БІОЛОГІЯ РОСЛИН

UDC 581.522
http://orcid.org/0000-0002-4526-4873

EVALUATION OF RECREATIONAL LOADING ON ARTEM CITY PARK (KHARKIV)

Goncharenko Y.V. *Ph.D. (byology), assistant professor*

G.S. Skovoroda's Kharkiv National Pedagogical University, Kharkiv, Ukraine
janina6962@gmail.com

This article deals with the issue of recreational pressure on the Artem city park. Most of Kharkiv parks were built on the site of natural forests. They are artificially created objects and because of that they are characterized by vulnerability and low resilience. There are 36 taxons of bushes and trees on 120-hectare area of the park. The sanitary and hygienic significance of this green belt is very high since industrial enterprises are located nearby. Recreational load and stage of digression were found. Digression of ecological systems of city parks as a result of anthropogenic activity was regarded. Dependence of growth of the degree of recreational digression on the increase of recreational pressure was discovered.

***Key words*:** digression, park, recreation.

Оцінка рекреаційного навантаження на міський парк імені Артема (м. Харків). Гончаренко Я. В. – У статті висвітлені питання рекреаційного навантаження на міський парк культури та відпочинку імені Артема. Більшість харківських парків були споруджені на місці природних лісів. Вони є штучно створеними об'єктами і тому характеризуються вразливістю й низькою стійкістю. На 120 гектарах парку знаходяться 36 таксонів дерев і чагарників. Санітарно-гігієнічна значимість цього зеленого поясу є дуже високою, оскільки поблизу розташовані промислові підприємства. Виявлено рекреаційні навантаження та стадії дигресії. Розглянуто дигресію екологічних систем міських парків внаслідок антропогенної діяльності. Виявлено залежність росту ступеня дигресії від збільшення рекреаційних навантажень.

***Ключові слова*:** дигресія, парки, рекреація.

INTRODUCTION

At modern conditions, city parks are regarded as the main recreational resources, they can be considered as urbo-compensatory zones. The majority of parks in Kharkov are founded at the areas of natural forests. They are artificially human made objects, this is why they are very vulnerable and characterized by low stability. Therefore, investigation of recreational exertion levels in park systems nowadays gains greater significance. These evaluations serve as the base for performance of functional zoning with the aid of induction of park systems anthropo-tolerance. The problems of naturally re-creative potential and of forest and park systems recreational

exertion determination attract attention of many scientists, and recreational regulating eco-systems demands annual monitoring [4; 6]. But, until now, there no similar point of view as to methods of evaluation of recreational potential of woods and forests zones. Results of digression of Zhitomir's system parks have been evaluated at the works of O.F. Dunayevskaya and O.Y. Kozlovskiy [3]. Recreational exertions on the naturally protected territories with regulated people's attention are investigated by Shlapak [6]. That was him who has substantiated the special significance of recreational buildings, which aid to facilitate the anthropogenic influence on the park zones. M.M. Kutya and O.F. Gyrs [5] have determined the actual, optimal and limiting recreational exertions as well as recreational contents of Kyiv's parks. These authors, with the accordance of previous scientists' view point, suggest performing the events directed to the decrease of recreational exertions at the public recreational areas, and in this connection, they propose to increase park territories improvements. Therefore, the problem of ecosystems recreational regulation remains amongst the most actual problems and demands the annual attention of scientists.

MATERIAL AND METHODS OF RESEARCH

The investigation was performed in Kharkov city from March, 2014 till July, 2015. The research object was the City Cultural and Resting Artem's Park. The research subject was influence of recreational exertions upon plant cover digression level. The investigations were performed with the usage of stationary, recreational and other methods. The research objective was determination of recreational exertions upon Artem's Park during the comfort period as well as establishment of digression stages on the Park areas.

The investigated Park was founded within 1934-37 time period, in Kominternovskiy City District according to a project of the leading Soviet Union architects [1]. This green zone plays an important role for the City, screening several industrial factories situated around it. The most significant amongst them are "Turboatom" and a military plant, named "Zavod imeni Malysheva" (Malyshev's Industrial Plant). The numerous public attractions, situated on the Park-zone, such as South-Park, Paint-Ball Club "Fort-Post" serve as a significant public temptation for many attendants. Unfortunately, the observation of tree plants and any other botanic objects on the Park territory is not carried out constantly. The significant number of attendants and their public activity results in the pronounced digression alterations at some areas.

20 sample areas with different digression stages were founded at our experiments according to the commonly accepted forestry methods. Each experimental area was tested to determine the composition of herbaceous plants and their projective cover to establish digression stages. During the investigations we used a special scale (tab. 1), according to which we the digression stages at the Park conditions.

