Fir Working Circles in Functional Forest Management Plans of Regional Forestry Directorate of Kastamonu

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Abstract

Fir, which is one of the main tree species with natural distribution in Turkey, has four taxa. These taxa include *Abies nordmanniana* subsp. *bornmulleriana, Abies nordmanniana* subsp. *equi-trojani, Abies nordmanniana* subsp. *nordmanniana, Abies cilicica* subsp. *cilicica* and *Abies cilicica* subsp. *isaurica.* Our own species, *Abies nordmanniana* subsp. *bornmulleriana* is widely distributed in the borders of Regional Forestry Directorate of Kastamonu.

Forest management planning process, started in Hendek (Adapazarı) in 1917, and proceeding with some improvements, has been maintained as functional planning. The borders of Sub-district Directorate is divided into working circles in terms of various issues (rotation, tree species, etc.) in the scope of planning performed on the basis of Sub-district Directorate. The Regional Forestry Directorate of Kastamonu, constituting a basis for the topic of this study, has 133 forestry Sub-district Directorates.

Working circles identified in the management plans of forestry Sub-district Directorates within the distribution areas of fir are reviewed in this study. Issues such as in which Sub-district Directorate has a separated fir working circle, characteristic of working circle (pure or mixed stands) and the aims of working circle are tried to be identified. Maps showing the distribution areas of fir within the borders of Sub-district Directorates have been prepared by means of geographical information systems.

Key words: Working Circles, Fir, Forest Management Plan.

Introduction

The first forest management planning branch was established in 1917. The first Forest Management Planning Team consisting of Turkish and Austrian Forest Engineers was assigned to develop management plan for Hendek (Adapazarı) in 1917. This plan was completed in 1918.

With the Forest Management Code enacted in 1924, developing ultimate Forest Management Plans for all forests, it was decided to make production with provisional management plans until ultimate plans were developed.

Planned period started with the first 5-Year Development Plan in 1963. According to this plan, a more rational and intensive forestry has been deemed necessary. With this goal, the development of the new forest management plans had begun with a 10-year work program involving the first and second 5-Year Development Plans. In a 10-year period (1963-1972), the country's forest management plans were completed. These plans made in accordance with the age-class method (ERASLAN) have been the pride and success of Turkish foresters.

Almost one century has passed if the starting date of Forest Management Planning is considered as 1917, while only 40 years have passed based on the starting year of 1963. These 10-year or 20-year plans merely reflect the picture of forest. Therefore, working circles of fir stands, playing a key role for our country's forests, were surveyed by means of Forest Management Plans, started long time ago.

Materials and Methods

The data needed for the article were provided by the Forest Management Plans of the Regional Forestry Directorate of Kastamonu.

These plans were produced by Forest Management Chief Engineering Departments and Forest Planning Team working under the Forest Management and Planning Department.

The first renewal of 29 plans, the second renewal of 63 plans, the third renewal of 23 plans and the fourth renewal of 2 plans were completed successfully.

The Sinop and Kastamonu Regional Forestry Directorates have been two separate regional directorates during the period when

the planning activities were undertaken. As a result of re-restructuring performed in 2011, all units of Sinop Regional Directorates were closed then connected to the Regional Directorate of Kastamonu. In this study, the current situation has been taken into consideration.

The boundaries of Regional Forestry Directorates, Forestry District Directorates and Forestry Sub-district Directorates were taken from the maps digitized by the Map and Photogrammetry Unit.

In addition, the boundaries of fir trees were taken from the maps of distribution of tree species prepared by the same unit.

On this map, Forest Sub-district Directorates having fir working circles were indicated.

117 Forest Sub-district Directorates are divided into 142 working circles (Table 1). 14 of them have been allocated as working circle of fir selection, 3 of them as mixed working circle of fir and one of them as working circle of beech and fir.

Forest Sub-district Directorates which have fir working circles are shown in Map 1. The areas of fir working circles were taken from the National Forest Inventory.

