Conservation and Sustainable Use of Cold Winter Deserts of Central Asia (Turan)

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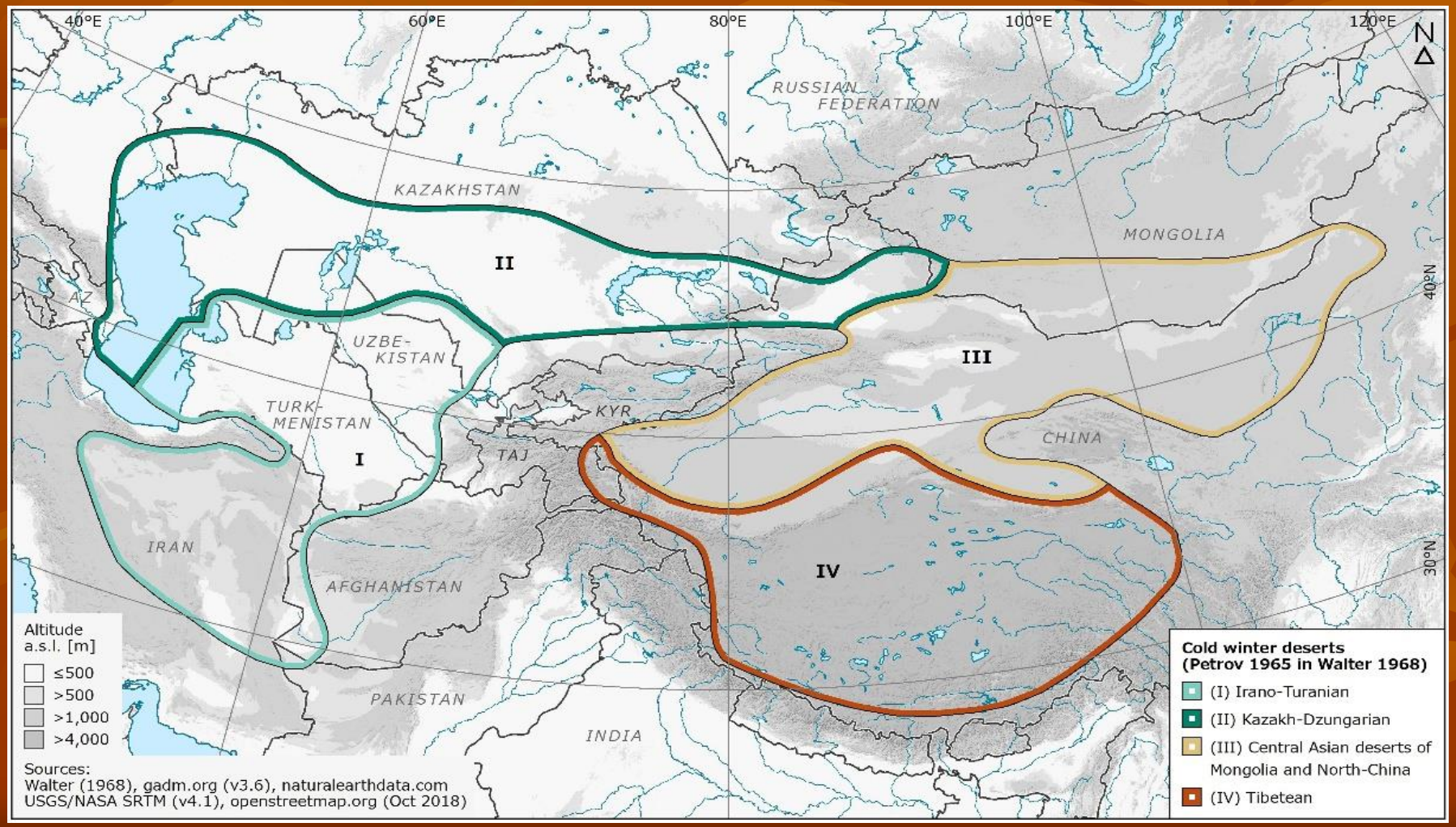
- “The Central Asian Desert Initiative” (CADI) – “Conservation and Sustainable Use of Cold Winter Desert of Central Asia (Turan)” project aimed to preserve and sustainable use of cold winter deserts in Kazakhstan, Turkmenistan, and Uzbekistan
- The CADI project is funded by the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)
- Project is implemented by the MAEPT, University of Greifswald (Germany), the Michael Succow Foundation (Germany)

The project has **three pillars** to foster biodiversity conservation in the deserts of Turan:

- As a first pillar, CADI project has conducted several biodiversity expeditions to the desert sites.
- As a second pillar – the improvement of the management effectiveness of the PAs was addressed; 5-th years Management Plans for 3 PAs were elaborated; capacity of PAs enhanced
- A third pillar – is the serial transnational nomination of the “Cold Winter Deserts of Turan” as the UNESCO World Heritage Site has elaborated in 2021

The Asian desert areas of the temperate climate zone can be subdivided namely into four subregions: *I - Irano-Turanian, II - Kazakh-Dzungarian, III - Central Asian deserts of Mongolia and China, IV - Tibetian high altitude deserts*



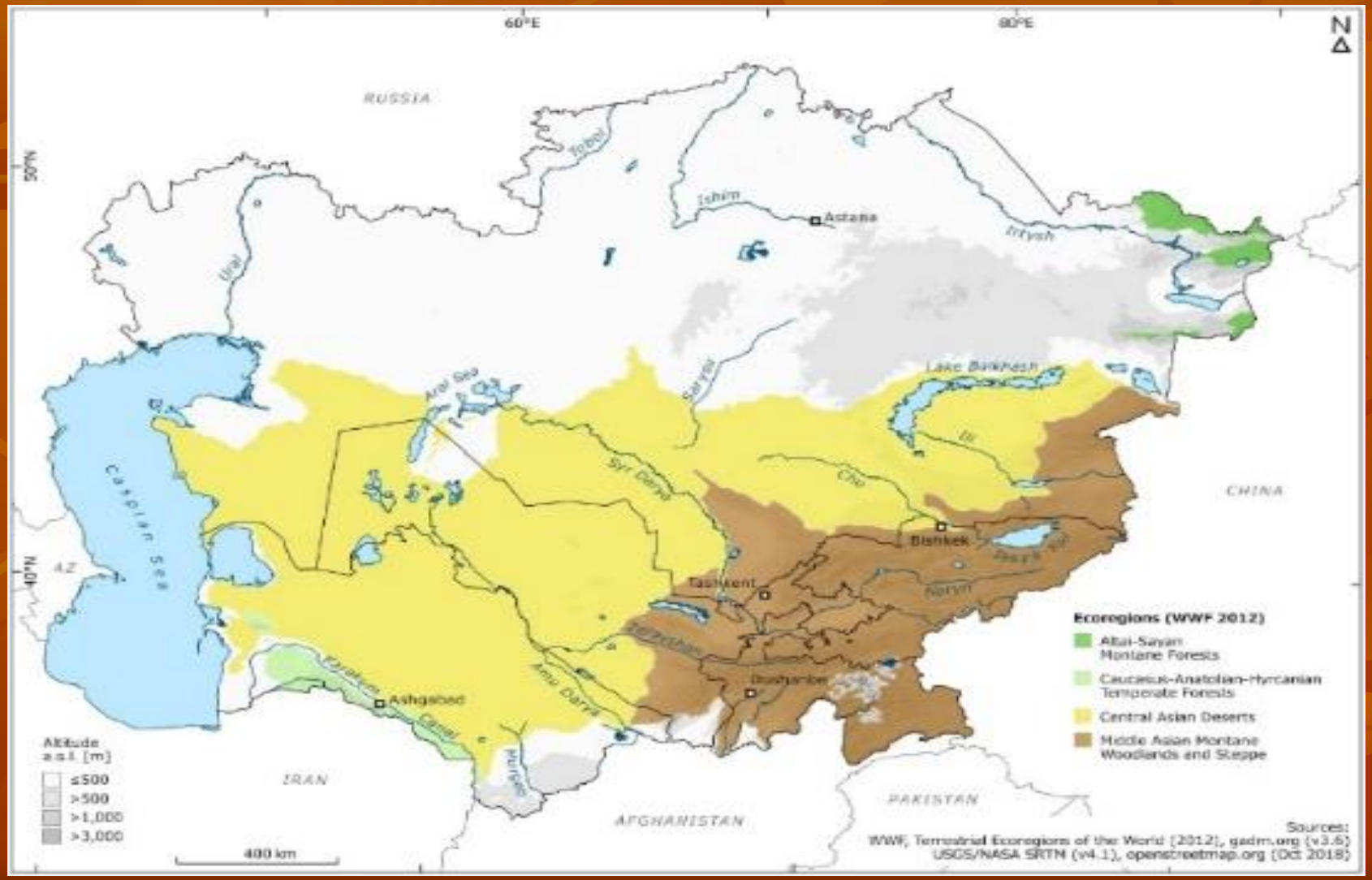
List of World Heritage Sites

One of the fundamental reviews of future priority sites for a credible and complete list of natural world heritage sites identifies the Cold Winter Deserts as the worldwide only biome (according to Udvardy 1975) not inscribed to the list of World Heritage Sites. A comparison of priority habitat types having potential for inscription as World Heritage Site of studies of IUCN, WWF, Birdlife International emphazises Central Asian deserts among 4 other deserts worldwide (IUCN 2004).

