VEGETATION FEATURES OF ALPINE AND SUBALPINE RANGELANDS IN EASTERN BLACK SEA REGION

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Abstract

This current study was conducted by using modified wheel point method to determine the features of the vegetation of alpine and subalpine rangelands in Giresun province located in Eastern Black Sea Region of Turkey. Plant covered ratios were detected from 33.0 % to 100.00 %. Botanical composition rates of families were determined between 3.71-45.81 % for legumes, 4.59-86.00% for grasses and 8.00-84.13% for other plant species in rangelands. During the vegetation surveys, a total of 148 different species were identified including 25 legumes, 32 grasses, and 91 belonging to other families. In addition, 23 of identified species were classified as decreasing species, 14 of them were classified as increasing species and 111 of them were classified as invasive species. Rangelands in the study area were categorized as healthy-risky rangeland according to range health classification and moderate-poor rangeland according to range condition classification. From the Giresun rangelands, a part, representing 47.17% has been grazed intensively, 35.85% moderately, 9.43% lightly and 7.55% weren't grazed. Research results showed that grazing pressure must be decreased by regulating the grazing systems for Eastern Black Sea Region to improve rangeland quality.

Key words: rangeland vegetation, grazing intensity, range health, range condition.

INTRODUCTION

The grasslands are high-quality forage source for ruminants and natural life areas for wild animals worldwide. Stockbreeding is very important for many countries and mainly depends on rangelands (Ünal et al., 2014). Unfortunately, rangelands in Turkey have been destroyed within the last 70 years, decreasing from 45 million hectares to 14.6 million hectares (Anonymous, 2015). Giresun rangelands (97.9 thousand hectares) in Eastern Black Sea Region are located in alpine and subalpine zones. The remaining rangelands have been overgrazed beyond their capacities, contrary to management rules (Ayan et al., 2007).

Grazing frequency affects botanical composition and productivity of rangeland vegetation (Kadziulis and Kadziuliene, 2006). Thus, a large proportion of rangelands need urgent improvement plans. However, the success of improvement programmes directly related to the vegetation features of rangelands. Forage production is dependent on the management of the rangelands (Rashid and Abbas, 2011). The vegetation features of rangelands are one of the most important factors in the choice of the improvement program or the grazing system.

The aim of this study was to identify some of the vegetation characteristics of the grasslands in Giresun province, to contribute to the accumulation of knowledge required for future possible improvement programmes.

MATERIALS AND METHODS

In this study, vegetation surveys were carried out by using modified wheel point method at 53 sites (Koç and Çakal, 2004) to determine the features of the vegetation of alpine and subalpine rangelands in Giresun province located in Eastern Black Sea Region of Turkey. This vegetation study was conducted at the flowering period of the plants. Characteristics of rangeland surface such as slope, vector, aspect and altitude were considered. Determining of the cover ratio of the vegetation on the rangeland was based on the study of

Gökkuş et al. (2000), and determining the range health and condition was based on the study of Koç et al. (2003).

RESULTS AND DISCUSSIONS

Plant covered ratios in the rangelands ranged between 33.0 and 100 %. Decreaser species rates in botanical composition varied between 0.0 to 50.95 %, increaser species rates in botanical composition varied between 0.0 % to 52.60 %, and the rates of the invaders species varied between 35.06 to 100 %. In the determined botanical composition rates of families, between 3.71 and 45.81 % belong to legumes, 4.59 to 86.00 % belong to grasses, and 8.00 to 84.13 % belong to other families in rangelands (Table 1).

According to the average value, plant covered rate in rangelands was 71.08 %. The average ratio of the decreaser species in the botanical composition was calculated as 16.24 %, ratio of the increaser species as 15.9%, and ratio of the invaders species as 67.86 %. Average rates of legumes, grasses and other families in the botanical composition were found as 20.74 %, 33.34 % and 45.92 %, respectively. Rangelands in the study area were categorized as healthy-risky rangeland according to range health classification and moderate-poor rangeland according to range condition classification (Table 1).

It was determined that there were no grazing in 4 points, light grazing in 5 points, moderate grazing in 19 points and intensive grazing in 25 points in Giresun rangelands (Table 1). In these rangelands, a part, representing 47.17 % has been grazed intensively, 35.85 % moderately, 9.43 % lightly, and 7.55 % weren't grazed. Thus, it can be said that most of the rangelands were exposed to intensive grazing (Figure 1).
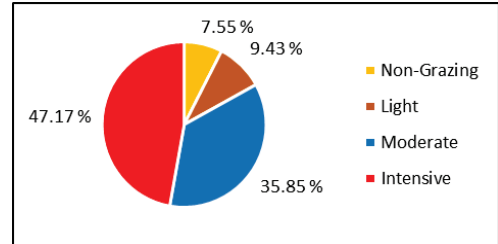

Figure 1. Grazing intensity in Giresun rangelands

Totally, 148 species were identified and these species were classified according to family they belong: 25 of them were legume, 32 were grasses and 91 belong to other families. Also, 23 species were classified as decreaser, 14 of them were increaser and 111 were invaders species (Figure 2).

