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Floristic Characters of the Area between the Direkli (Göndes) Village, Yassiçal (Ebemi) Town and Abaci Village (A5/6 Amasya-Turkey)

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Abstract: In this study, floristic characters of the area between the Direkli (Göndes) village, Yassiçal (Ebemi) town and Abaci village has been given. About 645 vascular plant specimens collected from the area have been identified. At the end of the study, 379 taxa (371 species) were determined belonging to 221 genera and 56 families. In the flora, 44 endemic taxa (11.6%) have been observed. The distribution of the taxa to the phytogeographical regions are, as given below: Irano-Turanian (13.4%), Euro-Siberian (11.8%), Mediterranean (9.2%). The order of ten families and four genera which involved the most species are these. Familiesare: Asteraceae, 47 (12.6%), Fabaceae 38 (10.2%), Lamiaceae 36 (9.7%), Poaceae 31 (8.3%), Brassicaceae 30 (8.0%), Caryophyllaceae 22 (5.9%), Rosaceae 16 (4.3%), Scrophulariaceae 15 (4.0%), Boraginaceae 13 (3.5%), Liliaceae 12 (3.2%). Generadare: *Astragalus* L.- *Silene* L. 8 (3.6%), *Centaurea* L. 7 (3.1%), *Lathyrus* L. 6 (2.7%), *Salvia* L. -*Viola* L.-*Euphorbia* L. 5 (2.2%).

Key words: Turkish flora, vascular plant, systematics, Amasya, Turkey

INTRODUCTION

Turkey is situated in the temperate zone and it has the richest flora among the west palearctic countries. It also attracts attention with its high endemism rate in the Turkish flora (34.4%). Nearly one third of the flowering plants and ferns grown naturally in Turkey (10.765) are endemic (3022) (Özhatay *et al*., 2003).

The research area (Direkli village-Yassiçal town-Abaci village) is located in the east of Amasya province in Türkiye. The research area is bordered in the west by Sarilar village and Amasya province, in the east by Findikli village, in the north by Kuşpinar hill and Yeşilirmak river and the south by Sivri hill and Saraycik village (Fig. 1). The studying area is in the A5/6 square in Grid system (Yassiçal town: A5, Abaci village: A6, Direkli village: A5/6) (Davis, 1965-1985). Amasya is situated on the border of Black Sea Region and Central Anatolia Region in Turkey (Baytop and Alpinar, 1980) and is located in a valley through which River Yeşilirmak flows a southwest-northeast direction. And the area contains two phytogeographic regions: the Euro-Siberian and Irano-Turanian. The main reason for studying the area among the Direkli village, Yassiçal town and Abaci village is that this area is little-studied and has some interesting characteristics in terms of both flora and phytogeography as it is a transition region. Because the presence of endemics and many different kinds of plant species at the border of junction of different phytogeographic regions. It has recently been an increase in the number of floristic researches in Amasya (Cansaran and Aydoğdu, 1998, Cansaran, 2002, Korkmaz *et al*., 2005 etc.). However, the studies of Peker, S. (The Flora of Kuşpinartepe-Amasya), Celep, F. (Plant Diversity and Distribution in the Lower Tersakan Valley/Amasya-Turkey) and Yücel, E. (The Flora of Çakir Mountain-Merzifon) are the other floristic researches which have not been published.

Amasya, located in the south of Middle Black Sea Region, has a harder climate compared to other cities in the region. As going from north to south rainfall in the city decreases (The General Directorship of Village Services, 1991). In short, transition zone climate is dominant in Amasya. According to Emberger semi-arid Mediterranean climate is dominant (winter is extremely cold). While drawing climate diagram belonging to Amasya (Fig. 2) and enterpolated Yassiçal hill and Direkli diagrams (Fig. 3 and 4) 29 years' (1975-2003) meteorological data belong to Amasya is used obtained from the general directorship of state meteorology (Akman, 1990, The General Directorship of State Meteorology, 2003).

The study area regarding to the structure has become last shape at mesozoic in second period and tertiary in third period. It can also be seen areas belonging to the

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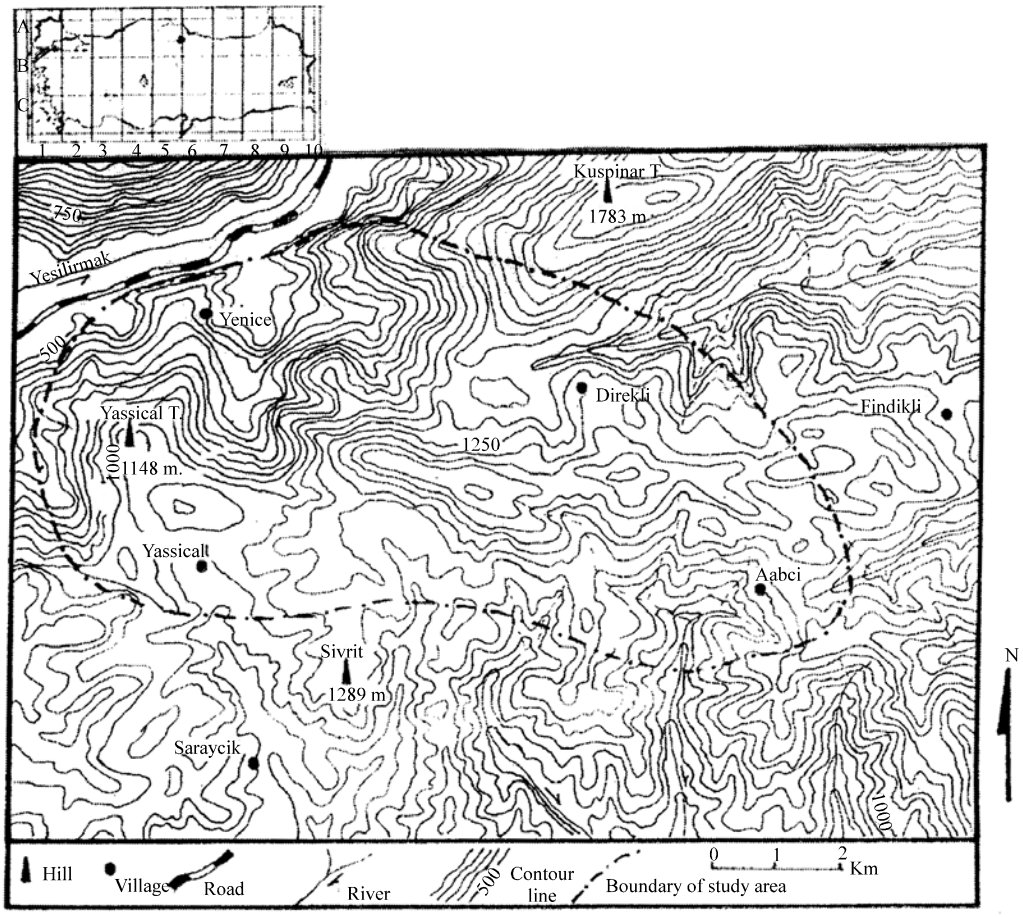

