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Juniperus polycarpos K. Koch (Turkestan Juniper) Species in Turianchai Preserve (Azerbaijan Republic)

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Abstract: Juniper is one of the most useful multi-purpose plants worldwide. Containing a large number of essential oil, extracts from its leaves and berries (the blue-black seed cones) have been used as traditional medicine against urinary infections, dermatitis or as a diuretic. *Juniperus polycarpos* K. Koch is an important element of the rare pistachio—juniper thin forests [1, 2]. Habitat fragmentation and low regeneration are the main reasons of conservation Juniperus populations in this region. In order to prevent a decline in its area, mostly caused by problems in natural regeneration, the present study was carried out to analyze of *Juniperus polycarpos* individuals in Turianchai preserve. The bio-morphological analysis and age stages description is very consequential in order to protect this main member of dry arid forests of Azerbaijan.

Key words: *Juniperus polycarpos*, Turianchai preserve.

1. Introduction

Turianchai Preserve is located in the foothills of the Major Caucasus on the slopes of the Bozdag Range in Agdash region. Within the preserve, the Bozdag Range is divided longitudinally by the Turianchai River, which flows from the Greater Caucasus.

This preserve was organized in 1958 to safeguard the rare pistachio—Juniper thin forests. *Juniperus polycarpos* K. Koch belongs to the family cupressaceae and can be met mostly in mild and subtropical areas. Juniper has a significant place in folklore for its diverse ethno botanical, medical, veterinary and culinary uses. Mainly, juniper can grow in a wide range of soil types at varying altitudes, but it favors free draining soils and rarely inhabits wet conditions [3, 4]. Caused by their potential to grow under the hard conditions, junipers are particularly suited for afforestation programs in various ecological areas [5]. Mainly, this species has expanded in opulence and habitat range with some fluctuations based on naturally and man caused fires. Most of juniperus species has rapidly self-reestablishment ability [6, 7, 8]. Reestablishment in before occupied areas and additionally spread into new areas is a progressing process especially in the lack of regular fire. The comprehensive study of junipers biomorphology and ecology is indispensable for better appreciation of the difference in abundance of this species, its impact on ecosystem structure and function.

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2. Materials and Methods

In 2015-2017, we have visited 11 populations of *Juniperus polycarpos* located in medium arid forests of Turianchai preserve [Fig 1.]. Trip observations were carried out to estimate age structure of juniperus populations in this region. The area of observations was between 40°46′ N and 47°24′ E. Observed trees were selected from relatively far localized associations. Soil types of Turianchai preserve are mainly black-brown and brown forest soils. Bio-morphological analysis conducted was in accordance with the system of independent morphological units of L. Gatcuk. Within the life period the following groups are distinguished to:

established seedling, juvenile, reproductive adult and senescent. Fifty examples of *Juniperus polycarpos* have been studied and their age stages were described. In age stage identifications visual tree assessment methods have been used.

3. Results

Fifty examples of *Juniperus polycarpos* have been studied in Turianchai preserve, their bio-morphological stages were identified visually by observations. All observed locations were consisted of isolated minor groups or single plants. This tendency shows the importance of their protection.

We have determined the age structure by allocating each individual to one of the following age categories: established seedling, juvenile, reproductive adult and senescent. We contemplated each age class to correspond, appropriately, to the size categories of <0.25 m, 0.25-1 m, 1-5 m and 5 m> because individual size correlates notably with age in this species even when considering populations along environmental gradients. The close similarity between various plant sizes and age classes could be influenced by: the surrounding conditions where the individual plant grows and the density of individuals in the attitude. In the direction of taking account of these potential factors we also arbitrated the age of some individuals from Ref. [9] the presence or absence of reproductive organs and the consignment of dead wood (an individual of size 0.8 m showing reproductive structures were assigned as reproductive adult, an individual of size 4.0 m with a great amount of dead wood was assigned as senescent) [4]. Most of studied plants were reproductive adults and juveniles, 50% and 38% respectively (Table 1). This tendency shows the optimistic stabile position of *Juniperus polycarpos* K. Koch populationin in Turianchai preserve due to preservation events in this region. But we cannot say this for whole juniperus inhabitance in general, due to over-grazing and over-harvesting their quantity is declining and their protection is important.

Table 1 Age structure of Juniperus polycarpos in Turianchai preserve.

Age groups	Number of shrubs	Percentage
Habitual seedling	5	10
Juvenile	19	38
Reproductive adult	25	50
Senescent	1	2

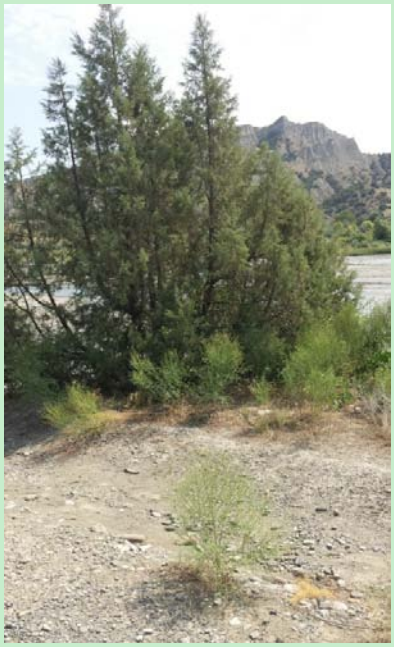

Fig. 1 *Juniperus polycarpos* K. Koch in Turianchai preserve.

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