

Training for youths for monitoring and advocacy through utilization of spatial data – part 1

April 28–30 2014, Sofia

Practical exercise 2 Ecosystem services/benefits

Nature Park Strandzha

Strandzha Mountain is situated in south-eastern part of Bulgaria, on the border between Bulgaria and Turkey and flanks the Black sea on east. Its highest peak is in Turkey (1031 m); the highest peak in Bulgaria is Goliamo Gradiste, 731 m. Strandzha is declared a Nature park (IUCN 5) in 1995. This is the biggest protected territory in Bulgaria, 1161 km², which 1% of the country's area. Within the boundaries of the Nature park there are territories with a higher protection rank than the Nature park. These are 5 strictly protected territories – reserves (IUCN 1), 14 protected sites (IUCN 4 and 5), 8 natural monuments (IUCN 3).

In addition Strandzha is proclaimed a NATURE 2000 zone in 2008 for the bird protection and for the protection of the natural habitats. Strandzha is a part of European initiative for protection of the territories, where in the past the Iron Curtain was located, now called the Green Belt.

The forest covers 80% of the park area. The centuries-old forests are 30% of the forests in the protected territory – three times more than average for the country. In the natural massifs of old forests – the most valuable habitats from conservational point of view – trees of east *Quercus petraea*, *Quercus frainetto*, *Fagus Orientalis* и *Quercus hartwissiana* with diameter of 1.5–2.0 m and older than 500 years can be often found. This is the single place (in the whole continent) where forests of the temperate climate with evergreen rhododendron shrubs, typical for the end of the Tertiary (2 million years ago) have been preserved.

Besides providing a habitat for a large variety of species, the forests of Strandzha serve as a natural filter of the air and the protection of the forest is important since it functions as a means for regulation of the climate changes and also accumulates carbon.

A part of the forests in the park are included in the reserves falling within the park borders. The use and logging of trees from these forests is forbidden. Another part of the forests is managed by the State Forestry unit. The main activity of the forestry is related to the utilization of the timber for commercial and trading purposes. The forest management should take into account the conservation of biodiversity and protected territories, the sustainable environmentally friendly management and multifunctional use, restriction of the clear cutting of the forest in order to preserve the forest age structure.

The State forestry unit of Kosti and the private forestry "Kobarelovi gori" in Strandzha are certified according to FCS.

The forestry develops side exploitation of non-timber forest products – grazing of livestock, yielding of hay and leaf feed, picking of herbs, berries and mushrooms, forest apiculture. The local community and the tourists in Strandzha, as well as some business companies collect herbs, berries and mushrooms. Part of the products is used for preparation of home-made jams and other gastronomy activities. The local community has a specific knowledge for the healing properties of the herbs in the region and uses them for healing, cosmetics et cetera. Another well-developed field in Strandzha is apiculture and the presence of pastures and meadows within the park contribute to the support and pollination of the plants.

According to Appendix 28 from Management Plan of NP „Strandzha“ 41 species of the mammals in Bulgaria (without bats) are encountered within the boundaries of the explored area. From the large mammals (carnivores and ungulates) there are 14 species which compose 64% of the autochthonous species members of the group in Europe. Small mammals (insectivora, rodents and lagomorpha) are 27 species in total, which is 35% of autochthonous species members of the group in Europe. The jackal (*Canis aureus*) (400–600 individuals), the fox (500 – 600 individuals), the badger, wild boar (app. 600 individuals in the state hunting territory and grossly exaggerated number in the areas provided for utilization by the hunting parties), red deer (*Cervus elaphus*) (app. 350 – 400) and doe (above 1000 individuals) are common for the territory. The park is the most important protected territory in Europe for the jackal. The otter (*Lutra lutra*) can be seen in the eastern part of the park, its number is above 30 individuals, which turns the park micro-population of European importance.

The wild boar, doe and the red deer are objects of hunting. The hunting is well developed branch in the region, which often comes into conflict with ecotourism and with the local communities – because of fencing of parts of the territory and overlapping of the hunting fields with the tourists' eco-routes.