Fig. 1: Topographic map of the study area

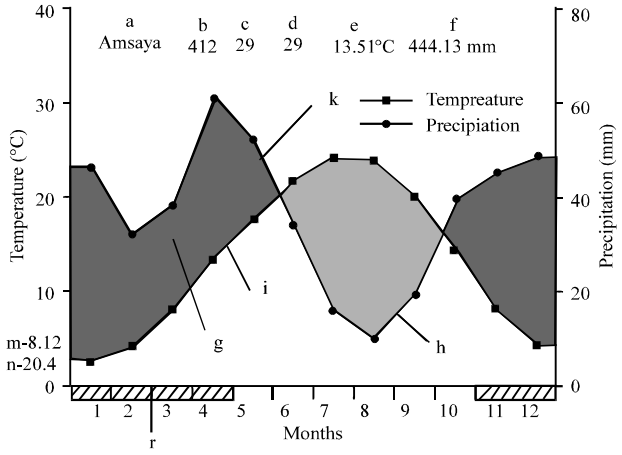

Fig. 2: The climatic diagram of Amasya province a: Station, b: Altitude, c: Temperature period, d: Precipitation period, e: Mean annual temperature (°C), f: Mean annual precipitation (mm), g: Rainy period, h: Dry period, I: Temperature curve, k: Precipitation curve, m: The lowest temperature average for the coldest month (°C), n: Absolute minimum temperature (°C), r: Possible freezing months

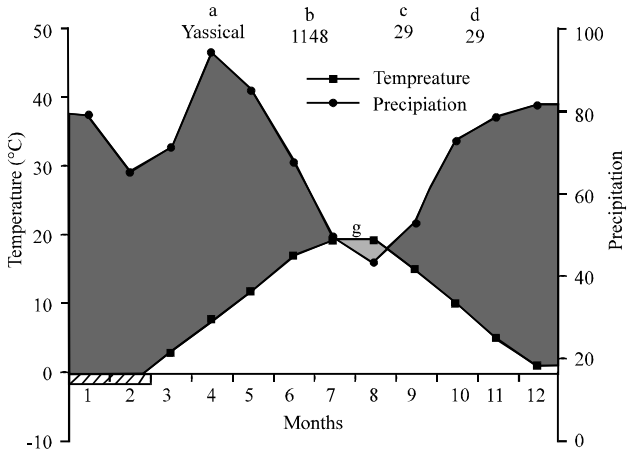

Fig. 3: The enterpolated climatic diagram of Yassiçal hill

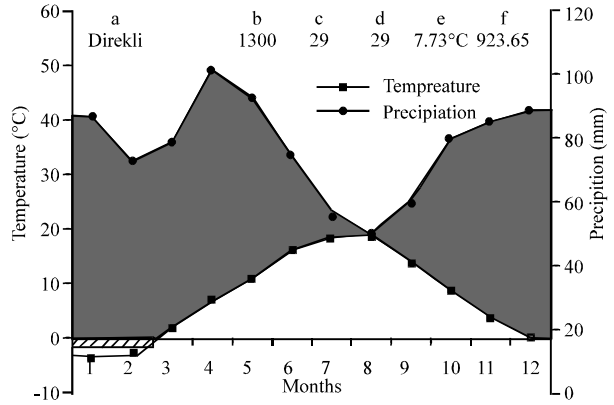

Fig. 4: The enterpolated climatic diagram of Direkli

last mesozoic period consisting of hard and soft calcareous and chalky parts in the study area. (Amasya Culture and Tourism Administration, 1986).

The chestnut color soils are commonly seen in the study area. Furthermore, colluvial and alluvial soils are rarely seen in the area (The General Directorship of Soil-Water, 1970).

MATERIALS AND METHODS

The research material consists of 645 plant specimens collected from the area (Direkli-Yassiçal-Abaci) between April and November 2000. Efforts were made to collect both flowering and fruiting specimens. The specimens were prepared according to established herbarium techniques. The flora of Turkey (Davis, 1965-1985, Davis *et al*., 1988, Güner *et al*., 2000) were utilized in the identification of the specimens. Plant were identified in the Amasya University Education Faculty but some doubtful plant samples were examined in the herbarium at the Faculty of Arts and Science at Gazi University. Experts were consulted in some controversial cases. All the specimens are kept at the Education Faculty in Amasya.

A few stations have been determined for presentation of floristic list and have been put in these stations. The first letters of similar taxa following each other and some terms written very often are shortened. Taxa in the floristic list are given according to the phylogenetic order in The Flora of Turkey and the East Aegean Islands by P.H. Davis with abbreviations of their locality, habitats, collector's name and number. Lastly, whether the plant is endemic and which phytogeographical region it belongs to are recorded. A5/6 Amasya is dropped from all localities, because all the stations of collected samples have it (Yassiçal town: A5, Abaci village: A6, Direkli village: A5/6). not all stations were recorded, in order to avoid repetition. Furthermore, the authors of the plant names were checked (Brummitt and Powell, 1992).

FLORISTICAL LIST OF STUDYING AREA

Pteridophyta
Adiantaceae
Adiantum. capillus-veneris L. 8 a, C. 4084.

Spermatophyta
Gymnospermae
Pinaceae
Pinus nigra J.F. Arnold sp. *nigra* var. *caramanica* (Loudon) Rehder 3 a, C. 3491.

Cupressaceae
Juniperus communis L. sp. *alpina* (Sm.) Celak. 1 a, C. 3709. *J. oxycedrus* L. sp. *oxycedrus* 1 d, C. 3755. *J. excelsa* M. Bieb. 8 c, C. 3958.

Ephedraceae
Ephedra major Host 4 f, C. 4079.

Angiospermae
Dicotyledones
Ranunculaceae
Consolida orientalis (Gay) Schröd. 1 e, C. 3996. *Clematis vitalba* L. 8 d, C. 4059. *Adonis aestivalis* L. sp. a*estivalis* 3 e, C. 3688. *Ranunculus domascenus* Boiss. and Gaill.

5 d, C. 3594. IT *R. argyreus* Boiss. 6 f, C. 3668. *R. arvensis* L. 3 e, C. 3674. *R. ficaria* L. sp. *calthifolius* (Reiche) Archer 1 b, C. 3496.

Papaveraceae
Roemeria hybrida (L.) DC. sp. *hybrida* 6 a, C. 3810. *Papaver lacerum* Popov 1 a, C. 3732. *Corydalis solida* (L.) Sw. sp. *solida* 1 d, C. 3461. *Fumaria asepala* Boiss. 3 e, C. 3682. IT

