



Bukhara deer

as a flag species

for Aral sea basin ecosystem conservation

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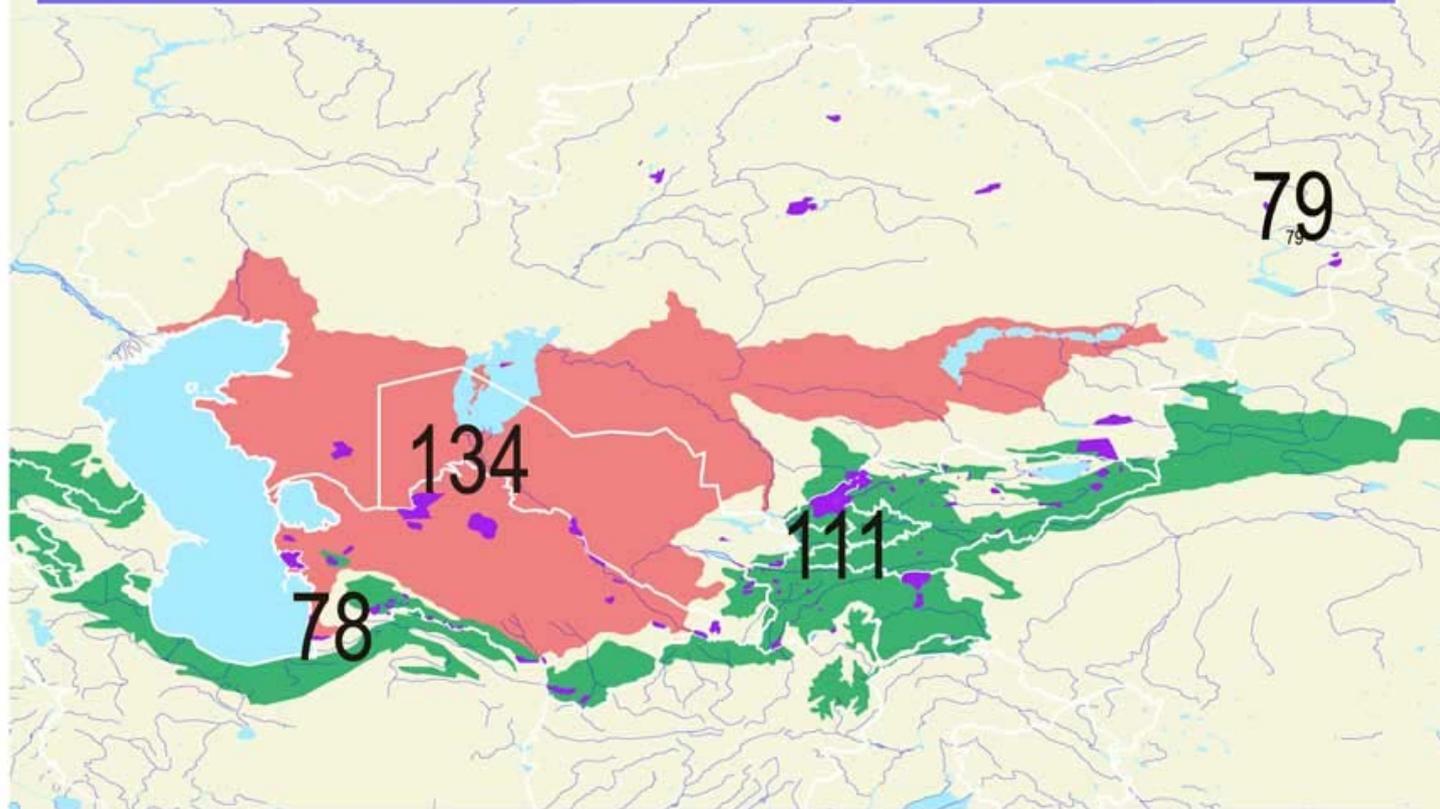
Head of WWF Central Asia Programme

Chair person of the Ungulate commission

of the Theriological Community of the Academy of Sciences of RF



Global 200 Ecoregions and Protected Areas of Central Asia



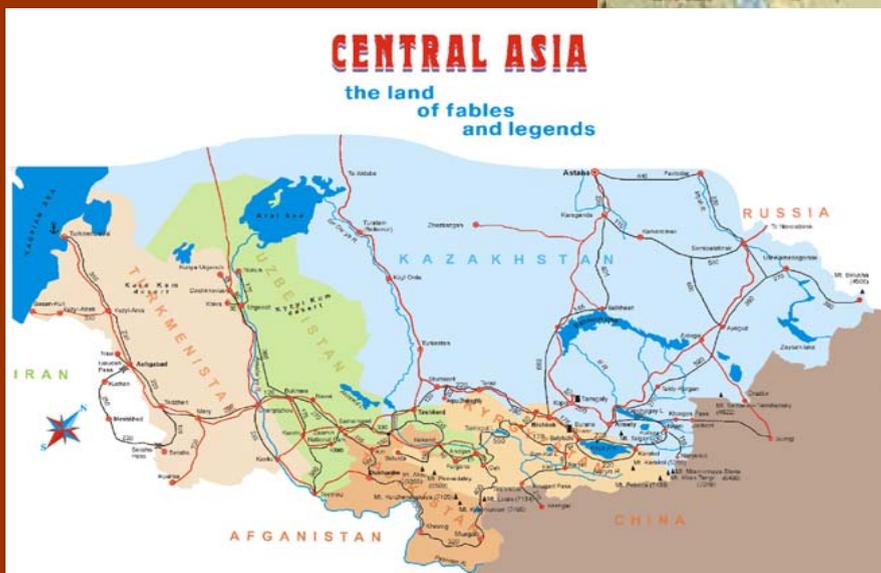
<p>Global 200 Ecoregions</p>	<p>Protected Areas</p>	<p>Protected areas data acquired from WWF Russian Program Office. Authors: E. Radkova-Skaja, Ju. Evstifeev, N. Safarov, I. Lysenko.</p>	<p>Map prepared by Conservation Science Program, WWF-US, 1998. Geographic Projection.</p>
<p> Central Asian Mountains Temperate Forests & Steppe</p>	<p> Zapovedniks, National and Nature Parks</p>	<p>Apply in an east-west direction only</p> <p>0 200 800 kilometers</p>	
<p> Central Asian Deserts</p>			





Ecosystems - countries....

- State borders divided natural ecosystems artificially
- It mostly effected either really migrating species (saiga, migrating birds) or species inhabiting major river valleys – Amudaria and Syrdaria



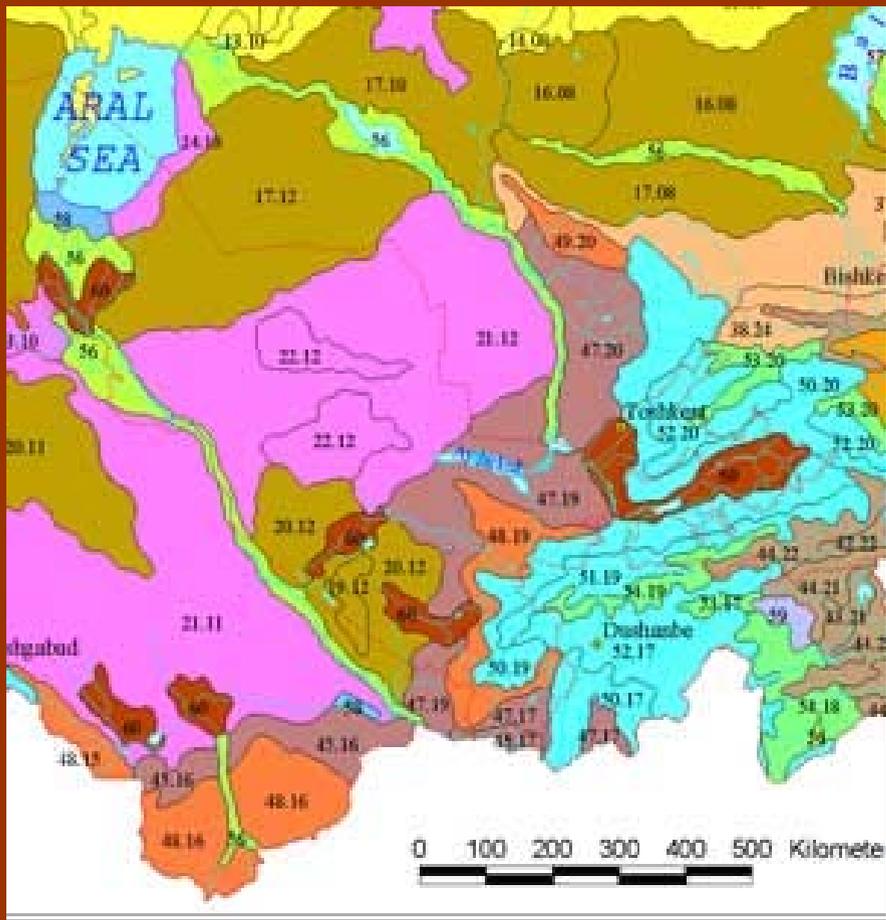
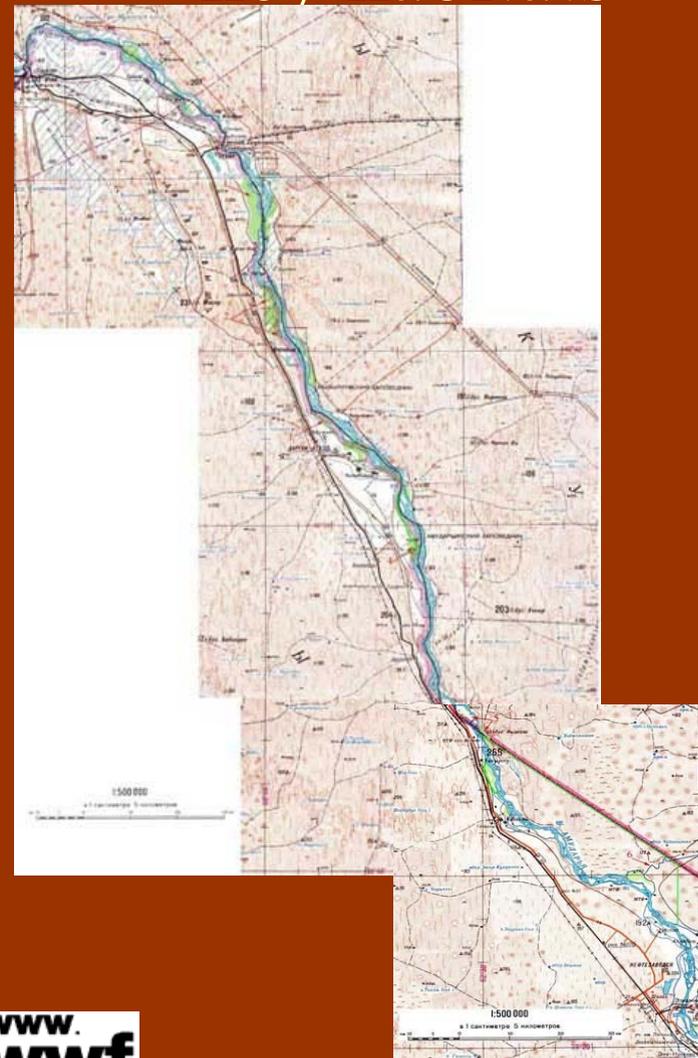


