

## Synopsis of syntaxonomy of Turkish forests

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**Abstract:** Turkish forests have a very important genetic, biological and ecological diversity. Syntaxonomy of Turkish forests have been studied over 40 years but there were many unvalidly published names and a chaos among syntaxonomical units. In this paper it was aimed to overview the phytosociological studies and the sum of syntaxa of forest vegetation in Turkey. In the study, all syntaxa described so far from forests in Turkey were gathered together to clear their ranks and last status.

**Key words:** Forest vegetation, Syntaxonomy, Phytosociology

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### Introduction

Turkey is situated at a meeting area of continents and phytogeographical regions which are Euro-Siberian, Mediterranean and Irano-Turanian. Therefore, the climatological, topographical, geographical and geomorphological diversity leads to high biodiversity and endemism in plant life. According to the historical and scientific researches it was known that 4000 years ago, Anatolia was covered mostly with forests (60-70%) and steppe vegetation covered only 10-15% (Davis, 1965-1988). Nowadays as the forest cover decreases (about 26%) steppic areas increases (24%). Over-grazing, over-cutting, fires, clearance for agriculture, wars and the general misuse of the land lead to this decrease in the sylvatic areas (Mayer and Aksoy, 1986, Colak and Rotherdam 2006).

Turkey has 21188 million ha of forest area in total. 42 % of this area is covered with coniferous, 53.3% is covered with broad leaved and 4.5% is covered with mixed forests of both coniferous and broad-leaved species (Ministry of Environment and Forestry, General Directorate of Forestry, [www.ogm.gov.tr](http://www.ogm.gov.tr)).

In the present study it was aimed to review all the syntaxonomical units of Turkish forests which mostly spread over mountainous parts of Turkey. The syntaxonomy of Turkish forests have been studied from 1960's by both native and foreign scientists (Quezel, Barbero, Akman, Ketenoglu, Vural, Yurdakulol, Kurt, Hamzaoglu, Duman, Tatli, Ozturk, Kilinc, Kutbay etc.). Although these forests are important not only for Turkey but also for whole world, they are under the risk of degradation because of fires, over grazing, clearance to get agricultural or living areas for human being, etc. The deciduous and evergreen sylvatic syntaxa have their own particular floristic compositions due to their regional distributions and therefore, their peculiar ecologies. So many syntaxa, many of which create phytosociological problems, were therefore described within the forest vegetation of Turkey. In this

review it was aimed to provide an overall knowledge about all the syntaxonomical units of Turkish forests.

### Results and Discussion

At the end of the overview of phytosociological forest units of Turkey following list with super class, class, order, alliance and associations was prepared. The associations were given with their distributions. In this review, the names of the categories were given according to the "Typification de syntaxa décrits en region méditerranéenne orientale" (Quézel *et al.*, 1992).

Class Quercetea ilicis Br.- Bl. 1947 ex A. & O. Bolòs Y Vayreda 1950

#### Orders -

##### 1. Quercetalia ilicis Br.-Bl. 1936 em. R.M. 1974

i. Alliance Oleo-Ceratonion Br.-Bl. 1936 em. R.M. 1974

*Aetheorhizo bulbosae-Pinetum brutia* Vural, Duman, Guner, Donmez and Sagban 1995. Koycegiz Dalyan Specially Protected area

*Allio subhirsuti-Cupressetum sempervirenti* Vural, Duman, Guner, Donmez and Sagban 1995. Koycegiz Dalyan Specially Protected area

*Junipero phoeniceae-Pinetum brutiae* Akman, Kurt, Demiryurek, Quezel, Kurt, Evren and Kucukoduk 1993. Marmaris, Bodrum.

*Lilio candidi-Arbutetum andrachnes* Vural, Duman, Guner, Donmez and Sagban 1995. Koycegiz Dalyan Specially Protected area

*Microsciadio minuti-Lauretum nobilis* Vural, Duman, Guner, Donmez and Sagban 1995. Koycegiz Dalyan Specially Protected area

*Phlomidio bourgaei-Pinetum brutiae* Akman, Kurt, Demiryurek, Quezel, Kurt, Evren and Kucukoduk 1993. Marmaris, Bodrum.