Assessment of Fir Working Circles

Representatives of the fir genus in our country are *Abies nordmanniana* subsp. *bornmulleriana, Abies nordmanniana* subsp. *equi-trojani*, *Abies nordmanniana* subsp. *nordmanniana*, *Abies cilicica* subsp. *cilicica* and *Abies cilicica* subsp. *isaurica.*

Distribution of *Abies nordmanniana* subsp. *bornmulleriana* within the borders of Regional Forestry Directorate of Kastamonu is shown in Map 2.

In the beginning, planned forest management activities in Turkey were carried out on serial basis. Then, areas of planning unit were transferred to sub-district directorate.

Article 3 of Forest Management Regulations defines the Planning Unit as follows: In order to ensure the integrity of administrative and technical work, planning sub-unit covers the borders of sub-district directorate, which were determined on the basis of natural and geographical boundaries.

Areas of Planning Unit (forest sub-district directorate) are divided into different working circles in terms of various matters (tree species, operating mode, etc.).

Working Circle (meaning sustainable harvesting) may be defined as follows:

In general meaning, working circle is a sustainable unit consisting of the aims of operation, growing conditions, especially site classes, tree species, operation types, forest forms, rotation ages, land structures, transportation of forest products and their usage areas, usufruct rights to be applied whether on a charge basis or freely (these areas may be placed in a specific area either collectively or as a big or small parts), in a forest directorate or its Forest Management Planning Unit. These units are subject to similar management methods (methods for benefit) and allowable cut and harvesting plans are carried out accordingly. All these factors ensure sustainable harvesting.

According to the Forest Management Regulations the working section is: "according to the Forest Management Regulations, working circles defines the sustainable unit covering different areas, whether collectively or in a separated form, when different forest functions become prominent as the aim of operation or there are different areas in terms of forest forms and operation types. The total area in hectares of a working circle is at least equal to the rotation age of that tree species."

Working Circles are named according to the purpose of allocation (for example Turkish Pine Working Circle, water protection forest, nature conservation forest, recreation forest, etc.).The boundaries of working circle are determined based on natural lines, first boundaries of compartment, when it is not possible rill, crest, channel, etc. It is also determined based on boundaries of stand in case of necessity.

Working Circles are drawn in capital letters on the plans and maps and the information related is provided in separate sections (Anonymous, 1991).

