Article ID: 24536
Oral Presentation

Spatial Differentiation in Tree Formation Distribution of Kaz Mount

Berna Hepbilgin & Telat Koç

Department of Geography, Faculty of Sciences and Arts, Çanakkale Onsekiz Mart University, Çanakkale-Turkey
e-mail: bernahepbilgin@comu.edu.tr

Mountainous areas are one of the most important geomorphological elements for physical geography researches in terms of reflecting physical geographic differences. With its location, Kaz Mount causes significant physical geographic differentiation in short distances in horizontal and vertical directions. In this study, the tree associations which constitute the natural forest formation of Kaz Mount are classified according to their basic climatological needs and compared with the determined elevation intervals and their distribution on the direction of aspects. The distribution areas of tree associations of Kaz Mount, which are classified according to the temperature and humidity demand are discussed in terms of geographical differentiation with respect to the direction of the North and South aspects and the levels determined at intervals of 250 meters. It is achieved simple, reasonable and clear classification in associations of Kaz Mount. It is also attained their minimum and maximum distribution elevations at both side and obtained significant differentiations in associations and pure tree populations. This study is finally being a base for the next studies will analyze the detailed dynamics of tree distribution of Kaz Mount in detailed geographical aspects.

Keywords: Kaz Kaz Mount, Tree formation, Aspect, Elevation, Spatial differentiation

INTRODUCTION

Kaz Mount is located the northwest side of Turkey and at the south side Marmara region (Figure 1). Kaz Mount has an important role on biodiversity of the region. It shows a strong differentiation at both side and in short distance about its physical geographical features because of its morphological features which is gained with neotectonic processes in geological periods. The richness of the morphological features which gained with its location, ~West-East direction and its climate of the Mount lead also to become different climate at the north and west side at short distance and occur micro-climatic areas in its valleys.

There are many studies on the distribution of forest formation of Kaz Mount (Pamukçuoğlu, 1976; Güngördü, 1996; Cürebal et al., 2012; Koç and Arslan, 2013; Hepbilgin, 2019). The main difference in this study is to understand the distribution structure of the dominant tree associations both the north and western aspects and in intervals of 250 m elevations at first step. Another step is to obtain the maximum and minimum elevation locality of the dominant tree associations and pure-distributed populations. Results of this study leads to attain the actual-main climatological needs of tree species or associations of Kaz Mount at a later research.

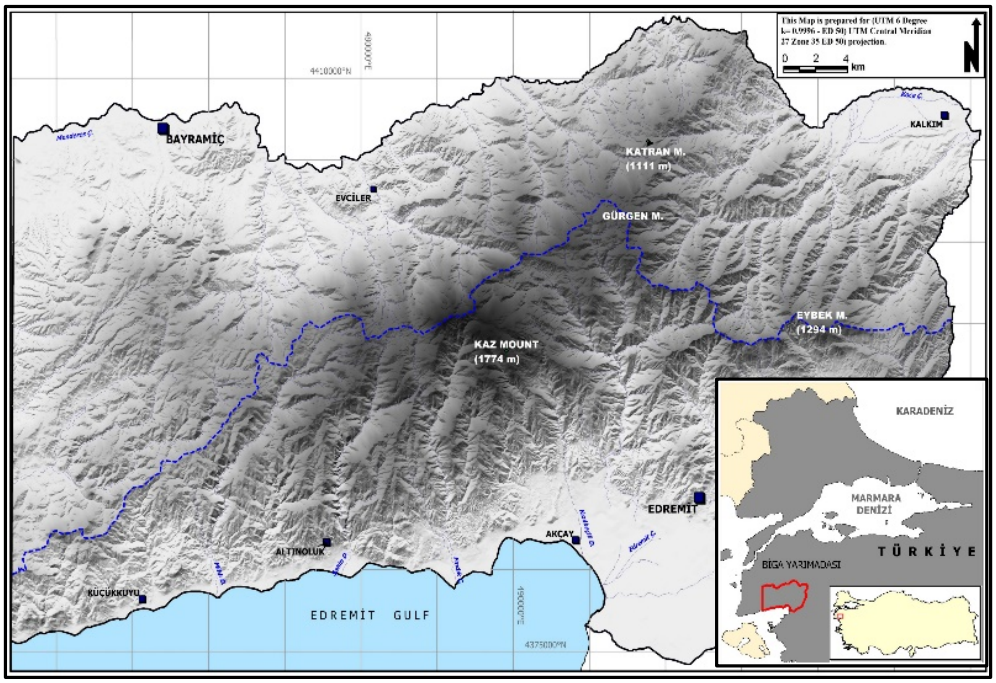

Figure 1. Title of the Figure

MATERIALS AND METHODS

It is used Forest Management Plans for analysing associations of Kaz Mount. First, the pure populations were queried and then the tree associations which consist of first two dominant species in GIS program Mapinfo. It is gained the distribution of pure population and associations (Table 1).

Table 1. Classification of tree associations according to dominance and pure tree populations.