*Pino-Brachypodium pinnatii* Akman and Ekim 1988. Gelibolu National Park



*Quercus aucheri-Oleetum europae* Vural, Duman, Guner, Donmez and Sagban 1995. Koycegiz Dalyan Specially Protected area  
*Quercus aucheri-Phlomidetum lyciae* Vural and Duman 1995 Koycegiz Dalyan Specially Protected area

ii. Alliance Quercion ilicis Br.-Bl. (1931) 1936 em. R.M. 1974  
*Carpino-Phillyretum latifoliae* Kutbay and Kilinc 1995. Bafra, Samsun  
*Centarureo lycopifoliae-Pinetum brutiae* Varol and Tatti 2001. Cimen Mountain (Kahramanmaras)

*Diantho tripunctati-Pinetum pineae* Varol 2004. Milas, Yatagan  
*Ferulago humili-Pinetum brutiae* N. Ozel 1999. Kaz Mountain  
*Phillyreo-Lauretum nobilis* Kutbay and Kilinc 1995. Bafra, Samsun  
*Phillyreo media-Lauretum nobilis* Quezel, Barbero and Akman 1980. Cide

*Quercus-Pinetum brutiae* Kutbay and Kilinc 1995. Bafra, Samsun

iii. Alliance Quercion calliprini (Zohary 1962) Quézel, Barbéro and Akman 1978

*Glycyrrhizo asymetricae-Pinetum brutiae* Ayasligil 1987. Koprulu Canyon

There are 6 associations that are directly connected to the order Quercetalia ilicis, these are as follows:

*Cotino coggyriae-Arbutetum andrachnes* Karaer, Kilinc and Kutbay 1999. Erbaa, Niksar

*Lauro-Quercetum ilicis* Kutbay, Karaer and Kilinc 1998. Sinop Peninsula

*Paliuro spine-christi-Fontenisetum philliraeoidis* Karaer, Kilinc and Kutbay 1999. Erbaa, Niksar

*Phillyreo-Quercetum cocciferae* Kutbay, Karaer and Kilinc 1998. Kelkit Valley

*Siderito dichotomae-Quercetum cocciferae* Karaer, Kilinc and Kutbay 1999. Erbaa, Niksar

## 2. Pistacio-Rhamnetalia alatemi Rivas-Martinez 1974

i. Alliance Gonocytiso pterocladii-Pinion brutiae Barbéro, Chalabi, Nahal and Quézel, 1976

*Hedysario-Pinetum brutiae* Akman, Barbéro and Quézel 1978. Mersin-Kas

*Medicagini coronatae-Pinetum brutiae* Varol, Ketenoglu, Bingol, Geven and Guney 2006. Baskonus mountain (Kahramanmaras)

*Pinus brutia-Helichrysum pamphylicum* Akman, Barbéro and Quézel 1978. Central Taurus

ii. Alliance Ptosimopappo bracteati-Quercion microphyllae Barbéro, Chalabi, Nahal and Quezel 1976

*Glycyrrhizo flavescens-Pinetum brutiae* Barbéro, Chalabi, Nahal and Quézel 1977. Iskenderun

iii. Alliance Quercus calliprini-Juniperion excelsae Barbero and Quézel 1979

*Juniperetum oxycedro-excelsae* Akman, Barbero and Quezel 1980.

*Paliuro spine-christi-Pistacietum palaestinae* Hamzaoglu, Duran and Menemen 2002. Kazankaya Canyon (Corum-Yozgat)

*Pinus brutia-Cytisopsis dorycniifolia* Akman, Barbéro and Quézel 1978. Fethiye, Koycegiz

iv. Alliance Andrachno-Quercion cocciferae Barbéro-Quézel 1979

*Hyperico polyphyllii-Pinetum brutiae* Saglam 2007. Davras Mountain (Isparta)

The associations directly connected to the order Pistacio-Rhamnetalia alatemi are:

*Bupleuro-Pistacietum palaestinae* Serin, Ketenoglu and Kucukoduk 1996. Haci Baba Mountain (Karaman)

*Centrantho-Juniperetum excelsae* Serin, Ketenoglu and Kucukoduk 1996. Haci Baba Mountain (Karaman)

*Cyclotrichio-Rhoetum coriariae* Serin, Ketenoglu and Kucukoduk 1996. Haci Baba Mountain (Karaman)

There is also an association that was connected directly to the class QUERCETEA ILICIS;

*Gastridio ventricosi-Pinetum pineae* Varol and Tatti 2002. Onsen-Haciagali (Kahramanmaras)

Class QUERCETEA PUBESCENTIS (Oberd. 1948, Doing-Kraft 1955) Scamoni and Passarge 1959.

