ASIA LIFE SCIENCES

ISSN 0117-3375

REPRINT

The Asian International Journal of Life Sciences

Beyond Excellence©

SUPPLEMENT 21(1) DECEMBER 13, 2019

Vital Issues in Life Sciences Implications: Socio-Economic, Legal, Environmental and Cultural Trends

e-mails: asialifesciences@yahoo.com wsmgruezo@gmail.com
Website - http://emtpub.com/journals/ALS/

ASIA LIFE SCIENCES **The Asian International Journal of Life Sciences** *Beyond Excellence©*

ASIA LIFE SCIENCES -The Asian International Journal of Life Sciences (ISSN 0117-3375) is a non-profit, non-stock, refereed/peer-reviewed (double-blind review), international, scientific journal devoted to the publication of original research in the Life Sciences and other disciplines. Articles originating from anywhere in the world are most welcome. Two issues a year make a volume.

BOARD OF EDITORS - *Asia Life Sciences* Supplement 21(1) 2019

Deadlines for submission of manuscripts. *First issue*-01 July; *Second issue*-01 January. Please contact the Chief Editor/Chairman, ALS Board of Editors (see addresses below).

Subscription Prices. **Foreign:** Institutional - US$1000; Individual - US$800 (including Volumes 1-28, 1992-2019 + 21 Supplements). **Local:** Institutional - PhP10,000; Individual - PhP8,000 (including Volumes 1-28, 1992-2019 + 21 Supplements). Prepayment of order/back order is required. All issues are to be sent by air mail. Back orders will have an additional packing-handling and postage cost.

Send manuscripts, subscription orders and correspondence to: Dr. William Sm. Gruèzo, ***ASIA LIFE SCIENCES***, The Asian International Journal of Life Sciences, 81 Governor F.T. San Luis Avenue, Masaya, Bay 4033, Laguna, Philippines. ***e-mails*****:** asialifesciences@yahoo.com wsmgruezo@gmail.com ***Website*****:** http://emtpub.com/journals/ALS/

 Printed in the Philippines

ASIA LIFE SCIENCES

The Asian International Journal of Life Sciences
ISSN 0117-3375

Supplement 21 Number 1 December 13, 2019

CONTENTS

Cont. on Next Page

***Reviewers for this Issue*:** Refer to pages **681-686** of this Issue.

 Printed in the Philippines

Contents

Contents

Contents

Contents

Contents

Contents

Contents

Beyond Excellence©

81 Governor F.T. San Luis Avenue, Masaya, Bay 4033, Laguna, Philippines
Celfone nos. (063) (049) 0916-526-0164; 0977-706-0972
e-mails: asialifesciences@yahoo.com wsmgruezo@gmail.com
http://emtpub.com/journals/ALS/

Actual Date of Publication: *Asia Life Sciences*
Supplement 21(1) 2019 - 13 December 2019

Beyond Excellence©

81 Governor F.T. San Luis Avenue, Masaya, Bay 4033
Laguna, Philippines
Celfone nos. (063) (049) 0916-526-0164; 0977-706-0972
e-mails: asialifesciences@yahoo.com
wsmgruezo@gmail.com
http://emtpub.com/journals/ALS/

Asia Life Sciences has an Impact Factor of 0.180

The papers published in ***Asia Life Sciences*** are indexed/covered by SCOPUS, Elsevier B.V., Radarweg 29, 1043 NX, Amsterdam, The Netherlands; CABI, Wallingford, Oxon, UK; China National Knowledge Infrastructure (CNKI), 66 Xixiaokou Avenue, Haidian District, Beijing, China; J-Gate, Informatics Publishing Limited, No. 194, RV Road, Basavanagudi, Bangalore-560004, Karnataka, India and EBSCO Publishing, Inc., 10 Estes Street, Ipswich, Massachusetts, 01938-0682, USA.

Asia Life Sciences is a recipient of the Journal Accreditation Award of the Commission on Higher Education (CHED), Republic of the Philippines (2010-2016).

