Tuijin Jishu/Journal of Propulsion Technology
ISSN: 1001-4055
Vol. 46 No. 1 (2025)

Productivity, Feed Quality, Capacity, And Environmental Assessment Of The Natural Feeding Grounds Of The Caspian Coastal Zone

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Abstract. The diversity and richness of the plant ecosystem of the Caspian coast of Azerbaijan is due to the diverse natural conditions of the territory, as well as its formation under the influence of remote floral regions. There is a great need to conduct floristic, as well as ecological and geobotanical studies of the territory's biodiversity, including wild flora and natural vegetation. In this regard, conducting research on phytocenosis, which is a component of biocenosis, is of great importance at the present time.

Many studies covered individual territories and did not fully reflect the diversity of plants of the Caspian coast as a whole. To order implement the "task of rational use and protection of flora on a biological basis", it was considered important to conduct research based on scientific research of the flora and vegetation of the Caspian coast using progressive methods

Keywords ecosystem, Caspian coast, biocenosis, the diversity of plants, natural conditions and vegetation

1. INTRODUCTION.

Conducting relevant research in the coastal zone of the Caspian Sea, which is subject to anthropogenic influences, is of great theoretical and practical importance. Therefore, in botany and the science of ecology, there is a need to study natural phytochromes toto develop comprehensive measures (surface and root) to protect the environment in the territory, proper use and improvement of pasture lands according to geobotanical indicators. XVIII Flora of the Caspian Sea (hereinafter the Caspian coast) For many years, it has been of interest to travellers, natural scientists, geographers, botanists and other researchers from foreign countries, including Germany and Russia. The research of Azerbaijani botanists on the history of studying the flora and phytocenoses of the Caspian coast [1] has been reflected in relevant scientific papers and abstracts. Thus, the disclosure of the flora and vegetation of the Caspian coast in the literature on historical chronological and administrative principles [2,3] is conditionally divided into five periods (stages). During and at the beginning of the 19th century, natural scientists, along with the flora and vegetation of the Caspian coast, began to study other branches of natural sciences - geology, mineralogy, especially zoology [4]. At the beginning of the 19th century (in 1812), the German traveler H.H. Stephen visited the forests of several regions of the Caucasus and Azerbaijan, and also listed psammophytic plants common in the flora and coastal sandy phytocenoses of the Absheron Peninsula [4]. In 1929-1930, A.A. Grossheim gave methodological readings "Introduction to geobotanical studies of winter pastures of Azerbaijan", as well as "Methodological guidelines for the study of Transcaucasian vegetation" and characteristics of forest vegetation on the Samur-Devechinsky plain. In 1929-1930, A.A. Grossheim gave methodological readings titled "Introduction to geobotanical studies of winter pastures of Azerbaijan," "Methodological guidelines for the study of Transcaucasian vegetation," and "Characteristics of forest vegetation on the Samur-Devechinsky plain." At the beginning of the 19th century (in 1912-1913), the Russian scientist and botanist A.A. Mayorov [5,6] provided a list of 104 species of flowering plants in his data on the vegetation of Eastern Transcaucasia, including southeastern Shirvan in the botanical and geographical zoning of Azerbaijan. At the same time, the staff of the botanical expedition, in which A.A. Mayorov, A.B. Shelkovnikov and L.G. Smithin participated under the

leadership of Yu.N. Voronov, conducted botanical studies of southeastern Shirvan, as well as the Pirsaat Valley and the area from the coast of the Caspian Sea to the Kura River. After that, in 1913, A.A.Mayorov studied the flora of the Harami Mountains and in 1914 published a general list of plants collected by himself. The third period covers the period from 1920 to 1950. During this period, the flora and vegetation of the Caspian coast were studied by Russian botanists. The flora and vegetation of the Absheron Peninsula, located at that time on the western coast of the Caspian Sea, was studied by the Russian scientist A.A. Mikheev. In 1926, his work "Flora of the Absheron Peninsula" was published. In his work, the author identified 2 classes of formations and 5 groups of formations in the vegetation of the psammophytic-littoral desert type of the Caspian coast of the Absheron Peninsula, and also noted the distribution of 460 plant species in the floral composition. A.A. Grossheim is considered to be the founder of geobotanical research in Azerbaijan, under whose leadership research work was first carried out on the winter and summer pastures of our country, as well as on rural pastures and hayfields (in 1928-1932 and 1947-1952). In this regard, L.I. Prilipko and other research scientists (in 1948-1952) compiled a 1:50,000 scale vegetation map of Devechi, Siyazan, Khizinsky, Salyan and Neftchala districts located on the Caspian coast and compiled reports. In those years, special attention was paid by botanical scientists to the study of winter and summer pastures of the republic, as well as forests [7]. In 1940, L.I. Prilipko, in his article "Plants of the southern part of the Lenkoran-Mugani", reviewed the types and formations of phytocenoses related to zonation and mesozonality by plant groups. The fourth period covers the 1950s and 1990s. During this period, the flora and vegetation of the Caspian coast of Azerbaijan were studied in different directions by I.I. Karyagin [8], D.M. Aliyev [9], L.I. Prilipko [10], V.X. Tutayuk [11], I.S. Safarov [12], H.A. Aliyev [13], H.N. Hasanov [14] and other research scientists.