Cruciferae (brassicaceae)
Conringia orientalis (L.) Andrz. 6 a, C. 4022. *Lepidium campestre* (L.) R.Br. 3 e, C. 3692. *Cardaria draba* (L.) Desv. sp. *draba* 4 d, C. 3547 *Thlaspi perfoliatum* L. 1 a, C. 3502. **T. violescens* Boiss. 5 a, C. 3592. *Capsella bursa-pastoris* (L.) Medik. 3 a, C. 3478. *Neslia apiculata* Fisch. 3 e, C. 3684. *Fibigia eriocarpa* (DC.) Boiss. 5 a, C. 3595. *Alyssum. minus* (L.) Rothm. *var. minus* 2 d, C. 3514. *A. strigosum* Banks and Sol. sp. *strigosum* 2 b, C. 3524. *A. strigosum* Banks and Sol. sp.*cedrorum* (Schott and Kotschy)Dudley 4 f, C. 3565. *A. murale* Waldst. and Kit. var. *murale* 3 e, C. 3698. *Clypeola jonthlaspi* L. 2 b, C. 3536. *Erophila verna* (L.) Chevall. sp. *verna* 5 d, C. 3583. *Arabis caucasica* Willd. sp. *caucasica* 6 f, C. 3623. *Hesperis bicuspidata* (Willd.) Poir. 2 d, C. 3518. *Malcolmia africana* (L.) R. Br. 6 a, C. 3813. *Erysimum goniocaulon* Boiss. 4 f, C. 3924. *E. pulchellum* (Willd.) Gay 5 d, C. 3597. **E. amasianum* Hausskn. and Bornm. 1 d, C. 3757. **E. eginense* Hausskn. and Bornm. 6 a, C. 3817. *Alliaria petiolata* (M. Bieb.) Cavara and Grande 1 a, C. 3495. *Sisymbrium altissimum* L. 3 e, C. 3702. *S. orientale* L. 2 b, C. 3523. **Camelina hispida* Boiss.var. *grandiflora* (Boiss.) Hedge 7 d, C. 3889.

Resedaceae
Reseda lutea L. var. *lutea.* 7 d, C. 3776.
Cistaceae
Cictus ereticus L. 8 d, C. 4057. M *Helianthemum nummularium* (L.) Mill. sp. *nummularium* 1 a, C. 3724. *H. canum* (L.) Baumg. (Group D) 6 f, C. 3657. *H. salicifolium* (L.) Mill. 2 b, C. 3537. *Fumaria procumbens* (Dun.) Gren. and Godr. 2 d, C. 3511.

Violaceae
Viola odorata L. 5 a, C. 3586. *V. suavis* M. Bieb. 3 a, C. 3488. *V. occulta* Lehm. 4 f, C. 3579. *V. parvula* Tineo 5 d, C. 3584. *V. kitaibeliana* Roem. and Schult. 2 b, C. 3529.

Polygalaceae
Polygala supina Schreb. 4 f, C. 3557. *P. pruinosa* Boiss. sp. *pruinosa* 1 a, C. 3703.

Caryophyllaceae
Minuartia anatolica (Boiss.)Woronin var. *polymorpha* McNeil 3 e, C. 3673. **M. corymbulosa* (Boiss. and Ball) McNeil var. *corymbulosa* 6 f, C. 3617. IT *M. hybrida* (Vill.) Schischk. sp. *turcica* McNeil 2 b, C. 3531. *Cerastium anomalum* Waldst. and Kit. 1 a, C. 3705. *C. dichotomum* L. sp. *dichotomum* 3 e, C. 3701. *Holosteum umbellatum* L. var *glutinosum* (M. Bieb.) Gay 4 f, C. 3567. *Telephium imperati* L. var. *orientale* (Boiss.) Nyman. 3 d, C. 3979. *Dianthus anatolicus* Boiss. 4 f, C. 3919. *D. zonatus* Fenzl.var. *zonatus* 4 f, C. 4076.**D. carmelitarum* Reut. ex Boiss. 1 e, C. 4022. E *D. calocephalus* Boiss. 3 c, C. 3970. **Velezia pseudorigida* Hub.-Mor. 6 a, C. 3806. M **Saponaria prostrata* Willd. sp. *prostrata* 9 f, C. 3873. IT *Silene viscosa* (L.) Pers. 6 f, C. 3621. *S. spergulifolia* (Desf.) M. Bieb. 6 a, C. 3805. IT *S. supina* M. Bieb. sp. *pruinosa* (Boiss.) Chowdhuri 3 c, C. 3857. *S. dianthoides* Pers. 6 f, C. 3661. IT *S. vulgaris* (Moench) Garcke. var. *vulgaris* 1 e, C. 3995 *S. caryophylloides* (Poir.) Otth sp. *subulata*

(Boiss.) Coode and Cullen 4 f, C. 3920. *S. alba* (Mill.) Krause var. *eriocalycina* (Boiss.) Walters. 6 a, C. 3984. *S. dichotoma* Ehrh. sp. *dichotoma* 7 d, C. 3777. *S. dichotoma* Ehrh. sp. *sibthorpiana* (Reiche) Rech. f. 3 c, C. 3865. *Agrostemma githago* L. 7 d, C. 3892.

Illecebraceae

Herniaria micrantha A.K. Jacks. ex Turrill 7 d, C. 3766. M *Paronychia kurdica* Boiss. sp. *kurdica* var. *kurdica* 4 f, C. 3569. *Scleranthus annuus* L. sp. *annuus* 6 f, C. 3669.

Polygonaceae

Polygonum aviculare L. 1 e, C. 4020. *P. convolvulus* L. 6 a, C. 3800. *Rumex acetosella* L. 7 d, C. 3767. *R. tuberosus* L. sp. *tuberosus* 6 f, C. 3665. *R. crispus* L. 1 e, C. 4013. *R. nepalensis* Spreng. 1 e, C. 4014.

Chenopodiaceae

Chenopodium botrys L. 1 a, C. 4041. *C. murale* L. 7 d, C. 3891.

Guttiferae (hypericaceae)

Hypericum perfoliatum L. 4 f, C. 3929. *H. origanifolium* Willd. 9 f, C. 3878. *H. perforatum* L. 3 c, C. 3972.

Malvaceae

Malva neglecta Wallr. 3 e, C. 3685. **Alcea apterocarpa* (Fenzl.) Boiss. 8 d, C. 4062. IT

Geraniaceae

Geranium pusillum Burm. 1 a, C. 3745. *G. macrostylum* Boiss. 1 a, C. 3731. M *Erodium ciconium* (L.) L'He'r. 2 d, C. 3506. *E. cicutarium* (L.) L'He'r. sp. *cicutarium* 3 a, C. 3482.

Rutaceae

**Haplophyllum armenum* Spach 6 a, C. 3789.

Aceraceae

**Acer hyrcanum* Fisch. and Mey. sp. *sphaerocaryum* Yalt. 1 c, C. 3987. M.

Rhamnaceae

Paliurus spina-christi Mill. 8 d, C. 4052.

Anacardiaceae

Pistacia terebinthus L. sp. *palaestina* (Boiss.) Engl. 8 d, C. 4054.