Printed on acid-free papers

Actual Date of Publication: *Asia Life Sciences* Supplement 21, Number 1, 2019 - 13 December 2019

ASIA LIFE SCIENCES Supplement 21(1): 1-9, 2019
The Asian International Journal of Life Sciences

Modern condition of coenopopulation of *Eremurus robustus* Regel (Xanthorrhoeaceae) in Kashkadarya Basin, Uzbekistan

Uktam E. Khujanazarov[1*], Habibullo Shomuradov[2] and Elena A. Afonina[3]

Eremurus robustus Regel (Xanthorrhoeaceae) is endemic to the Tyan-Shan and Pamir-Alay mountain ranges. Of 900-1,200 m outcrops of gypseous rocks in the low hills. Single specimens, seldom 2-3 plants can be found. The studied coenopopulation of *E.robustus* is normal, incomplete. The presence or absence of certain ontogenetic groups in coenopopulation is associated with the ecological-phytocenotic growth condition and the degree of cattle grazing. The aim of the research was to describe the coenopopulation of *E. robustus* and the scientific justification of the ways of ecological improvement of coenopopulation. In the implementation of scientific work, the methods of traditional geobotanical and cartographic remote study of plant formations were applied. When identifying plant species – 6 volumes of "Flora of Uzbekistan" and 10 volume "Key to plants of Central Asia" were used and GIS technology was used in mapping. The factors that influence the vegetative processes of plant formations were identified in this study so that the ontogenetic structure of coenopopulation of *E. robustus* was developed. The practical significance of the research results shows in the fact that monitoring of mountain pastures of the Kashkadarya Basin and ways of improvement were analyzed, tasks and practical recommendations to prevent anthropogenic factors were developed.

Keywords*: Eremurus robustus,* Xanthorrhoeaceae pastures, population, community, coenopopulation, ecological-phytocenotic conditions, Kashkadarya Basin, Uzbekistan

[1]Department of Botany, Tashkent State Pedagogical University, 100185, 27 Bunyodkor Str., Tashkent, Uzbekistan

[2]Department of Geobotany and Ecology, Botanical Institute, 100125, 232B Durman Yuli Str., Tashkent, Uzbekistan

[3]Department of Biology and Chemistry, Kazan Federal University, 420008, 18 Kremlevskaya Str., Kazan, Russian Federation

[*]Corresponding author

Received 21 October 2019; Accepted 18 November 2019

Printed in the Philippines

INTRODUCTION

Kashkadarya region includes the Karshi depression in southern Uzbekistan, bordered in the north by the mountains of Koratepa, Zirabulok, and Ziyevuddin; in the east – by the foothills of the southwestern part of the Gisar ridge (Kashkadarya Region 1959). As a result of the study, we analyzed the plant species of mountain pastures and determined the current state of pastures in the Kashkadarya Basin (Dias & Barreiros 2018, Lebedev et al. 2018).

One of the leading branches of agriculture is animal husbandry, and it is important to conduct a scientific, practical study, assessment of the material source of its development – natural food (source of hay) – pasture types (Galnaityte & Krisciukaitiene 2017). This work was arisen in the process of implementation and the requirements of economic development; subsequently, the requirements of the national economy, and is one of the urgent tasks of modern science and technology. The types of pastures – natural territorial complexes with similar climate, soil, productivity (fertility), the time of year, when cattle are grazed and types are determined by the edificatory types of plant families. There is a need to determine their ecological status: structure, composition, productivity (fertility), and degree of damage (degradation, transformation), types of damage factors (damage), and other quantitative and qualitative indicators (Sukhova et al. 2018). The foothill pastures of the Kashkadarya Basin are one of the main bases for the development of animal husbandry, in recent years the productivity (fertility) of which is reduced under the influence of metrological factors (Khuzhanazarov 2012, Poškus et al. 2018).