From I.I. Karyagin's book "Flora of Absheron", published in 1952, it is known that 730 plant species belonging to 63 families and 370 genera grow in the natural state on the territory of the Absheron Peninsula, and about 160 of these plant species are medicinal plants [15,16]. The author reports that there are 29 endemic plant species of the Caucasus and Azerbaijan, 5 of which are endemic to the Absheron Peninsula. The results of the geobotanical studies conducted by R.A. Aliyev in 1952-1953 are summarized in his work "An outline of the vegetation of the Kyzylagaj Reserve". According to his data, vegetation belonging to 43 families and 244 species belonging to 162 genera is widespread on the territory of this reserve[17]. L.I. Prilipko (1980), in his discussion of the "Kura-Araz (East Transcaucasian) desert", noted the spread of desert vegetation in our republic [18]. In this regard, he notes that the vegetation of the deserts of the Caspian coast differs from the Central Asian and Mediterranean vegetation in desert soil, air temperature, precipitation, climatic conditions, etc., as well as the dominance of xerophytic semi-shrubs in vegetation. Accordingly, the distribution of desert-type vegetation on the Caspian coast has been confirmed by us on the basis of our research. V.H.Tutayuk (in 1975) publishes the monograph "Ancient relics of Talysh" based on his studies of relict trees and shrubs of the third period. This book comments on the bioecological features, intraspecific variability, and economic importance of the main relict woody and shrubby plants of the Hyrcanus flora of Azerbaijan [19]. G.A. Aliyev paid special attention to the protection of the arboretum of the republic. In this regard, Hasan Aliyev was concerned about the threat of destruction of relict, endemic trees and shrubs. Thus, the book "Anxiety" was published under his authorship [20]. H.N. Hasanov studied the flora and vegetation of the Hyrkan, Shirvan, and Kyzylagaj national parks located on the Caspian coast, as well as relevant studies noted in the book Nature Reserves of the USSR and the Caucasus. The fifth period was the modern period of studying the flora and vegetation of the Caspian coast and covers its stage from 1991 to 2022. Since 1991, under the leadership and ideas of academician V.D. Hajiyev and E.M. Gurbanov, scientific research conducted in Azerbaijan by national personnel specializing in botany and geobotany has changed dramatically. In this regard, on the advice of Corresponding Member of ANAS, Doctor of Biological Sciences, Professor E.M. Gurbanov, since 2016, we have begun studying and researching the flora and vegetation of the Caspian coast and their rational use. The flora and vegetation of the Caspian coast during this period was noted in the works of R.T. Shakhsuvarov (1994), M.X. Gakhramanova (2002), E.S. Shukurov (2003), K.S. Asadov (2008), O.H. Mirzoev and S.A. Sadikhova(2009), H.M. Safarova (2010), A.A.Akhundova (2012) and a number of botanical scientists. Gakhramanova M.X. (2002), as a result of studying the psammophytoctoral flora and vegetation of the Absheron Peninsula in connection with the transgression of the Caspian Sea, revealed the distribution of 158 plant species belonging to 38 families and 114 genera in the flora of the territory. She compiled

a classification of vegetation and its schematic profile based on the distribution of saprophytic plants in the primorsky strip in the south of the Absheron Peninsula, characterized the phytocenological features in the region of 2 classes of formations, 14 groups of formations and 35 associations [21].

This article's author [22] analyses fauna, that destruction of natural ecosystems resulting in a reduction or even destruction of saiga habitat is the consequence of anthropogenic impact.