Leguminosae (Fabaceae)

Argyrolobium biebersteinii Ball 6 a, C. 3833. *Genista albida* Willd. 2 d, C. 3510. *Colutea cilicica* Boiss. 3 c, C. 3849. *Astragalus amasiensis* (Freyn.) Bornm. 6 f, C. 3653. **A. leucothrix* Freyn. and Bornm. 4 d, C. 3748. IT **A. melanophrurius* Boiss. 2 b, C. 3541. IT *A. lineatus* Lam.var. *longidens* (Freyn) Mathews 2 b, C. 3540. *A. onobrychis* L. 3 c, C. 3856. **A. hirsutus* Vahl. 4 f, C. 3576. *A. campylosema* Boiss. sp. *campylosema* 7 d, C. 3765. IT *A. angustifolius* Lam. sp. *angustifolius* var. *angustifolius* 6 f, C. 3641. *A. angustifolius* Lam. sp. *pungens* (Willd.) Hayek 6 f, C. 3656. *Vicia cracca* L. sp. *cracca* 6 f, C. 3630. *V. ervilia* (L.) Willd. 2 b, C. 3538. *V. anatolica* Turrill 3 e, C. 3681. IT *V. sativa* L. sp. *nigra* (L.) Ehrh.var. *nigra* 3 c, C. 3864. *V. sativa* L. sp. *nigra* (L.) Ehrh.var. *segatilis* (Thuill.) Ser. ex DC. 6 a, C. 3784. *Lathyrus aureus* (Stev.) D. Brandza 1 a, C. 3739. **L. tukhtensis* Czeczott 6 a, C. 3785. *L. laxiflorus* (Desf.) O. Kuntze sp. l*axiflorus* 1 a, C. 4072. **L. czeczottianus* Bassler 6 f, C. 3629. *L. cicera* L. 2 d, C. 3507. *L. aphaca* L.var. *biflorus* Post 6 a, C. 3804. *Pisum sativum* L. var. elatius (M. Bieb.) Asch. and Graebn. 4 d, C. 3553. M *Ononis pusilla* L. 6 a, C. 3840. M *Trifolium repens* L.var.*repens* 7 d, C. 3778. *T. pratense* L. var. *pratense* 6 a, C. 3811. **T. pannonicum* Jacq. sp. *elongatum* (Willd.) Zohary 1 e, C. 4005. *T. arvense* L. var. *arvense* 6 a, C. 3801. *Mellilotus neapolitana* Ten. 1 a, C. 4088. *M. officinalis* (L.) Desr. 6 a, C. 3814. *M. alba* Desr. 8 b, C. 4096. *Trigonella fischeriana* Ser. 2 d, C. 3521. IT *Medicago xvaria* Martyn. 9 f, C. 3880. *M. coronata* (L.) Bartal. 6 a, C. 3839. M *Dorycnium pentaphyllum* Scop. sp.*anatolicum* (Boiss.) Gams 4 d, C. 3764. *Lotus corniculatus* L. var. *corniculatus* 3 c, C. 3848. *Anthyllis vulneraria* L. sp. *boissieri* (Sagorski) Bornm. 6 f, C. 3638. *A. vulneraria* L. sp. *hispidissima* (Sagorski) Cullen 6 a, C. 3834. *Coronilla varia* L. sp. *varia* 7 d, C. 3891.

Rosaceae

Cerasus prostrata (L. Laborde) Ser. var. *prostrata* 6 f, C. 3671. *C. microcarpa* (C.A. Mey.) Boiss. sp. *tortuosa* (Boiss. and Hausskn.) Browicz 1 a, C. 3504. IT *C. mahaleb (L.)* Mill. *var. mahaleb* 8 d, C. 4053. *Filipendula vulgaris* Moench 1 c, C. 3991. *Rubus sanctus* Schreb. 8 b, C. 4065. *R. canescens* DC. var. *canescens* 4 f, C. 3946. *Potentilla recta* L. Group A 7 d, C. 3890. *Geum urbanum* L. 1 a, C. 3746. *Sanguisorba minor* Scop. sp. *muricata* (Spach) Briq. 1 a, C. 3716-A. *Rosa canina* L. 4 f, C. 3945. *Pyracantha coccinea* Roem. 9 f, C. 4081. *Crataegus szovitsii* Pojark. 4 f, C. 3944. *C. microphylla* G. Koch 1 a, C. 3710. *Sorbus umbellata* (Desf.) Fritsch var. *umbellata* 1 a, C. 3740. *S. torminalis* (L.) Crantz var. *torminalis* 1 a, C. 3715. *Pyrus elaeagnifolia* Pall. sp. *elaeagnifolia* 1 a, C. 3718.

Lythraceae

Lythrum salicaria L. 8 b, C. 4066. ES.

Onagraceae

Epilobium roseum Schreb. sp. *consimile* (Hausskn.) P.H. Raven 8 b, C. 4067.

Crassulaceae

Sedum acre L. 6 f, C. 3667. *S. pallidum* M. Bieb. var. *bithynicum* (Boiss.) Chamb. 6 f, C. 3905. E **Sempervivum brevipilum* Muirhead 4 f, C. 4078.

Umbelliferae (Apiaceae)

Scandix iberica M. Bieb. 3 e, C. 3680. *S. pecten-veneris* L. 2 b, C. 3526. *Bunium microcarpum* (Boiss.) Freyn. sp. *bourgaei* 6 a, C. 3816. IT *Zosima absinthifolia* (Vent.) Link 7 d, C. 3772. *Torilis leptophylla* (L.) Reiche 6 a, C. 3841. *Astrodaucus orientalis* (L.) Drude 8 d, C. 4058. IT *Turgenia latifolia* (L.) H. Hoffm. 3 e, C. 3694.

Caprifoliaceae

Viburnum lantana L. 6 f, C. 3666. ES.

Rubiaceae

Asperula laxiflora Boiss. 6 f, C. 3906. E **A. lilaciflora* Boiss. sp. *phrygia* (Bornm.) Schönb.-Tem. 6 f, C. 3914. *A. involucrata* Wahlenb. 1 e, C. 4015. E *A. arvensis* L. 3 e, C. 3676. M *Galium verum* L. sp. *glabrescens* Ehrend. 6 f, C. 3663. IT *G. incanum* Sm. sp. *elatius* (Boiss.) Ehrend. 4 f, C. 3942. IT *G. tricornutum* Dandy. 3 e, C. 3675. M *Cruciata taurica* (Pall. ex Willd) Ehrend. 2 d, C. 3509. IT.

Valerianaceae

Valeriana pumila (L.) DC. 2 b, C. 3527.

Dipsacaceae

Scabiosa columbaria L. sp. *ochroleuca* (L.) Celak. var. *ochroleuca* (L) Coult. 1 a, C. 4026.

Compositae (Asteraceae)

