-alpine vegetation and alpine vegetation (WWF-IUCN, 1995), a zonation sequence particularly well illustrated in the Altaysky Zapovednik.
- More than 1400 vascular plants (70% of the Altai flora) are located in the Altaysky Zapovednik alone, and of them 17% are endemic species, including 60 narrow endemics representing Paleo-endemic from the Pleistocene Period. This is the highest level of endemism in the whole Altai mountains but is higher than in the Pyrénées (5%) and the Alps (7%) and very close to the Caucasus (20%). In addition, the Altai is a major global centre of origin of the montane floristic assemblages of northern Asia, which have subsequently spread into Central Asia. These include a number of important crop plant relatives. Thus the Altai mountains have a global significance in

understanding the evolution of the vegetation of Central Asia (WWF-IUCN, 1995; Messerli and Ives, 1997).

- Due to the presence of a high number of undisturbed glaciers, the Altai is one of the mountain ranges identified as having global importance in assessing the effects of global warming in mountain ecosystems by monitoring the variation and state of glacial health.
- The Altai plays a key role in the conservation of the snow leopard (*Uncia uncia*), a globally endangered species (IUCN, 1996). The Gobi-Altai population of this species serves as a core source for dispersing snow leopard individuals into southern Siberia. Enhancing the protection of areas in this nomination would help provide a protected corridor for the natural movement of this species across the Mongolian and Kazakhstan population, helping to maintain a viable number across their international range (Koshkarev, 1998).
- The nomination covers a range of landscapes features, and includes samples of the evolution and influence of major glaciation in the Quaternary Period. There are well developed complexes of great curving moraines, drumlins, outwash plains and different moraine lakes. Teletskoye and Marka-Kul Lakes are good examples of tectonic lakes. Some of these landscapes characteristics are also to be found in other isolated alpine massifs but in the Altai they are well-preserved and have a great potential for comparative studies that provide key elements to understand the geological and geomorphological evolution of mountains in the temperate zone.

In conclusion, while the Altai mountains do not rank as highly as the Caucasus the Pamirs, the TienShan and the Alps in many respects, they have many significant features and, specifically, have global significance as a centre of plant diversity and as a key location of extensive, undisturbed glaciers of global importance for assessing the impact of global warming on mountain ecosystems. The nominated area also enhances the conservation of globally endangered species such as the Snow Leopard and combine in a relatively small area a high diversity of landscapes features.

Finally, there are no existing World Heritage sites in this particular biogeographic province (Udvardy's Altai Highlands biogeographic province). WWF's Global 200 programme also identifies the Altai-Sayan mountain ecoregion as a priority area for conservation.

4 INTEGRITY

4.1 Legal Status

Legal protection stems from a number of federal laws and decisions, as well as laws and decisions of the Altai Republic. These include new laws relating to the environmental protection within the Altai Republic enacted since the 1996 IUCN evaluation mission to the Altai. Specifically, these include a decision of the Altai Republic on the "inclusion of natural properties of the Altai Republic in the World Heritage List", signed by the Premier of the Republic and the Government Committee of Ecology. This decision covers all of the nominated sites and is a positive sign indicating strong commitment to the protection of key sites within the Altai Republic. Additionally, the Altaisky and Katunsky Zapovedniks are offered protection at the highest level under the laws of the Russian Federation with the buffer zones around the Teletskoye Lake and Belukha mountain protected under the Federal Forest Service. The Ukok Quiet Zone is protected by laws and decisions of the Altai Republic and has recently been given strict protected status. Other actions have been taken to protect the integrity of the site, including implementation of restrictions on grazing and herding of cattle from Mongolia. Overall, IUCN considers that the matrix of laws at the Federal and Provincial level provide adequate levels of protection to ensure that the environmental values of the nominated areas are maintained. However, it is considered that protection under

Federal laws should also be provided for the Ukok Quiet Zone, to bring its protection site into line with the other parts of the nomination.

4.2 Management

The Altaisky and Katunsky Zapovedniks are managed by The State Committee on Environmental Protection of the Russian Federation under provisions of the Federal Law on Nature. Buffer zones surrounding Teletskoye Lake and Mt. Belukha are managed by the Federal Forest Service and Committees for Nature Protection and for Hunting and Fishing of the Government of Altai Republic. The Ukok Quiet Zone is managed under Committees for Nature Protection and for Hunting and Fishing of the Government of the Altai Republic.