Strandzha has rich fish diversity. There are 51 species, 43 of which are included in the Red list of IUCN, and 6 species are globally endangered. The critically endangered European eel (*A. anguilla*) and *A. mandrensis* have the highest conservational status. The endemic *Ph. stranjae* and *A. schischkovi* are considered as endangered species; the species *A. immaculata* and *G. kovatchevi* are listed as vulnerable. Twelve species are included in the new Red book of Bulgaria; with *S. labrax* and *R. frisii* having the highest conservation status among them. 9 species from the region are included in Annex III of the Berne Convention. The number of

species included in Appendix 2 of Biodiversity Act as well as in the appendices of the Habitat Directive (Directive 92/43) is the same (Tihomir Stefanov, 2011).

Sport fishing is allowed in Strandzha excluding the territories of the protected sites and reserves. Mass construction along the Black Sea coast and putting enclosures and hunting with unauthorized methods in the rivers of Strandzha causes serious disturbance among the fish and apart from damaging the biodiversity, it also causes a decrease in fishing as part of the eco-tourist products of the region. Pollution (disposal of household solid and construction waste) prevents the migration and breeding of the fish in the rivers. The natural flow of the rivers can be facilitated by cleaning of the river bed and adding of sand and gravel. Such activities also support the fish populations.

Strandzha is the only protected territory in Bulgaria, with settlements included in its boundaries. 21 towns with total population of 7000 people are located within the park area. Strandzha is a mountain with a century-old history, treasured in its land and spiritual atmosphere the heritage of more than one civilization. Numerous shrines from different eras can be found here: Thracian shrines, dolmens and sacrificial altars, archaic folklore rituals, fortresses and so on. The custom of walking on embers (nestinarstvo) is alive in Strandzha.

Due to its rich biodiversity, sand beaches, cool forests, numerous culture objects, traditional local cuisine and products Strandzha attracts a lot of tourists. Several environmentally-friendly businesses are developed in the park which rely on utilization of the natural resources of the region. A regional brand for sustainable business "Strandzha" has been registered in 2012. So far there are 39 certified entities - guest houses, eating places, riding schools etc.

On the other hand, there is an increased interest and pressure for development of resort tourism along the seacoast. The uncontrolled development, damage of the landscape and destroying the habitats and species decreases the opportunities for development of other tourism branches such as environmental and agro-tourism, which are in line with the regime of the Nature park as well as with the spirit and traditions of the region.

Within the boundaries of the Park there are 269 bird species, which is two thirds of the whole Bulgarian ornitho-fauna. The globally endangered corncrake nestles in the park; the centuries old forests of Strandzha are the second most important protected territory in the world for the southern white-backed woodpecker. The populations of semi-collared Flycatcher, olive-tree Warbler are of world-class significance, and Egyptian vulture, white and black storks, owl and four species of eagles are of European-class significance.



Проектът „Повишаване капацитета на НПО, младежи и граждани за работа с географски информационни системи (ГИС) и чрез тях подобряване на уменията им за мониторинг и застъпничество за политиките на устойчиво развитие на регионите“ се финансира в рамките на Програмата за подкрепа на НПО в България по Финансовия механизъм на Европейското икономическо пространство 2009–2014 г.

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The second largest migratory route in Europe – Via Pontica, which combines the flocks of Northern and Eastern Europe and Siberia, stretches over Strandzha. The significance of the Park is complemented by the gulfs and estuaries on the Black Sea coast, used by the waterfowl birds not only for resting, but also for wintering.

Pastures and meadows are another type of valuable habitats typical for the region, which also shelter interesting species of plants, including app. 40 orchid species. Unfortunately due to the depopulation of the villages and epidemic diseases (foot-and-mouth disease), entering through Turkey there is a steady decrease of the number of the domestic animals in Strandzha. Because of this every few years the animals in the farms are slaughtered by the Veterinary services

In the recent years an interest in photo-tourism – taking photos of interesting animal and plant species has developed in Bulgaria with orchids and birds being objects of a special interest.