Asteriscus aquaticus (L.) Less. 8 b, C. 4068. M *Inula oculus-christi* L. 1 a, C. 4039. ES *I. thapsoides* (M. Bieb. ex Willd) Spreng. sp. *thapsoides* 4 a, C. 4048. **Helichrysum compactum* Boiss. 1 c, C. 3990. M **H. arenarium* (L.) Moench sp. *erzincanicum* P.H. Davis and Kupicha 1 a, C. 4035. Ir. IT *Logfia arvensis* (L.) Holub 6 a, C. 3798. *Bellis perennis* L. 3 a, C. 3489. ES *Doronicum orientale* H. Hoffm. 3 a, C. 3489. *Senecio vernalis* Waldst. and Kit. 3 e, C. 3689. *Tussilago farfara* L. 1 d, C. 3460. ES *Anthemis cretica* L. sp. *tenuiloba* (DC.) Grierson 6 a, C. 3790. *A. tinctoria* L. var. *tinctoria* 4 f, C. 3937. *A. tinctoria* L. var. *pallida* DC. 1 e, C. 4004. *Achillea millefolium* L. sp. *millefolium* 4 f, C. 3941. ES *A. biebersteinii* Afan. 6 f, C. 3898. IT *Tanacetum poteriifolium* (Ledeb.) Grierson 7 d, C. 3893. E *T. parthenium* (L.) Sch. Bip. 6 a, C. 3820. *T. argenteum* (H. J. Lam.) Willd. sp. *canum* (G. Koch) Grierson var. *canum* 6 f, C. 3907. *Tripleurospermum parviflorum* (Willd.) Pobed. 3 a, C. 3484. *Cirsium lappaceum* (M. Bieb.) G. Fisch. sp. *anatolicum* Petr. 1 a, C. 4038. IT *C. echinus* (M. Bieb.) Hand.-Mazz. 7 d, C. 3884. **C. pseudopersonata* Boiss. and Ball sp. *pseudopersonata* 1 a, C. 4028. E *C. arvense* (L.) Scop. sp. *vestitum* (Wimm. and Grab) Petr. 1 a, C. 4037. **Ptilostemon afer* (Jacq.) Greuter sp. *eburneus* Greuter 1 a, C. 4039. *Carduus nutans* L. sp. *nutans* sensu lato 1 e, C. 4008. *C. pycnocephalus* L. sp. *albidus* (M. Bieb) Kazmi. 7 d, C. 3779. *Centaurea virgata* Lam. Group A. 4 f, C. 3923. *C. drabifolia* Sm. sp. *cappadocica* (DC.) Wagenitz 4 f, C. 3938. *C. urvillei* DC. sp. *urvillei* 8 c, C. 3965. M *C. carduiformis* DC. sp. *carduiformis* var. *carduiformis* 7 d, C. 4024. *C. pichleri* Boiss. sp. *pichleri* 2 b, C. 3533. **C. lanigera* DC. 6 f, C. 3633. IT *C. depressa* M. Bieb. 8 c, C. 3965. *Xeranthemum cylindraceum* Sm. 3 c, C. 3854. *Echinops galaticus* Freyn. 1 a, C. 4029. E *Scorzonera laciniata* L. sp. *laciniata* 1 a, C. 3721. *Tragopogon coloratus* C.A. Mey. 6 a, C. 3788. IT **T. aureus* Boiss. 6 a, C. 3797. *Leontodon asperrimus* (Willd.) Ball 4 f, C. 3953. IT *L. crispus* Vill. sp. *asper* (Waldst. and Kit.) Röhl. var. *asper* 6 a, C. 3815. *Sonchus asper* (L.) Hill sp. *glaucescens* (Jordan) J.R.Ball 8 c, C. 3964. *Pilosella hoppeaena* (Schultes) C.H. and F.W. Schultz sp. *testimonialis* (Nageli ex Peter) P.D. Sell. and West 8 c, C. 3955. ES *P. piloselloides* (Vill.) Sojak sp. *piloselloides* 6 a, C. 3794. *P. piloselloides* (Vill.) Sojak sp. m*egalomastix* P.D. Sell. and West 1 e, C. 4012. **Cicerbita variabilis* (Bornm.) Bornm. 1 e, C. 4023. *Scariola viminea* (L.) F.W. Schmidt 3 c, C. 3847. *Lapsana communis* L. sp. *intermedia* (M. Bieb.) Hayek 6 a, C. 3786. *Crepis foetida* L. sp. *rhoedifolia* (M. Bieb.) Celak. 8 c, C. 3956. *C. sancta* (L.) Babcock. 2 d, C. 3517.

Campanulaceae

Campanula rapunculoides L. sp. *cordifolia* (G. Koch) Damboldt 1 e, C. 4016. *C. glomerata* L. sp. *hispida* (Witasek) Hayek. 1 a, C. 3743. ES *C. involucrata* Aucher ex A. DC. 6 a, C. 3783. IT **Asyneuma limonifolium* (L.) Janch. sp. *pestalozzae* (Boiss.) Dambolt 6 a, C. 3795. *Legouisa speculum-veneris* (L.) Chaix. 6 a, C. 3835. M.

Ericaceae

Arbutus andrachne L. 8 a, C. 4083.

Primulaceae

Primula vulgaris Huds. sp. *vulgaris* 1 d, C. 3463. ES *Androsace maxima* L. 1 a, C. 3503. *Cyclamen coum* Mill. var. *coum* 1 d, C. 3468.

Oleaceae

Jasminum fruticans L. 2 b, C. 3543. M *Phillyrea latifolia* L. 8 d, C. 4094. M

Apocynaceae

Vinca herbacea Waldst. and Kit. 4 f, C. 3555.

Convolvulaceae

Convolvulus cantabrica L. 6 f, C. 3912. **C. assyricus* Griseb. 6 f, C. 3639. IT *C. arvensis* L. 6 a, C. 3792.

Boraginaceae

Lappula barbata (M. Bieb.) Gürke 3 e, C. 3697. IT *Rochelia disperma* (L.f..) G. Koch.var. *disperma* 4 d, C. 3546. *Asperugo procumbens* L. 3 e, C. 3686. ES *Myosotis heteropoda* Trautv. 1 a, C. 3723. IT *M. arvensis* (L.) Hill sp. *arvensis* 4 f, C. 3570. ES **Paracaryum ancyritanum* Boiss. 4 d, C. 3753. IT *Buglossoides arvensis* (L.) I.M. Johnst. 2 d, C. 3508. *Echium vulgare* L. 1 d, C. 4002. ES *Onosma bourgaei* Boiss. 2 d, C. 3519. IT **O. tauricum* Pall. ex Willd. var. *brevifolium* DC. 6 f, C. 3664. *Cerinthe minor* L. sp. *auriculata* (Ten.) Domac 1 e, C. 4003. *Anchusa leptophylla* Roem. and Schultes sp. *leptophylla* 4 d, C. 3551. *A. azurea* Mill. var. *azurea* 7 d, C. 3769.

Scrophulariaceae

**Verbascum wiedemannianum* Fisch and Mey. 9 f, C. 3872. IT *V. sinuatum* L. var. *sinuatum* 1 a, C. 4031. M *V. lasianthum* Boiss. ex Benth. 7 d, C. 3780. *V. cheiranthifolium* Boiss.var. *asperulum* (Boiss.) Murb. 6 f, C. 3918. *Scrophularia scopolii* [Hoppe ex] Pers. var. *scopolii* 6 f, C. 3627. *S. lucida* L. 4 f, C. 3949. *Anarrhinum orientale* Benth. 8 d, C. 4060. IT **Linaria corifolia* Desf. 9 f, C. 3876. IT *L. chalepensis* (L.) Mill. var. *chalepensis* 7 d, C. 3886. M *Digitalis ferruginea* L. sp. *schischkinii* (Ivan.) Werner 4 a, C. 4050. E *D. lamarckii* Ivan 7 d, C. 3883. *Veronica triloba* (Opiz) Kerner 1 a, C. 3501. *V. jacquinii* Baumg. 4 f, C. 3571. ES **V. multifida* L. 2 b, C. 3539. IT *Pedicularis comosa* L. var. *sibthorpii* (Boiss.)Boiss. 6 f, C. 3642.

Orobanchaceae

Orobanche mutelii F.W. Schultz. 1 a, C. 3742. *O. minor* Sm. 6 d, C. 3901.