Abbr.	Associations	Abbr. Latin	Dominant genus/species in assoc.
CkKs	Karaçam - Kestane	PniCas	*Pinus nigra - Castanea*
CkDy	Karaçam - Diğer yapraklılar	PniOtLe	*Pinus nigra - Other leafed trees*
CkKn	Karaçam - Kayın	PniFag	*Pinus nigra - Fagus*
CkM	Karaçam - Meşe	PniQu	*Pinus nigra - Quercus*
CkCz	Karaçam - Kızılçam	PniPbru	*Pinus nigra - Pinus brutia*
CkG	Karaçam - Göknar	PniAbi	*Pinus nigra - Abies*
CkMa	Karaçam - Maki	PniMa	*Pinus nigra - Maquis*
Abbr.	Associations	Abbr. Latin	Dominant genus/species in assoc.
CzCk	Kızılçam - Karaçam	PbruPni	*Pinus bruita - Pinus nigra*
CzM	Kızılçam - Meşe	PbruQu	*Pinus brutia - Quercus*
CzDy	Kızılçam - Diğer yapraklılar	PbruOtLe	*Pinus brutia - Other leafed trees*
Abbr.	Associations	Abbr. Latin	Dominant genus/species in assoc.
Ma	Maki	Ma	*Maquis*
Dy	Diğer yapraklılar	OtLe	*Other leafed trees*
G	Göknar	Abi	*Abies*
Ks	Kestane	Cas	*Castanea*
Kn	Kayın	Fag	*Fagus*
M	Meşe	Qu	*Quercus*
Ck	Karaçam	Pni	*Pinus nigra*
Cz	Kızılçam	Pbru	*Pinus brutia*
Cf	Fıstık çamı	Ppin	*Pinus pinea*

Table 1. Continued

Abbr.	Associations	Abbr. Latin	Dominant genus/species in assoc.
MDy	Meşe - Diğer yapraklılar	QuOtLe	*Quercus - Other leafed trees*
MG	Meşe - Göknar	QuAbi	*Quercus - Abies*
MKn	Meşe - Kayın	QuFag	*Quercus - Fagus*
MKs	Meşe - Kestane	QuCas	*Quercus - Castanea*
MCk	Meşe - Karaçam	QuPni	*Quercus - Pinus nigra*
MCz	Meşe - Kızılçam	QuPbru	*Quercus - Pinus brutia*
Abbr.	Associations	Abbr. Latin	Dominant genus/species in assoc.
GKn	Göknar - Kayın	AbiFag	*Abies - Fagus*
GCk	Göknar - Karaçam	AbiPni	*Abies - Pinus nigra*
Abbr.	Associations	Abbr. Latin	Dominant genus/species in assoc.
KnKs	Kayın - Kestane	FagCa	*Fagus - Castanea*
KnCk	Kayın - Karaçam	FagPni	*Fagus - Pinus nigra*
KnG	Kayın - Göknar	FagAbi	*Fagus - Abies*
KnM	Kayın - Meşe	FagQu	*Fagus - Quercus*
Abbr	Associations	Abbr. Latin	Dominant genus/species in assoc.
KsKn	Kestane - Kayın	CasFag	*Castanea - Fagus*
KsCk	Kestane - Karaçam	CasPni	*Castanea - Pinus nigra*
KsM	Kestane - Meşe	CasQu	*Castanea - Quercus*
Abbr.	Associations	Abbr. Latin	Dominant genus/species in assoc.
DyCk	Diğer yapraklılar - Karaçam	OtLePni	*Other leafed trees - Pinus nigra*

RESULTS

Pinus nigra dominant associations contains *Pinus nigra-Castanea* (PniCas), *Pinus nigra*-Other leafed trees (PniOtLe), *Pinus nigra-Fagus* (PniFag), *Pinus nigra-Quercus* (PniQu), *Pinus nigra-Pinus brutia* (PniQu), *Pinus nigra-Abies* (PniAbi) and *Pinus nigra*-Maquis (PniMa) associations. 85% of PniCas and PniOtLe community areas are located on the northern slope of Kaz Mount (Figure 2). The communities have the least distribution areas on the southern slope compared to others. The PniAbi association has nearly equal distribution area at both side (Figure 2). The elevation range of PniCas on the northern slope is 327m-1336m while it is in the range of 597m-1333m on the southern slope (Table 4). PniMa is largely distributed at south slope (%75) and located at the range of 235m-1403M on southern slope (Table 4).