In general, the population of saiga in the NorthWestern Caspian region continues to be in depression despite low losses of newborn saiga (6.2%). The degradation of pastures led to the next stage of the population cycle characterized by lower animal reproduction ability and high mortality. This process deteriorates due to worse living conditions during some seasons as well as by decreasing the ability of pastures to give feed. This article's author [23] analyses fauna, Ecosystem degradation and decline are central issues that urgently require resolution within global environmental protection efforts. Accordingly, accurately analyzing the spatiotemporal evolution of regional ecological environmental quality and exploring its natural and anthropogenic driving factors of ecological environmental quality are crucial for protecting regional ecological environments and advancing sustainable development strategies. Therefore, this study created a new remote sensing ecological index to investigate the patterns of ecological quality change in vegetation-covered areas over a long time series and identified the intensity and local response relationships of various driving factors, including climate, topography, soil, and urbanization. The ecological grades in forest-covered areas significantly surpassed those in other vegetated, urban, and desert regions. Through a collaborative analysis of various geographical statistical methods, the intensities of the driving factors and their local response relationships were determined. This study provides a method for accurately and rapidly assessing regional ecological environmental quality and exploring the complex interactions of driving factors, thus offering a theoretical basis for monitoring regional-scale ecological conditions, balancing ecological and economic development, and informing environmental protection policies.

This article's author [24] analyses the Caspian Sea is the largest enclosed body of water on the earth. Since the collapse of Soviet Union in 1991 and discovering large oil and gas fields, some issues such as political, economic and environmental events, made the Caspian Sea important. The ecology of the Sea are being endangered due to several issues such as petroleum extraction, river and sea pollutions, water level rise, biological damages, decline of Caspian seals and lack of legal regime among the neighbors. Tremendous infrastructures have had serious impacts on the ecosystems around the Caspian Sea and have often imposed long term damages to the sea. Activities around the Caspian Sea endangered the balance of this very sensitive and fragile ecosystem. Large oil stains on the sea level and thousands of acres of soil contaminated by oil leaking from abandoned wells are some parts of the pollutions. Some people must endure to the Caspian borders. In addition, there are various pollution-related industries, especially chemical and mineral industries, large non-irrigated agricultural and also domestic wastes. These impurities in addition to the negative impact of oil have serious effects on human welfare and wildlife of the area. Ecological balance of the Caspian Sea is nearly going to be ruined (Éfendieva & M. Dzhafarov 1993). The increase of pollutions in the area has made many problems. The negative effects of shipping activities, oil and gas extraction and oil transport through the sea, have always been problematic. Destruction of flora and fauna are of the consequences of pollution. Finally, exploitation of Caspian Sea oil and gas provide the new challenges about the ecosystem of the environment. The natural resources of environment are the source of potential wealth. So they can easily increase the conflict for example legal aspects between neighbors as well as the risk of security in the region. This article's author [25] analyses natural forage plants, efficient use, improvement of biodiversity, and also prevention of degradation processes in phytodiversity. From this perspective, the composition of vegetation is important for assessing the dynamics of productivity, quality of feeds, norms of cattle grazing and parameters of ecological evaluation of plants and soils which are common in the grazing area, in meadow-steppe phytochromes, which are a valuable resource of livestock breeding on the Caspian Coast. We analyzed the parameters of meadow-steppe vegetation, common in yellow-podzolized soils. Meadow-steppe vegetation that is used as a natural feeding ground varies by species composition, structure of communities and productivity.

Based on an environmental assessment, it is impossible to develop recommendations for the conservation of phytodiversity and its rational use, classify phytocenoses, compile an ecological and geobotanical map,

productivity of winter pastures and agricultural fields, calculate feed quality without analyzing the flora of the Caspian coast and studying the species composition, vegetation structure by formations and associations. In order to implement the ”Problem of rational use and protection of flora on a biological basis", it was important to carry out progressive research methods based on scientific studies of the flora and vegetation of the Caspian coast.

2. The object and subject of the study.

The object of the study was the flora and vegetation of the Caspian coast. Conducting floristic and geobotanical studies in Samur-Yalaminsky, Absheron, Shirvan, Girkan National Parks and the Kyzylagaj State Reserve located within six botanical and geographical areas (Samur-Shabran lowland, Caspian lowland, Absheron, Gobustan, Lenkoran-Mugan and Lenkoran lowlands) at an altitude of 28.0 to 200 meters, productivity assessment and the determination of the load of natural feeding grounds on the territory of Siyazan, The Neftchala and Astara districts in the autumn-winter and spring seasons have become the subject of research. The flora and vegetation of the Caspian coast of the Republic of Azerbaijan were studied using floral and geobotanical methods. Geobotanical studies of the wild flora and natural vegetation of the region, formed in various relief, soil and ecological conditions, were carried out at the preparatory, field and camera stages. Field research was carried out in a semi-stationary and stationary manner along the routes of large-scale topographic and land management plans of the state land management of Primorsky administrative regions (on a scale of 1:50,000). The species composition and structure of formations according to the classification of the widespread phytochromes of forest, shrub, semi-desert, desert, shrub-meadow and wetland types (the largest classification unit, type, was adopted as the main criterion, and the association, as the smallest) are recorded in separate geobotanical descriptions.