The territories of Central Asia constitute a unique region, which is united not only by geography but also by the common historical and cultural development of its peoples. The main features of the region's climate are its sharp seasonality and aridity. The difference between summer and winter temperatures in some places can be up to 80°C. The annual amount of precipitation in the plains does not exceed 300 mm and evaporation rates are in the region of 600 mm in the north and 1500 mm in the south.





“Arteries” of the region – major rivers,
key habitats – floodplain riparian forests:





Characteristics of riparian forests:

*The complex of lowland riparian forests of the Central Asian region with all its diversity (stands of Tamarix, Elaeagnus, Poplar, Hippophae, communities of Phragmites and Erianthus) hosts a great diversity of animal life. The tugai forests contain at least 28 species of mammals, 58 species of reptiles, 91 species of birds of nesting – and numerous species of migrating waterfowl birds, using these areas as resting sites; there are 26 species of fish in the freshwater bodies of this area (rivers and lakes). Riparian forest has been the home of Turanian tiger – which is extinct from the wild since 1958. The highly endangered Bukhara Deer (*Cervus elaphus bacrianus*), which numbered less than 900 individuals in the world in its “best” years, makes its home in tugai forests.*





The main ecosystem of the river valleys - riparian forest, while the watershed as a whole is largely occupied by a variety of desert types (e.g. sand, clay). Therefore riparian forests represent a unique land, which is particularly suitable for agriculture, resulting in the destruction of natural ecosystems. As the river valley is the most climatically comfortable area in the region, the majority of the population (up to 90%) from each of the basin countries is concentrated within its limits. Existing system of irrigation not only takes water for the fields, but prevents it from flooding floodplain forests, which causes their degradation. It is not taken in consideration, that riparian forests are very important from the point of view of water saving and soil erosion prevention.





In general, tugais are represented by narrow stripes and separate areas along the desert river valleys.



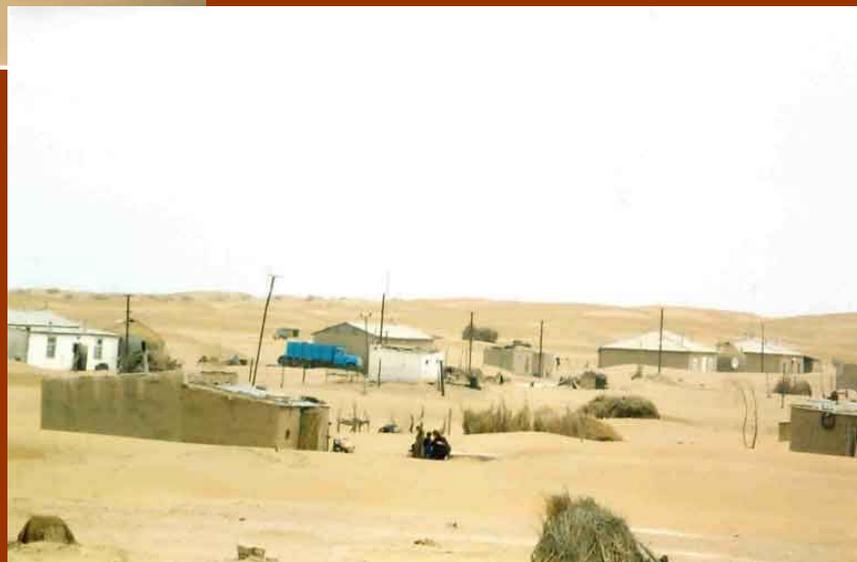


The only huge massive of riparian forests is situated in the upper reaches of Amudaria – in Tajikistan – confluence of Vakhsh and Piandz





*Desert ecosystems completely depends on the water sources
– and major rivers of the region first of all.*

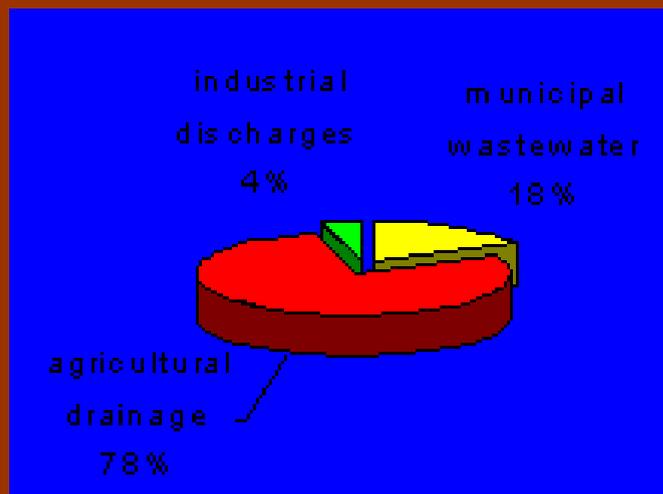




Succession of river valley ecosystems depends on the regulation of water level



Irrigation



- 80% of the water taken from the Amudaria River is used for irrigation
- If too much water is allocated to a farm the farmer will not complain (but rather dump the water) as next time less will be allocated





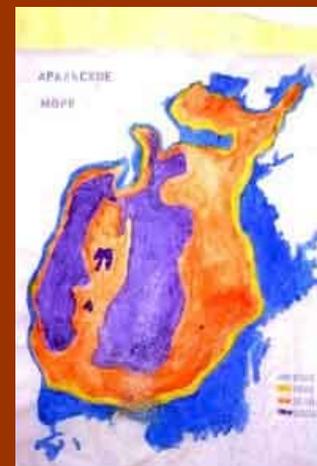
The majority of riparian forests is replaced with fields :

- cotton,*
- wheat,*
- rice...*



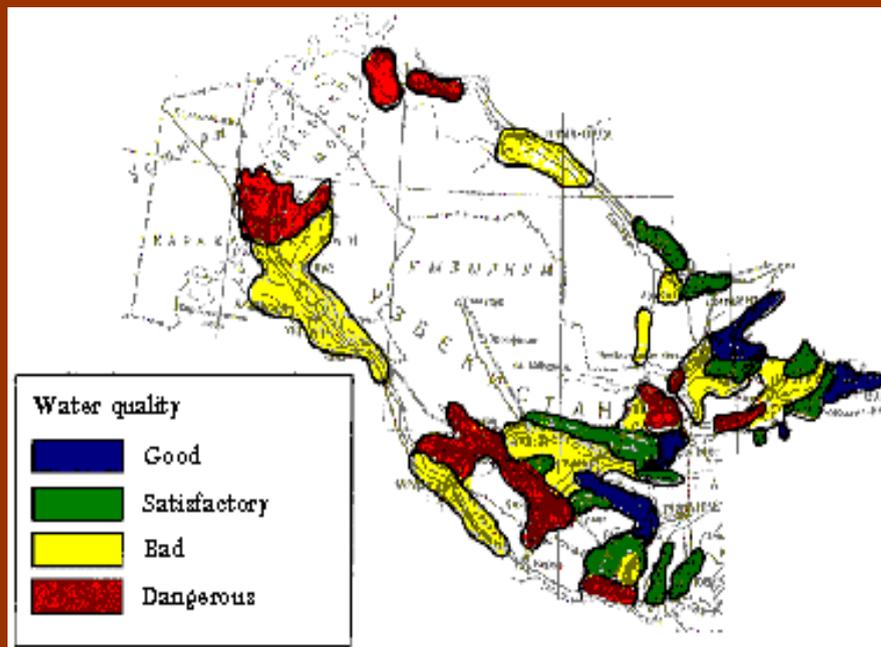


Artificial regulation of water distribution results in ecosystem degradation and Aral sea crisis





Both ecosystems and people suffer from it – water quality is far from optimal in the region...