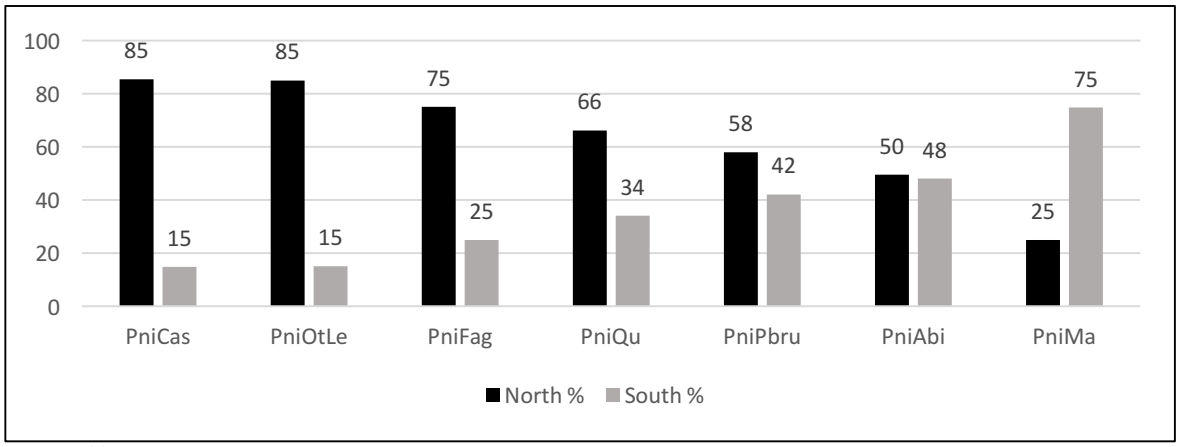

Figure 2. The Percentage Distribution Diagram of *Pinus nigra* dominant associations on the northern and southern slope.

PniCas association is largely located in the range of 500m-1000m in the level of ~45% on the north slope (Table 2). PniOtLe is in the range of 750m-1000m. The distribution areas of *Pinus nigra* associations with *Quercus*, *Pinus brutia* and *Maquis* on the northern slope are located in lower elevation levels (Table 2).

Table 2. The Percentage Assessment Table of *Pinus nigra* dominant associations on the northern slope

the percentage assessment of *Pinus nigra* -dominant associations at the North side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
PniCas	28.1	24.0	85.4	-	4.7	**43.2**	**42.6**	9.0	0.5	-
PniOtLe	5.4	4.6	84.8	-	0.1	**36.9**	**54.8**	7.7	0.1	-
PniFag	29.2	21.9	75.0	-	0.2	**22.6**	**42.5**	**31.6**	3.3	-
PniQu	166.3	110.1	66.2	-	**33.5**	**49.4**	15.3	1.7	0.2	-
PniPbru	17.8	10.3	57.9	-	**51.2**	**48.4**	-	-	-	-
PniAbi	6.5	3.2	49.5	-	1.3	1.2	**31.0**	**29.0**	**31.3**	9.3
PniMa	14.7	3.6	24.4	-	**36.7**	**63.0**	0.9	0.6	-	-

PniCas association on the southern slope is largely distributed in the range of 750-1250 m levels (Table 3). 60% of PniPbru association areas is seen in the range of 500-750 m elevation on the southern slope (Table 3)

Table 3. The Percentage Assessment Table of *Pinus nigra* dominant associations on the southern slope

the percentage assessment of Pinus nigra-dominant associations at the South side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
PniCas	28.1	4.2	14.6	-	-	10.0	**48.0**	**40.0**	1.8	-
PniOtLe	5.4	0.9	14.8	-	-	19.0	**33.0**	**45.0**	3.0	-
PniFag	29.2	7.1	24.7	-	-	6.0	16.0	**55.0**	**24.0**	-
PniQu	166.3	55.4	33.8	-	1.5	**21.3**	**52.0**	**24.0**	1.4	0.4
PniPbru	17.8	7.5	42.1	-	5.1	**60.9**	**32.7**	1.4	-	-
PniAbi	6.5	3.1	48.7	-	-	1.0	1.0	4.5	**89.7**	5.3
PniMa	14.7	11	75.5	0.4	2.6	**31.9**	**48.6**	**15.6**	1.7	-

PniQu and PniMa associations have the largest vertical distribution areas on the south slope, while PniPbru and PniMa have a narrow distribution area of vertically on the northern slope (Table 4).

Table 4. The elevation range of *Pinus nigra* dominant associations at both slope.

N	Min Elev.(m)	Max Elev.(m)	S	Min Elev. (m)	Max Elev. (m)
PniCas	327	1336	PniCas	597	1333
PniOtLe	489	1263	PniOtLe	541	1290
PniFag	135	1358	PniFag	558	1421
PniQu	249	1366	PniQu	263	1660
PniPbru	240	741	PniPbru	338	1131
PniAbi	379	1642	PniAbi	668	1624
PniMa	750	990	PniMa	235	1403

The distribution of *Pinus brutia-Quercus* (PbruQu) association is seen in the level of 57% and *Pinus brutia*-Other leafed trees are largely distributed on the southern slope (71%) (Figure 3).

