

Lower Amudarya State Biosphere Reserve
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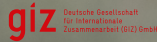


Lower Amudarya
State Biosphere Reserve

Supported by:



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety



based on a decision of the German Bundestag



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General information

The Lower Amudarya State Biosphere Reserve was established in Uzbekistan in 2011 on the site of the Badai-Tugai Nature Reserve, with the addition of new territories.

The Biosphere Reserve is located in the lower course of the Amudarya River at the foot of the Sultan-Uizdag Range. The biosphere reserve's territory stretches from the south-east to north-west.

The goal of the biosphere reserve is to conserve the tugai forest, the total area of which has decreased over 10 times in the last hundred years, alongside with its flora and fauna.

The area of the reserve is 68,717.8 ha

Front cover:
Male Bukhara
Red Deer in
rut.
Photo by
Ernest
Kurtveliyeu.

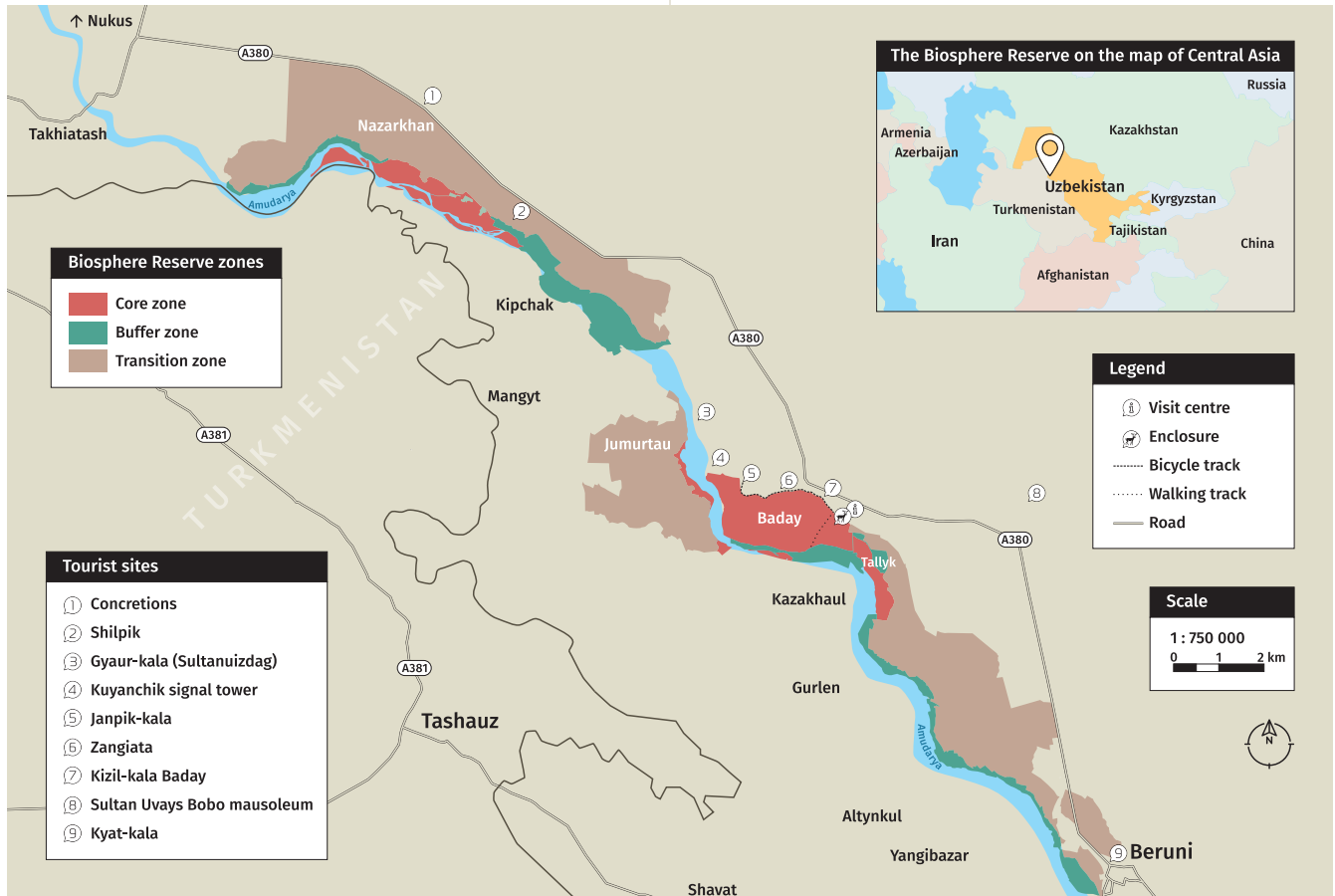
Zonation

The function of *the core zone* is to conserve the tugai forest and rare and threatened animal and plant species inhabiting the biosphere reserve. Any economic activity apart from scientific research and monitoring is prohibited within the core zone.