Key- species of the river-valleys' habitats:

- **Turanian tiger** – extinct (last tiger was killed in the upper reaches of Amudaria in 1958; last visual registration of tiger –in reeds of Amudaria river delta – in 1962);
- **Bukhara deer** – extinct in Ili and the Syrdarya river basins (last dead – in 1962-68), the only natural self-sustainable population in the upper reaches of Amudaria (Tigrovaja balka), some natural and re-introduced populations in Amudaria basin, some re- and introduced populations in the limits of historical area...



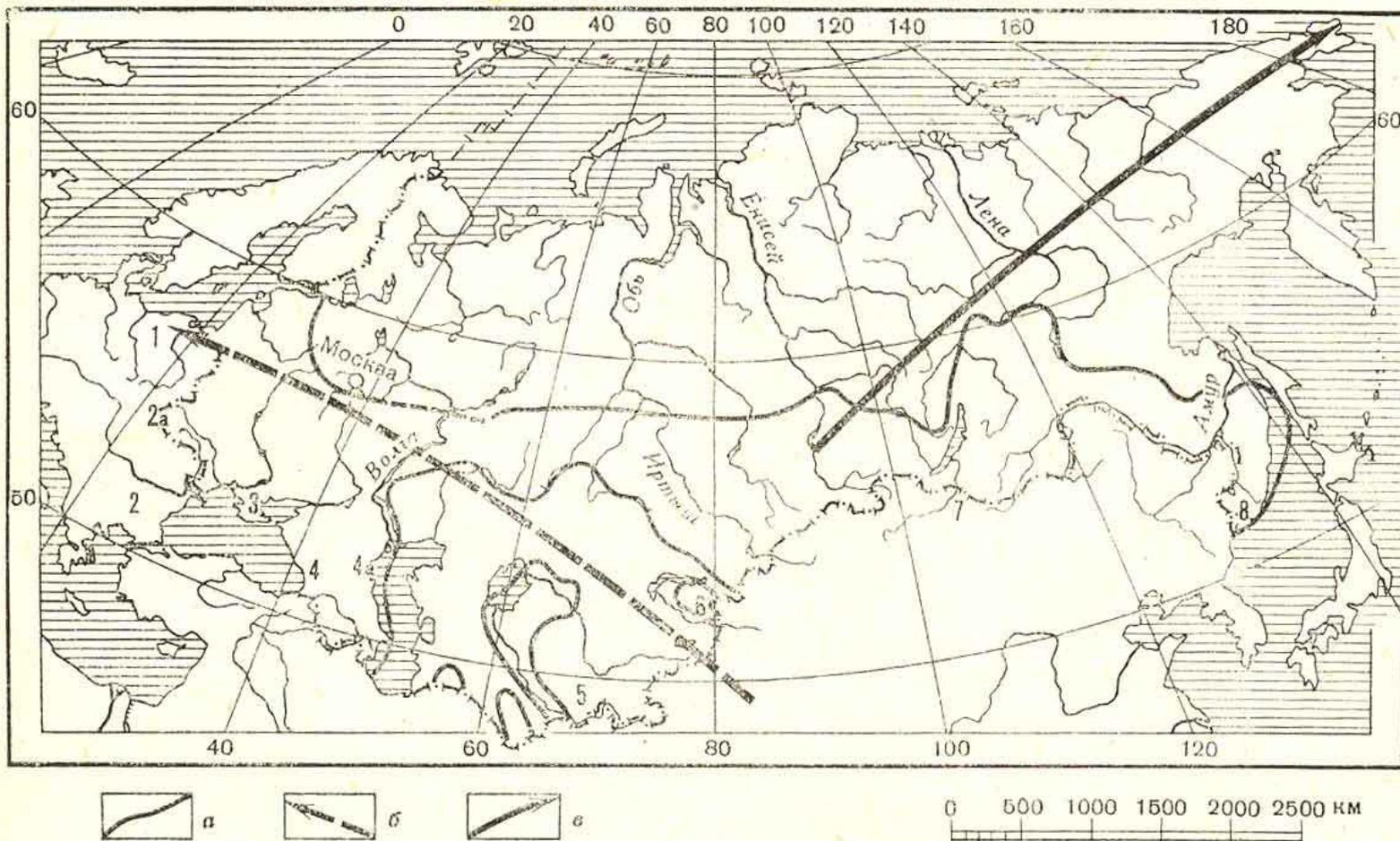


What is so special in bukhara deer – its differences from other red deer forms:

- *Morphology (the initial base for systematic) – size, weight, specificity of skull structure, antlers ;*
- *Ecological adaptations;*
- *Behaviour and communication;*
- *Physiology;*
- *Genetics (as a proof of previous).*



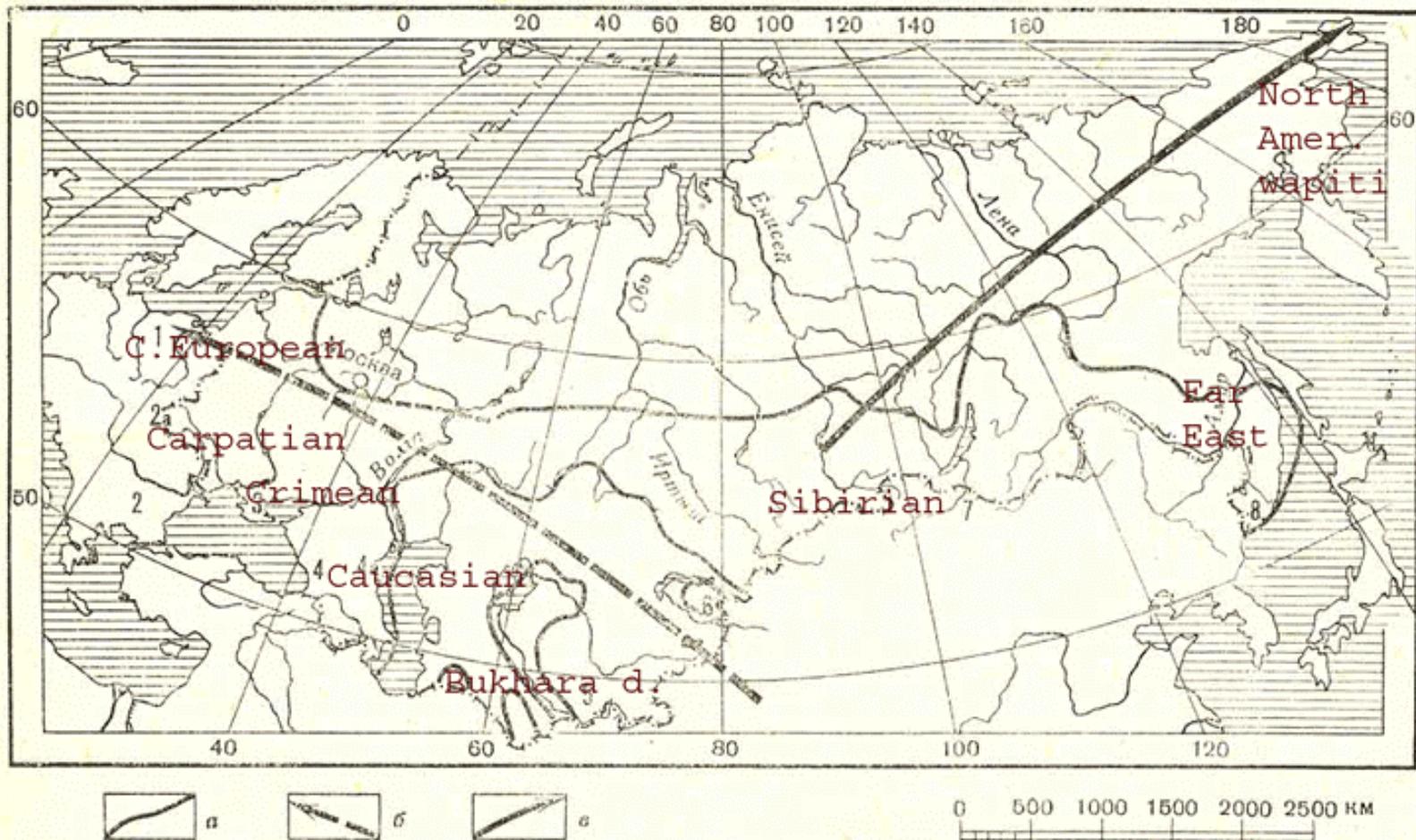
Paleontological history of deer forms:



Pleistocene migrations of deer (after Nikolskii A.A., 1984)



Different deer subspecies:

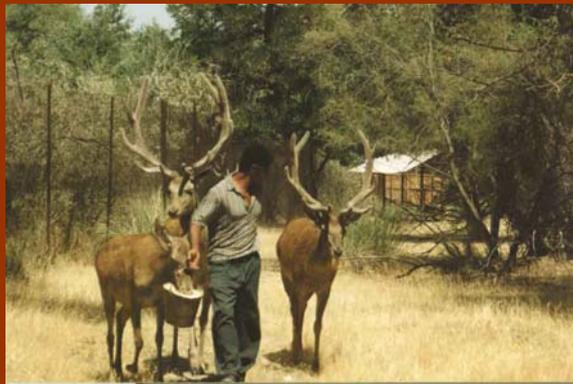


Pleistocene migrations of deer (after Nikolskii A.A., 1984)