The limit of ecosystem stability is measured up by its ability to recreate itself during the existing recreational exertions and is located in between III-d and IV-th

digression stages. For the determination of recreational exertion, we needed to calculate average hours quantity of daily recreant occurrence for 1 Park hectare during the comfort period (the average daily temperature was higher than 5^0C). The measurements were carried out from March, 2014 till July, 2015 according to S.A. Gensiruk method [2]. In the accounting of the Park visitors during 8 hours per day we protocoled one-hour data of persons quantities who entered and exited the surveys object as well as the persons who failed to enter the given hour.

Table 1

Features of recreational digression stages establishment

Digression Stage	Recreation Coefficient (Kr)	State of:	
		Herbaceous cover	Trees and Bushes
1	0,05	Undisturbed	Good State
2	0,1	Disturbed up to10-25%	Good and Adequate
3	0,1 – 0,3	Disturbed up to 25-40%	Adequate prevailing
4	0,3 – 0,6	Disturbed up to 40-60%	Adequate and Inadequate
5	≥0,6	Disturbed up to 60%, and more	Inadequate prevailing

RESULTS OF INVESTIGATION AND DISCUSSION

There are two types of systems in Artem's Park - artificial one (stationary attractions zone) and mixed one (zone of natural forest with anthropogenic origin planting). We set up ten sample areas per each zone. All the sample areas showed to develop different stages of recreational digressions according to the state of their herbaceous cover, trees and bushes. Permissible recreational exertions were found at 12 areas, 5 areas had the third stage of digression, 3 areas possessed destructive stages (Fig. 1) at the artificial zone.

The fourth stage of digression was displayed at the area №1 in the stationary attractions zone. The area is situated in the immediate proximity to the Park attractions and is subjected to the significant anthropogenic influence. Its herbaceous cover is composed of *Plantago major* L., *Polygonum aviculare* L., *Glechoma hederaceae* L. and is trampled up to 50 %. The areas № 2, 4, 7, 8 showed the first stage of digression. The second stage of digression was registered at the areas № 5, 6 with the prevalence of *Melilotus albus* Medik., *Berteroa incana* (L.) DC, *Artemisia austriaca* Jack amongst their herbaceous cover. The trampling exertion at the areas was about 15-20 %. The third stage of digression was registered at the areas № 3, 9, 10. The trampling exertion at the areas amounted up to 30-35 % with the prevalence of *Trifolium repens* L., *Convolvulus arvensis* L., *Plantago lanceolata* L amongst their herbaceous cover.

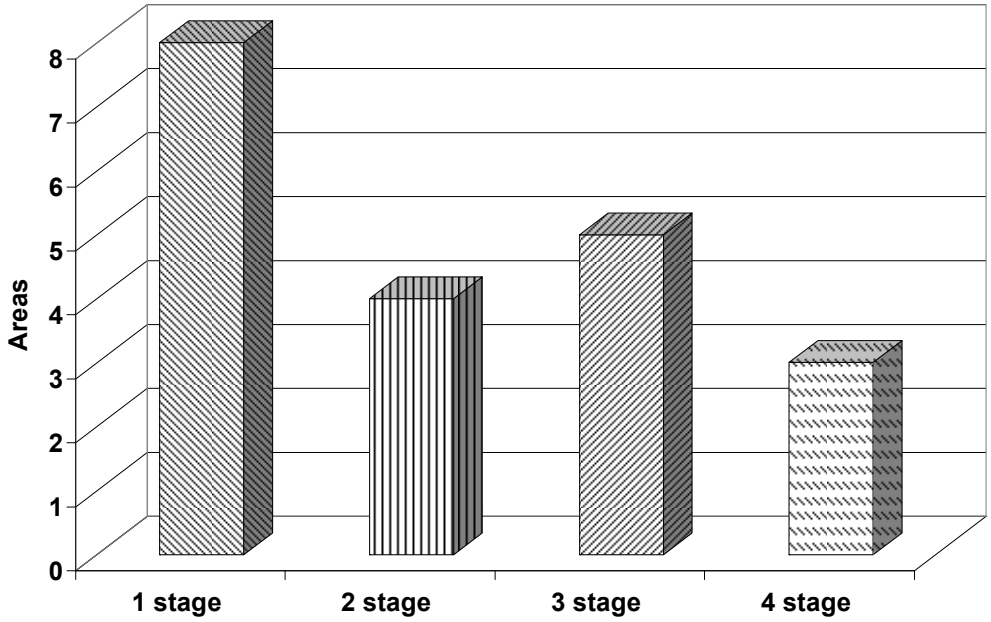

Figure 1. Distribution of digression stages at experimental areas.