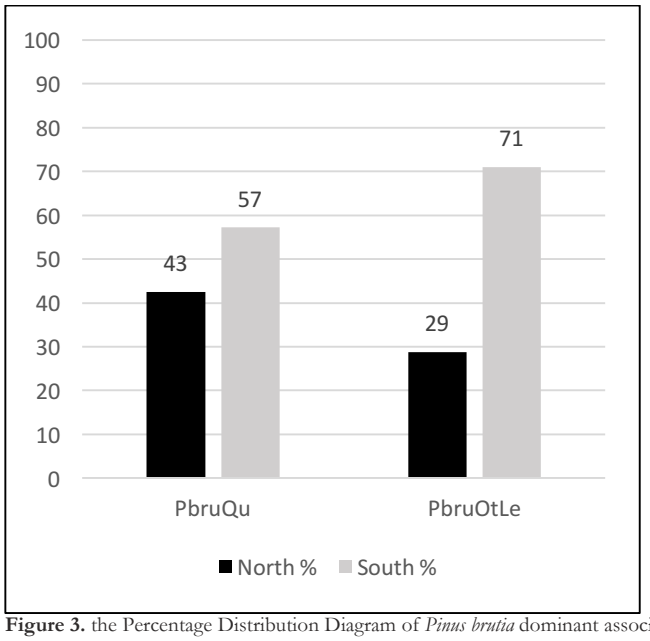

Figure 3. the Percentage Distribution Diagram of *Pinus brutia* dominant associations on the northern and southern slope.

PbruPni is generally distributed in the range of 250m-750m elevations on the northern slope and of 500-750m elevations in the level of 70% on the southern slope (Table 5,6) Other associations are densely located in the level of 250m-500m elevation on the north side (Table 5).

Table 5. the Percentage Assessment Table of *Pinus brutia* dominant associations on the northern slope

the percentage assessment of *Pinus brutia* -dominant associations at the North side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
PbruPni	21.0	16.1	76.8	2.4	**53.6**	**44.3**	-	-	-	-
PbruQu	28.7	12.2	42.5	6.9	**65.5**	**28.1**	-	-	-	-
PbruOtLe	8.7	2.5	28.8	7.6	**89.2**	4.3	-	-	-	-

The *Pinus brutia* dominant associations at south side is largely distributed in the range of 250m-750m elevation (Table 6). The area of *Pinus brutia-quercus* association is distributed ~400 m larger on the south slope than the northern (Table 7).

Table 6. the Percentage Assessment Table of *Pinus brutia* dominant associations on the southern slope

the percentage assessment of *Pinus brutia* -dominant associations at the South side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
PbruPni	21.0	4.7	22.9	-	10.0	**70.0**	20.0		-	-
PbruQu	28.7	16.4	57.1	4.8	**31.5**	**52.6**	11.2	0.1	-	-
PbruOtLe	8.7	6.1	70.1	13.0	**40.0**	**43.0**	5.0		-	-

Table 7. The elevation range of *Pinus brutia* dominant associations at both slope.

N	Min Elev.(m)	Max Elev.(m)	S	Min Elev. (m)	Max Elev. (m)
PbruPni	211	732	PbruPni	256	978
PbruQu	159	776	PbruQu	66	1064
PbruOtLe	219	616	PbruOtLe	138	889

Pure-distributed tree populations consist of *Maquis* (Ma), OtLe (Other leafed trees), *Abies, Castanea, Fagus, Quercus, Pinus nigra, Pinus brutia* and *Pinus pinea* populations. *Castanea* pure population is completely distributed on the northern slope. Abies is located in the rate of 96% on the north side, and in the rate of 6% on the southern slope (Figure 4). *Pinus brutia* and *Pinus pinea* populations are highly distributed on the southern slope. *Pinus nigra* population is located in the level of 60% on the north side (Figure 4).

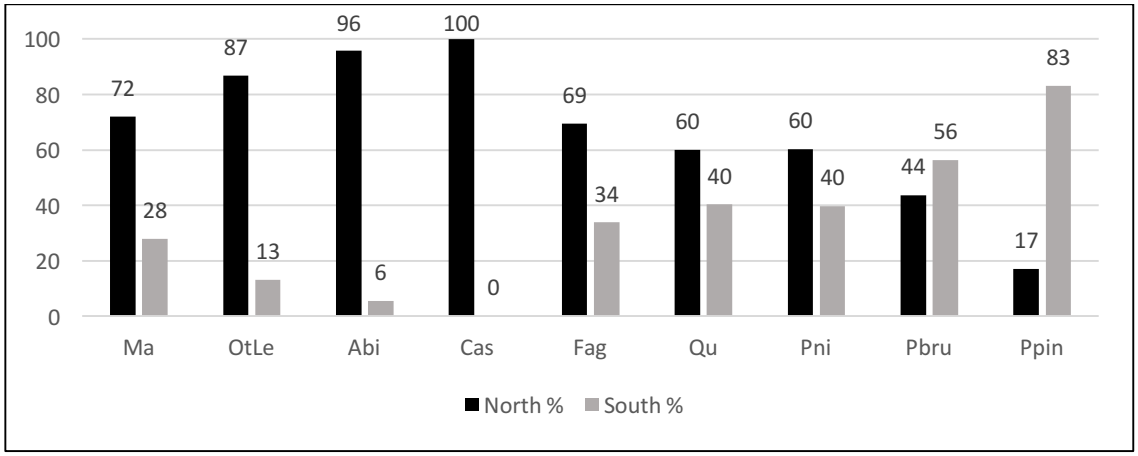

Figure 4. the Percentage Distribution Diagram of Pure-tree populations on the northern and southern slope.