Researchers from developed countries, in particular, American scientists M.W. Williams and V.G. Konovalov (2008) studied temperature phenomena and humidity in Central Asia, and brought scientific results on vegetative processes of plants. Research in the direction of monitoring and environmental improvement of the foothill pastures of the Kashkadarya Basin has current scientific and practical importance (Hobohm et al. 2016, Poor & Thorpe 2017, Johnstone et al. 2017, Halimatussadiah et al. 2017, Strydom 2017, Mironova et al. 2018, Belonozhko et al. 2018, Krechetov et al. 2018).

MATERIALS AND METHODS

The area of research is situated in the western spurs of the Hissar ridge located in the south of Guzar town and Dehkanabad village, on the left bank of the Kichik-Uradarya River and in Tarkapchigay River basin. This territory has been defined as the Tarkapchigay phytogeographical region of the Western Hissar district of the Central Asian Mountain Province (Tojibaev et al. 2016). The territory belongs to the temperate climatic zone. The climate is dry, continental with long, hot and dry summer season; the winter season is short with mild frosts and little snow. The average annual temperature is 13–14˚C, the average temperature of January is 0 –2˚C, average temperature of the July is 26 –28˚C, the annual precipitation is 400 – 600 mm (Kashkadarya Region 1959, Williams & Konovalov 2008).

Field research was performed during June 2016 by traditional phytosociological methods with description of plant associations, collection of herbarium specimens and photographing of surveyed plots (Mirkin et al. 2000). Demographic structure

of populations was studied in accordance with T.A. Rabotnov (1950), A.A. Uranov (1975), L.A. Zhukova and E.V. Shestakova (1997). The age indexes were studied by A.A. Uranov (1975). The ontogenetic structure of coenopopulations in the different ecological and phytocenotical conditions was determined by the transect method (Glotov 1998, Silbernagel 2018).

RESULTS AND DISCUSSION

As part of the study in the Zeravshan mountain ranges (upper part of the Kashkadarya Basin), two coenotic populations of *E. robustus* were studied under different ecological and phytocenotic conditions (Figure 1). The first coenopopulation of the species is distinguished on the northwestern slopes of the Zeravshan mountain ranges (Takhta-Karacha Pass) along the bourn as part of the different herbaceous-wormwood-hawthorn community on typical serozem (Figure 2). The geographic coordinates of the coenopopulation are: N. 39.30125'E.066.89365'. The total projective cover of the grass stand is 70%. At the same time, the density of individuals of the studied species is low and barely reaches to 2%. We should note that this coenopopulation was studied approximately 100–150 m down to the west of the first coenopopulation of *Dianthus uzbekistanicus* in the enclosed area. The floristic composition of the community is composed of 25 species of vascular plants (Table 1). Perennials prevail in the herbage is about 72%, it is followed by shrubs and youngsters (on 12%), and trees are represented by a single species – *Crataegus turkestanica*.

Figure 1. *Eremurus robustus* Regel (Xanthorrhoeaceae) in the Zeravshan mountain ranges (upper part of the Kashkadarya Basin), Uzbekistan. (Photo by Uktam E. Khujanazarov, 18 July 2018)

Table 1. Species composition and their abundance of the mixed grassy-wormwood-hawk community.

No.	Name of plants	Life form	Projective cover, %
1	*Crataegus turkestanica*	Tree	20
2	*Artemisia tenuisecta*	half -shrub	15
3	*Thymus serawschanicus*	half –shrub	3
4	*Ziziphora clinopodioides*	half -shrub	4
5	*Elytrigia trichophora*	perennial	10
6	*Stipa* sp.	perennial	4
7	*Hypericum perforatum*	perennial	5
8	*H. scabrum*	perennial	5
9	*Allium* sp.	perennial	+
10	*Helichrysum mussae*	perennial	+
11	*Tulipa fosteriana*	perennial	+
12	*Plantago lanceolata*	perennial	2
13	*Tragopogon* sp.	perennial	+
14	*Astragalus sewerzowii*	perennial	1
15	*Convolvulus lineatus*	perennial	2
16	*Astragalus eximus*	perennial	1
17	*Ferula kuhistanica*	perennial	+
18	*Galagania fragrantissima*	perennial	2
19	*Dianthus uzbekistanicus*	perennial	1
20	*Eremurus robustus*	perennial	2
21	*Delphinium semibarbatum*	perennial	+
22	*Poa bulbosa*	perennial	4
23	*Verbascum songaricum*	biennial	+
24	*Bromus macrostachys*	annual	2
25	*Veronica stylophora*	annual	+