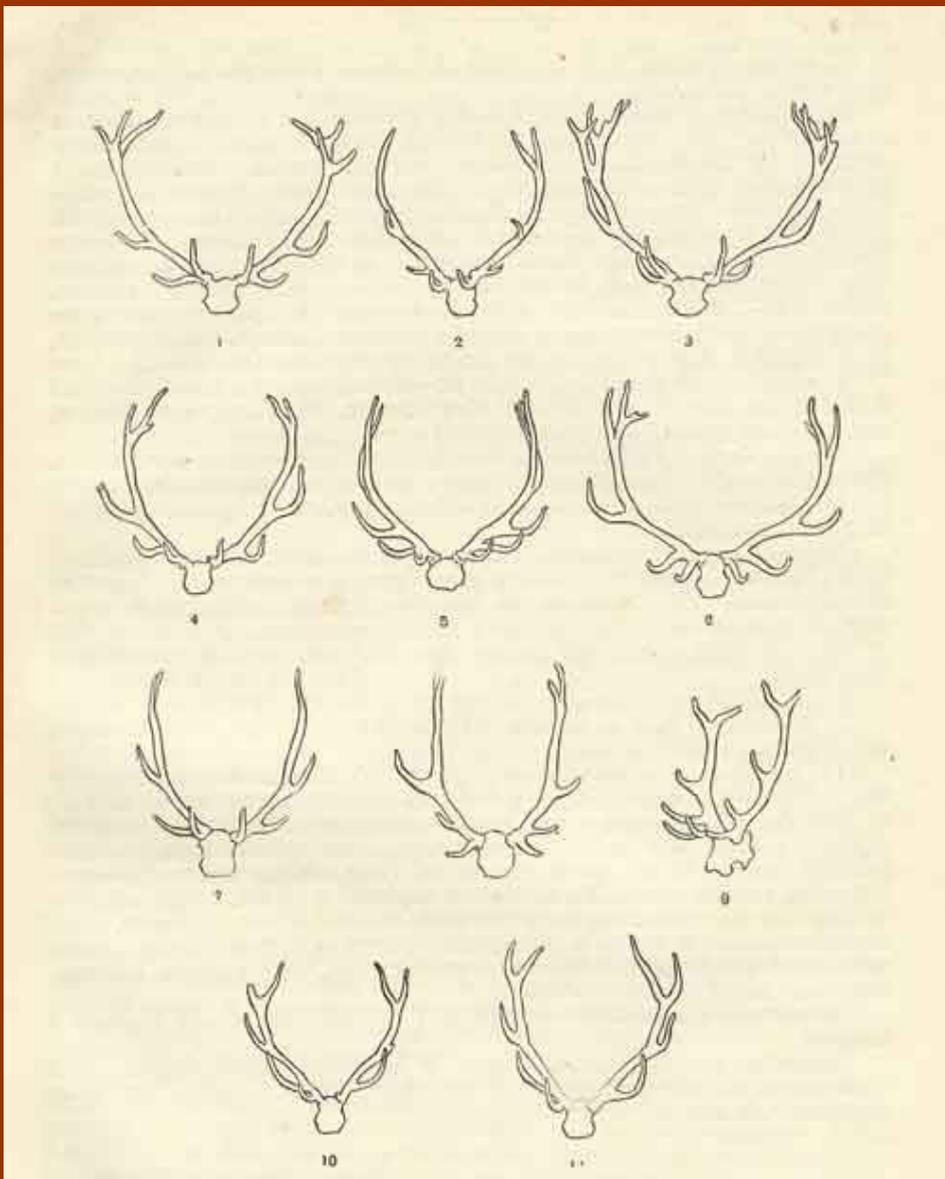


Morphological differences:

- size,
weight,
sexual
dimorphism



• Antlers:



After Geptner et.a.,

1961:

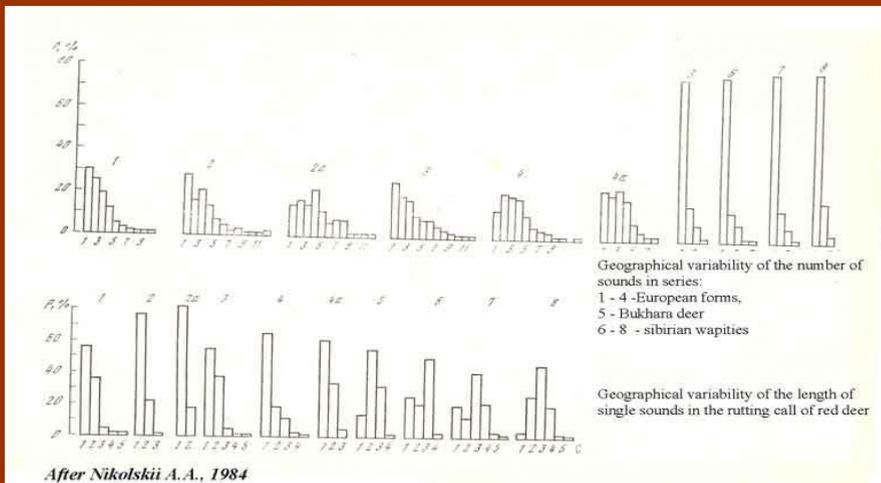
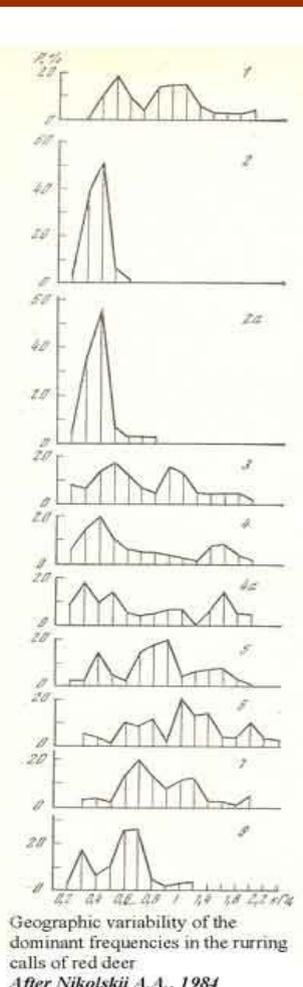
- 1-3 - European forms
- 4-9 - Sibirian wapities
- 10-11 - bukhara deer





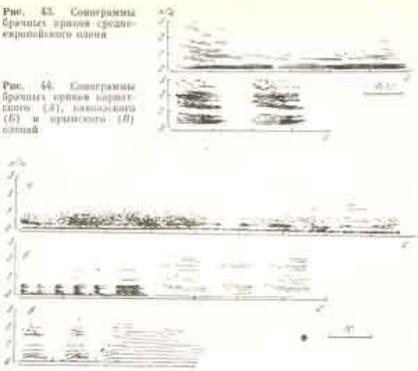
Specific characteristics of acoustic communication:

- **Time characteristics:**
 - number of sounds in series,
 - length of sounds
- **Frequency characteristics :**
 - basing frequencies,
 - dominant frequencies,
 - harmonic or formant structure,
 - type of modulations

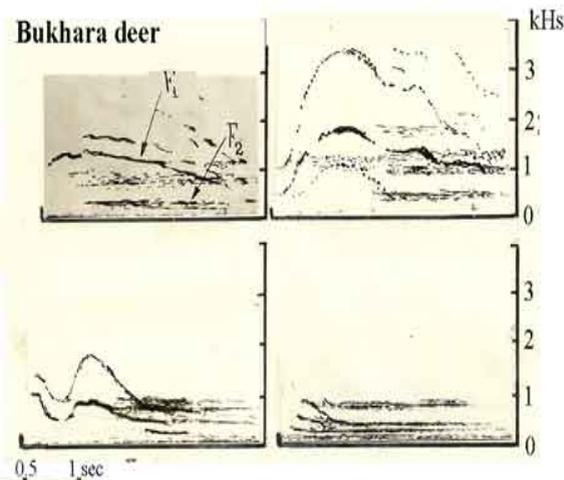
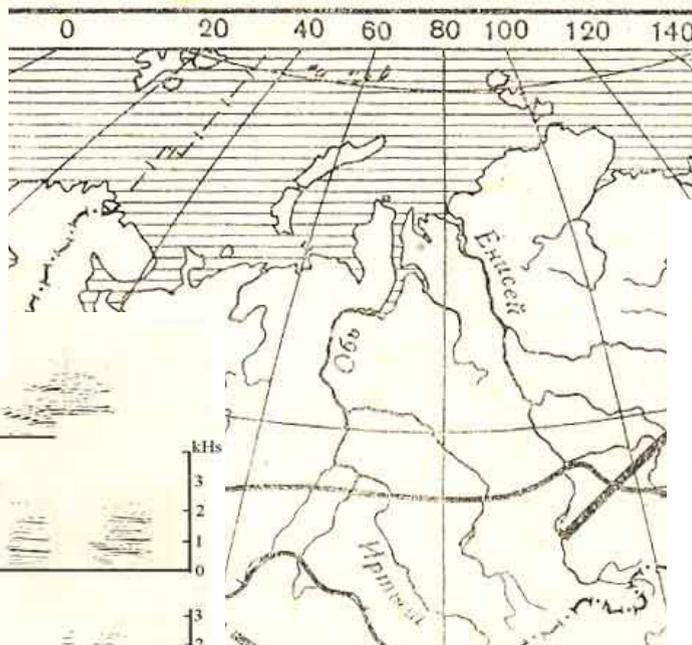
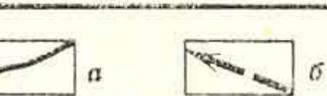
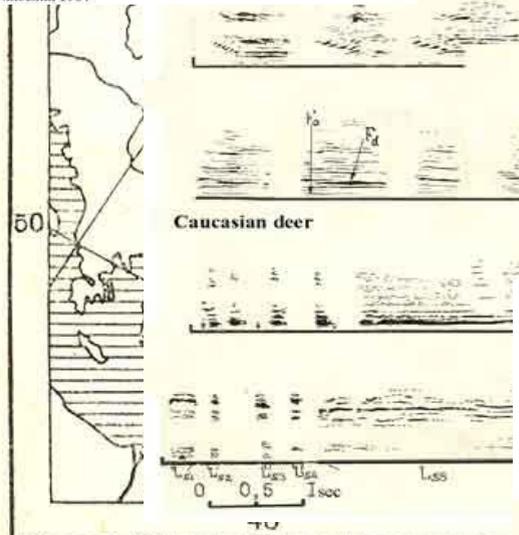