The vegetation surveys reveal that the ratios of species from legumes, grasses, and other families of identified species were 16.89 %, 21.62 % and 61.49 %, respectively. Among the identified species, 15.54 % of species were found as decreaser, 9.46 % as increaser, 75.00 % as invaders (Figure 2).
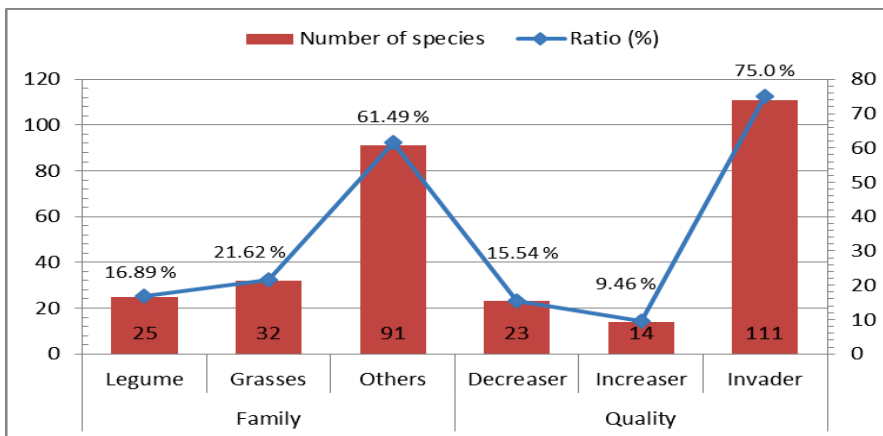

Figure 2. The identified species according to families and quality (number, %)