The buffer zone surrounds the core zone of the biosphere reserve. It also provides important ecological corridors for wild animals to move between sections in the core zone and facilitates the conservation and restoration of the forest.

Core zone
area –
11,568.3 ha

Buffer zone
area –
6,731.4 ha



Transition zone area – 50,418.1 ha

The transition zone (or economic development zone) can be used by local communities for agricultural, cattle-breeding or industrial purposes.

Climate

The climate in the biosphere reserve is extreme continental, with dry and hot summer, moderately cold winter and low precipitation. The average annual precipitation in the form of snow and rain is 80 mm. Average temperature in January is -5°C , with a minimum of -32°C recorded in certain years. Most of the days in winter are clear and frosty. Summer is hot and dry, with a relative humidity of 40 %. Average temperatures in July are $+27-28^{\circ}\text{C}$. Maximum temperatures may reach above $+40-41^{\circ}\text{C}$.

The Amudarya

The Amudarya is Central Asia's largest and second-longest (after the Syrdarya) river. It is formed by the confluence of the Panj and the Vakhsh rivers.

The banks of the Amudarya are covered all over with the footprints of the animals that come there to drink, which makes the waterside an excellent place for observations and surveys.

Deer can easily cross the Amudarya at any time of the year.
Photo by Ernest Kurtveliyev.



Gyaur-kala fortress (Sultanuizdag) near Amudarya, 4th–2nd centuries BCE.
Photo by Mariya Gritsina.

What is tugai?

Tugai is a type of riparian forest along perennial streams in Central Asia. Hundreds of bird species and dozens of animal species shelter in the shade of the tugai thickets. Formerly, it was a habitat for the Caspian Tiger.

The earliest finds confirming the habitation of people in this territory are dated to the 4th–3rd millennia BCE. They used the wood of the tugai to build houses and as firewood. Also, the tugai abounded in dogbane, whose fibres were very good to make fishing tackle and nets.

The vegetation-rich Amudarya valley provided excellent pastures for livestock. Archaeological sites in the tugai area, such as the Janpyk-kala fortress, indicate that the evolution of human civilization was closely associated with the forest.

Unfortunately, during the last century the area of the tugai decreased by 92 %. This situation about the riparian forest in Uzbekistan arose from a large-scale conversion of natural areas into agricultural fields in the 1950s–1970s. One of the objectives of the biosphere reserve is to conserve and restore the remaining portions of the unique old-growth tugai forest for the coming generations.

Tugai flora

Three trees form the base of the tugai in the biosphere reserve: poplar, oleaster and willow.

The poplar is represented by two species: *Populus diversifolia* (desert poplar) and *Populus pruinosa* (bloomy poplar). They are very important as part of the deer's diet. In different seasons the animal feeds on their leaves, branches and bark.

Three oleaster species are *Elaeagnus angustifolia* (Russian olive), *Elaeagnus orientalis* and *Elaeagnus turcomanica*. The oleaster fruit is an important food component for the inhabitants of the tugai — various species of birds and mammals, including predators, such as fox, badger and jackal. Deer like it, too. They are also edible for humans.

Willows — *Salix songarica*, *Salix olgae* and *Salix wilhelmsiana* — are essential elements of the tugai forest. They form extensive, in some places impassable thickets.

In many parts trees are covered with lianas, such as *Clematis orientalis* (Oriental virginsbower), *Cynanchum acutum* and *Asparagus persicus*.

Shrubs are represented by the *Tamarix* (tamarisk) and *Halimodendron* (common salt tree).



The tamarisk is a melliferous plant attracting masses of bees during the blossoming. Photo by Anna Ten.