3. Material and method research.

The main purpose of the study is to compile a taxonomic summary of the diversity of the flora of the Caspian coast (within Azerbaijan), to analyze taxa (divisions, classes, families, genera, species) in accordance with the new nomenclature, to develop their biomorphological, ecological, botanical and geographical classification, to study the reasons for the decline of species with protected status, including in mapping of its current state by studying the ecological and geobotanical parameters of natural vegetation. The following tasks were set for their implementation::

– Identification of rare and endangered (listed in the “Red Book” of the Republic of Azerbaijan) geobotanical areas, including endemic and relict flora species of the Caspian coast with a protected status;

– Assessment of productivity, feed quality, capacity and ecology of winter pastures located on the territory; H.M. Safarov (2010) studied the flora and vegetation of the Hyrkan National Park. He showed an edifier of chestnut-leaved oak and ironwood in the national park, spreading in lowland-lowland forest vegetation (at an altitude of up to 100 meters above sea level). Along with this, the author gave the taxonomic composition of the flora of the national park, geographical and ecological analysis of its life forms, as well as classification, species composition and characteristics of the structure of forest vegetation..

4. Research results

4.1. Identification of rare and endangered (listed in the “Red Book” of the Republic of Azerbaijan), including endemic and relict species of flora of the Caspian coast with a protected status, by geobotanical areas**;**

Taxonomic analysis of flora

Based on the analysis of the flora of the Caspian coast by taxa, 1,054 plant species belonging to 5 divisions, 2 classes, 124 families and 506 genera were identified for the flora of the territory. The flora of the territory contains 40 species of mossy, 16 species of ferns, 5 species of horsetail, 1 species of gymnosperms and 992 species of angiosperms (Table 1). Of these, 22.1%-1 are monocotyledonous (234 species) and 71.9% (758 species) dicotyledonous.

Tab 1 Taxonomic structure of the flora of the Caspian coast

Plant groups (departments and classes)		Taxsons					
		family					
		Total number	By quantity, in %	Total number	By quantity, in %	Total number	By quantity, in %
1	Mossy (*Bryophyta)*	16	12,9	20	3,9	40	3,8
2	Ferns (*Polypodiophyta*)	9	7,3	13	2,6	16	1,5
3	Horsetail (*Equisetophyta)* Horsetail trees (*Equisetopsida)*	1	0,8	1	0,2	5	0,5
4	Gymnosperms *(Gymnospermae*)	1	0,8	1	0,2	1	0,1
5	Angiosperms (*Angiospermae*)	97	78,2	472	93,1	992	94,1
	a) monocots *(Monocotyledon*)	23	18,5	108	21,3	234	22,2
	dicotyledons *icotyledon*)	74	59,7	364	71,8	758	71,9
General:		124	100,0	506	100,0	1054	100,0

Based on the analysis of the taxon structure, it was found that 1,054 plant species studied in the flora of the Caspian coast make up 23.1% of the 4,557 species common in the flora of Azerbaijan and 16.6% of the flora of the Caucasus (6,350 species). However, according to the latest data, 6,500 species belonging to 155 families and 1,286 genera are found in the Caucasus, as well as 4,557 species belonging to 159 families and 1,117 genera in the wild flora of Azerbaijan, including the number of higher plants in the flora of our country has increased to 5,000 (Table 2).

Tab 2

Comparative analysis of the taxa of the flora of the Caspian coast with the flora of Azerbaijan.