The second coenopopulation of *E. robustus* grows on the southwestern slope of the Zarafshan Ridge. The soil of the described plot is fine-milled, in some places with large rocky. The coenopopulation of *E.robustus* was distinguished along dry sai, where ten of cattle paths were noted. Pastures where this coenopopulation grows are exhausted, grassy forage plants are eaten. But the community has the following uneaten apparently poisonous plants such as *Astragalus eximus, Verbascum songaricum, Onosma maracandicum, Scrophularia* sp. and *Diarthron vesiculosum*. The total projective cover of the grass stand is about 30%. The botanical composition of the community consists of 24 species of flowering plants. Of these are 17 perennials, 7 annual-biennials, 2 half-shrubs and 1 shrub (Table 2).

Figure 2. Mixed grassy-wormwood-hawthorn community on the northwestern slopes of the Zarafshan Ridge, Uzbekistan. (Photo by Uktam E.Khujanazarov, 25 July 2018)

Ontogenetic structure of *E. robustus* has not been previously studied by anyone. To assess the state of coenopopulations on the basis of demographic indicators of coenopopulations, data were used that collected in the current year during the field research. According to the classification of Uranov (1975) and Smirnova et al. (1979), the studied coenopopulations are normal, incomplete (Figure 3). In the first coenopopulation there are no senile individuals, and in the second as senile, so and mature generative and young (juvenile and immature) individuals.

Table 2. Species composition and abundance of mixed grassy-wormwood-lonicer community.

No.	Name of the plants	Life form	Projective cover, %
1	*Lonicera stenantha*	shrub	15
2	*Artemisia tenuisecta*	half-shrub	6
3	*Ziziphora clinopodioides*	half-shrub	+
4	*Elytrigia trichophora*	perennial	+
5	*Achillea* sp.	perennial	1
6	*Hypericum perforatum*	perennial	1
7	*Iris sogdiana*	perennial	+
8	*Centaurea squarrosa*	perennial	2

9	*Salvia serawschanica*	perennial	+
10	*Plantago lanceolata*	perennial	+
11	*Onosma maracandica*	perennial	+
12	*Astragalus* sp.	perennial	+
13	*Ferula kuhistanica*	perennial	+
14	*Silene* sp.	perennial	+
15	*Scrophularia* sp.	perennial	1
16	*Dianthus uzbekistanicus*	perennial	+
17	*Eremurus robustus*	perennial	1
18	*Delphinium semibarbatum*	perennial	+
19	*Convolvulus lineatus*	perennial	+
20	*Poa bulbosa*	perennial	+
21	*Verbascum songaricum*	two-year-old	+
22	*Bromus macrostachys*	annual	+
23	*Diarthron vesiculosum*	annual	2
24	*Veronica stylophora*	annual	+

Based on the characteristics of the biology of the species (high seed productivity, high germination of seeds, the slowest rate of development of individuals in a generative state), the characteristic spectrum of coenopopulations of this species will be a left-sided type with a peak in juvenile individuals. At the time of the research, the ontogenetic spectrum of the first coenopopulation does not coincide with the characteristic one (Schwendemann 2017).

It is left-sided with an absolute maximum on individuals of the young generative state (24.0%). The insignificant low value of the number of juvenile individuals is probably due to, on the one hand with a flush of young, not mature seedlings by spring flooding, and, on the other hand, it is a young growth due to phytocenotic pressure. As noted above, this CP grows on the fine-grained soils of the northwestern slopes of the mountains along the river, where the projective cover of the grass stand reaches to 68%. The accumulation of individuals of the young generative state occurs due to the prolonged continuation of this ontogenetic state in comparison with other age groups in the left part of the spectrum. The decrease of the number of individuals in mature and old generative states is most likely due to the death of a large number of individuals after abundant fruiting. The absence of old fractions of plants is directly related to the death of individuals in previous age states. This is probably one of the biological features of the species.

