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# Biomorphological Analysis and Identification of Subspecies of *Juniperus communis* in Azerbaijan

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## ABSTRACT

*Juniperus communis* L. is an important element of Northern West forests of Azerbaijan. Habitat fragmentation and low regeneration are the main reasons of conservation *Juniperus* populations in this region. Ecological, sub specific and biomorphological analysis of this shrubs helps to prevent any unuseful changes in their population. The present study was carried out to biomorphological differences of *Juniperus communis* individuals in population and their identification.

**Keywords:** *Juniperus communis*, Subspecies, *J. communis* ssp. *communis*, *J. communis* ssp. *nana*

## INTRODUCTION

*Juniperus communis* L. belongs to the family Cupressaceae and can be found mainly in temperate and subtropical regions. 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 [1-3]. The veracious dispensation and amplitude of *Juniperus* species can be known only with some degree of accuracy [4]. Due to their potential to grow under the hard conditions, Junipers are particularly suited for afforestation programs in various ecological regions [5]. Generally, 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. Reestablishment in before occupied areas and additionally spread into new areas is a progressing process especially in the lack of regular fire. The detailed study of Junipers biomorphology and ecology is essential for better appreciation the difference in abundance of this species, its impact on ecosystem structure and function.

## MATERIALS AND METHODS

Fifty species of *Juniperus communis* have been studied and their biomorphological stages were described. In biomorphological stage identifications visual tree assessment methods have been used. For separation of reputed subspecies we used length of leaves and leaf to stem angle.

## RESULTS AND DISCUSSION

Fifty species of *Juniperus* have been studied in Northern West part of Azerbaijan; their bio morphological stages were identified visually by observations. All observed 20 localities were consisted of isolated small groups or individual shrubs. Following Plant life (UK) criteria a « formation » can be taken as any separate group of more than 50 shrubs and no one of observed small groups corresponded to this criteria. Absence of formations shows the dangerous conservation of *Juniperus communis* population and the importance of their protection.

The subspecies differentiation of *Juniperus communis* is very important, because even without environmental influences there can be observed some morphological differences. *Juniperus communis* has two scientific supported

subspecies in the world: an upright form – ssp. *communis* and a prostrate form – ssp. *nana*. In spite of that, the length of leaves and leaf to stem angle may be used to divide the putative subspecies (Table 1) 8-20 mm long at 90° in ssp. *communis* and 4-5 mm long at 45° in ssp. *nana*.

**Table 1:** Frequent reclassification of Juniper in the historical literature may have led to confusion [3,6]

Modern classification	Description	Historical classification	Authority
<i>J. communis</i> ssp. <i>communis</i> [3]	Generally upright (though can be spreading) leaves 8-20 mm long at 90° to stem calcicole and lowland.	ssp. <i>eu communis</i>	Syme
		var. <i>Arborescens</i>	Gaud.
		var. <i>Montana</i>	Nielr – non-Ait.
		var. <i>vulgaris</i>	
<i>J. communis</i> ssp. <i>nana</i> [3]	Generally prostrate, leaves 4-10 mm long at 45° to stem calcifuge and upland	ssp. <i>nana</i>	Willd. Syme
		ssp. <i>alpina</i>	Sm. Celak
		var. <i>Montana</i>	S.F. Gray.
		var. <i>saxatilis</i>	Ait.
		<i>J. alpina</i>	Pall.
		<i>J. pygmaea</i>	Gord
		<i>J. sibirica</i>	K. Koch
		<i>J. vulgaris</i>	Burgst
		Willd.	

As we can see from Table 2, all collected shrub samples are *J. communis* ssp. *communis* with 8-20 mm leaves and 90° leaf to stem angle [3]. This method can be easily used to identify subspecies in view of the fact that, subspecies differences are visible to the naked eye [7,8].

**Table 2:** The length of the leaves and leaf to stem angle for some studied Juniper examples

The length of the leave	10	12	9	15	17	21	20	12	10	10	14	20	22	13	17	23	14	12	19	17	13	19	14	13
leaf to stem angle	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90

## CONCLUSION

In conclusion, it has been detected that Junipers species of Northern West of Azerbaijan need to be protected and their sub special identification is important in this case. We have suggested the simple method to recognize subspecies for the main life member of Azerbaijan forests- *Juniperus communis* L.

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