## Orders -

1. **Quercus cerridis-Carpinetalia orientalis** Quézel, Barbéro and Akman 1980.

i. Alliance Quercion frainetto Horvat 1954.

*Quercetum pubescenti-cerridis* Vural 1985. Baskomutan National Park (Afyon)

*Rubus caesii-Fagetum orientali* N. Ozel 1999. Kaz Mountain

ii. Alliance Carpino betuli-Acerion hyrcani Quézel, Barbéro and Akman 1978

*Abies bormmuelleriana-Saxifraga rotundifolis* Kilinc 1985. Tosya, Iskilip

*Abies bormmuelleriana-Pinus sylvestris* Kilinc 1985. Tosya

*Argyrolobio biebersteinii-Quercetum cerridis* Ture, Tokur and Ketenoglu 2005. Asagimuratli and Muratdere

*Astragalo aucheri-Pinetum pallasianea* Karaer, Kilinc and Kutbay 1999. Erbaa, Resadiye, Koyulhisar

*Carpino-Quercetum cerridis* Kutbay and Kilinc 1995. Bafra (Samsun)

*Carpino-Quercetum petraea* Yurdakulol, Demirors and Yildiz 2002. Devrekani, Inebolu, Abana

*Carpinus orientalis-Coryllus avellana* Kilinc 1985. Between Corum and Kastamonu.