Management of the GMA focuses on resource protection and research. All of the nominated areas have management plans or have plans in an advanced state of preparation. The Zapovedniks are relatively well staffed with 80 staff in the Altaisky Zapovednik and 70 in the Katunsky Zapovednik. However, the availability of funds for management pose a significant challenge. The budget for the Altaisky and Katunsky Zapovedniks comes from the Federal Committee for the Protection of Nature and the budget for the Ukok Quiet Zone comes from the Altai Republic. Funds for management are declining significantly and this greatly constrains management effectiveness (although WWF now has a US\$5 million project in the Altai). The involvement of international donors and partners can significantly assist and should be encouraged. Already, the British “Know How” Fund is supporting planning and management activities within the Katunsky Zapovednik. Although finance does pose a constraint on management, the low levels of use and threats to the area mean that no major problems for integrity exist at this time.

Ecological research is one of the major management activities within the site and has been undertaken for many years. It is important that future research programmes build on this wealth of experience and that research findings are applied to management programmes such as wildlife and fire management.

4.3 Human Use of the Area

There are no economic activities within the nominated areas and activities allowed are restricted to ecological research and education. There is potential for tourism in the areas of the Teletskoye Lake (in Altaisky), the Belukha Mountain and the Katun river (in the Katunsky Zapovednik) such as climbing, camping, hiking, rafting, and other outdoor activities tourism and is increasingly seen as an important aspect of future development in the region. There are already some tourist developments adjacent to the nominated areas such as the tourist lodge at the southern end of Lake Teletskoye. At present, tourism is constrained by difficulties of access and lack of facilities. Nevertheless, a number of international tour companies have organised tourist trips to the region and it is anticipated that this will continue. A tourism strategy for the region, including facilities and infrastructure is considered a vital need. In relation to the Quiet Zone, all types of industrial and large-scale economic activities are prohibited, except for traditional grazing. Overland vehicles are prohibited from travelling in the area outside the one road recently been set aside for use by the border guards. Hunting and fishing are prohibited.

4.4 Threats

There are few direct threats to the environment of the nominated sites at present. Grazing has been the principal human impact to date, but this has been isolated and at a low level. An issue has been raised in relation to rocket boosters associated with rockets launched from Kazakhstan, falling to earth within the Altaisky Zapovednik. The extent of this problem and the specific environmental impacts are unclear at this stage. It is understood that the Altai

Republic has developed an environmental agreement with two neighbouring Republics, and that one of the elements of this agreement relates to this issue.

5. ADDITIONAL COMMENTS

5.1 Cultural Heritage

The region has a rich cultural heritage. The first humans appeared in the region almost a million years ago as evidenced by Palaeolithic settlements located in the region of Gorno-Altai. The area of GMA was part of emerging and collapsing tribal unions, *khanates*, and the empires of the Scythians, Turks, Uigurs, Yenisey Kirgiz, Kidans, Mongols and Oitrats. From the middle of the 18th Century AD, the Altai region became part of the Russian Empire. The area is sparsely populated with local populations of Russians and Altaisky, a Turkish speaking people, mainly involved in traditional pastoralism, low intensity agriculture, hunting and gathering. These people have co-existed with nature for millenia and have a strong affinity with the natural environment. Indeed, one reviewer commented that the region's important biodiversity is probably not due to purely to natural factors but to the millenia of grazing. The Ukok Quiet Zone and Mt. Belukha have particular cultural and religious values for local people. Taking all this into account, there may be reason to consider the GMA on cultural grounds as well.

5.2 Regional Integration

Integrated regional planning for sustainable development is being undertaken in the Republic and it is important that planning for the GMA is linked with this broader regional planning framework. It is also important that planning for protected areas be integrated across boundaries. There is potential for expanding the boundaries of the nominated areas into adjoining Republics. Specifically, there is potential for linking the Altaisky Zapovednik in the Altai Republic with the Aba Kanske Reserve in the Hakacea Republic (Abakanske is contiguous with the north eastern portion of the Altaisky Zuapovednik). There is also potential for linking the Altaisky Zapovednik with adjoining protected areas in the Tuva Republic. Any expansion of the area between the Altai Republic and adjoining republics should be implemented in the context of the joint environmental agreement between the three Republics. There is also strong potential for transboundary expansion of the nominated area, in association with those parts of the Altai mountains in the neighbouring countries of China, Mongolia and Kazakhstan. It would be desirable for possible additions to the nominated area to be carefully considered and addressed as one integrated exercise.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