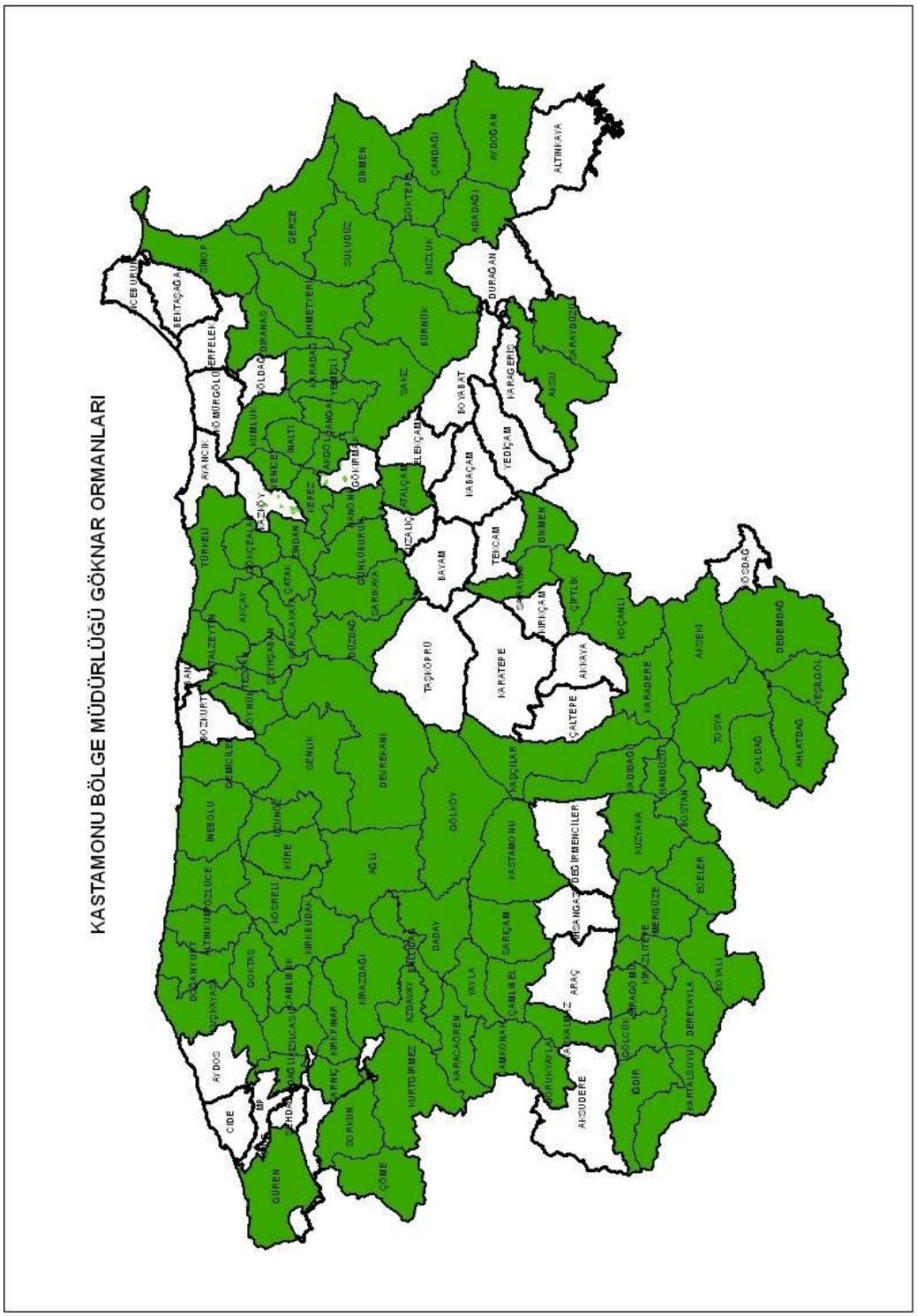

Figure 1. Forest Sub-district directorates having fir (A*bies nordmanniana* subsp. *bornmulleriana*) Working Circles