*Carpinus betulus-Fagus orientalis* Akman, Yurdakulol and Aydogdu 1983. Bolu

*Cephalanthero rubrae-Quercetum cerridis* Karaer, Kilinc and Kutbay 1999. Erbaa

- Chamaecytiso pygmaei-Pinetum pallasianae* Quézel, Akman and Barbero 1980. Kastamonu
- Cirsio-Pinetum nigrae* Adiguzel and Vural 1995. Soguk Su National Park
- Crataego microphyllae-Carpinetum betuli* Cansaran and Aydogdu 2001. Egerli Mountain (Amasya)
- Crataego-Quercetum ibericae* Kutbay, Karaer and Kilinc 1998. Samsun
- Crataego curvisepalae-Quercetum cerridis* Quézel, Barbéro and Akman 1980. Corum, Merzifon
- Daphno ponticae-Pinetum sylvestris* Kutbay and Kilinc 1995. Bafra (Samsun)
- Daphno ponticae-Quercetum ibericae* Quézel, Barbéro and Akman 1980. Kastamonu
- Dictamnno albi-Quercetum sypsiensis* Quézel, Barbéro, Akman 1980. Between Safranbolu and Eskipinar
- Digitalo trojani-Pinetum nigrae* N. Ozel 1999. Kaz Mountains
- Erico arborea-Quercetum ibericae* N. Ozel 1999 Kaz Mountains
- Fago orientalis-Abietetum bommuelleriana* Akman, Yurdakulol and Aydogdu 1983. Sulhiye, Mezitli, Kozpinar
- Fragario vescae-Pinetum sylvestris* Tatli, Basyigit, Varol and Tel 2005. Gumus Mountain (Kutahya)
- Genisto-Pinetum nigrae* Kutbay and Kilinc 1995. Bafra (Samsun)
- Hyperico conferti-Pinetum sylvestris* Ekim and Akman 1990. Sundiken Mountains
- Junipero oxycedri-Pinetum sylvestris* Eminagaoglu and Ansin 2007. Karagol, Sahara (Artvin)
- Leontodonto asperi-Quercetum pubescentis* Cansaran and Aydogdu 2001. Egerli Mountain (Amasya)
- Linario-Quercetum petraea* Adiguzel and Vural 1995. Soguk Su National Park
- Mercurialo-Abietetum bommuelleriana* Yurdakulol, Demirors and Yildiz 2002. Yaraligoz and Goynuk Mountains
- Onobrychido pisidicae-Quercetum pubescentis* Kargioglu and Tatli 2005. Yandag (Isparta)
- Onopordo anatolici-Prunetum divaricatae* N. Ozel 1999. Kaz Mountain
- Osmundo regali-Castanetum sativae* N. Ozel 1999. Kaz Mountain
- Paeonio peregrinae-Quercetum cerridis* Ekim 1977 em Akman, Barbéro and Quézel 1979. Sundiken Mountain
- Petrorhagio olympicae-Pinetum sylvestris* Cansaran and Aydogdu 2001. Egerli Mountain (Amasya)
- Pinus sylvestris-Doronicum orientale* Duzenli 1989. Akdagmadeni (Sivas)
- Pinus sylvestris-Quercus petraea* subsp. *iberica* Akman, Yurdakulol and Demirors 1983. Ilgaz Mountain
- Pinus sylvestris-Daphne pontica* Kilinc 1985. Tosya
- Pinus nigra* subsp. *pallasiana-Quercus petraea* subsp. *iberica* Akman, Yurdakulol and Aydogdu 1983. Bolu
- Populo tremulae-Quercetum sypsiensis* Cansaran and Aydogdu 2001. Egerli Mountain (Amasya)
- Populo-Pinetum sylvestris* Adiguzel and Vural 1995. Soguk Su National Park
- Rusco aculeati-Carpinetum orientalis* Quézel, Barbéro and Akman 1980. Samsun
- Pyrolo secundae-Fagetum orientalis* Akman, Barbéro and Quézel 1979. Eskisehir, Kutahya, Balikesir
- Quercus petraea* subsp. *iberica-Viola suavis* Akman, Yurdakulol and Demirors 1983. Semen Mountains
- Quercus hartwissiana x Q. petraea-Erica arborea* Akman, Yurdakulol and Aydogdu 1983. Bolu
- Quercetum vulcanicae-cerridis* Kargioglu 2007. Ahirdagi (Afyon)
- Quercetum trojano-macrolepis* Kargioglu and Tatli 2005. Yandag (Isparta)
- Quercus petraea-Piceetum orientalis* Eminagaoglu, Ansin and Kutbay 2007. Karagol, Sahara (Artvin)
- Quercus-Carpinetum orientalis* Kutbay, Karaer and Kilinc 1998. Sinop
- Quercus iberica-Acer cappadocicum* Quézel, Barbéro and Akman 1980. Samsun
- Ranunculo buhsei-Pinetum sylvestris* Karaer, Kilinc and Kutbay 1999. Kelkit Valley
- Salvio tomentosa-Rhoetum coriaria* Cansaran and Aydogdu 2001. Egerli Mountain (Amasya)
- Salvio forskahli-Quercetum cerridis* Akman, Barbéro and Quézel 1979. Bilecik, Bursa, Balikesir
- Scaligerio tripartitae-Carpinetum betuli* Akman, Barbéro and Quézel 1979. Ilgaz and Semen Mountains
- Seslerio argentea-Pinetum pallasianae* Akman, Barbéro and Quézel 1979. Nallihan, Mudumu
- Stachyo tmoleae-Cistetum laurifolii* Kargioglu 2007. Ahirdagi (Afyon)
- Stellario holosteeae-Pinetum pallasianae* Ture, Tokur and Ketenoglu 2005. Sari dayi, Kizilpinar, Muratdere, Ormanguzle
- Tanaceto-Pinetum nigrae* Ozen and Kilinc 1995. Alacam, Gerze (Samsun) and Boyabat, Duragan (Sinop)
- Trifolio hirti-Cistetum laurifolii* Cansaran and Aydogdu 2001. Egerli Mountain (Amasya)
- Ulmo glabrae-Carpinetum betuli* N. Ozel 1999. Kaz Mountain
- iii. Alliance Cisto laurifolii-Pinion pallasianae Akman, Barbéro and Quézel 1978.
- Astragalo oxytropifolii-Pinetum caramanicae* Kargioglu and Tatli 2005. Yandag (Isparta)
- Dorcynio hirsuti-Populetum tremulae* Varol and Tatli 2001. Cimen Mountain (Kahramanmaras)