The GMA are considered under all four natural criteria:

(i) *Outstanding Example of Major Stage of Earth's History and Geological Features.*

The nominated area provides an excellent example of the geological history of Asia. The most important factor in the development of the landscape has been the influence of glaciation, with as many as five glacial periods in evidence. There are particularly well represented in the Katunsky Zuapovednik and in the Mt. Belukha buffer zone. These areas contain all or most of the key interdependent elements of glaciation, in their natural relationships. The presence of the high number of undisturbed glaciers in the nominated area makes it significant as a site for assessing the effects of global warming in mountain ecosystems. IUCN, however, considers inscription under the criterion is not warranted as the geological values of the GMA are more of regional than international importance.

(ii) *Contains Outstanding Examples Representing Significant On-going Ecological and Biological Processes*

The nominated area has important hydrological values and provides an outstanding example of processes relating to fresh water. The Altai is the major mountain range in the western Siberia biogeographic region

and plays a central role in maintaining the hydrological regime of the western Siberian lowlands. Protection of catchment values within the nominated areas are particularly significant when it is considered that 30% of all water in eastern Siberia comes from the Altai Republic, largely originating from the nominated areas. However, IUCN considers inscription under this category is not warranted for the same reason as criterion (i).

(iii) *Contains Superlative Natural Phenomena or a Site of Exception Natural Beauty*

The variety of landscapes and ecosystems within the nominated area from the steppes to the glaciers, provides diverse and spectacular scenery but overall is not seen as being of the superlative character needed to meet this criterion.

(iv) *Contains Extremely Important Habitat for Biological Diversity and Threatened Species*

The Altai region is an important and original centre of biodiversity of plant and animal species, a number of which are rare and endemic. Particularly significant is the Altaiskiy Zapovednik which has a unique biogeographical position, representing the interaction of Eurasia floristic and faunal influences with different regions, (including Siberia, and Central Asia). The GMA also contains extremely important habitat for the protection of a number of globally threatened species, including the Snow Leopard, and the Altai argali. The Altai population of snow leopard serves as a core source for dispersing snow leopard individuals into southern Siberia.

The rich biodiversity of the GMA, its place as a major global centre of origin of the montane floristic assemblages of northern Asia and its importance as habitat for threatened species warrants inscription under this criterion.

7. RECOMMENDATION

That the nominated area be inscribed on the World Heritage List under criteria (iv).

The Bureau may wish to recommend that the State Party to: complete management plans as soon as possible; develop a tourism strategy for the region; pursue international sources of funds to support management; and initiate a cooperative process with neighbouring states to consider possible transboundary expansion.



The Golden Mountains of Altai: 1. Altaisky Zapovednik and Teletskoye Lake; 2. Katunsky Zapovednik and Mt. Belukha; 3. Ukok Quiet Zone on the Ukok Plateau

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

NATIONAL PARK OF CILENTO (ITALY)

(MIXED CULTURAL-NATURAL NOMINATION)

1. DOCUMENTATION

- (i) IUCN/WCMC Data Sheet (3 references).
- (ii) Additional Literature Consulted: Government of Italy.1997. **Liste du Patrimoine Mondial: Candidature du Parc National du Cilento avec les sites archeologiques de Paestum et Velia**. Ministero dell’Ambiente. 1998. **Parco Nazionale del Cilento e Vallo di Diano – Relazione Programmatica e di Indirizzo, 1998-2001**. UNESCO-MAB. 1997. **Nuove Riserve di Biosfera in Italia**.
- (iii) Consultations: 12 external reviewers.
- (iv) Field Visit: J. Marsh, April, 1998.

2. SUMMARY OF NATURAL VALUES

The site, comprising 181,041 ha. is located in central-southern Italy, in the Campania region, and Salerno Province. Of this total size 20 core zones make up 26,000ha (i.e. 14%) with the remainder being in the buffer zone (50,000ha) and transitional zone (105,000h) categories. Cilento is in the Mediterranean Sclerophyll biogeographical province. The area is characterised by mountains, valleys and coast. It is bounded on the north and east by the Vallo di Diano, and on the west and south by the coast and Tyrrhenian Sea. The relief results from the collision of tectonic plates, mountain building, and fluvial and marine erosion.