The ontogenetic structure of the second coenopopulation is also characterized by left-handedness. The peak in the spectrum occurs in virginals. Their share is about 50%. In this coenopopulation, in the left part of the spectrum there are no juvenile and immature individuals, old generative and senile individuals are in the right part of the spectrum. The absence of a young fraction of plants is explained by two reasons: the first belongs to vegetation; the second is with a degree of

anthropogenic impact. This coenopopulation grows on dry slopes of the steep slope. Even a small water influx, which often happens, especially in spring due to the rapid flow easily washes away young individuals, which they are good not rooted plants. In addition, this coenopopulation was allocated by us in an area where pastures are used almost daily. The high pasture load naturally had a negative impact on the structure of coenopopulation.

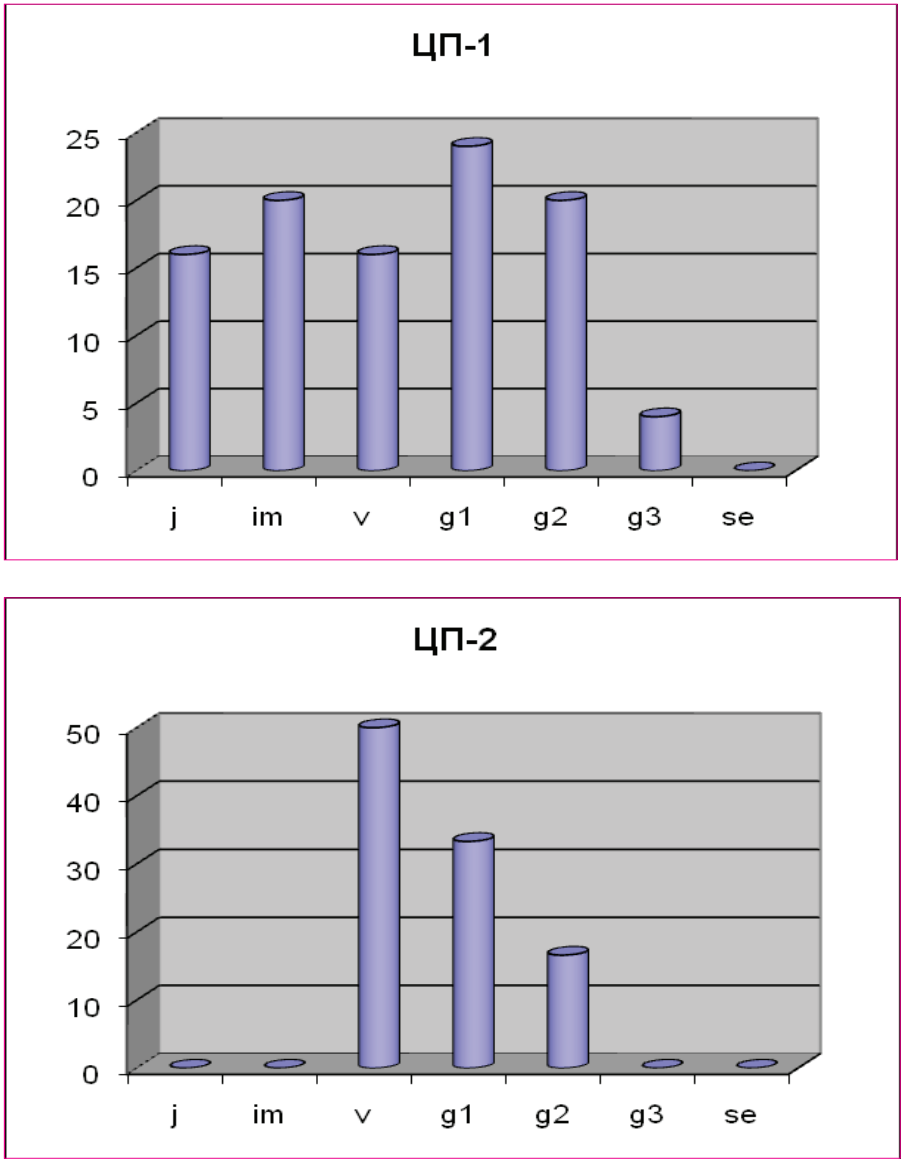

Figure 3. Ontogenetic structures of *Eremurus robustus* coenopulations.