*Dorycnio graeci-Pinetum nigrae* Vural 1985. Baskomutan National Park

*Ferulago galbaniferae-Pinetum pallasianae* Ekim 1977 em. Akman, Barbéro and Quézel 1979. Sundiken Mountain

*Hieracio pannosi-Cistetum laurifolii* Ture, Tokur and Ketenoglu 2005. Deliarmacik

*Junipero oxycedri-Cistetum laurifolii* Hamzaoglu and Duran 2004. Dinek Mountain (Kirikkale)

*Pinus nigra* subsp. *pallasiana-Astragalus listonia* Kilinc 1985. Tosya  
*Quercu cerridis-Cistetum laurifolii* Vural 1985. Baskomutan National Park

iv. Alliance Quercion anatolicae Akman, Barbéro and Quézel 1979.  
*Allio calyprati-Quercetum pubescentis* Ocakverdi and Unal 1991. Kartallik, Sizak, Maklac Hill (Karaman)

*Astragalo-Quercetum macrolepidis* Serin, Ketenoglu and Kucukoduk 1996. Haci Baba (Karaman)

*Homalothecio-Quercetum vulcanici* Ocakverdi and Unal 1991. Karadag

*Jasmino fruticantis-Crataegetum meyeri* Hamzaoglu and Geven 1999. Kervansaray Mountain (Kirsehir)

*Jasmino fruticantis-Quercetum pubescentis* Hamzaoglu 2000. Buzluk Mountain (Kirsehir)

*Jasmino fruticantis-Quercetum cerridis* Hamzaoglu and Duran 2004. Dinek Mountain (Kirikkale)

*Junipeterum oxycedro-foetidissimatis* Vural 1985. Baskomutan National Park

*Junipero foetidissimae-Juniperetum excelsae* Ture, Tokur and Ketenoglu 2005. Ormanguzle

*Junipero oxycedri-Quercetum pubescentis* Ture, Tokur and Ketenoglu 2005. Bozuyuk

*Onobrychido tournefortii-Quercetum pubescentis* Karaer, Kilinc and Kutbay 1999. Koyulhisar

*Pinetum pallasianae* Cetik 1963. Eldivan (Cankiri)

*Piptathero-Quercetum pubescentis x infectoria* Ocakverdi and Unal 1991. Karaman Gedigi, Yeldibi Hills

*Populetum tremula* Tatli 1985. Gavur Mountain (Erzurum)

*Pyro elaeagnifoliae-Quercetum anatolicae* Akman and Ketenoglu em. Akman, Barbéro and Quézel 1979. Ayas, Beynam, Beypazari  
*Quercetum macrolepidi-trojanae* Akman, Barbéro and Quézel 1979. Usak, Ulubay, Simay

*Quercetum pubescentii* Akman and Ketenoglu 1976 em. Akman, Barbéro and Quézel 1979. Eldivan (Cankiri)

*Quercetum trojano-pubescentis* Hamzaoglu, Duran and Menemen 2002. Kazankaya Canyon (Yozgat-Corum)

*Quercetum macrolepidi-cerridis* Vural, Yaman and Sahin 2007. Delice (Kirikkale)

*Salvio tomentosii-Cistetum laurifolii* Tatli, Eyce and Serin 1994. Konya

*Trifolio-Quercetum pubescentis* [Ketenoglu] ex Adiguzel and Vural 1995. Soguk Su National Park

*Trifolio-Pinetum sylvestris* Tatli 1985. Gavur Mountain (Erzurum)

v. Alliance Staphylleo pinnatae-Buxion sempervirentis Quézel, Barbéro and Akman 1980.