In the east and north are the highest mountains, composed of limestone with stratified dolomites. They include Mount Alburni (1742m), Mount Cocuzzo (1411m), Mount Motola (1700m), and Mount Cervati (1898m). This area is separated from the western region by several river valleys, notably that of the River Calore. In the western area, the highest massif is Mount Sacro or Gelbison (1705m), composed of limestone, quartz, sandstone, conglomerate and clay. To the west of Mount Sacro, across the valley of the River Alento, lies Mount Stella (1131m). To the south-east of Mount Sacro, across the valley of the River Mingado, lies Mount Bulgheria (1225m), composed of limestone. The coast, extending from the Gulf of Salerno in the north, to the Gulf of Policastro in the south, is characterised by a succession of cliffs, promontories, valleys and beaches. Karst features, include over 400 caves in the limestone mountains and caves and natural arches along the coast.

The area experiences a Mediterranean climate that varies with altitude. Capaccio receives 1268mm of precipitation annually, with most in December, and least in summer. On the higher peaks there is snow from November to March, and strong winds are common. The area is at a biogeographical intersection of different bioclimatic zones. Many species from northern, eastern and southern biogeographical areas have their extreme limits of distribution testifying past geological events and contacts between Central Europe, the Balkan Peninsula and Northern Africa. A total of 3200-3500 vascular plant species (a high density for Europe)

occur in the area. The present vegetation pattern depends especially on altitude. Along the Mediterranean coast the following species dominate: *Pinus halepensis*, *Ampelodesma mauritanicus*, *Cistus monspeliensis*, *Olea eupopaea*, *Ceratonia ciliaqua*, *Juniperus phoenicia*, and *Euphorbia dendroides*. Internal valleys along the Mediterranean coast are occupied by *Quercus ilex* associated with *Asplenium onopteris*, *Rubia pergerina*, *Asparagus acutifolius* and *Viburnum tinus*. Between 400m and 1000m, there is an area of *Sanninica lucana* occupied by *Quercus cerris*, *Quercus pubescens*, *Acer obtusatum*, *Ostryia carpinifolia*, *Carpinus orientalis*, *Carpinus betulus*, and *Alnus cordata*. Between 700m and 900m, the grazed areas are occupied by *Lavandula angustifolia* and *Asphodelus albus*. *Fagus sylvatica* occurs exclusively on the Sub-Atlantic zone between 1000m and 1800m. The highest area with limestone and karst plateaux features grasslands of *Sesleria tenuifolia*, especially on Mount Cervati. There are at least 110 endemic, and 35 rare floral species.

There are 252 bird species, of which 25 are rare, e.g. the white-backed woodpecker and black woodpecker. 37 mammal species are found, of which 18 are rare. Noteworthy are small populations of wolf, otter and bats. There are 17 species of reptiles of which one is rare. There are 11 amphibian species, of which 4 are rare.

3. COMPARISON WITH OTHER AREAS

The site has some similarities with the existing World Heritage site of Cape Girolata, Cape Porto, Scandola Natural Reserve and the Piano Calanches in Corsica (France). This site differs from Cilento in being primarily coastal, composed of granite, with spectacular rock formations, and different tree species than Cilento.

There are many other sites in the Mediterranean Sclerophyll Biogeographical Province. For example, Pollino National Park, 190,000ha., south of Cilento in Basilicata and Calabria, is a calcareous-dolomite massif of 2664m, shaped by glacial and karst processes. The vegetation varies from high-montane to Mediterranean coast, providing a high habitat diversity. In the high -montane belt, characterised by *Seslerion apenninae*, there is an important endemic, *Pinus leucodermis*, at its western limit, a relic of Pleistocene glaciations. In the montane belt, *Asyneumati-Fagetum* and *Abies alba* are common. In the coastal belt, *Quercus cerris* woods are contiguous to *Aquifolio-Fagetum*, while the sclerophyll shrublands of *Quercus ilex* have been partly replaced by coniferous afforestation. Pollino was included on a tentative list of potential World Heritage natural sites in Italy.

Etna Volcano, in Sicily, is one of the most active in the world, and the highest in Europe (3,350m). It has several vegetation belts, and numerous endemic species. It was also included on a tentative list of potential World Heritage sites for Italy, primarily for geological values.

Gargano National Park, 121,118ha., on the Adriatic Coast of Italy, lacks high mountain environments and their associated vegetation zones, so has less biodiversity than Cilento. Abruzzo National Park in central Italy features mountain environments and their associated species but lacks the lower elevation and coastal environments found in Cilento. Other comparable parks in the region are Circeo and Garano and many similarities can be drawn especially on the coastal features.