Strandzha local communities are extremely attached to their birth places.

Ecosystem services

More information at (www.teebweb.org)

Task: Try to find out what type of ecosystem services are provided from the Strandzha Nature park. Try to find examples for each single type of ecosystem service.

Provisioning services	Regulating services	Habitat supporting services	Cultural services
<p>Food: Ecosystem provides the conditions for growing food. Both from managed and non-managed areas. Including marine and freshwater.</p>	<p>Local climate and air quality: trees provide shade whilst forest influence rainfall and water availability both locally and regionally. Trees and plants also play an important role in regulating air quality by removing pollutants from the atmosphere.</p>	<p>Habitats for species: Habitats provide everything that an individual plant or animal needs to survive: food, water and shelter. Each ecosystem provides different habitats that can be essential for a species "lifecycle". Migratory species including birds, fish, mammals and insects all depend upon different ecosystems during their movements.</p>	<p>Recreation and mental and physical health: Walking and playing sports in green space. That green space play a role in maintaining mental and physical health is increasingly being recognized.</p>
<p>Raw materials: Ecosystems provide a great diversity of materials for construction and fuel including wood, biofuels and plant oils that are directly derived from wild and cultivated plant species.</p>	<p>Carbon sequestration (deposit) and storage: Ecosystems regulate the global climate by storing and sequestering greenhouse gases. Biodiversity also plays an important role by improving the capacity of ecosystems to adapt to the effect of climate change.</p>	<p>Maintenance of genetic diversity: genetic diversity is the variety of genes between and within species populations. Genetic diversity distinguishes different breeds or races from each other thus providing the basis for locally well-adapted cultivars and a gene pool for further developing crops and</p>	<p>Aesthetic appreciation and inspiration for culture, art and design: Language, knowledge and the natural environment have been intimately related throughout human history. Biodiversity, ecosystems and natural landscapes have been the source of inspiration for much of our art,</p>

		livestock. Some habitats have an exceptionally high number of species which make them more genetically diverse than others and are known as “biodiversity hotspots”.	culture and increasingly for science.
Fresh water: Ecosystems play a vital role in the global hydrological cycle, as they regulate the flow and purification of water. Vegetation and forest influence the quantity of water available locally.	Moderation of extreme events: Extreme weather events or natural hazards include floods, storms, tsunamis, avalanches and landslides. Ecosystems and living organisms create buffers against natural disasters, thereby preventing possible damage. For example, wetlands can soak up flood water whilst trees can stabilize slopes. Coral reefs and mangroves help protecting coastlines from storm damage.		Spiritual experience and sense of place: In many parts of the world natural features such as specific forest, caves or mountains are considered sacred or have religious meaning. Nature is a common element of all major religions and traditional knowledge, and associated customs are important for creating a sense of belonging.
Medical resources: Ecosystems and biodiversity provide many plants used in traditional medicine as well as providing raw materials for the pharmaceutical	Waste-water treatment: Ecosystems such as wetlands filter both human and animal waste and act as a natural buffer to the surrounding		

<p>industry. All ecosystems are a potential source of medicinal resources.</p>	<p>environment. Through the biological activity of microorganisms in the soil, most wastes are broken down. Pathogens are eliminated and level of nutrient pollution is reduced.</p>		
	<p>Erosion prevention and maintenance of soil fertility: Vegetation cover provides an important regulating services preventing soil erosion. Well-functioning ecosystems supply the soil with nutrients required to support plant growth.</p>		
	<p>Pollination: Insects pollinated plants are essential for development of fruits, vegetables and seeds. Animal pollination is an ecosystem service mainly provided by insects but also by some birds and bats. About 87 of the 115 leading global food crops depend on animal pollination.</p>		
	<p>Biological control: ecosystems are</p>		

	<p>important for regulating pests and vector borne diseases that attack plants, animals and people. Ecosystems regulate pests and diseases through the activities of predators and parasites. Birds, bats, flies, wasps, frogs and fungi all acts as natural controls.</p>		
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