Abies and *Fagus* pure populations are largely seen at the range of 1000m-1500m elevation on the northern slope and at the range of 1250m-1500m elevation on the southern slope (Table 8, 9).

Table 8. the Percentage Assessment Table of Pure Tree Populations on the northern slope

the percentage assessment of pure tree populations at the North side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
Ma	2.9	2.1	71.4	0.0	**51.2**	**44.7**	4.7	0.4	-	-
OtLe	8.4	7.3	86.7	**32.6**	**54.0**	10.5	2.4	0.0	-	-
Abi	1.8	1.7	95.9	-	0.1	2.7	6.2	**68.8**	**21.8**	-
Cas	0.1	0.1	100.0	-	3.0	**75.2**	**22.6**	-	-	-
Fag	5.6	3.9	69.4	-	0.3	1.3	20.0	**40.0**	**38.0**	-
Qu	37.2	22.3	59.9	**14.5**	**53.1**	**26.0**	4.5	1.9	-	-
Pni	410.4	247.3	60.3	0.4	**20.3**	**39.7**	**26.9**	9.7	2.7	0.3
Pbru	295.8	128.9	43.6	**17.9**	**69.0**	13.2	0.0	0.0	-	-
Ppin	1.8	0.2	11.2	**55.0**	**45.0**	-	-	-	-	-

Table 9. the Percentage Assessment Table of Pure Tree Populations on the southern slope

the percentage assessment of pure tree populations at the South side											
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
Ma	2.9	0.8	27	-	-	**26.0**	**65.0**	9.0	-	-
OtLe	8.4	1.1	13.1	**67.0**	**29.0**	0.0	-	4.0	-	-
Abi	1.8	0.1	5.6	-	-	-	-	**10.0**	**90.0**	-
Cas	0.1	0.1	-	-	-	-	-	-	-	-
Fag	5.6	1.9	32.1		-	-	10.0	12.0	**78.0**	-
Qu	37.2	15	40.1	2.4	16.2	**27.9**	**40.0**	13.5	0.4	-
Pni	410.4	163.1	39.8		1.3	18.5	**27.3**	**27.7**	21.0	4.3
Pbru	295.8	166.8	56.4	12.1	**57.7**	**28.3**	1.9	0.1	-	-
Ppin	1.8	1.5	88.9	7.0	**93.0**	-	-	-	-	-

Pinus nigra population has the largest distribution area at both side, approximately ~1500m. It is seen in the level of 273m on the southern slope (Table 10). *Abies* population is seen 1400 m max. at both side (Table 10).

Table 10. The elevation range of Pure Tree Populations at both slope.

N	Min Elev.(m)	Max Elev.(m)	S	Min Elev. (m)	Max Elev. (m)
Ma	229	1065	Ma	579	1082
OtLe	140	998	OtLe	130	404
Abi	499	1394	Abi	1155	1406
Cas	549	852	Cas	-	-
Fag	489	559	Fag	816	1432
Qu	90	1212	Qu	78	1367
Pni	216	1708	Pni	273	1735
Pbru	70	757	Pbru	0	1175
Ppin	89	302	Ppin	0	422

Quercus communities which associate with *Castanea, Fagus, Abies* and Other leafed trees are all located at the northern slope. Other Quercus associations such as *Quercus-Pinus nigra*, *Quercus-Pinus brutia* are partly or all located on the southern slope (Figure 5).

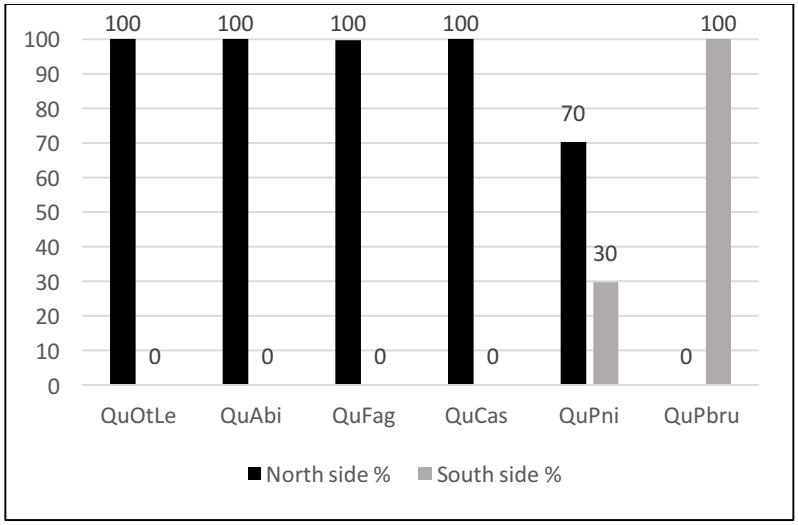

Figure 5. the Percentage Distribution Diagram of *Quercus*-dominant associations on the northern and southern slope

Quercus-Abies association is completely located in the range of 750m-1250m elevation at north side. *Quercus-Fagus* association is also largely located in the level of 250m-500m elevation (85,9%) at the north side. At

the southern slope, *Quercus-Pinus nigra* (750m-1000m) and *Quercus -Pinus brutia* (500m-750m) associations are dominant (Table 11, 12).