In conclusion, Cilento, together with Circeo and Gargano National Parks, is one of the three most valuable coastal areas in Italy. Its coastal component is much smaller, more disturbed and less diverse than that found in the World Heritage site at Girolata (Corsica). Cilento's main natural values are related to the range of habitat it protects from the sea up to the surrounding hills rising to 1,898m. Plant diversity in the area is thus high though less than in

other European World Heritage sites such as Mont Perdu. As a landscape, Cilento is typical of much of Italy and regions bordering the Tyrrhenian and Adriatic coasts.

4. INTEGRITY

Legislation was passed in by the Italian parliament in 1991 and 1992 that established boundaries and provided provisional protection of the area. In 1993, revised boundaries and rules for protection were approved. Legislation in 1995 approved the present boundaries (including 181,000 ha) and rules for protection. Landscape plans for inner Cilento and coastal Cilento were approved by decrees in 1996. There is thus a substantial legal basis for protecting the park environment, especially the core areas and coast. According to the information on the Cilento Biosphere Reserve (1997), the core areas of the park, of which there are about 20, comprise 26,000 ha., buffer zones adjacent to them, 50,000 ha, the remaining 105,000 ha being labelled a transition zone. A management plan is being prepared by a team of consultants. Meanwhile, a work plan for the years 1998-2001 is guiding financial allocations, research, planning and management activities. The Ministry of Environment has provided 28,000,000,000 lira to implement this plan, and additional funds are being obtained from international organisations.

A park director was appointed in 1996. Information provided by the National Park office indicates that in April 1998, " 71 people are employed full time, in addition to 70 other ones who take care of wildlife and the damage caused by the latter [i.e. to crops and forest plantations]. Moreover, there are 183 forest guards." An office is now operating in Vallo di Lucania and regional offices linked by computer are planned. Some park regulations, especially relating to illegal wood cutting and poaching, are currently being enforced by some rangers of the Corpo Forestale. Relations with local residents are reported to be "difficult" and are a major management issue.

Most of the mountain areas have been, or still are, subjected to grazing and management for wood products, but these activities are being reconsidered. There are numerous roads throughout the area, though some are closed to the public. The coast from Camerota to Sapri is well preserved, there being no road access, and development has been constrained. Ecotourism and environmental education activities are occurring here, and elsewhere in the park.

The park includes some 86 communities with a population of 237,000. Some 352 illegally constructed buildings have been found inside the park. The park boundaries are not ecologically viable, there being two indentations, orientated north-west and south-east, that almost cut the park in two. This resulted from objections by several communities to inclusion in the boundary first suggested in 1992.

5. ADDITIONAL COMMENTS

The area has numerous cultural heritage values. A survey conducted by the Salerno Department of Archeology and the University of Sienna identified 19 caves, including: Cala (whose stratigraphic features have been dated between 250,000 and 10,000 years BP.), Granato and Castelcivita. Various forms of hominids occurred there during the Paleolithic, including *Homo erectus*, Neanderthal, and *Homo sapiens*. Wall paintings from the Neolithic are found in the caves. There are also numerous historic towns, villages and buildings, such as the stone watchtowers along the coast.

The site has been recognised (1997) as a UNESCO Biosphere Reserve. Twenty areas of the park, six of them coastal, have been proposed as ecological sites of European importance.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA





Cilento has some important values that are clearly significant at the national scale and its botanical values are recognised as having European significance. The nomination document itself does not present a convincing case for its "outstanding universal value", however, and all external reviewers had strong hesitations in recommending Cilento as a natural World Heritage site. Many also felt that only a small portion of the site is in a natural state and that its numerous but small disaggregated core areas were not sufficient to ensure biological integrity. With extensive agricultural development, forestry, grazing and the presence of 237,000 residents, Cilento is much more a candidate as a "Cultural Landscape" than as a natural site. Certainly the Conditions of Integrity as spelled out in the Operational Guidelines are not met in terms of its boundaries and current management presence which has only recently been established.