Globulariaceae

Globularia trichosantha Fisch. and Mey. 1 d, C. 3464.

Verbenaceae

Vitex agnus-castus L. 8 b, C. 4063. M.

Labiatae (Lamiaceae)

Ajuga orientalis L. 5 a, C. 3587. *A. chamaepitys* (L.) Schreb. sp. *chia* (Schereb.) Arcang. *var. chia* 4 f, C. 3554. *Teucrium chamaedrys* L. sp. *chamaedrys* 8 c, C. 3966. ES *T. polium* L. 8 c, C. 3961. **Scutellaria salviifolia* Benth. 4 d, C. 3750. *S. orientalis* L. sp. *pinnatifida* Edmondson 1 a, C. 3738. *Phlomis pungens* Willd. var. *pungens* 1 a, C. 4034. **P. armeniaca* Willd. 4 a, C. 4049. IT *Lamium garganicum* L. sp. *reniforme* (Montbret and Aucher ex Benth.) R.R. Mill 5 a, C. 3591. *L. amplexicaule* L. 3 a, C. 3483. ES *L purpureum* L. var. *purpureum* 2 d, C. 3518. ES *L. album* L. 5 a, C. 3591. ES **Wiedemannia orientalis* Fisch. and Mey. 4 a, C. 3548. IT *Marrubium vulgare* L. 6 a, C. 3829. *Sideritis montana* L. sp. *montana* (d'Urv.) P.W. Ball ex Heywood 6 f, C. 3619. M **S. dichotoma* Huter 1 a, C. 4030. *Stachys byzantina* G. Koch. 4 f, C. 3922. ES *S. lavandulifolia* Vahl. var. *lavandulifolia* 4 f, C. 3564. IT *S. annua* (L.) L. sp. *annua* var. *Iycaonica* Bhattacharjee 7 d, C. 3765. IT *Nepeta nuda* L. sp. *albiflora* (Boiss.) Gams 3 c, C. 3844. *Lallemantia peltata* (L.) Fisch. and Mey. 3 e, C. 3678. IT *Prunella laciniata* (L.) L. 1 e, C. 4001. ES *Origanum vulgare* L. sp. *hirtum* (Link) Ietsw. 1 a, C. 4032. M **Satureja wiedemanniana* (Lallem.) Velen. 4 f, C. 4077. *S. hortensis* L. 10 d, C. 4073. *Clinopodium vulgare* L. sp. *vulgare* 1 e, C. 3999. *Acinos rotundifolius* Pers. 6 f, C. 3616. *Thymus leucotrichus* Hal. var. *leucotrichus* 4 f, C. 3943. M *T. sipyleus* Boiss. sp. *rosulans* (Barbas) Jalas 4 f, C. 3933. *Mentha longifolia* (L.) Huds. sp. *typhoides* (Briq.) Harley var. *typhoides* 8 b, C. 4056. *Ziziphora capitata* L. 6 a, C. 3809. IT *Salvia tomentosa* Mill. 8 c, C. 3959. M *S. syriaca* L. 6 f, C. 3909. IT *S. sclarea* L. 1 c, C. 3987. *S. candidissima* Vahl sp. *occidentalis* 3 c, C. 3974. IT *S. verticillata* L. sp. *verticillata* 6 a, C. 3791. ES.

Plumbaginaceae

Plumbago europaea L. 8 b, C. 4064. *Acantholimon acerosum* (Willd.) Boiss. var *acerosum* 4 a, C. 4043. IT

Santalaceae

Thesium billardieri Boiss. 4 f, C. 3559. IT

Euphorbiaceae

Andrachne telephioides L. 6 f, C. 3904. **Euphorbia cardiophylla* Boiss. and Heldr. 1 d, C. 3469. *E. szovitsii* Fisch. and C.A. Mey. var. *szovitsii* 6 a, C. 3838. IT *E. rigida* M. Bieb. 7 d, C. 3474. M *E. terracina* L. 1 a, C. 3719. M *E. amygdaloides* L. var. *amygdaloides* 1 a, C. 3494. ES

Fagaceae

Fagus orientalis Lipsky 1 a, C. 3708. ES *Quercus hartwissiana* Steven 4 f, C. 3951. *Q. cerris* L. var. *cerris* 3 c, C. 3968.

Corylaceae

Carpinus orientalis Mill. sp. *orientalis* 1 c, C. 3988.

Angiospermae

Monocotyledones

Liliaceae

Asphodeline taurica (Pall.) Kunth 5 d, C. 3598. M *Allium callidictyon* C.A. Mey. ex Kunth 1 a, C. 4033. IT *A. scorodoprasum* L. sp. *rotundum* (L.) Stearn 6 f, C. 3903. M *Ornithogalum sphaerocarpum* Kerner 6 a, C. 3823. *O. oligophyllum* E.D. Clarke 1 d, C. 3471. *O. sigmoideum* Freyn. and Sint. 5 a, C. 3588. ES *O. ortophyllum* Ten. 1 a, C. 3497. *Muscari armeniacum* Leichtlin ex Baker 1 d, C. 3457. *M. neglectum* Guss. 2 b, C. 3535. **M. bourgaei* Baker 1 d, C. 3470. M *Fritillaria caucasica* J. F. Adam. 1 d, C. 3467. HE *Gagea granatellii* (Parl.) Parl. 1 d, C. 3458. M

Amaryllidaceae

Galanthus fosteri Baker 1 d, C. 3455. M.

Iridaceae

**Iris kerneriana* Asch. and Sint. ex Baker 4 d, C. 3748. ES **I. histrioides* (Wilson) S. Arn. 1 d, C. 3454. E **Crocus speciosus* Bieb. sp. *ilgazensis* Mathew. 1 a, C. 4085. ES.

Orchidaceae

Cephalanthera rubra (L.) Rich. 6 a, C. 3789. *C. damosianum* (Mill.) Druce 1 d, C. 3760. ES *Orchis mascula* (L.) L. sp. *pinetorum* (Boiss. and Kotschy) E.G. Camus 1 a, C. 3716-B. ES

Cyperaceae

Carex otrubae Podp. 6 a, C. 3807. ES *C. divulsa* Stokes sp. *leersii* (Kneuck.) W. D.J. Koch 1 a, C. 3726. ES *C. distans* L. 6 f, C. 3646-A. ES.