Table 11. the Percentage Assessment Table of *Quercus*-dominant on the northern slope

the percentage assessment of *Quercus* -dominant associations at the North side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
QuOtLe	0.5	0.5	95.6	-	**48.0**	**54.0**	-	-	-	-
QuAbi	0.3	0.2	73.3	-	-	5.0	**45.0**	**50.0**	-	-
QuFag	0.4	0.4	99.6	-	**85.9**	14.5	-	-	-	-
QuCas	1.3	1.3	100.0	-	16.0	**76.2**	8.0	-	-	-
QuPni	68.1	47.8	70.2	-	14.1	26.5	6.7	0.5	0.0	-
QuPbru	4.0	-		-	-	-	-	-	-	-

Table 12. the Percentage Assessment Table of *Quercus*-dominant on the southern slope

the percentage assessment of *Quercus* -dominant associations at the South side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
QuOtLe	0.5	-	-	-	-	-	-	-	-	-
QuAbi	0.3	-	-	-	-	-	-	-	-	-
QuFag	0.4	-	-	-	-	-	-	-	-	-
QuCas	1.3	-	-	-	-	-	-	-	-	-
QuPni	68.1	20.3	29.8	-	0.7	24.3	**58.2**	17.0	-	-
QuPbru	4.0	4	100	8.1	17.4	**44.2**	**29.6**	1.2	-	-

Quercus-Pinus brutia is only located on the south slope in the intervals of 18m-1059m. *Quercus* species which associate with hygrophilous tree species such as *Abies, Fagus, Castanea* should also be hygrophilous characteristic. The associations are only located on the northern slope (Table 13).

Table 13. The elevation range of *Quercus*-dominant associations at both slope.

N	Min Elev.(m)	Max Elev.(m)	S	Min Elev. (m)	Max Elev. (m)
QuOtLe	399	626	QuOtLe	-	-
QuAbi	507	1157	QuAbi	-	-
QuFag	317	668	QuFag	-	-
QuCas	408	989	QuCas	-	-
QuPni	298	1249	QuPni	392	1284
QuPbru	-	-	QuPbru	18	1059

The percentage rates of *Abies-Pinus nigra* and *Abies-Fagus* associations according to slopes are seen Figure 6. The associations are largely located at the northern slope.

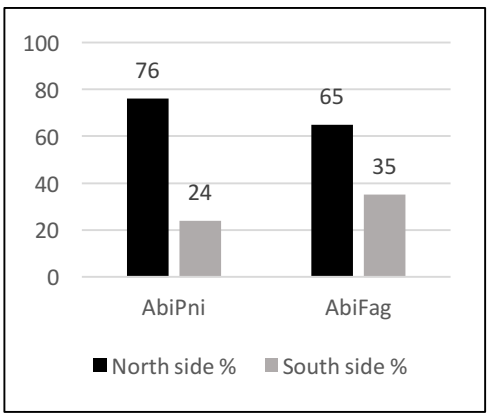

Figure 6. the Percentage Distribution Diagram of *Abies*-dominant associations on the northern and southern slope

Abies-Fagus association is heavily located in the range of 1000m-1250m (68%) at the north side and in the range of 1250m-1500m (%47) at the south side (Table 14). *Abies-Pinus nigra* association is heavily distributed in the range of 1250m-1500m elevation (%98) on the south slope (Table 14, 15).

Table 14. the Percentage Assessment Table of *Abies*-dominant associations on the northern slope

the percentage assessment of *Abies*-dominant associations at the North side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
AbiFag	3.3	2.5	75.6	-	-	-	12.0	**68.0**	20.0	-
AbiPni	2.3	1.5	64.0	-	-	-	-	**40.0**	**60.0**	-

Table 15. the Percentage Assessment Table of *Abies*-dominant associations on the southern slope

the percentage assessment of *Abies*-dominant associations at the South side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
AbiFag	3.3	0.9	27.2	-	-	-	-	**30.0**	**47.0**	23.0
AbiPni	2.3	0.9	38.4	-	-	-	-	2.0	**98.0**	-

Maksimum and minimum elevation levels of *Abies*-dominant associations are seen on the Table 16.

Table 16. The elevation range of *Abies*-dominant associations at both slope.

N	Min Elev.(m)	Max Elev.(m)	S	Min Elev. (m)	Max Elev. (m)
AbiFag	1055	1426	AbiFag	1222	1416
AbiPni	774	1468	AbiPni	1023	1605

Fagus-Castanea, *Fagus-Pinus nigra* and *Fagus-Abies* associations are located at the north slope 100%, 73% and 64% respectively. Fagus-quercus community is distributed on the southern slope at the rate of 56% and on the northern slope at the rate of 42% (Figure 7).