The tamarisk grows fast and can adapt to various types of soil. This is the first plant that appears in salinised or burnt ash-covered areas in the tugai. It blossoms from mid-summer to late autumn.

Halimodendron is a resilient photophilous plant which can grow on saline soil. Like all other legumes, it accumulates nitrogen and thus improves the quality of soils.

The reed inhabits watersides and wetlands and can reach 6 m in height.

The colossal herb *Erianthus ravennae* (elephant grass) is one of the most remarkable grassy plants in the tugai. In some places, extensive areas are covered with *Glycyrrhiza glabra* (licorice) and *Apocynum spp.* (dogbane).

One of the main reasons for the degradation of the tugai is the anthropogenic impact on the environment and, as a result, the reduction of the Amudarya's flow. This led to the disruption of some natural hydrological processes, including the critical reduction of annual floods that brought water and new silt to the tugai and thus fed the forest. Another anthropogenic factor was the construction of a broad network of irrigation canals, which led to the overall rise of the groundwater and salinisation of soil and, as a result, to the aridisation of the tugai forest.

The local name for the poplar is turanga.

Shrubs, grass and other undergrowth may form impassable thickets, which is why the tugai has an unofficial name of 'Central Asian jungle.'
Photo by Ernest Kurtveliyev.



Tugai fauna

Locals call the deer 'khangul,' which means 'the royal flower'.

Bukhara Red Deer (*Cervus hanglu bactrianus*) is the key species of the biosphere reserve. This animal has adapted to living in arid areas.

Formerly, the deer used to live all across the basins of the Amudarya and the Syrdarya. The population has reduced critically through uncontrolled deforestation and reduction of tugai areas.

The Bukhara Red Deer was re-acclimatised in the Lower Amudarya State Biosphere Reserve.

Currently, the reserve is inhabited by over 1,200 individuals and is thus a home for the world's largest Bukhara Red Deer population.



The antlers of young animals are soft and covered with velvety skin.
Photo by Ernest Kurtveliyev.

The commonest mammal predator in the biosphere reserve is the Golden Jackal resembling a small wolf in appearance.

The Tolai Hare which usually hides in grass and shrub thickets is the owner of the longest ears. The big ears enlarge the evaporation area and thus help the animal cool the body, which is essential in the hot climate of the desert. The badger is the hare's biotopic neighbour.

The White-winged Pheasant, the pearl of the biosphere reserve.
Photo by Ernest Kurtveliyev.



Since the Caspian Tiger has been completely destroyed by the human, the only feline animals inhabiting the reserve are the Steppe and Jungle Cats, with the Caracal coming from time to time from the adjacent desert.

The biosphere reserve is also a home for the Red Fox (*Vulpes vulpes karagan*). This subspecies is rather light reddish-grey colour.

The ungulates, alongside the deer, are represented by the Wild Boar. Boars hide in reed thickets and deep inside the forest, but can also be found on islands in the Amudarya.

The diversity of birds represented by over 200 species is conditioned by the diversity of biotopes and ample food. Numerous migratory birds stop at the tugai while passing across Central Asia during seasonal migrations. The forest and riverbanks are also important breeding grounds.



The jackal's massive fluffy tail always points downwards.
Photo by Ernest Kurtveliyev.

Code of conduct for visitors

When in the biosphere reserve, be sure to comply with this short list of rules and keep in mind that this is nature's home.

- Travelling within the biosphere reserve is only allowed in organised groups guided by a biosphere reserve worker.
- You should follow only planned routes.
- Take all rubbish with you and never leave any waste in the territory of the biosphere reserve. If you plan to stay in the reserve for a while, be sure to take with you a plastic bag for waste, which you will take with you as you leave the biosphere reserve.
- Do not pluck flowers, break tree branches or cut bark! Mushrooming or picking any fruit, herbs or other plants is also prohibited in the territory. Let the plants please not only you, but all those who come thereafter you as well as all the animals in the biosphere reserve, whose survival depends critically on the plants.
- Keep quiet, do not frighten animals and birds. Watch them from a distance not to disturb them.
- Do not throw or pour anything into natural bodies of water. They are habitats for a wide range of organisms: do not kill them.
- All you may take away as souvenirs are photos of the place. When you see an animal during a tour of the biosphere reserve, you may photograph it, but never chase it under any circumstances.
- Do not play music. Instead, listen yourself and let other people listen to the music of nature – the singing of birds, the rustling of grass, the murmuring of water. The quieter you keep, the more you see and hear.
- Do not smoke in the forest and do not make fires.