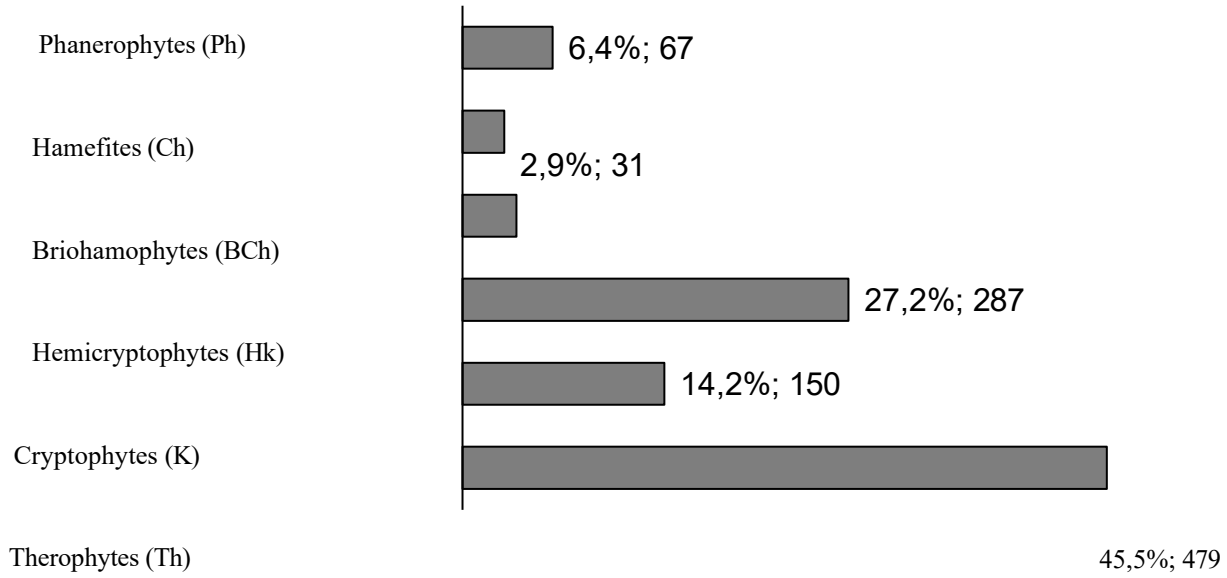
d life forms	n the flora of Azerbaijan		In the flora of the Caspian coast	
	number	in %-x	number	in %-x
Families	159	100	124	77,9
Genus	1117	100	506	45,2
Species	4557	100	1054	23,1
Trees	119	100	23	19,3
Shrubs, semi-shrubs, shrubs, semi-shrubs	316	100	75	23,7
Herbs	4122	100	956	23,1

Of these, 22.1%-1 are monocotyledonous (234 species) and 71.9% (758 species) dicotyledonous. As part of the flora, families (124) make up 99.2% of the families (125) of the flora of Azerbaijan, and genera (506) make

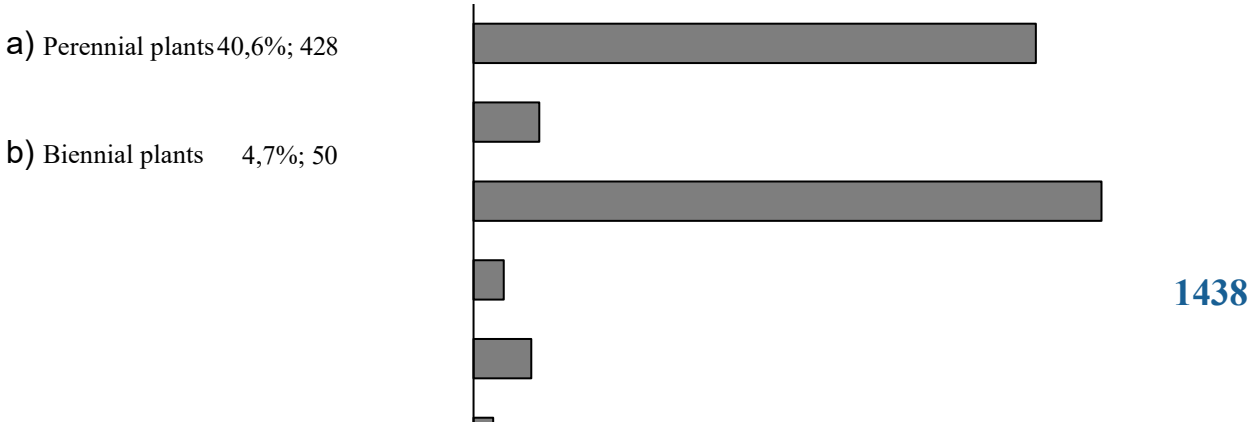
up 54.4% of the genera (930) of the flora of our country. In the formation of the flora of the Caspian coast, based on the analysis of the classification and composition of taxa as a whole, the following are dominant, as well as subdominant in formations and associations in desert vegetation: genera Avena, Bromus, Poa of the Poaceae Barnhart family.; genera Atremisia, Carduus, Tragopogon of the Asteraceae Giseke family.; genera Astragalus, Trifolium, Medicago, Vicia, Lathyrus, Amoria of the Fabaceae family Juss. and the genera Salsola, Petrosimonia of the Chenopodiaceae Vent family.