World Natural Heritage Sites within Biogeographical Provinces of North and Central Eurasia (regarding Udvardy)

Udvardy Biogeographical Provinces of North and Central Eurasia		Number of WH Sites	Name of WH Sites / criterion
Number	Name		
2.3.3	West Eurasian Taiga	3	Laponian Area (S) / iii, v, vii, viii, ix The High Coast/Kvarken Archipelago (S / Fi) / viii Virgin Komi Forests (Ru) / vii, ix
2.21.8	Turanian	0	
2.29.11	Pontian Steppe	1	Danube Delta (Ro) / vii, x
2.34.12	Caucaso-Iranian Highlands	1	Western Caucasus (Ru) / ix, x
2.35.12	Altai Highlands	2	Golden Mountains of Altai (Ru) / x Uvs Nuur Basin (Ru / M) / ix, x
2.36.12	Pamir-Tian-Shan Highlands	2	Western Tienshan (Ka, Uz, Ky) / x Tajik National Park (Ta) / vii, viii
2.43.14	Aral Sea	0	

These deserts form the ecoregion “Central Asian deserts” of the WWF “Global 200” – one of 233 ecoregions, whose biodiversity and representation values are outstanding on a global scale



Karakum Desert and Protected Areas

- Component of CWD in Turkmenistan include desert PAs: Repetek Biosphere State Reserve, Bereketli Garagum State Nature Reserve, the Gaplangyr State Nature Reserve.
- These State Reserves (IUCN Ia) are remotely distributed over the entire Karakum desert (in the Eastern, Central, and Northern Karakum). They, together with their jointly managed Wildlife Sanctuaries, represent a variety of typical habitats for the Cold Winter Deserts of Central Asia.

Map of PAs in Turkmenistan

Types of Karakum Desert

Adaptation process

- The diversity of desert landforms and ongoing land forming processes is reflected by corresponding communities of plants and animals, which are in **ongoing processes of adaptation to changing ecological extreme conditions**.
- These are characterized by cold winter with low precipitation, and by hot and dry summer, by sometimes strong wind with physical effects to plants and animals. In long-time and ongoing evolution, they developed different survival strategies.

- Adaption strategies of plants are, e.g., xeromorphic structures like reduced leaves, extensive or deep roots, succulent and woody sprouts.

Salsoleta richteri

Haloxylon persicum

- **Woodland of Saxaul** (*Haloxylon persicum* and *H. ammodendron (syn. H. aphyllum)*) is one of the most distinctive and significant ecosystems of the cold winter deserts of Turan. These two only species, which is endemic in Central Asia, form large scale woody vegetation in sandy areas, all over the Turanian region from Turkmenistan, Uzbekistan to Kazakhstan.
- According to Rachkovskaya (2003) about 500.000 km^2 is the natural distribution area of these both species. Saxaul woodland is the most significant example for **ongoing carbon sequestration and storage** in deserts ecosystems.

Haloxylon aphyllum (ammodendron)

Ammodendron conollyi

- The role of the nature reserves for the conservation of endemic species is high: about 14% of species are endemic to the Karakum and Kyzylkum deserts; over 6 species are exclusively endemic to Karakum: Calligonum (*Calligonum arborescens*), Heliotropium (*Heliotropium grande*), Lipskyella (*Lipskyella annua*), Ferula karakumica (*Ferula karakumica*), etc.

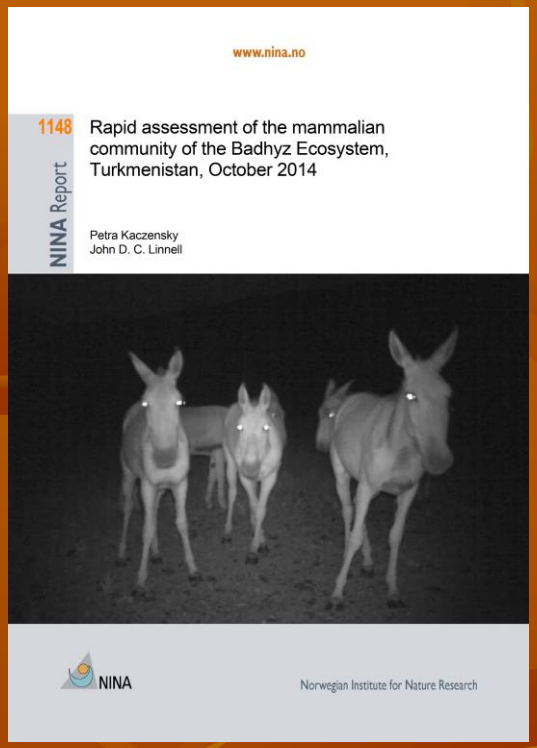
- Not only plant species and vegetation adapt to the extreme life conditions of cold winter deserts, but also animals developed special survival strategies.
- Water storage, ectopic fat storage and the shape and size of desert organisms are important adaptations for desert animals.
- Morphological adaptations are as varied as the diversity of desert ecosystems, but all contribute, in one way or another, toward tolerance of desert environments and the diversity of life they support.