At the mixed zone (zone of natural forest with anthropogenic origin planting) the areas № 11, 12, 13, 20 did not have the disturbed herbaceous cover with the prevalence of *Trifolium pratense* L., *Elytrigia repens* (L.) Nevski, *Lotus ucrainicus* Klok., *Achillea submillefolium* Klok. et Krytzka in it. The areas № 15 and 18 possessed the secod stage of digression with the disturbance of their herbaceous cover up to 15 %. *Plantago major* L., *Convolvulus arvensis* L., *Trifolium pratense* L., *Polygonum aviculare* L prevailed in the herbaciuos composition of their cover. The third stage of digression was registered at the areas № 16, 17. The trampling exertion amounted to 35 %, and *Trifolium repens* L., *Polygonum aviculare* L., *Taraxacum officinale* Webb. ex Wigg prevailed in their herbacious cover. The areas № 14, 19 were disturbed up to as high as 55 %, which corresponded to the forth stage of digression with the prevalence of *Trifolium repens* L., *Polygonum aviculare* L., *Plantago major* L amongst their herbaceous cover.

From March, 2014 till July, 2015, on working days and weekends, we performed the accounting of the Park visitors during 8 hours per day. Each day, almost equal amount of recreants was established (6.9 persons/day/hectare). The visitors were the most active in July, the least activity was displayed in March, 2014 and March, 2015 - 6.3 and 6.2 persons/day/hectare, correspondently. However, recreational exertion was significantly increased during different public events which negatively influenced the state of the Park system.

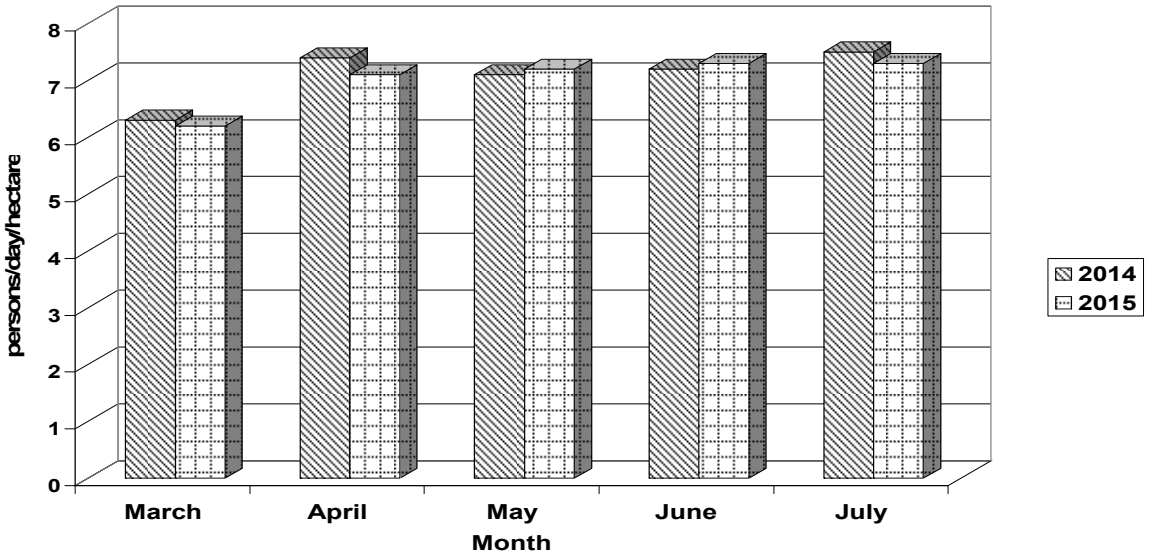

Figure 2. Comparison of recreational exertions on the Park during 2014-2015 years.

CONCLUSIONS

Out of Artem's Park two zones 20 founded sample areas, eight areas possess the first stage of digression, four - the second, five - the third, and three areas had the forth, i.e. the destructive stage of digression. The renovation of the latter areas is required to immediately apply strict measures for not using them. The performance of survey of recreational exertions upon the Park zone from March, 2014 till July, 2015 display almost equal amount of recreants which amounts to 6.9 persons/day/hectare, signifying that this high multitude of visitors results in the mentioned digressions onset. However, we believe that rational usage and different improvements of the large Park territory will allow to decrease the digressions level and renovate the disturbed herbaceous cover.

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Оценка рекреационных нагрузок на городской парк им. Артёма (г. Харьков). Гончаренко Я. В. – В статье освещены вопросы рекреационной нагрузки на городской парк культуры и отдыха имени Артема. Большинство харьковских парков были сооружены на месте естественных лесов. Они являются искусственно созданными объектами и поэтому характеризуются уязвимостью и низкой устойчивостью. На 120 гектарах парка находятся 36 таксонов деревьев и кустарников. Санитарно-гигиеническая значимость этого зеленого пояса является очень высокой, поскольку поблизости расположены промышленные предприятия. Установлены рекреационные нагрузки и стадии дигрессии. Рассмотрена дигрессия экологических систем городских парков вследствие антропогенной деятельности. Выявлена зависимость увеличения степени дигрессии в связи с увеличением рекреационных нагрузок.

***Ключевые слова**:* дигрессия, парки, рекреация.

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