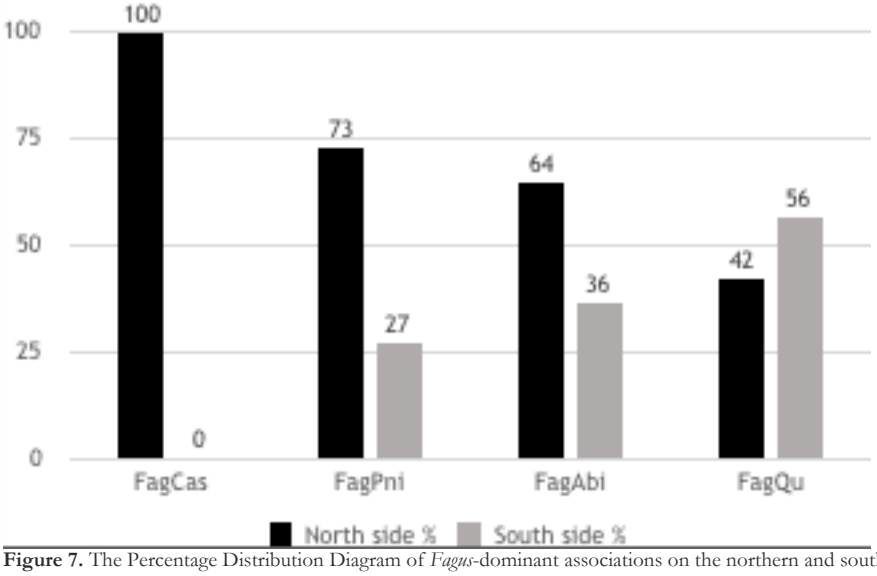

Figure 7. The Percentage Distribution Diagram of *Fagus*-dominant associations on the northern and southern slope

Fagus-Castanea association is heavily located in the range of 500m-1000m on the northern slope (Table 17) and is not found on the southern slope (Table 17, 18). *Fagus-Pinus nigra* community is largely located in the range of 750m-1000m elevation on the northern slope and in the range of 1000m-1500m elevation on the southern slope (Table 17, 18). *Fagus-Abies* community is nearly completely located in the range of 1250m-1500m elevation on the southern slope (95%). Hygrophilous communities are located higher elevation range on the northern slope and lower range on the southern slope. The result is clearly seen at the

minimum and maximum elevation points of associations (Table 19).

Table 17. The Percentage Assessment Table of *Fagus*-dominant on the northern slope

the percentage assessment of *Fagus* -dominant associations at the North side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
FagCa	2.4	2.4	100.0	-	3.0	**40.0**	**49.0**	5.0	3.0	-
FagPni	13.6	9.9	72.6	-	1.6	**25.3**	**49.9**	23.5	0.3	-
FagAbi	7.5	4.8	64.3	-	0.1	7.0	10.0	**37.0**	**45.0**	-
FagQu	2.2	0.9	41.7	-	13.3	**54.4**	**28.9**	4.4	-	-

Table 18. the Percentage Assessment Table of *Fagus*-dominant on the southern slope

the percentage assessment of *Fagus* -dominant associations at the South side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
FagCa	2.4	-	-	-	-	-	-	-	-	-
FagPni	13.6	3.8	27.9	-	-	5.0	13.0	**45.0**	**36.0**	-
FagAbi	7.5	2.7	36.2	-	-	-	0.0	5.0	**95.0**	-
FagQu	2.2	1.2	55.6	-	-	10.9	**65.8**	**23.7**	-	-

Table 19. The elevation range of *Fagus*-dominant associations at both slope.

N	Min Elev.(m)	Max Elev.(m)	S	Min Elev. (m)	Max Elev. (m)
FagCa	448	1343	FagCa	-	-
FagPni	414	1278	FagPni	599	1421
FagAbi	488	1425	FagAbi	1106	1431
FagQu	428	1129	FagQu	598	1131

Castanea-dominant community covers *Fagus, Pinus nigra* and *Quercus species*. Castanea-Fagus, *Castanea-Pinus nigra* and *Castanea-Quercus* are all completely located on the northern slope (Figure 8). All of the associations are heavily located in the range of 500m-1000m elevation on the northern slope (Table 20).