Biomorphological analysis of flora

The biomorphological or vital signs of plants recorded in the flora of the Caspian coast are diverse. Thus, herbaceous plants are more common in the flora of the area than trees and shrubs. The species that form on the territory of semi-desert, desert, shrub-meadow and wetland phytocenoses also differ from each other. In desert vegetation, halophytes and psammophytes are widespread in a wide range. The classification and composition of plants by life forms characteristic of the flora of the territory was established with reference to information from K.Raunkier, J. Brown-Blanke, P.D. Yaroshenko, B.A. Bykov, Flora of Azerbaijan [26], L.B.Lyubarskaya and A.M.Askerov, E.M. Gurbanov. As shown in Figure 1, therophytes are mainly represented by 479 species (45.5%), hemicryptophytes-287 species (27.2%), cryptophytes-150 species (14.2%), phanerophytes-67 species (6.4%), bryochamophytes-40 species (3.8%), hamophytes-31 species (2.9%). The analysis of life forms by plant species of the flora of the Caspian coast was carried out according to I.G. Serebryakov [27]. Thus, the definition of biomorphs was based on ecological-morphological and ecological-genetic approaches, including the first approach has priority in the study of life forms of seed plants, and the second-in the study of the distribution of plants in certain habitats and the areological analysis of floral research. As a result of the analysis of biomorphological groups, the classification and composition of species in the flora of the Caspian coast are shown (Fig.1).



Number of plant species according to Raunkier (1934) - 1054 (100%)



c) Annual plants 45,4%; 478

Trees 2,2%; 23

Shrubs 4,2%; 44

Semi-shrubs 1,5%; 15

Shrubs 0,8%; 9

Semi-shrubs 0,6%; 7

The number of plant species according to Serebryakov (1964) is 1,054 (100%)

Figure 1. Classification and composition of the flora of the Caspian coast by biomorphological groups.

At the same time, a biomorphological analysis of the flora of the Caspian coast showed that 956 species of grasses were registered in the floral composition (428 perennial, 50 biennial and 478 annual species). Among them, perennial grasses account for 40.6%, biennial grasses-4.7%, and annual grasses -45.5%. To ensure the food security of the population in Azerbaijan, it is important to develop scientific and practical foundations for the conservation of vegetation of natural forage lands, effective use, improvement of biodiversity, including phytobacteria, and prevention of degradation. In this regard, the task is to study the parameters of productivity dynamics, feed quality, grazing standards and ecological assessment of vegetation and soils where they are common in the plant environment, semi-desert, desert and shrub-meadow phytocenoses, which are a valuable source of feed for livestock on the territory of the Caspian coast [28].

4.2. Yield, feed quality, and winter pasture capacity

To analyze the dynamics of productivity of natural winter pastures on the Caspian coast, we used the climatic indicators of the Salyan–Neftchala administrative region. Thus, the climatic conditions of the area are of the moderately hot and steppe type with arid summers [29]. Taking into account the air temperature and precipitation rates from these climatic parameters, yield, feed quality, and vegetation capacity (grazing rates) were analyzed, and an overview of their results is given below. In this regard, formations are divided into quality groups (good, medium and low categories) according to nutritional value and yield. Based on the biochemical parameters of phytocenoses, in accordance with each formation, its conversion into crude ash (K_1), protein (P_1), fat (Y_1) and nitrogen-free extractives (A_1) is calculated using the following formula:

$$PP_1 = \frac{PP \times 100}{qq \times mm}$$

where

P_1 – protein with an absolute amount of dry matter (in %),

P – crude protein per 100 g in the form of dry weight in air (in %),

$qq \times mm$ – the dry substance contained in the dry grass mass (in %).

It should also be noted that the previously mentioned K_1, Y_1, A_1 are calculated using the same method, and the amount of digestible (digested) nutrients is calculated using numerical data of biochemical parameters converted to absolute dry matter [30]. Including the indicators of protein, cellulose, fat and BEV contained in absolute dry food correspond to the coefficients of digestibility, and the amount of digestible protein (H_P),

digestible fat (H_Y), digestible cellulose (H_S) and digestible nitrogen-free extractives (H_{AEM}) in kg corresponding to each formation can be found by the formula:

$$HH_{pp} = \frac{TT \times PP_1}{100}$$

Where

HH_{PP} – digestible protein per 100 kg of dry grass weight (in kg),

T – based on the volume coefficients of the transition to assimilation,

PP_1 – protein in the absolute amount of dry matter (in %).