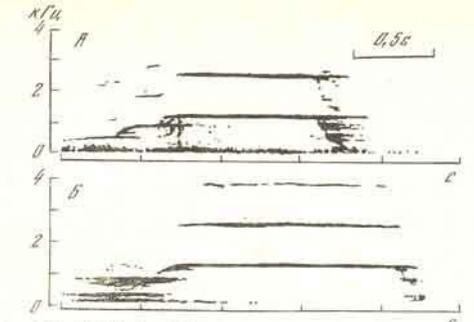
Deer of Central Europe



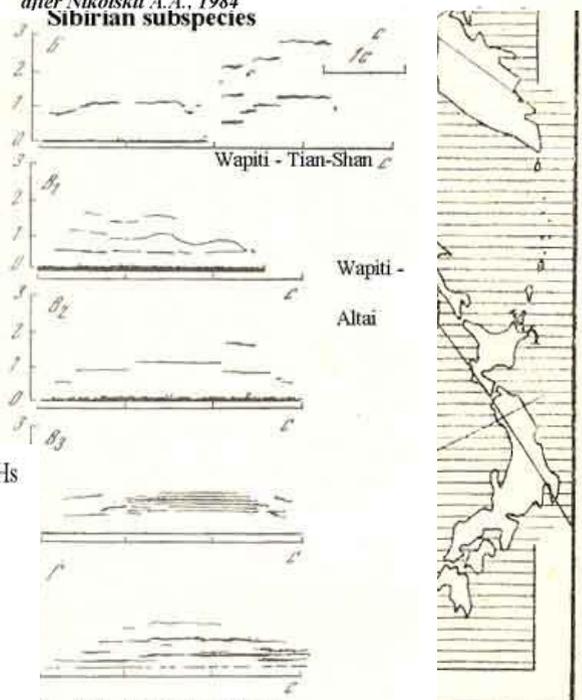
after Nikolskii, 1984



American wapiti



after Nikolskii A.A., 1984
Siberian subspecies



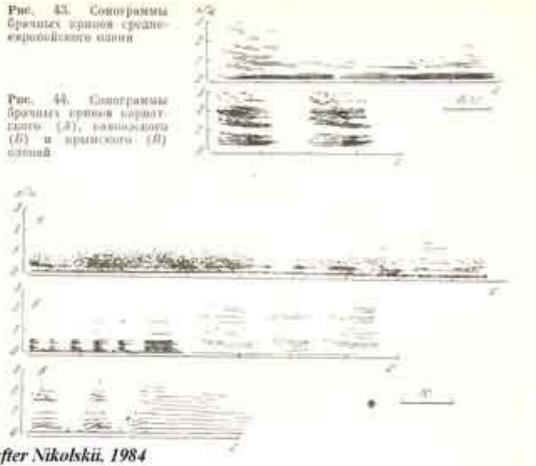
after Nikolskii A.A., 1984

Pleistocene migrations of de



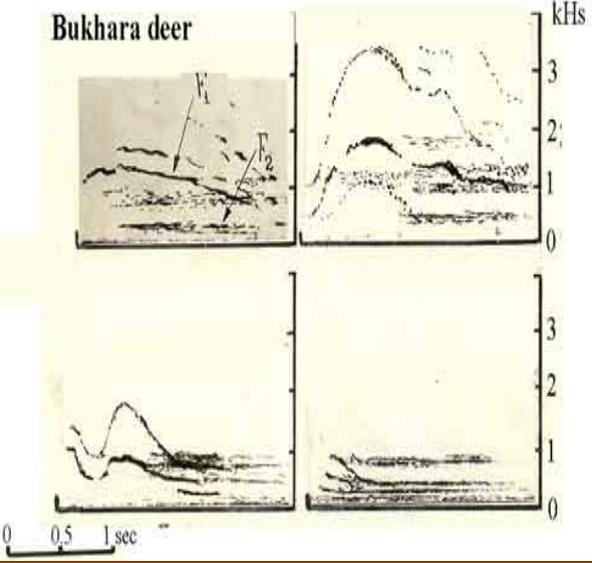
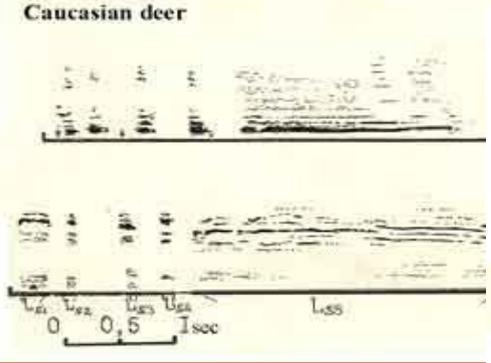
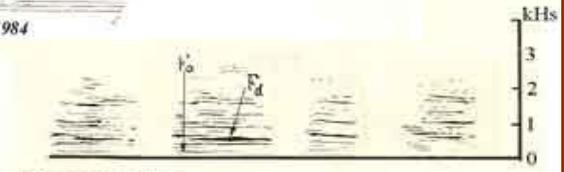
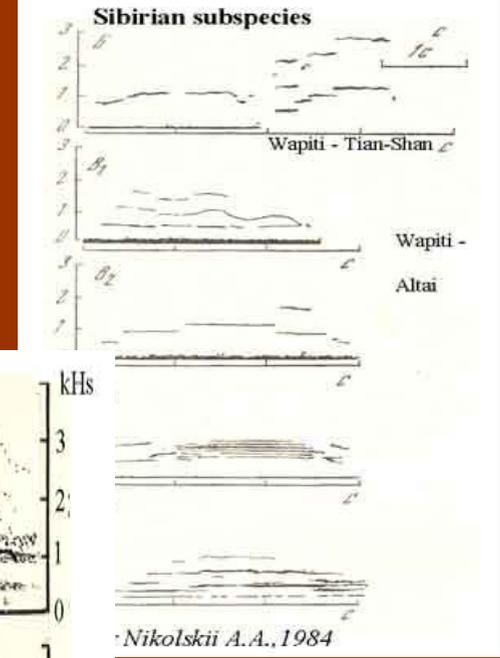
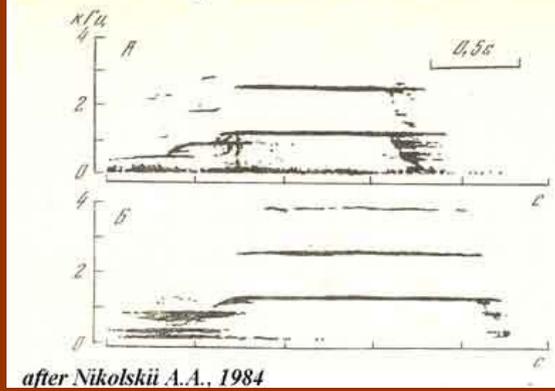


Deer of Central Europe



Sonograms of rutting signals of different deer forms:

American wapiti





Behaviour, physiology

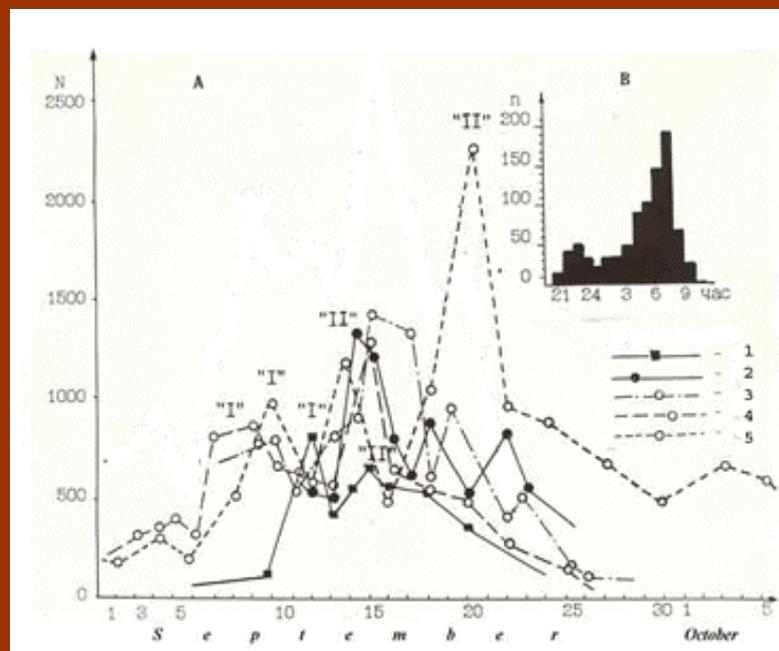
Physiology:

- Concentration of biologically- active compounds in velvets (concentration in 1,7 times higher then that of traditional species - sika deer and Siberian wapiti –"maral")
- Reversed moulting and rutting periods
- Adaptation to very poor diet

Behaviour :

- Rutting activity;
- Size of reproductive groups;
- Level of aggressiveness;
- The only true deer species forming a true lek

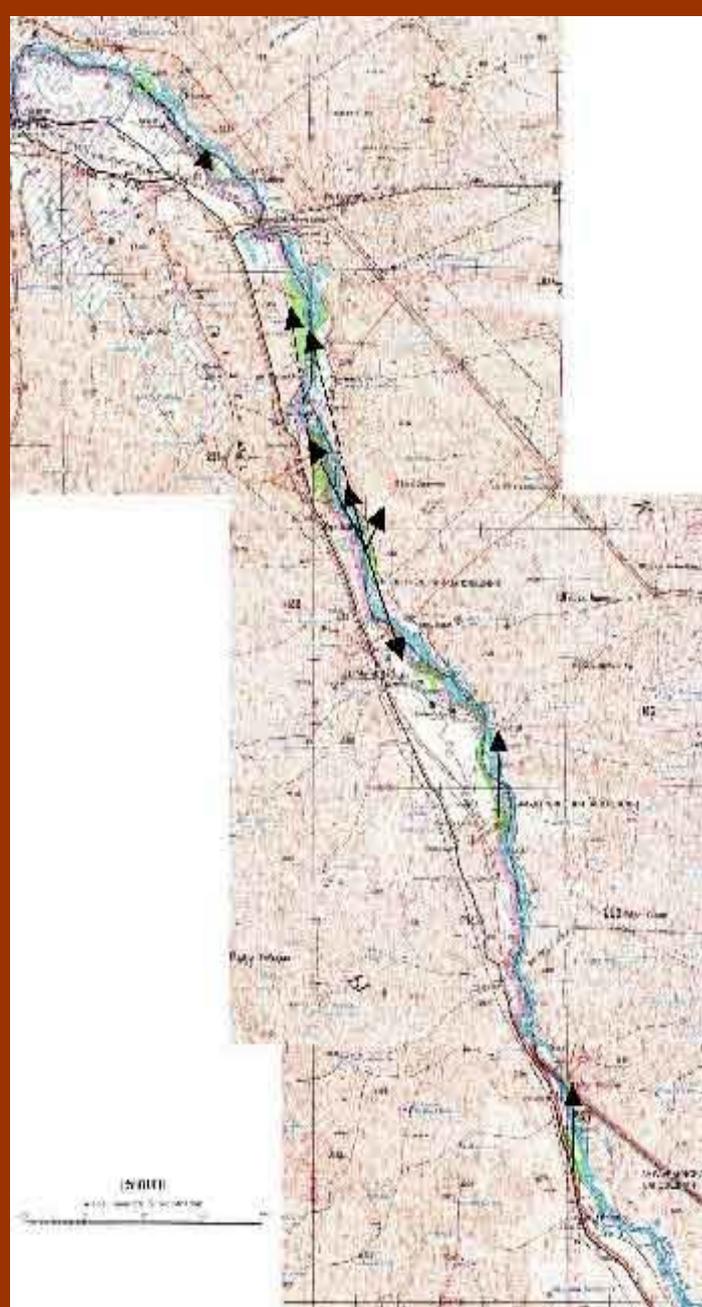
(in understanding of "The evolution of ungulate leks" after Clutton-Brock et.a., 1993)





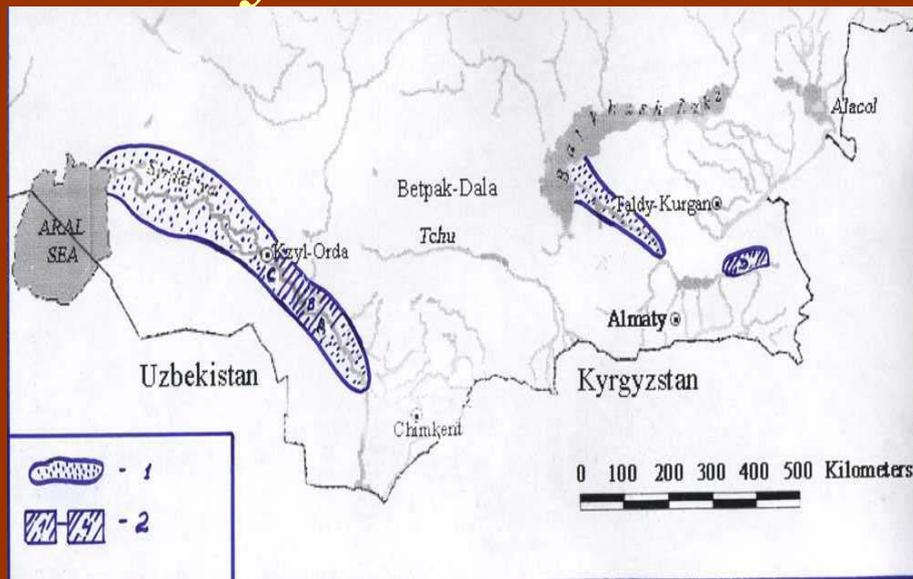
Trans-boundary migrations of bukhara deer:

- As a result of population development – attempts of natural expansion of the area
- As a result of different unfavourable conditions (fluctuations of water level, etc.)





Differences between Amudaria and Syrdaria river basins:



- Major part of the river basin is situated inside one country – the Republic of Kazakhstan;
- lands of the river valley with its fertile soils are not so critical for the agriculture: huge areas of steppe zone gives lots of possibilities.





WWF project on bukhara deer conservation:

The overall goal of the project is to conserve still existing and to restore bukhara deer populations within its historical area in order:

- to guarantee long-term self-existence of the species in natural habitats, ecologically balanced with the carrying capacity of ecosystems, and promising for sustainable use of the species in favour of local people and biodiversity conservation;
- to support restoration and a normal functioning of riparian ecosystems of the region, for which bukhara deer is a natural and



The project focus on the following objectives:

- support of existing nature reserves, inhabited by bukhara deer populations;
- inventory works in existing populations;
- inventory works in deer habitats to identify areas, still suitable for the deer;



- *special measures of protection*



- technical support for rangers' groups;

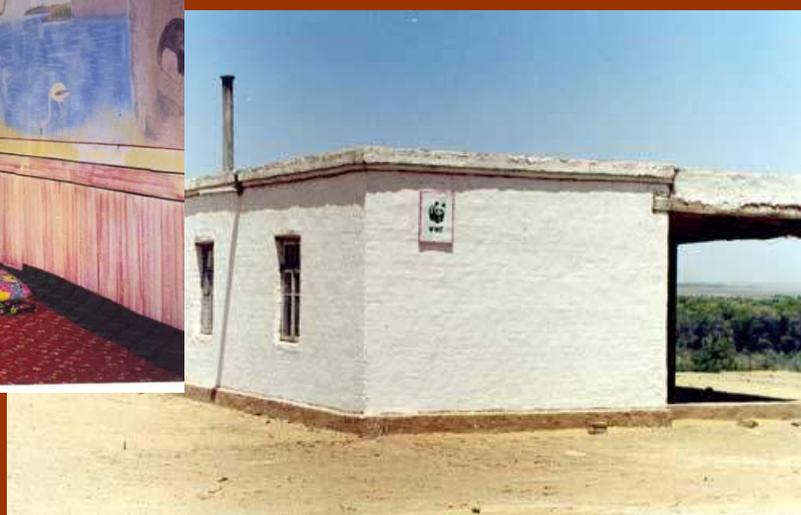
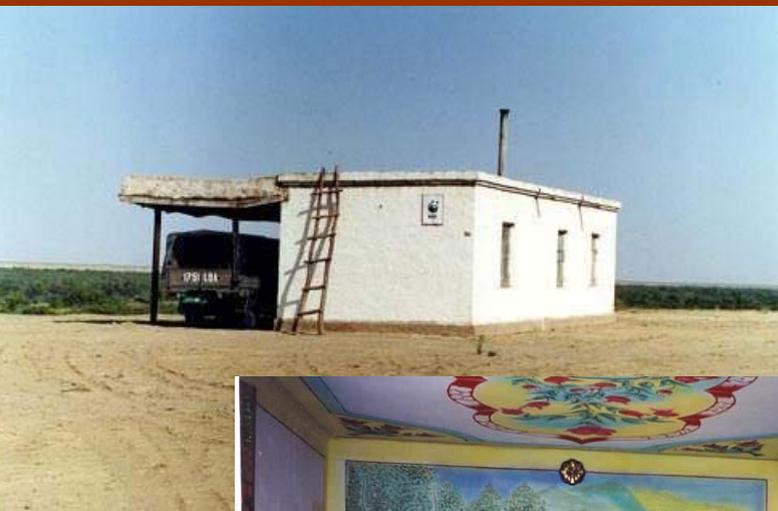
- creation of new protected areas (sanctuaries)

and improvement of the area and regime of existing ones.