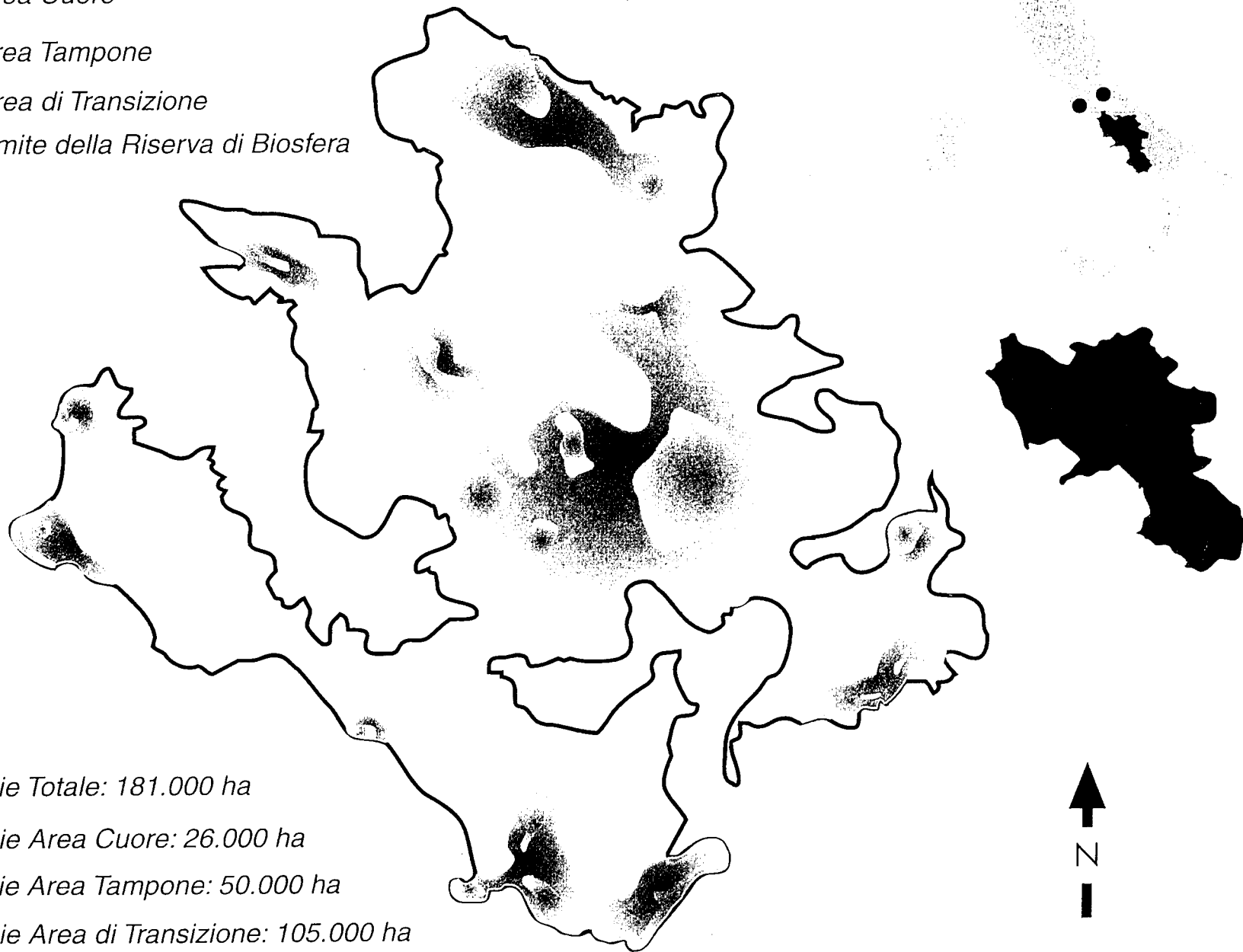
Given the numerous archaeological and historic resources of the site it is clear that the predominant values of Cilento are cultural. Its natural values are nationally important and serve to supplement its cultural milieu.

7. RECOMMENDATION

Cilento has been nominated as a mixed site. Its natural values are not considered to be of outstanding universal value and are much subordinate to its cultural ones, IUCN considers it is more appropriate to consider it under those criteria.

RISERVA DI BIOSFERA "IL CILENTO E VALLO DI DIANO"

-  *Area Cuore*
-  *Area Tampone*
-  *Area di Transizione*
-  *Limite della Riserva di Biosfera*



Superficie Totale: 181.000 ha

Superficie Area Cuore: 26.000 ha

Superficie Area Tampone: 50.000 ha

Superficie Area di Transizione: 105.000 ha