H_S, H_Y, H_{AEM} - considered as similar (similar).

It is also important to add that after determining the area, yield and feed unit of the formation, the mass of feed extracted from pasture areas where vegetation is widespread over the period of use (210 and 245 days), the feed unit collected in this mass, and the amount of protein absorbed are calculated using the formula:

$YY \cdot EE(yy) = MM \cdot xx$ the area under study

$$YY \times EE(yy \times vv) = \frac{YY \times vv \times YY \times EE(yy)}{100}$$

After that, the feed unit for plant formations is calculated as follows (the calculation process is shown in Figure 2.

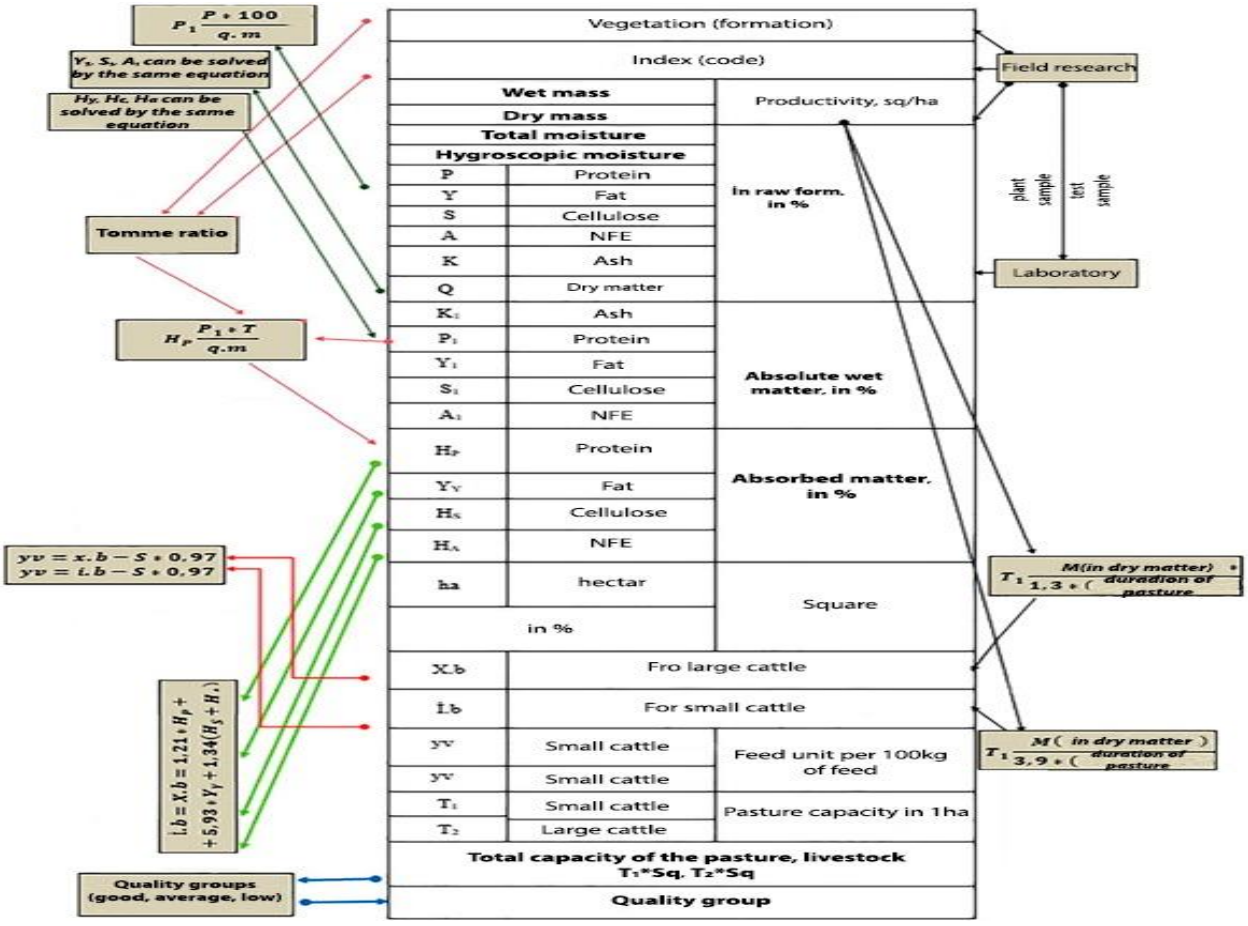


Figure 2. Scheme for determining the yield of vegetation in natural forage areas by biochemical composition, feed unit, capacity and quality group.