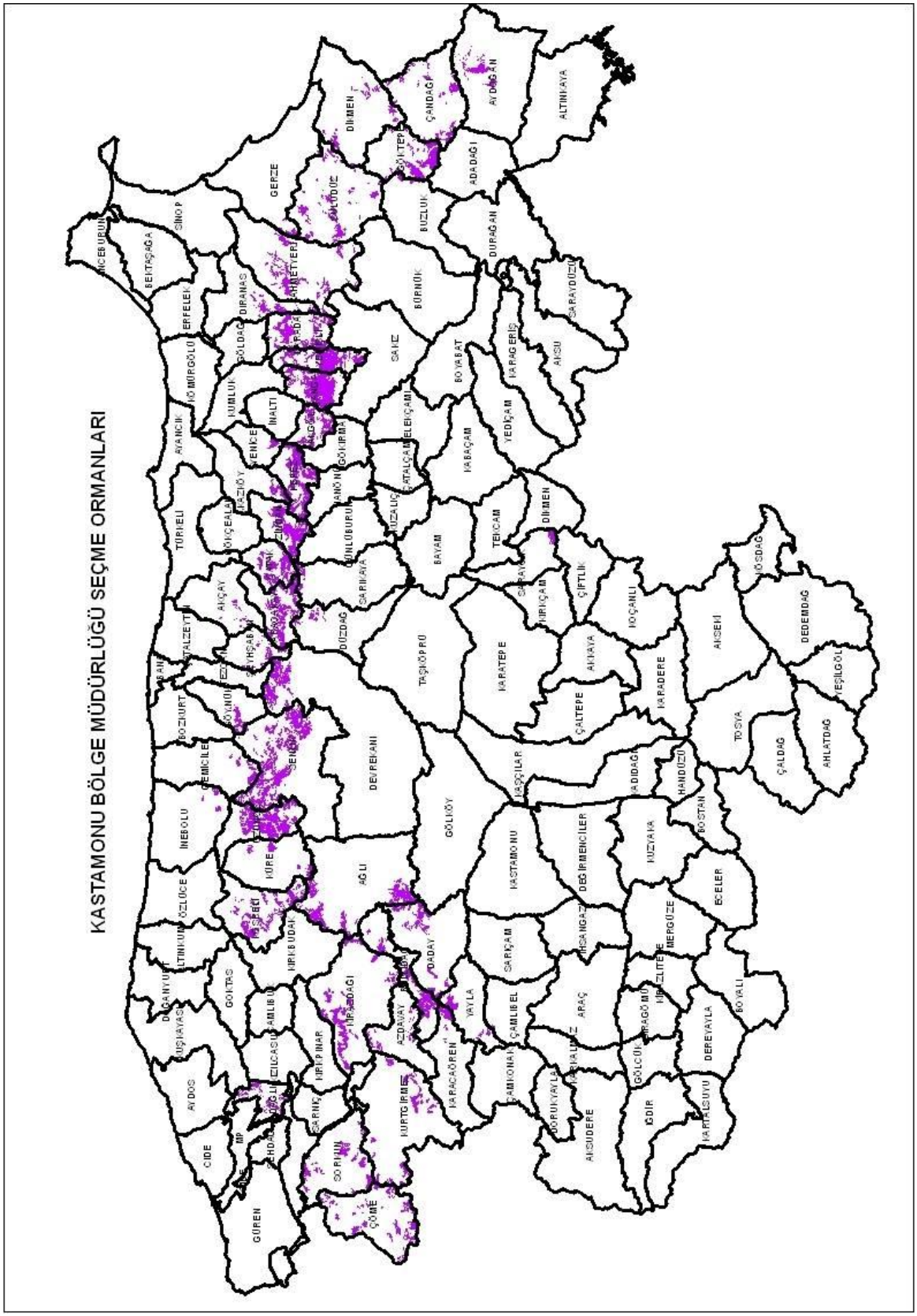

Figure 2. The boundaries of the Sub-district Directorates of Kastamonu Regional Forestry Directorate and distribution of *Abies nordmanniana* subsp. *bornmulleriana*

The fir working circles are divided based on the aim of operation as follows: the main objective of wood production, with fir selection divided into the working section fir + beech and working circle mixed fir and beech; aesthetics as conservation purposes, erosion prevention, wildlife, nature conservation, scientific, recreation, without status of character of conservation and social pressure, and national park under status protection (Table 1).

Considering the tree species and rotation ages based on the distribution of working circles, the total area of working circle should not be less than the duration (years) of rotation age.

Pure stands may be divided into working circles under the name of pure tree species if they are big enough. In case of mixture, they can be classified under the mixed working circle. Two-thirds of fir working circles are allocated as pure fir tree species. Fir forms mixed forests with black pine among conifers; it only mixes up with beech out of broad-leaved tree species (Table 1).

The fact that it forms a mixed working circle with beech while it has also a working circle with black pine may be the result of not forming stands with broad-leaved trees.

Table 1. Status of fir working circles in Forest Management Plans

Item No	Working Circle	Number of Working Circles	Forest Area (ha)	Forestless Area (ha)	General Area (ha)
1	Fir Selection	63	98,208.8	24,665.2	122,874.0
2	Aesthetics	5	3,281.6	1,654.2	4,935.8
3	Fir + Beech	2	11.,452.6	2,513.6	13,966.2
4	Erosion Prevention	3	2,755.8	1,144.5	3,900.3
5	Wildlife	3	5,672.6	724.7	6,397.3
6	Conservation Character	7	6,086.3	5,296.1	11,382.4
7	Nature Conservation	3	693.0	731.9	1,424.9
8	National Park	1	849.0	252.5	1,101.5
9	Mixed Fir	4	14,578.0	22,293.0	36,871.0
10	Recreation	2	14.0	128.0	142.0
11	Scientific	1	76.2		76.2
12	Social Pressure	1	614.4	1,231.5	1,845.9
	TOTAL	95	144,282.3	60,635.2	204,917.5

Forests are divided into three parts as high forest, coppice and coppice with standards in terms of management. Looking at the fir working circles, they are categorized as high forest. Forest forms are divided into two parts as even-aged forest and selection forest.

High forests are planned as even-aged or selection forests. Totally 95 Fir Working Circles were allocated to 19 out of 20 Forest District Directorates within the Regional Forestry Directorate of Kastamonu (Table 2).