Architectural monuments

The biosphere reserve and adjacent areas encompass a few interesting historical and cultural objects, which are also must-sees.

17th–19th
centuries

The Sultan Uvays Bobo mausoleum is a symbolic tomb erected in honour of a holy man from Yemen, a contemporary of Prophet Muhammad. Though he never met the Prophet in person, they were connected on the spiritual and mystical levels.

4th
century BCE –
1st century AD
9th–10th
centuries
12th–14th
centuries

The Janpyk-kala fortress served not only to control the passage between the river and mountains but also to protect the port from intrusions from the land. Archaeological excavations revealed numerous medieval artefacts from various parts of the world – from Egypt to Scandinavia.

10th–13th
centuries

Kuyanchik was a **signal tower** that warned against the approach of hostile armies. A network of towers like this one covered the entire territory of ancient Khoesr in such a way that from each tower could be seen from the next one.

4th
century BCE –
3rd century AD

The Gyaur-kala (Sultanuizdag) fortress was trapeziform and consisted of double walls, two-tier galleries for archers, towers and loopholes – a structure typical of the Khoesrman architecture of this type.

2nd–4th
centuries
9th–11th
centuries

Shilpik is a dagma, a 'tower of silence,' where the Zoroastrians used to bury their dead in ossuaries. The round tower, 15 m high and 65 m across, is located on the top of a natural hill.

Janpyk-kala. Photo by Ernest Kurtveliyev.



Wildlife calendar

● March — April

Tortoises, lizards and snakes wake up. Plants are in full blossom. The breeding period begins for most animal species. Male Bukhara red deer shed antlers. Migratory birds stop for a short rest. Breeding birds begin to arrive in April. The Pheasant displays courtship behaviour and breeds.

● May

Bukhara red deer moult actively. This is the beginning of a long and hot summer.

● June — July

The formation and ossification of deer's antlers come to an end. Females bring baby deer. Birds feed nestlings. Seasonal bodies of water dry up.

● August — September

The rutting period begins for Bukhara red deer. Birds begin departing for their wintering grounds.

● October — November

A short autumn. Adult deer change summer fur for thicker and denser winter fur. Young deer change their speckled coloration for a unicolour appearance. Birds finish their autumn migration and prepare for the winter.

● December — February

A hard period for the deer. To find enough food they keep on pasturing for most of the day. Birds winter. Occasional chukar partridges from the Sultanuzdag Range come to the reserve to forage.

The golden tugai in autumn.
Photo by Ernest Kurtveliiev.



The black reverse of the ears of the local fox subspecies (*Vulpes vulpes karagan*).
Photo by Ernest Kurtveliiev.



Directions

● Tashkent	🚗 Tashkent — Nukus	on a daily basis	1 hour 40 min.
	🚗 Tashkent — Urgench		1 hour 30 min.
	🚗 Tashkent — Nukus	16 hours	
● Nukus/Urgench	🚗 Tashkent — Urgench	13 hours	
	🚗 Nukus — visit centre	1 hour 30 min.	
● LABR	🚗 Urgench — visit centre	1 hour	

Excursion

We recommend that you take an 11-kilometre walking trip from the visit centre to the Amudarya. You will cross desert, desert with patches tugai, tugai and riparian ecosystems, where you will watch their inhabitants and visit an enclosure with Bukhara red deer.

It is best to begin the excursion at sunrise, when animals and birds are the most active.



Forage supply drastically reduces in wintertime and the deer have to eat the bark and branches of the trees.
Photo by Mariya Gritsina.

Scale

1 : 75 000

0 0,5 1 km



A380

SULTAN-UIZDAG

5 Janpyk-kala

6

Kokdarya

7

Baday-Tugay

Amudarya

Audio guide

izi.TRAVEL

Download the izi.TRAVEL application to your mobile device, find in it an audio guide to the Lower Amudarya State Biosphere Reserve and load audio files. Shortly before the trip start izi.TRAVEL and activate the positioning function to let the audio guide lead you through the biosphere reserve.



Legend

- Visit centre
- Enclosure
- Resting place
- Yurt camp
- Bicycle track
- Walking track
- Road
- Tugai
- Fields