CONCLUSION

Thus, the studied coenopopulations of *E.robustus* is normal, incomplete. The presence or absence of certain ontogenetic groups in coenopopulations is associated with the ecological-phytocenotic condition of growth and the degree of cattle grazing. In the optimal condition of growth is the first coenopopulation, where the ontogenetic structure is full-run (the absence of the senile individuals may be one of the biological features of the species) and the young fractions predominate in the coenopopulation. The second coenopopulation, which grows on the large-rocky soil of a steep slope in an unguarded territory, is in the worst demographic condition.

LITERATURE CITED

Belonozhko, M.L., O.M. Barbakov and A.L. Abramovsky. 2018. Development of tourism in the Arctic zone and its impact on environment. Journal of Environmental Management and Tourism 9(8): 1642-1650.

Dias, K.B. and R.M. Barreiros. 2018. Preservatives for rapid growth timber – A review. Periodico Tche Quimica 15(30): 241-251.

Galnaityte, A. and I. Krisciukaitiene. 2017. Simulation of sustainable farming practices development in Lithuania. Public Policy and Administration 16(2): 264-278.

Glotov, N.B. 1998. About value of parameters of aged structure of population of plants. plant life in heterogenic environment. Yoshkar-Ola 1: 146-149.

Halimatussadiah, A., B.P. Resosudarmo and D. Widyawati. 2017. Social capital to induce a contribution to environmental collective action: Results from a laboratory experiment in Indonesia. International Journal of Electronic Security and Digital Forensics 9(4): 397-414.

Hobohm, L., S. Wärntges and S.V. Konstantinides. 2016. European guidelines 2014 on acute PE. Zeitschrift fur Gefassmedizin 13(1): 10-15.

Johnstone, L., E. Svärd-Sandin and C. Lindh. 2017. The Scandinavian cooperative advantage? A mixed method approach to highlight the influence of contextual conditions for environmental CSR uptake. International Journal of Electronic Security and Digital Forensics 9(4): 336-358.

Kashkadarya Region. 1959. *Part I. Nature,* Proceedings SASU, Geographical Science. SASU, Tashkent, Uzbekistan, 279 p.

Khuzhanazarov, U. 2012. Current state of the pastures of the upper zone of the Kashkadarya basin. Bulletin of Agrarian Science of Uzbekistan 1-2(47-48): 111-114.

Krechetov, I.V., A.A. Skvortsov, I.A. Poselsky, S.A. Paltsev, P.S. Lavrikov and V. Korotkovs. 2018. Implementation of automated lines for sorting and recycling household waste as an important goal of environmental protection. Journal of Environmental Management and Tourism 9(8): 1805-1812.

Lebedev, V.G., N.M. Subbotina, V.V. Kirkach, E.O. Vidjagina, I.A. Pozdnyakov and K.A. Shestibratov. 2018. The assessment of polymorphism of Russian raspberry cultivars using microsatellite markers. Periodico Tche Quimica 15(1): 120-125.

Mirkin, B.M., L.G. Naumova, and A.I. Solomeshch. 2000. *The Modern Science of Vegetation*. Logos, Moscow, Russian Federation, 264 p.

Mironova, S.I., V.V. Ivanov, L.D. Gavrilyeva, and A.A. Nikiforov. 2018. Persistence of Yakutia vegetation under the technogenic impact. Periodico Tche Quimica 15(1): 18-26.

Poor, J.A. and D. Thorpe, 2017. Pro-environmental behaviours in improving energy performance of the Australian housing. International Journal of Electronic Security and Digital Forensics 9(4): 315-335.