Gramineae (Poaceae)

Brachypodium pinnatum (L.) P. Beauv. 1 e, C. 3997. ES *Trachynia distachys* (L.) Link. 6 f, C. 3911. M *Aegilops umbellulata* Zhuk. sp. *umbellulata* 9 f, C. 3867. IT *Hordeum bulbosum* L. 3 c, C. 3862. *Taeniatherum caput-medusae* (L.) Nevski sp. *crinitum* (Schreb.) Melderis 6 f, C. 3605. IT *Bromus arvensis* L. 3 e, C. 3869. *B. scoparius* L. 3 e, C. 3858. *B. tectorum* L. 7 d, C. 3773. *B. tomentellus* Boiss. 2 d, C. 3506. IT *Helictotrichon pratense* (L.)Besser ex Schult. and Schult. f. 6 f, C. 3647. ES *Koeleria cristata* (L.) Pers. 9 f, C. 3866. *Calamagrostis pseudophragmites* (Haller fil.) Koeler 7 d, C. 3882. ES *Alopecurus textilis* Boiss. sp. *textilis* 6 f, C. 3649. IT *A. myosuroides* Huds. var. *tonsus* (Blanche ex Boiss.) R.R. Mill. 1 a, C. 3733. ES *Phleum alpinum* L. 3 c, C. 3969. ES *P. montanum* C. Koch sp. *serrulatum* (Boiss.) M. Doğan 3 d, C. 3977. *Festuca woronowii* Hackel sp. *turcica* Markgr.-Dannenb. 6 f, C. 3609. E *Lolium rigidum* Gaudin var. *rigidum* 1 e, C. 4019. *Velpeau fasciculata* (Forssk.) Fritsch 7 d, C. 3775. M *V. myuros* (L.) C.C. Gmel. 6 a, C. 3790. *V. ciliata* Dumort. sp. *ciliata* 6 a, C. 3819. *Poa annua* L. 6 f, C. 3662. *P. bulbosa* L. 4 f, C. 3558. *Eremopoa persica* (Trin.) Roshev. 6 f, C. 3601. IT *Dactylis glomerata* L. sp. *glomerata* 6 f, C. 3604. ES *Cynosurus echinatus* L. 7 d, C. 3888. M *Briza media* L. 1 e, C. 4017. *Echinaria capitata* (L.) Desf. 6 c, C. 3836. *Stipa bromoides* (L.) Dörfl. 6 f, C. 3897. M *S. holosericea* Trin. 6 f, C. 3643. IT *S. lessingiana* Trin and Rupr. 6 f, C. 3648-B.

RESULTS AND DISCUSSION

In this research, floristic characters of the area between the Direkli (Göndes) village, Yassiçal (Ebemi) town and Abaci village which is located in the intersection point of Irano-Turanian and Euro-Siberian regions and in A5/6 square (Amasya-Turkey) has been examined. In the period of one year, approximately 645 samples of vascular plants have been gathered from there; as a result evaluation of these, total 379 taxa (371 species) related to 56 families and 221 genus have been determined. One of these taxa is the plants belonging to Pteridophyta, totally 378 taxa to Spermatophyta division while 5 of them belong to Gymnospermae and 373 to Angiospermae subdivisions. 320 of 373 taxa which are Angiospermae members are classified in Magnoliopsida (Dicotyledoneae) and 53 of them Liliopsida (Monocotyledoneae). The dispersion of the plant taxa in the study area into the large taxonomical groups is shown in Table 1.

The taxa of the study area, categorized according to phytogeographic region, can be listed as follows: Irano-Turanian elements 51 (13.4%), Euro-Siberian elements 45 (9 Eux., 1 H. Eux.) (11.8%), Mediterranean elements 35 (9.2%); the remaining 248 (65.4%) taxa are multi-regional or of unknown phytogeographic origin. Number of the endemic taxa in our research field is 44 (11.6%). The

Table 1: The dispersion of taxa into the large taxonomical groups

Taxa	No. of families	No. of genera	No. of taxa in total (sp., subsp., var.)
Pteridophyta	1	1	1
Spermatophyta	55	220	378
Gymospermae	3	3	5
Angiospermae	52	217	373
Dicotyledones	46	184	320
Monocotyledones	6	33	53
Total	56	221	379

Table 2: The distribution of the taxa in the research area (Direkli-Yasiçal-Abaci) and the others according to the phytogeographic regions and the comparison of endemism ratios

The areas	Irano-turanian	Euro-siberian	Mediterranean	Endemism ratio
Direkli-Yassiçal-Abaci (Amasya) (Present study)	51 (13.4)	45 (11.8)	35 (9.2)	44 (11.6)
Vermiş and Yuvacik villages-Amasya Castle (Cansaran and Aydoğdu, 1998)	70 (15.71)	31 (7.38)	40 (9.52)	46 (10.95)
Eğerli Mountain (Gümüşhaciköy/ Amasya) (Cansaran, 2002)	102 (15.69)	97 (14.92)	46 (7.07)	80 (12.30)
Tavşan Mountain (Merzifon/Amasya) (Korkmaz *et al.*, 2005)	71 (11.77)	141 (23.38)	30 (4.96)	65 (10.77)
Kunduz Forests (Vezirköprü/Samsun) (Özen and Kilinç, 2002)	15 (4.90)	87 (28.43)	35 (11.44)	13 (4.29)

Values in paranthesis show percentage

Table 3: The comparison of the first three families and genera in the research area and nearby regions in respect to species richness

The areas	The biggest 3 families (species number/ proportion to whole flora)	The biggest 3 genera (species number)
Direkli-Yassiçal-Abaci (Amasya) (present study)	Asteraceae: 47 (12.6%)	**Astragalus-Silene* (8)
	Fabaceae: 38 (10.2%)	**Centaurea* (7)
	Lamiaceae: 36 (9.7%)	* *Lathyrus* (6)
		* *Salvia-Viola-Euphorbia* (5)
Vermiş-Yuvacik villages-	Asteraceae: 46 (11.1%)	**Astragalus* (10)
Amasya Castle (Cansaran and Aydoğdu, 1998)	Lamiaceae: 38 (9.2%)	**Salvia* (9)
	Fabaceae: 33 (8.0%)	**Convolvulus* L. *-Euphorbia- Silene-Verbascum* L. (5)
Eğerli Mountain	Asteraceae: 78 (12.6%)	**Astragalus* (23)
(Gümüşhaciköy/Amasya)	Fabaceae: 77 (12.4%)	**Silene-Lathyrus* (10)
(Cansaran, 2002)	Poaceae : 42 (6.7%)	**Trifolium* L. *-Galium* L. *-Onosma* L. *- Salvia* (8)
Tavşan Mountain (Merzifon/Amasya)	Asteraceae: 78 (12.9%)	**Veronica* L. (13)
(Korkmaz *et al.*, 2005)	Fabaceae : 56 (9.2%)	**Salvia-Alyssum* L. (11)
	Lamiaceae: 53 (8.8%)	**Centaurea* (10)
Kunduz Forests (Vezirköprü/	Fabaceae: 27 (10.8%)	**Galium-Epilobium* L. (7)
Samsun) (Özen and Kilinç, 2002)	Rosaceae: 21 (6.9%)	**Hypericum* L.*-Euphorbia* (6)
	Asteraceae: 19 (6.5%)	**Vicia* L. *-Trifolium* (5)

distribution of species in the research area (Direkli-Yassiçal-Abaci) and of other studies carried out nearby (Cansaran and Aydoğdu, 1998, Cansaran, 2002, Özen and Kilinç, 2002, Korkmaz *et al.*, 2005) according to the phytogeographic regions and the comparison of endemism ratios are shown in Table 2.