$$YY \times EE(HH_{pp}) = \frac{HH_{pp} \times YY \times EE(yy)}{100}$$

where

$YY \cdot EE(yy)$ – annual feed supply of the formation (in c), $YY \cdot EE(yy \cdot vv)$ – feed unit in the stock of feed produced by the formation during the year (in c), $YY \cdot EE(HHpp)$ – digestible protein in the feed stock produced by the formation during the year (in c),

$yy \cdot vv$ – a unit of feed per 100 kg of dry grass weight (in kg),

$HHpp$ – digestible protein per 100 kg of dry grass weight, (in kg),

MM – the yield of dry grass eaten by cattle per hectare of pasture area (in c/ha).

Based on the yield of natural forage plots (the eaten part of the feed), the daily rate of livestock feed, the unit of feed and the duration of use (grazing) of the pasture area, the load and capacity of these areas by formations are determined by the following formula [3]:

$$W_p = \frac{MM \times YY_{vv}(100kkqq\ yyymmyya)}{NN \times GG}$$

where

YY_{bb} – number of cattle per hectare of pasture (total),

MM – yield of dry grass eaten by cattle per hectare of pasture area (in c/ha),

YY_{vv} – feed unit per 100 kg of dry feed,

NN – required feed unit per head of cattle per day (1.3 units of feed for small cattle and 3.9 units of feed for cattle are accepted),

GG – the number of days of grazing on pastures (210 and 245 days are taken).

The results of studies on productivity, feed quality, capacity, and quality groups of plant formations identified in the natural forage lands of the studied territory of the northern, middle, and southern Caspian coasts, according to previously published geobotanical and biochemical parameters, are shown below (Fig.2). Taking into account air temperature and precipitation rates from these climatic parameters, analyses of yield, feed quality, and plant formation capacity (grazing rates), and an overview of their results is given below. Thus, from the above-mentioned literature review, we conclude that the flora and vegetation of the Caspian coast in Azerbaijan from the 17th century to the beginning of the 21st century, travelers, natural scientists, botanists, and especially geobotanists studied the flora and vegetation of the Caspian coast for certain purposes. However, the flora of the Caspian coast, as well as vegetation, have not been studied in detail from an ecological and geobotanical point of view. Along with this, the preservation of the flora of the National Parks located on the territory is of great importance for the effective use and improvement of winter pastures, as well as for scientific research..

Conclusion.

1. 1. An overview of the wild flora of the Caspian coast was compiled and it was revealed that 1054 plant species of

506 genera belonging to 124 families are distributed here. Of these, 40 species (3.8%) are Bryophyta, 16 species (1.5%) are Polypodiophyta, 5 species (0.5%) are Equisetophyta, 1 species (0.1%) are gymnosperms, and 992 species (94.1%) are angiosperms. 2. It was determined that, in terms of the number of genera, Astragalus L. (15 species) ranks first; Trifolium – 12, Veronica – 11, Carex, Medicago and Vicia - 10 species each (30 species); the genera Avena, Bromus, Ranunculus, Galium and Orobanche - 9 species each (45 species); Cyperus, Atriplex, Salsola and Euphorbia-8 species each (32 species); Poa, Chenopodium, Lathyrus, Lepidium, Geranium, Plantago, Centaurea and Scirpus - 7 species each (56 species); Verbascum, Linaria, Cerastium, Papaver, Sisymbrium L. and Nonnea - 6 species each (36 species); The genera Trigonella, Juncus, Rumex, Polypogon, Amoria, Halothamnus, Gypsophila, Erodium, Viola, Lythrum, Artemisia, Carduus, and Tragopogon are represented by 5 species (65 species) each, including 296 species in the remaining genera, and 210 species in genera comprising 1-4 species, and all species organized into 506 childbirth.

Conflict of interest

The authors have no conflict of interest in relation to this research, whether financial, personal, authorship or otherwise, that could affect the research and its results presented in this paper.

Financing

The study was performed without financial support.

Data availability

– manuscript has no associated data

Use of artificial intelligence

The authors confirm that they did not use artificial intelligence technologies when creating the current work.

Acknowledgments

Thank the department of "Taxonomy and Phylogeny of Higher Plants " of the Institute of Botany of the Academy of Sciences of the Republic of Azerbaijan for their support in conducting the research

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