Table 2. Forestry District Directorates having Fir Working Circles

Item No.	Working Circle	Number of Working Circles	Forest Area (ha)	Forestless Area (ha)	General Area (ha)
1	ARAÇ	1	4,570	105.0	4,675.0
2	AZDAVAY	10	18,803.8	5,679.9	24,483.7
3	AYANCIK	10	16,276.2	3,285.1	19,561.3
4	BOYABAT	1	4,096.0	6,370.5	10,466.5
5	BOZKURT	7	1,151.4	145.5	1,296.9
6	CİDE	2	1,312.5	190.0	1,502.5
7	ÇATALZEYTİN	3	3,327.7	726.2	4,053.9
8	DADAY	4	5,303.8	128.3	5,432,1
9	DURAĞAN	1	2,601.0	6,225.5	8,826.5
10	İHSANGAZİ	2	4.287.0	625.0	4,912.0
11	KARADERE	6	5,426.5	1,086.0	6,512.5
12	KASTAMONU	7	8,055	1,135.0	9,190.0
13	KÜRE	8	24,772	15,874.5	40,646.5
14	PINARBAŞI	6	10,540.7	707.8	11,248.5
15	SAMATLAR	3	4,217.5	159.0	4,376.5
16	SİNOP	6	15,761.5	16,964.2	32,725.7
17	TAŞKÖPRÜ	7	2,189.0	80.5	2,269.5
18	TOSYA	8	6,866.5	942.0	7,808.5
19	TÜRKELİ	3	4,724.2	205.2	4,929.4
	TOTAL	95	144,282.3	60,635.2	204,917.5

Conclusion and Suggestions

Fir, which is one of the main and significant tree species of our country, has designated 20 working circles from Forest Management Plans and 19 working sections from Forestry District Directorates, whose total number is 95.

Table 3. The status of the fir working circles of Regional Forestry Directorate of Kastamonu

Fir areas and ratios	Forest Areas (ha)	Forestless Areas (ha)	General Areas (ha)
Areas of Regional Forestry Directorate of Kastamonu	1,171,461.9	736,073.7	1,907,535.6
Total Areas of Fir Working Circles in Regional Forestry Directorate of Kastamonu	144,282.3	60,635.2	204,917.5
The ratio of fir working circles to Regional Forestry Directorate of Kastamonu (%)	12.3	8.2	10.7

While 68 out of 117 Forestry Sub-district Directorates have working circles, 49 of them have no working circle.

Among the fir working sections 15 have been designated as conservation areas with status, 15 as conservation areas without status and 65 as production forests.

Working Circle allocated for the production is approximately ¾ of the total working circles.

Forest areas of fir working circles in Regional Forestry Directorate of Kastamonu is approximately 1/8 (12.3%) of the total forest areas of the Directorate (Table 3). The general ratio (10.7) is close to this figure (Table 3).

The area of fir affected by the insects in 2011 was 9,000 ha. For this reason, we should take protective measures at first hand and enlarge the protection areas.

References

Anonymous, 1991**.** Head of Department of Forest Management and Planning, The Regulations on Preparation, Implementation, Auditing and Renewing of Forest Management Plans Page 98.

Anonymous, Forest Management Plans of Forest Sub-district Directorates under the Regional Forestry Directorate of Kastamonu

Anonymous, Sinop (annulled) Forest Management Plans of Sub-district Directorates under the Regional Forestry Directorate.

Forest Management Plans of Sub-district Directorates under the Regional Forestry Directorates.

Anonymous, General Directorate of Forestry, Map and Photogrammetry Directorate, Digital Maps.

Eraslan, İ., 1982. Orman Amenajmanı. İ.Ü. Orman Fakültesi Yayınları No:3010/318, İstanbul, 582 s.

Kırış, R., 2002. Orman Amenajmanı İle İlgili Mevzuat (Applicable law about Forest Management) OGEMVAK, Ankara, 476 s.

Kırış, R., 2003. Participation to Forest Management Plans, 2nd National Forestry Congress, 19-20 Mart 2003, Ankara, Publication of the foresters' Association of Turkey, Kongre Serisi No: 2, 74-80 Ankara.