Table 1. Some features of the rangeland vegetation of Giresun province

District	Village	*PCR (%)	RDBC (%)	RIBC (%)	RINBC (%)	RLBC (%)	RGBC (%)	ROBC (%)	Grazing Intensity	Range Health	Range Condition
Alucra	Arda	64.00	34.37	18.76	46.87	15.63	46.88	37.49	Moderate	Risky	Good
Alucra	Hacıhasan	57.00	23.68	15.80	60.52	43.86	14.92	41.22	Intensive	Risky	Moderate
Alucra	Yeşilyurt	45.00	20.00	22.23	57.77	24.45	24.45	51.10	Intensive	Problem	Moderate
Alucra	Yeşilyurt	62.00	16.12	35.50	48.38	16.13	46.78	37.09	Intensive	Risky	Moderate
Alucra	Konaklı	56.00	5.35	10.73	83.92	10.72	21.43	67.85	Intensive	Risky	Poor
Alucra	Demirözü	75.75	7.59	23.77	68.64	22.12	34.33	43.55	Intensive	Healthy	Moderate
Alucra	Beylerce	79.75	6.26	16.32	77.42	21.32	22.58	56.10	Light	Healthy	Poor
Alucra	Kavaklıdere	59.50	21.84	10.10	68.06	18.49	31.94	49.57	Moderate	Risky	Moderate
Alucra	Suyurdu	54.50	14.67	13.78	71.55	11.93	29.36	58.71	No grazing	Problem	Moderate
Alucra	Aktepe	65.00	6.15	0.0	93.85	27.70	16.93	55.37	No grazing	Risky	Poor
Alucra	Bereketli	77.50	3.87	0.0	96.13	32.26	29.68	38.06	Intensive	Healthy	Poor
Alucra	Çakrak	81.00	3.70	0.0	96.30	3.71	16.05	80.24	Light	Healthy	Poor
Alucra	Tohumluk	81.00	3.70	0.0	96.30	3.71	16.05	80.24	Moderate	Healthy	Poor
Alucra	Tohumluk	82.00	4.87	23.18	71.95	25.61	36.59	37.80	Light	Healthy	Poor
Alucra	Elmacık	81.00	3.70	0.0	96.30	3.71	16.05	80.24	Moderate	Healthy	Poor
Bulancak	Tokmaden	100.00	0.0	20.00	80.00	4.00	66.00	30.00	Moderate	Healthy	Poor
Çamoluk	Pelitli	74.50	32.88	16.12	51.00	33.56	29.54	36.90	Moderate	Healthy	Moderate
Çamoluk	Yenice	76.00	13.15	30.28	56.57	25.00	35.53	39.47	Moderate	Healthy	Moderate
Çamoluk	Karadikmen	65.50	4.58	0.0	95.42	45.81	4.59	49.60	Moderate	Risky	Poor
Çamoluk	Kayacık	62.00	38.70	9.69	51.61	19.36	40.33	40.31	Moderate	Risky	Moderate
Çamoluk	Yeniköy	37.00	21.62	18.93	59.45	10.82	37.84	51.34	Moderate	Problem	Moderate
Çamoluk	Taşdemir	65.50	4.58	0.0	95.42	45.81	4.59	49.60	Intensive	Risky	Poor
Çamoluk	H.Ahmetoğlu	51.50	19.41	3.90	76.69	21.36	13.60	65.04	Intensive	Problem	Poor
Dereli	Kümbet	91.25	34.24	23.03	42.73	41.37	24.66	33.97	Moderate	Healthy	Moderate
Dereli	Tamdere	100.00	2.00	36.00	62.00	6.00	86.00	8.00	No grazing	Healthy	Poor
Dereli	Tamdere	77.00	23.37	16.89	59.74	28.58	36.37	35.05	Moderate	Healthy	Moderate
Dereli	Kızıltaş	84.00	19.04	21.44	59.52	21.43	60.72	17.85	Intensive	Healthy	Moderate
Dereli	Aksuk	83.00	19.27	24.11	56.62	16.87	53.02	30.11	Intensive	Healthy	Moderate
Dereli	Güzyurdu	92.00	0.00	30.44	69.56	17.40	60.87	21.73	Moderate	Healthy	Poor
Dereli	Güzyurdu	100.00	0.00	20.00	80.00	4.00	66.00	30.00	Moderate	Healthy	Poor
Şebinkarahisar	Ahırcık	67.50	0.00	52.60	47.40	14.45	52.97	32.58	Intensive	Risky	Moderate
Şebinkarahisar	Hocaoğlu	57.75	24.24	15.59	60.17	30.74	34.64	34.62	Intensive	Risky	Moderate
Şebinkarahisar	Ovacık	78.75	26.66	34.30	39.04	30.48	43.18	26.34	Intensive	Healthy	Moderate
Şebinkarahisar	Evcili	74.00	12.16	31.09	56.75	18.92	37.84	43.24	Moderate	Healthy	Moderate
Şebinkarahisar	Evcili	77.00	19.48	14.29	66.23	16.89	23.38	59.73	Intensive	Healthy	Moderate
Şebinkarahisar	Dereköy	67.75	0.0	12.92	87.08	4.43	11.44	84.13	Moderate	Risky	Poor
Şebinkarahisar	Arslanşah	94.00	0.0	14.90	85.10	6.39	21.28	72.33	Intensive	Healthy	Poor
Şebinkarahisar	Evcili	80.00	16.25	17.50	66.25	22.50	33.75	43.75	Intensive	Healthy	Moderate
Şebinkarahisar	Şaplıca	66.00	21.21	4.55	74.24	34.85	9.10	56.05	Intensive	Risky	Poor
Şebinkarahisar	Bayhasan	33.00	9.09	9.10	81.81	24.25	15.16	60.59	Intensive	Problem	Poor
Şebinkarahisar	Duman	62.50	12.80	14.40	72.80	11.20	36.80	52.00	Intensive	Risky	Moderate
Şebinkarahisar	Ekecek	46.00	28.26	13.05	58.69	30.44	17.40	52.16	Intensive	Problem	Moderate
Şebinkarahisar	Ozanlı	68.00	20.58	5.90	73.52	14.71	19.12	66.17	Intensive	Risky	Moderate
Şebinkarahisar	Gündoğdu	71.00	45.07	19.72	35.21	28.17	39.44	32.39	Moderate	Healthy	Good
Şebinkarahisar	Tekkaya	60.00	43.33	3.32	53.33	13.34	43.34	43.32	Moderate	Risky	Moderate
Şebinkarahisar	Ocaktaşı	79.00	13.92	20.26	65.82	25.32	43.04	31.64	Intensive	Healthy	Moderate
Şebinkarahisar	Yeniyol	78.50	50.95	7.65	41.40	31.85	29.30	38.85	Intensive	Healthy	Good
Şebinkarahisar	Sarıyer	73.00	28.76	12.34	58.90	17.81	30.14	52.05	Light	Healthy	Moderate
Şebinkarahisar	Yıltarıç	70.50	35.46	2.84	61.70	11.35	29.79	58.86	Intensive	Risky	Moderate
Şebinkarahisar	Gökçetaş	51.00	0.0	0.0	100.00	19.61	27.46	52.93	No grazing	Problem	Poor
Yağlıdere	Akpınar	77.50	15.48	11.62	72.90	23.23	43.88	32.89	Intensive	Healthy	Moderate
Yağlıdere	Akpınar	77.50	15.48	11.62	72.90	23.23	43.88	32.89	Moderate	Healthy	Moderate
Yavuzkemal	Tamdere	77.00	12.98	51.96	35.06	22.08	57.15	20.77	Intensive	Healthy	Moderate
Average		71.08	16.24	15.9	67.86	20.74	33.34	45.92			

*PCR: Plant covered ratio, RDBC: Ratio of decreaser in the botanical composition, RIBC: Ratio of increaser in the botanical composition, RINBC: Ratio of invaders in the botanical composition, RLBC: Ratio of legume family in the botanical composition, RGBC: Ratio of grasses family in the botanical composition, ROBC: Ratio of other families in the botanical composition

CONCLUSIONS

According to results, the rangelands in Giresun were classified as healthy-risky rangeland according to range health classification and as moderate-poor rangeland by range condition classification. A large part of rangelands has been grazing intensively with forcing their capacity. Results obtained from Giresun rangelands have suggested that grazing pressure must be decreased by controlling grazing in Eastern Black Sea Region to improve rangeland quality.

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