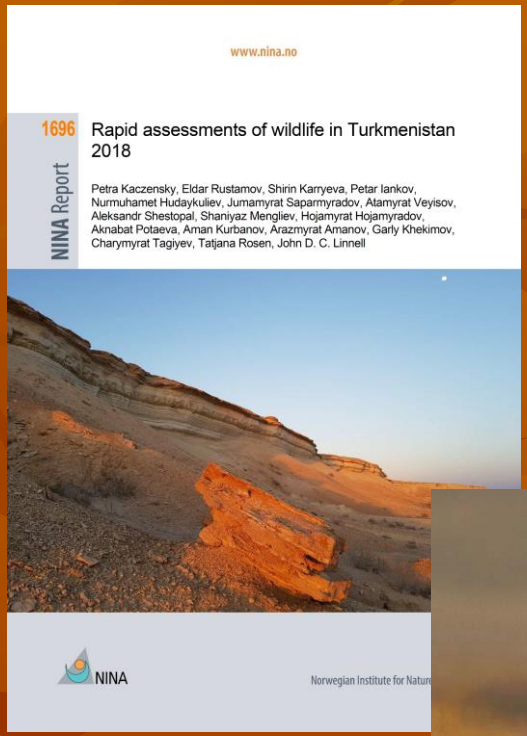
- Widely spread are also physiological and behavioral adaptations. These include tolerance of tissue to high temperatures, tolerance to dehydration, tolerance to cold – a specific peculiarity of cold winter deserts, compared with hot deserts – adaptive heterothermy and behavioral thermoregulation.
- Birds and ungulates also adapt by means of seasonal migration. It is the countless combinations of morphological, physiological and behavioral adaptations that contribute to the high biodiversity and endemism of the Turanian deserts.

Around 70% of invertebrate desert fauna are Turanian endemics.
More than 10 species of reptiles of Karakum are typically Turanian.

Mobile and transboundary animal migrations such as movements of goitered gazelle (*Gazella subgutturosa*), kulan (*Equus hemionus*), saiga (*Saiga tatarica*) and urial (*Ovis vignei*) are a behavioral response to the changing habitat conditions in the course of the annual phenological circle. Other approaches to deal with hot and arid seasons may take refuge in burrows or simply beneath the sand.

Cooperation with RSPB, NINA, MSF





Main threats to biodiversity

- Poaching and illegal hunting
- Fragmentation and degradation of habitats, agricultural land use
- Competition with livestock, overgrazing
- Illegal cutting of tugay, saksaul and archa/juniper forests
- Border fences
- Climate change and other ecological disasters (floods, landslides, droughts, fires)
- Pests, alien invasive species, diseases

Nomination of the “Cold Winter Deserts of Turan” as the UNESCO WH Site

- Shall close the gap of the last remaining biome in the UNESCO Convention without a single property. The inscription shall support the international recognition of the cold winter deserts, facilitate forced transboundary cooperation on habitat connectivity, scientific exchange and cooperation as well as commitment to international conventions.
- Nomination “Cold Winter Deserts of Turan” was included into the UNESCO Tentative List in January 2021 (website:unesco.org)
- Full nomination dossier will be submitted to the UNESCO WH Committee in January 2022
- The MoU was prepared to be signed by 3 Ministers of EP of CA
- The Interim Regional Secretariat is established in Tashkent, Uzbekistan in 2021; the Action Plan was developed for the period 2021-2025
- CWD of Turan Conference was held on 2-3 December 2021

CWD of turan Visitor Centre established, staff was trained and enhanced

Cooperation with “Ilbris”/Panthera, 2018-2021: camera trapping in Central and Western Kopetdag, Badhyz, Balkhan, Ustuyrt, Kugitang

Thank you for attention!

Further information: https://cadi.uni-greifswald.de;
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Photos: Amanov A., Annamamedov I., Karryeva Sh., Kepbanov P., Linnel J., Pavlenko A., Pestov M., Rustamov E., Sherbina A., Shestopal A., Schmidt S., Welscher C.