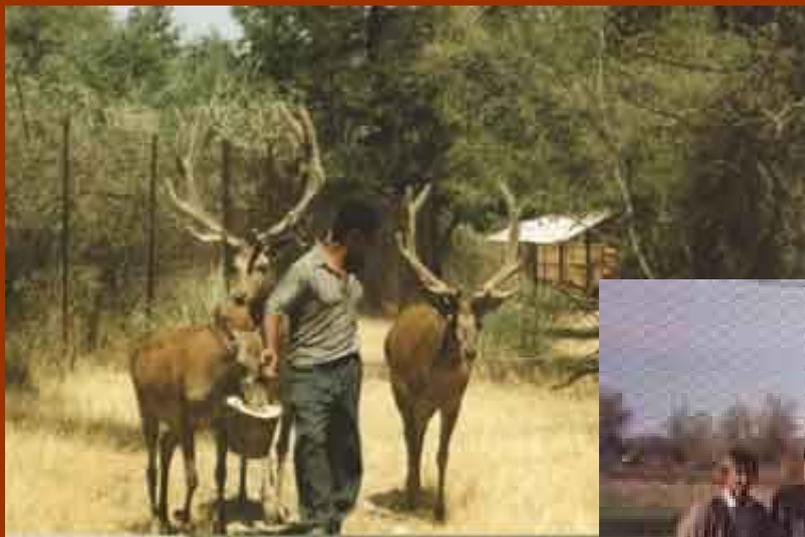




- reparation of rangers' stations;



- *restoration of the species in suitable habitats, with special measures for protection and favourable conditions for reproduction.*





Our groups are growing in :

- Zeravshan (Uzbekistan)- and we are ready to set the first animals free;
- Turkistan (Kazakhstan, Syrdaria)





• *Propaganda, education, mass-media work:*

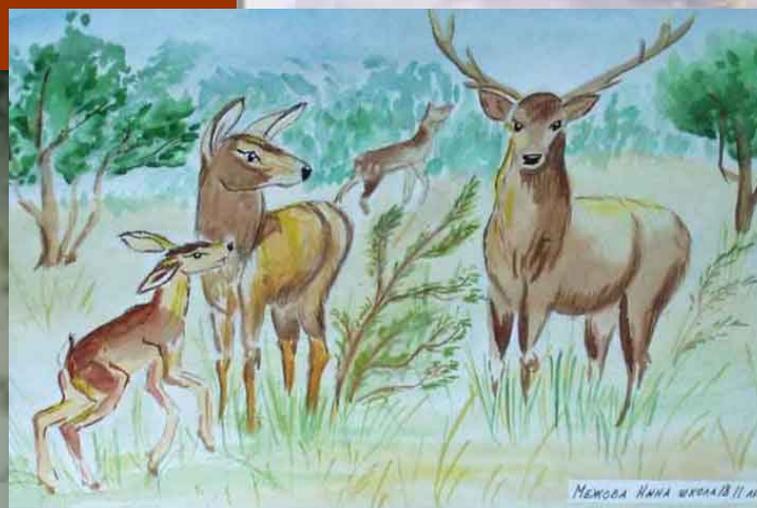
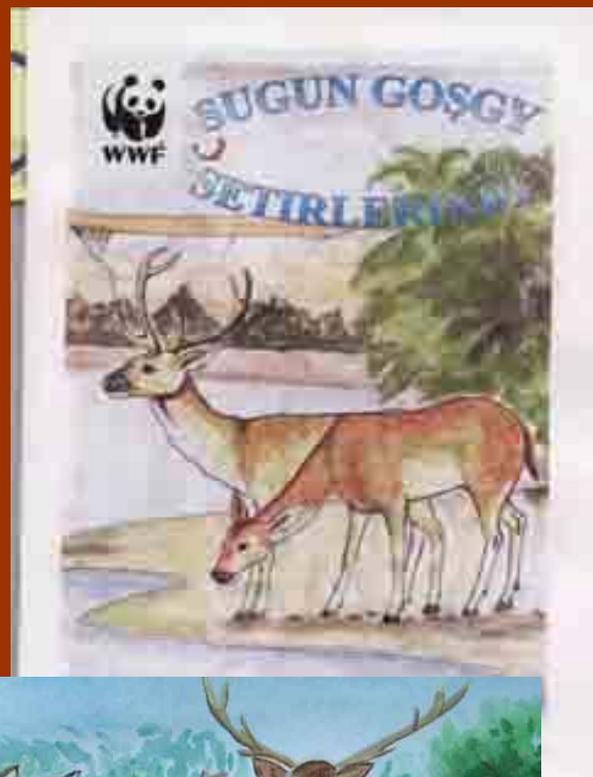
- Local and national TV, radio;
- mass-media;
- leaflets and booklets on the species, PAs, etc;





Special attention to children:

- Brochures, leaflets, games - for children of different ages;
- concourses of paintings, of compositions;
- performances;





Bukhara deer in pens - is an occasion for a human dimension campaign:



Deer live in Zeravshan
- near Samarkand;
but children of
12 schools in Tashkent

are collecting acorns - as a winter forage for the deer



First practical results:



- Forests (deer habitats) are well developing - less cutting, illegal pasturing of cows;
- less poaching (*an old deer came to die - naturally, from age!!! - to the rangers house*);
- there were about **400** deer in Central Asia when the project started - now the results of the census show **700 - 750** deer.

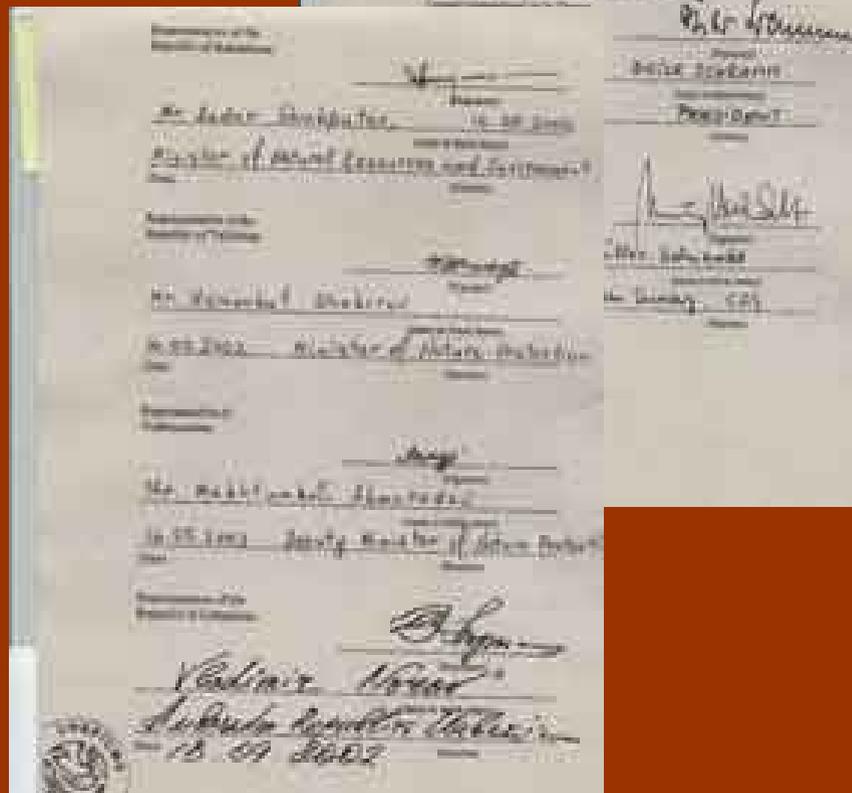
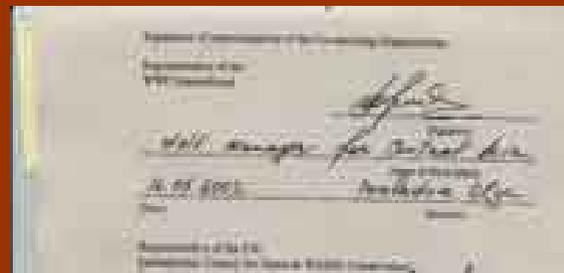