As a result of comparison of our study field with the other study fields in the region according to this (Table 2), it is seen that Irano-Turanian elements are in the first order in the floras of our study field (Direkli-Yassiçal-Abaci) and between Amasya Castle and the Villages of Vermiş and Yuvacik. The first reason of this that this areas is located in the transition zone between the Euro-Siberian and Irano-Turanian floristic regions. However, the effect of the Irano-Turanian phytogeographic region is greater. The other important reason of this situation is becoming dominant the steppic characters because of biotic factors such as agriculture, grazing, forest exploitation in study area. Irano-Turanian elements have spreaded on the southern slopes and degraded parts of the forest. Floristic characteristics of Tavşan Mountain and Kunduz Forests is under the influence of cool and rainy climate. Because of this condition; in these area most of the samples are Euro-Siberian elements. As a result, the deficiency of biotic factors and destruction of the vegetation and especially the northern areas having full-grown forests can be reason this situation besides the effect of the climate. The study carried out in nearby areas, the occureance of the Mediterranean phytogeographic elements is originated from effect of the Kizilirmak in Kunduz forests and Yeşilirmak in other areas. We can meet the Mediterranean elements in the alluvial soils in the skirts of the valley near to the bottom (in low elevation).

The number of endemic taxa in the study area is 44 and endemism rate is 11.6%. Fifteen of these taxa belong to the Irano-Turanian phytogeographic region. Furthermore, 5 of the endemic taxa belong to the Euro-Siberian phytogeographic region and 4 of these taxa belong to the Mediterranean. The pluriregional endemics number are 20. The proportion of endemism in the area is low (11.6%), below the average for Turkey (34.4%) (Özhatay *et al.*, 2003). The main reason for this is that the edaphic, climatic and topographic properties of the region do not vary enough. Apart from the Kunduz forests, the endemism rate is nearly the same in other studies and it changes between 10.77-12.30%. The endemism rate is quite low in the Kunduz forests where ecological diversity is very limited (4.29%). Most of endemics are (15) belonging to Irano-Turanian Region. Because, the Irano-

Turanian endemics are ecologically less restricted than those of the other elements; in other words; they occur in all kinds of habitat seven in ruderal and segetal ones (Zohary, 1973).

Forty four endemic species, subspecies and variety which composed of the vascular flora of the study area according to threatened categories are as follows: 36 of them are belonging to LR (Lower Risk) category and 2 of them are LR-nt (near threatened / *Minuartia corymbulosa* var. *corymbulosa* and *Crocus speciosus* sp. *ilgazensis*), 1 of them is LR-cd (conservation dependent/*Verbascum wiedemannianum*), 33 of them are LR-Ic (least concern). 6 of endemic species are belonging to VU category (Vulnerable/*Erysimum eginense*, *Velezia pseudorigida*, *Acer hyrcanum* sp. *sphaerocaryum*, *Lathyrus tukhtensis*, *Helichrysum arenarium* sp. *erzincanicum*, *Iris histrioides*) and *Erysimum amasianum* and *Helichrysum compactum* are belonging to EN category (Endangered) (Ekim *et al*., 2000).

The comparison of the first three families and genera in the research area (Direkli-Yassiçal-Abaci) and other nearby areas in the region in respect to species richness is shown in Table 3.

The dispersion and the ratios of the species gathered from the research field according to the biggest 10 families in the importance order are as fallow: Asteraceae 47 (12.6%), Fabaceae 38 (10.2%), Lamiaceae 36 (9.7%) Poaceae 31 (8.3%), Brassicaceae 30 (8.0%), Caryophyllaceae 22 (5.9%), Rosaceae 16 (4.3%), Scrophulariaceae 15 (4.0%), Boraginaceae 13 (3.5%), Liliaceae 12 (3.2%). When the number of taxa is taken into consideration, the family Asteraceae ranks first in the research area and nearby regions (except Kunduz Forests). This is related to its being the largest family in the Flora of Turkey, having many family members and greater ecological toleration and breaking up seeds easily. Following Asteraceae, the family Fabaceae is second in the research area. The reason why Fabaceae is second is that it is the second largest family in the Flora of Turkey and involves large genera containing many species the family Fabaceae. The family Fabaceae is one of the biggest 3 families in other studies. The Lamiaceae family is the third biggest family in this study because of its wide-spread and it is the third biggest family of the Turkish flora. Also in nearby area studies, Poaceae family is fifth and Rosaceae family is eleventh biggest family of Turkish Flora which are in placed in the first third biggest family in their areas (Erik and Tarikahya, 2004).

The biggest 4 genera which are determined according to the taxon numbers in the study field are as follows: *Astragalus-Silene* 8 (3.6%), *Centaurea* 7 (3.1%), *Lathyrus* 6 (2.7%), *Salvia-Viola-Euphorbia* 5 (2.2%). In the research area the *Astragalus* and *Silene* genus come in the first place with 8 species. Regarding to species number the *Astragalus* is the first and *Silene* is the fifth biggest genus of the Turkish Flora. The *Centaurea* genus has the second place in the research area whereas it has the third place in the Turkish Flora. The *Lathyrus* genus with 6 species come in the third place in the study area regarding to the Turkish Flora it is in the twenty second biggest genus. The genus sharing the fourth place with 5 species *Salvia* thirteenth and Euphorbia twelveth in the Turkish Flora (Erik and Tarikahya, 2004). Furthermore, in the research area *Ranunculus* L., *Erysimum* L., *Dianthus* L., *Rumex* L., *Vicia*, *Trifolium*, *Cirsium* Mill., *Verbascum*, *Lamium* L., *Asperula* L., *Ornithogalum* L. and *Bromus* L. genus are represented with 4 species (1.8%) whereas *Juniperus* L., *Alyssum*, *Helianthemum* Mill., *Minuartia* L., *Tanacetum* L., *Convolvulus*, *Stachys* L., *Galium*, *Muscari* Mill., *Carex* L., *Velpeau* C.C. Gmel. and *Stipa* L. with 3 species (1.3%).

As a result, various floristic data which contribute to the flora of Turkey were provided.

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ABBREVIATIONS

The Stations From Where Plants Were Gathered

1 : The vicinity of Direkli village, 1200-1450 m.
2 : Between the Eski Kizilca village, Küçük Kizilca village and Abaci village, 800-900 m.
3 : The vicinity of Abaci village, 1200-1400 m.
4 : Between Abaci village and Direkli village, 1250-1400 m.
5 : The west of Engülüs Hill and Tomsa Hill, 1500m.
6 : Between Direkli village and Yassiçal town, 1200-1600 m.
7 : Between Abaci village and Yassiçal town, 1200 m.
8 : Between Amasya province and Yassiçal town, 500-1000 m.
9 : The vicinity of Yassiçal village, 1100-1200 m.
10 : Between Yenice town and Direkli village, 800 m.

Habitats:

a : Under degraded forest
b : Moist places
c : Clearing in woodland
d : Vicinity of roadsides

e : Edge of fields (cultivated lands)
f : Rocky areas and steppes

Collection Date of the Plant Samples	The Collector's Number of the Plant Samples
22.04.2000	3453-3505
13.05.2000	3506-3599
01.06.2000	3600-3782
16.06.2000	3783-3918
01.07.2000	3919-4025
29.07.2000	4026-4069
03.10.2000	4070-4084
07.11.2000	4085-4097

Others:

*	: Endemic	M	: Mediterranean
E	: Euxine Element	C.	: Cansaran
HE	: Hyrcano-Euxine Element	sp.	: Subspecies
IT	: Irano-Turanian	var.	: variety

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