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BOOK OF ABSTRACTS

PS15**THE ASSESSMENT OF HEAVILY OVERGRAZED MOUNTAIN PASTURES WITH USE OF SATELLITE AND GROUND DATA**Dmitry Malakhov¹, Evgenya Senyak²¹Institute of Zoology MS RK, Almaty, Republic of Kazakhstan²Association for the Conservation of Biodiversity of Kazakhstan, Almaty, Kazakhstan

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Aims: To evaluate the condition of natural pastures within the protected area of Upper Koxsu Wildlife Sanctuary (UKWS) and to provide recommendations on sustainable management of natural resources of the area.

Location: UKWS is located in Jungar Alatau Mountains (South-Easter Kazakhstan) under approximately E 79° 30' and N 44° 45'. The area of the UKWS is about 240 000 ha. Approximately 30 000 ha of the total area is designated as livestock pastures. UKWS was created to protect endemic amphibian *Ranodon sibiricus* Kessler, 1866. Other subjects of protection are *Ursus arctos issabellinus*, *Uncia uncial* Schreber, *Bubo bubo* L., *Aegypius monachus* L. and a variety of rare and endangered plant species (*Pinaceae*, *Rosaceae*, *Liliaceae*, etc).

Methods: Ground measurements of 2021 were conducted at more than 80 sampling points, encompassing major pasture types in the basin of Koxsu River. Ground measurements included the measure of NDVI with handheld sensor Trimble Greenseeker, the measuring of the biomass, calculated by a weighting of cut plants at each sampling point, the estimation of grass cover, and the content of unpalatable species along with the detailed description of plant communities. Satellite data of Landsat-8 and Sentinel-2 (high-resolution optical sensors), synchronous to ground measurements were processed to calculate a series of vegetation indices.

Results: The intense degradation of natural pastures is obvious if consider two parameters: the seasonal biomass dynamics and the unpalatable species content. Biomass falls drastically in the middle of summer when, normally, it should reach its peak values. The content of unpalatable grass may reach 50-70% of the total biomass. Some indices (like DWSI, IRECI, GreenNDVI, OSAVI) demonstrating relatively high correlations to ground data (r-value varies as 0.68-0.94) were selected to produce a series of maps depicting the distribution of biomass, grass cover, and unpalatable species content within grazing areas.

Conclusions: This work is a part of a continuous project devoted to the assessment of the UKWS ecosystem stability concerning *Ranodon sibiricus* wellbeing. After additional study during 2022, the results of this particular work will provide the basis for further activity aimed at regulating or prohibiting livestock grazing within the UKWS area.

PS58**FLORISTIC COMPOSITION OF PLANT COMMUNITIES INVOLVING *RHAPONTICUM SERRATULOIDES* (GEORGI) BOBR IN THE DESERT STEPPES OF KAZAKHSTAN**Saule Mamyrova¹ & Anna Ivashchenko²¹Al-Farabi Kazakh National University, Almaty, Kazakhstan²Institute of Zoology MES RK, Almaty, Kazakhstan

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Question: *Rhaponticum serratulooides* (Georgi) Bobr. is a widespread, but yet a poorly species studied of 6 representatives of this genus in Kazakhstan. The necessity of its comprehensive study is of scientific and practical importance, since it has been established that this species contains ecdysterone and sesquiterpene lactones (Volodina et al., 2012). For this reason, it can replace the raw materials of *Rhaponticum carthamoides* Willd. Ijin in the pharmaceutical industry, which reserves are constantly being depleted due to excessive and illegal harvesting, since it is listed in the Red Book of Kazakhstan.

The aim of this work is to identify plant communities with *Rh. serratulooides*, their floristic composition and the role of the studied species in these communities.

Methods: The research was conducted in the subzone of dry desert steppes on the territory of the State Nature Reserve "Altyn-Dala" (Kazakhstan) on 11 sample plots. When describing plant communities, generally accepted methods of geobotanical research were used. The role of *Rh. serratulooides* in plant communities was assessed by the projective cover in percentage. Taxon nomenclature is given according to the summary by S. Abdulina (1999).

Results: We recorded *Rh. serratulooides* in three vegetation types - marsh, meadow and shrub. The overall floristic composition of plant communities with *Rh. serratulooides* is represented by 35 species from 32 genera and 20 families. The species studied is approximately equally common in communities of marsh and meadow vegetation types. However, its role is different; in the first case it occurs in low abundance, while in the second it is much more common as a dominant and subdominant. In shrub-type plant communities the species is found rarely and in solitary abundance.

Conclusions: We determined that *Rh. serratulooides* occurs in marsh and meadow vegetation types with varying degree of abundance. Meadow communities are poorer in floristic composition (a total of 18 species; average number of species per description - 7.6), but more homotypic - the floristic similarity or the Koch biotic dispersion index (IBD) is 38,3%, comparing to marsh type communities (a total of 24 species; average number of species per description - 9,4), IBD - 24%.

References

- Volodina, S. et al. (2012) Plant ecdysteroids of the Urals, Caucasus, Russian Far East and China (selective screening). *Turczaninowia*, 15, 58-75 (In Russian)
- Abdulina, S. (1999) Checklist of vascular plants of Kazakhstan. Almaty, 187