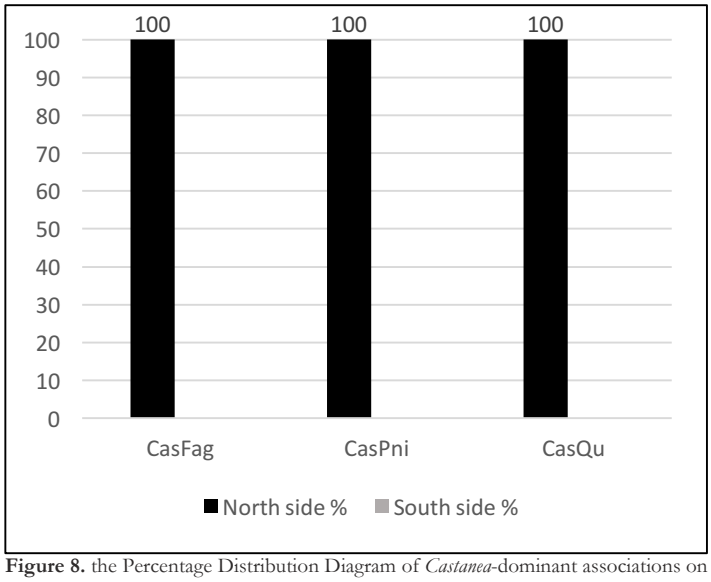

Figure 8. the Percentage Distribution Diagram of *Castanea*-dominant associations on the northern and southern slope

Table 20. the Percentage Assessment Table of *Castanea*-dominant on the northern slope

the percentage assessment of *Castanea* -dominant associations at the North side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
CasFag	0.4	0.5	100.0	-	-	**60.0**	20.0	20.0	-	-
CasPni	6.5	6.5	100.0	-	-	**38.5**	**49.2**	13.8	-	-
CasQu	1.6	1.6	100.0	-	6.3	**56.3**	**37.5**	0.8	-	-

The maximum and minimum elevation levels of *Castanea* communities are seen on the Table 21.

Table 21. The elevation range of *Castanea*-dominant associations at both slope.

N	Min Elev.(m)	Max Elev.(m)	S	Min Elev. (m)	Max Elev. (m)
CasFag	535	1067	CasFag	-	-
CasPni	489	1192	CasPni	-	-
CasQu	405	1065	CasQu	-	-

Other leafed trees-dominant association is largely located in the range of 750m-1000m elevation at the north side (Table 22). The association is only be found at the northern slope at the range of minimum 609m and maximum 1190m elevation.

Table 22. The Percentage Assessment Table of Other leafed trees-dominant on the northern slope

the percentage assessment of Other leafed trees-dominant association at the North side										
	Tot.Area	(km^2)	%	0-250%	250-500%	500-750%	750-1000%	1000-1250%	1250-1500%	1500-1750%
OtLePni	1.4	1.4	100.0		-	14.3	**57.1**	28.6	-	-

Table 23. The elevation range of Other leafed trees-dominant associations at both slope.

S	Min Elev. (m)	Max Elev. (m)	N	Min Elev.(m)	Max Elev.(m)
OtLePni	-	-	OtLePni	609	1190

DISCUSSION

Location, direction, elevation and geomorphological features of Kaz Mount lead to differences between its southern and northern slopes especially climatologically and in all physical geographical factors. Climatological differentiation in short distance on the Mount leads also to differ the tree composition and its distribution. Associations occur according to their climatological and ecological needs. The largely distribution areas of species, communities or associations are suitable habitats according to their ecological needs. The results of this study show the reflection of topographical and climatological differences to the tree composition of Kaz Mount. Hygrophilous communities are largely located at northern slope and higher levels at the southern part. Xerophilous associations/communities are distributed on the southern slope and lower levels on the northern slope. The distributional areas of some associations are higher or lower levels than expected or known such as *Pinus nigra*. *Pinus nigra* is purely seen in minimum 273 meters levels on the southern slope according to our study. This situation should be the reflection of various micro-climate areas in valleys on the southern slope. It is not found any knowledge about the species of *Quercus* in Forest Management Plans. However, the results of our study show that the *Quercus* species which constitute associations with hygrophilous tree species are completely located in the northern slope. It is also similar for the Quercus associations on the southern slope. It is seen the *Quercus* species with xerophilous character in xerophilous tree community on the southern slope.

REFERENCES

Cürebal, İ., Efe, R., Sönmez, S., Soykan A. Kazdağları Ekosistemi ve Ekolojisi, Kazdağları Ulusal Çalıştayı Bildiriler Kitabı, Balıkesir 2-3 Haziran 2012.

Güngördü, M. *Güney Marmara Bölümü (Batı Kesimi) Bitki Örtüsünün Coğrafi Dağılışı.* İstanbul Üniversitesi Edebiyat Fakültesi Coğrafya Bölümü, Coğrafya Dergisi, 1996, 55-112.

Hepbilgin, B. Kazdağı ve Yakın Çevresinde Ağaç Formasyonunun Dağılışına İklim Değişikliğinin Olası Etkilerinin Modellenmesi, Doktora Tezi, Çanakkale Onsekiz Mart Üniversitesi BAP Proje No: 2016/877, Çanakkale 2018.

Koç, T., Arslan E. (2013). Kazdağı ve Yakın Çevresinde Orman Örtüsünün Dağılış (Yatay/Dikey) Özellikleri. Profesör Doktor Asaf Koçman'a Armağan, Öner E. Ed., Ege Üniversitesi Basımevi, İzmir, 2013, 185-202.

Pamukçuoğlu, A. (1976). *Kazdağları'nın Bitki Coğrafyası Üzerine İncelemeler.* Atatürk Üniv. Yay. No:342 Ankara.