Poškus, M.S., R.P. Valickienė, and A. Kuzinas. 2018. Making the right decision: Subjective evaluation of pro-environmental public service announcements. Public Policy and Administration 17(4): 619-633.

Rabotnov, T.A. 1950. Vital cycle of perennial grassy plants in meadow. Proceedings BIN AN USSR 6: 7-204.

Schwendemann, A. 2017. Pharma-News. Zeitschrift fur Gefassmedizin 14(1): 17-18.

Silbernagel, G. 2018. LDL cholesterol treatment in the PCSK9 inhibitor Era. Zeitschrift fur Gefassmedizin 15(2): 12-13.

Smirnova, O.V., L.B. Zagolgova, I.M. Ermakova, L.I. Vorontsova, L.E. Gattsuk, V.N. Egorova, L.A. Zhukova, E.I. Kurchenko, A.R. Matveev, T.D. Mikhailov, E.A. Prosvirnina, N.A. Toropova, L.D. Falikov, N.I. Shorina, and A.A. Uranov. 1976. *Coenopopulations of Plants (Basic Concepts and Structure).* Nauka, Moscow, Russian Federation, 217 p.

Strydom, A. 2017. The effect of virtual learning environments in an ESL classroom: A case study. International Journal of Innovation, Creativity and Change 3(2): 49-59.

Sukhova, M.G., O.V. Zhuravleva, Y.I. Vinokurov, E.O. Chernova, M.I. Kaizer. 2018. Recreation and bioclimatic specifics of landscapes of the central and south-eastern altai. Periodico Tche Quimica 15(1): 537-547.

Tojibaev, K.Sh., N.Yu. Beshko, and V.A. Popov. 2016. Botanical-geographical regionalization of Uzbekistan. Russian Journal of Botany 101: 1105-1132.

Uranov, A.A. 1975. Age specter phytocenopopulation as function of time and energetic wave processes. scientific lecture of higher schools. Biological Sciences 2: 7-34.

Williams, M.W. and V.G. Konovalov. 2008. *Central Asia Temperature and Precipitation Data*. USA National Snow and Ice Data Center, Boulder, Colorado, USA, 298 p.

Zhukova, L.A. and E.V. Shestakova. 1997. *Ontogenetic Atlas of Medical Plants*. Mari State University, Yoshkar-Ola, 240 p.

ASIA LIFE SCIENCES
EST. 1992
Beyond Excellence©

81 Governor F.T. San Luis Avenue, Masaya, Bay 4033, Laguna, Philippines
Celfone nos. (063) (049) 0916-526-0164; 0977-706-0972
e-mails: asialifesciences@yahoo.com wsmgruezo@gmail.com
http://emtpub.com/journals/ALS/

Asia Life Sciences has an Impact Factor of 0.180

Beyond Excellence©

81 Governor F.T. San Luis Avenue, Masaya, Bay 4033
Laguna, Philippines
Celfone nos. (063) (049) 0916-526-0164; 0977-706-0972
e-mails: asialifesciences@yahoo.com
wsmgruezo@gmail.com
http://emtpub.com/journals/ALS/

Asia Life Sciences has an Impact Factor of 0.180

The papers published in ***Asia Life Sciences*** are indexed/covered by SCOPUS, Elsevier B.V., Radarweg 29, 1043 NX, Amsterdam, The Netherlands; CABI, Wallingford, Oxon, UK; China National Knowledge Infrastructure (CNKI), 66 Xixiaokou Avenue, Haidian District, Beijing, China; J-Gate, Informatics Publishing Limited, No. 194, RV Road, Basavanagudi, Bangalore-560004, Karnataka, India and EBSCO Publishing, Inc., 10 Estes Street, Ipswich, Massachusetts, 01938-0682, USA.

Asia Life Sciences is a recipient of the Journal Accreditation Award of the Commission on Higher Education (CHED), Republic of the Philippines (2010-2016).

Printed on acid-free papers