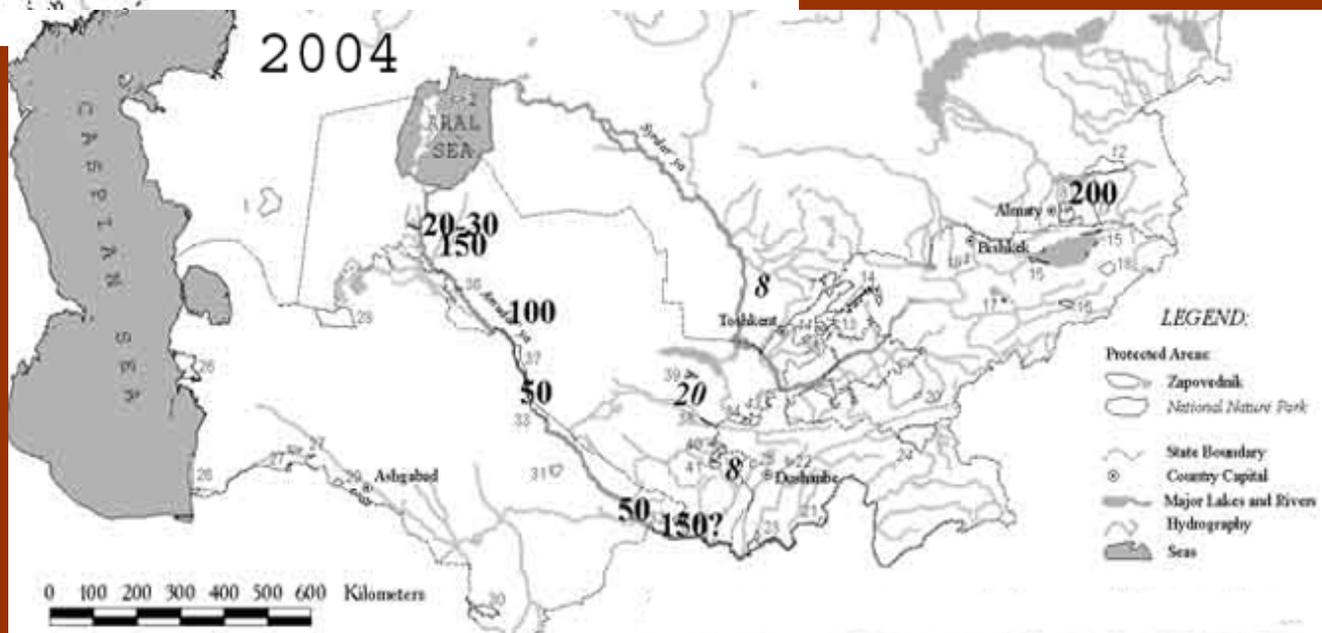
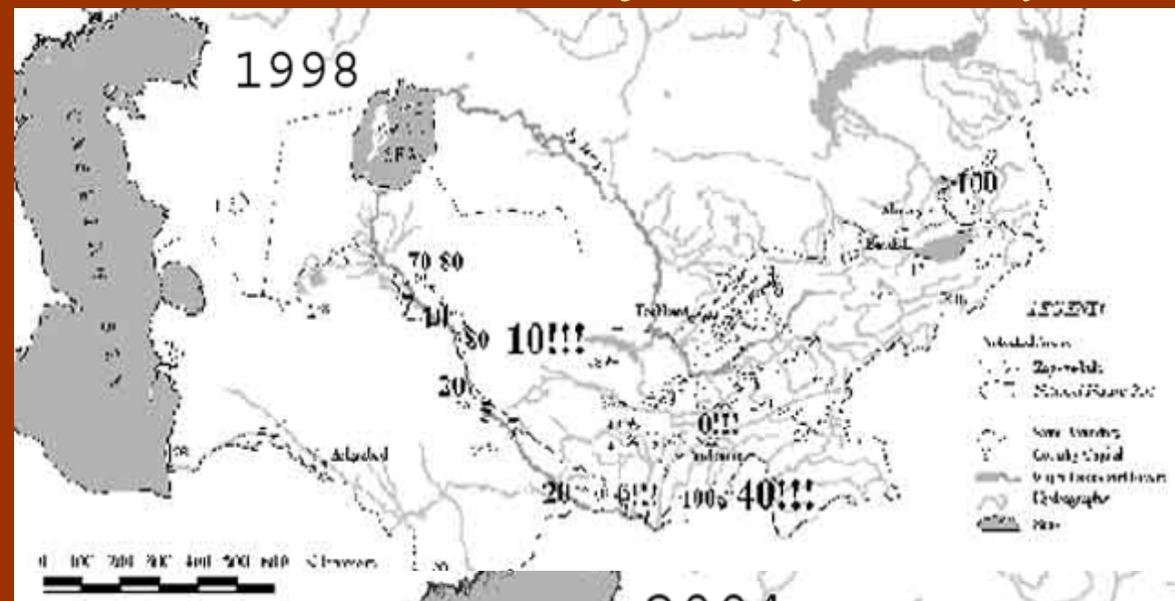
- *Important political result - way for future development:*

Action plan and Memorandum of understanding on Bukhara deer conservation is signed in the frame of Bonn Convention by

- 4 range states,
- CIC,
- CMS Secretariat
- and WWF



Main result of the first 4 years of the project:





We are interacting with responsible Ministries in the Countries

- by now umbrella agreements are signed with Turkmenistan, Uzbekistan and Kazakhstan and one of the major goals is to develop a trans-boundary econet – a system of protected areas of different status and ecological corridors

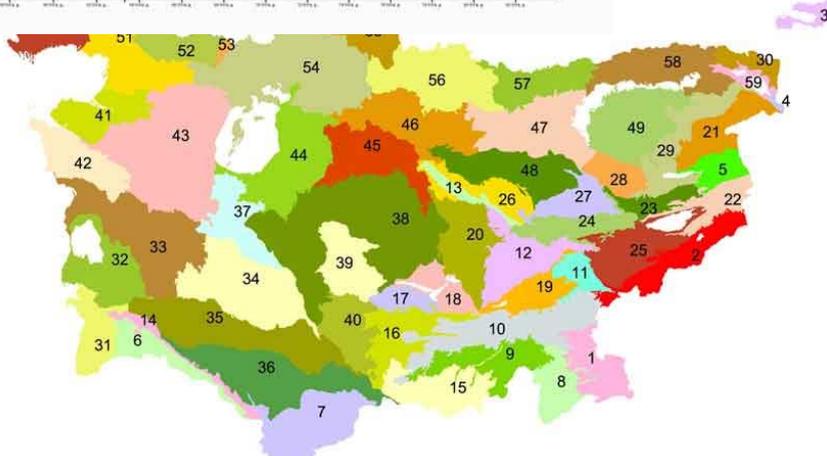




GEF-UNEP-WWF project: *Development of the Econet for long-term conservation of biodiversity in the Central Asia Ecoregions*

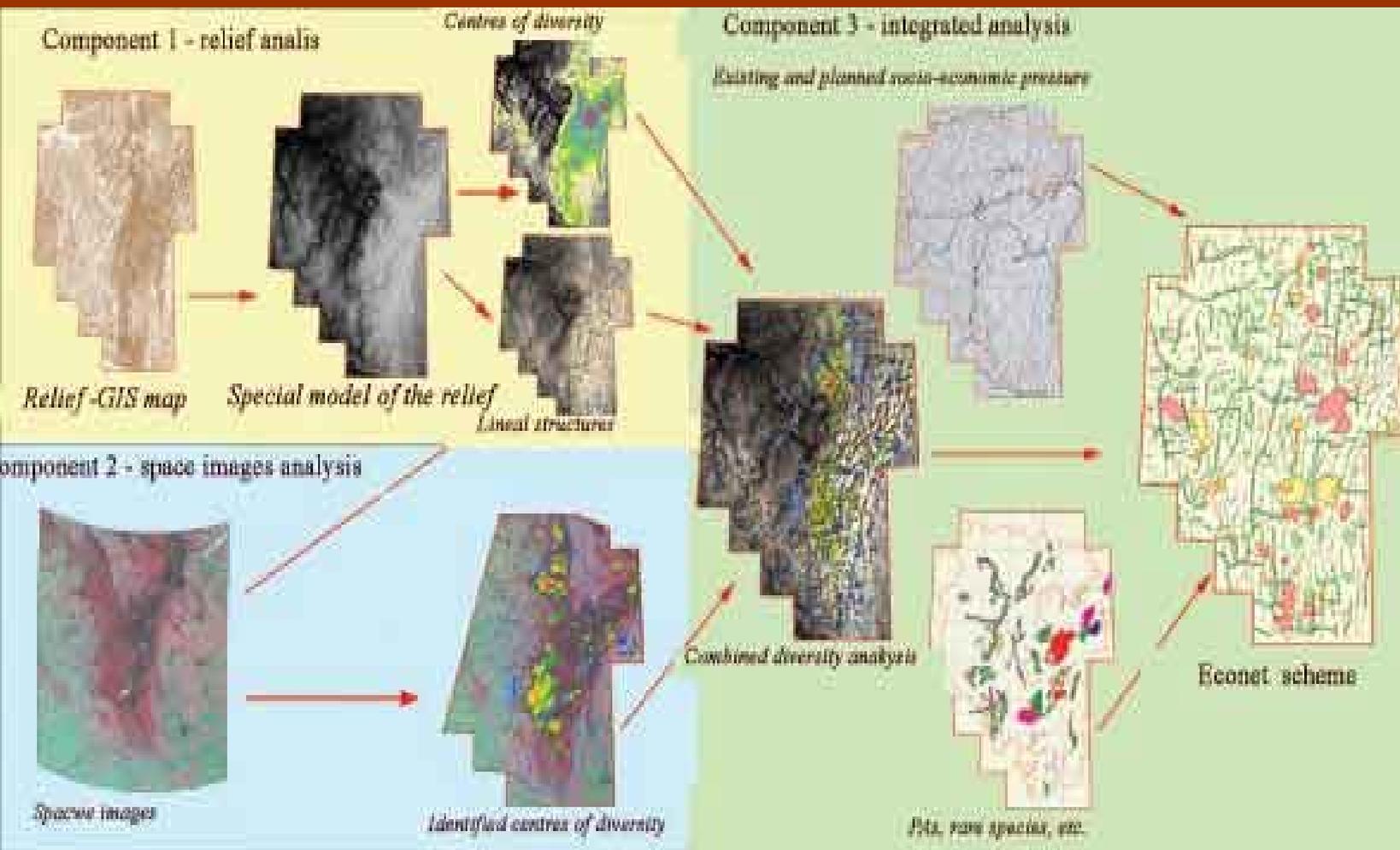


The overall goal of the project is to carry out a gap analysis with the aim of developing a strengthened econet in Central Asia, representing all main self-developing ecosystems of the region, ensuring conservation of its unique biodiversity, and integrating the biodiversity conservation





Principles and methods of econet creation:





*Thank you for your attention,
and welcome to Central Asia!*