*Doronico macrolepidis-Piceetum orientalis* Quézel, Barbéro and Akman 1992. Harsit-Kurtun

*Vincetoxico nigri-Fagetum orientalis* Quézel, Barbéro and Akman 1980. Dereli, Yavuz Kemal

*Pruno laurocerasi-Fagetum orientalis* Quézel, Barbéro and Akman 1980. Between Cide and Dereli

*Telekio speciosae-Abietetum bornmuellerianae* Quézel, Barbéro and Akman 1980. Between Azdavay and Cide

The associations directly connected to the order *Quercu cerridis-Carpinetalia orientalis* are:

*Carici-Pinetum maritimae* Kilinc and Karaer 1995. Sinop Peninsula

*Junipero-Pinetum nigra* Ozen and Kilinc 2002. Kunduz Forest (Samsun)

*Phyllireo latifoliae-Quercetum frainettinis* Yarci 2000 Isiklar Mountain (Tekirdag)

*Phyllireo mediae-Carpinetum orientalis* Quézel, Barbéro and Akman 1980. Between Unye and Trabzon

*Pino sylvestris-Cedretum libani* Quézel, Barbéro and Akman 1980. Erba

*Quercu hartwisianae-Quercetum petrae* Yarci 2000. Istranca Mountains

*Tilio argentae-Quercetum petrae* Yarci 2000. Isiklar Mountain (Tekirdag)

**2. *Quercu pseudocerridis-Cedretalia libani*** Barbéro, Loisel and Quézel 1974.

i. Alliance *Abieto cilicicae-Cedron libani* Quézel, Barbéro and Akman 1978.

*Abieto-Saponarietum elatii* Ocakverdi and Cetik 1987. Seydisehir

*Abieto-Cedretum libani* Ocakverdi and Cetik 1987. Seydisehir.

*Acero tauricauli-Abietetum cilicicae* Akman, Barbéro and Quézel 1979. Taurus Mountains

*Adenocarpo complicati-Pinetum nigrae* Serin 1996. Beysehir and Igin (Konya)

*Arabido-Juniperetum excelsae* Serin and Eyce 1994. Aladag (Konya)

*Centaureo lycopifoliae-Pinetum pallasianae* Varol, Ketenoglu, Bingol, Geven and Guney 2006. Baskonus Mountains

*Cephalanthero-Pinetum nigrae* Ocakverdi and Cetik 1987. Seydisehir

*Cicerbito-Cedretum libani* Serin and Eyce 1994. Aladag (Konya)

*Cochleario-Pinetum nigrae* Ocakverdi and Oflas 1999. Hadim (Konya)



*Corno australis-Ostryetum carpinifoliae* Akman, Barbéro and Quézel 1979. Amanos Mountains

*Ebeno hirsuta-Juniperetum excelsae* Serin 1996. Beysehir and Ilgin (Konya)

*Geranio libanotici-Pinetum nigrae* Duman 1995. Engizek Mountain (Kahramanmaras)

*Iberido-Abietum cilicicae* Serin and Eyce 1994. Aladag (Konya)

*Juniperetum excelsae* Bekat 1987. Barla Mountain (Egirdir)

*Lathyro variabilis-Cedretum libani* Duman 1995. Engizek Mountain (Kahramanmaras)

*Lecokio creticae-Abietetum cilicicae* Akman, Barbéro and Quézel 1979. Namrun

*Micromerio-Juniperetum excelsae* Ocakverdi and Cetik 1987. Hadim (Konya)

*Mycelido-Abietum cilicicae* Ocakverdi and Ofilas 1999. Hadim (Konya)

*Ostryo-Campanuletum pterocaulae* Ocakverdi and Cetik 1987. Hadim (Konya)

*Pinus nigra-Lathyrus czeczottianus* Quézel, Barbéro and Akman 1980. Beypazari, Isik Mountain

*Potentillo calycinae-Abietetum cilicicae* Akman, Barbéro and Quézel 1979. Pos

*Potentillo calycinae-Pinetum brutiae* Varol, Ketenoglu, Bingol, Geven and Guney 2006. (Baskonus Mountain)

*Quercu-Serratuletum grandifoliae* Ocakverdi and Cetik 1987. Seydisehir

*Sileno-Pinetum nigrae* Serin and Eyce 1994. Aladag (Konya)

*Salvio heldreichi-Quercetum pubescenti* Tatli, Eyce and Serin 1994. Akdag (Ilgin /Konya)

*Symphyto palaestini-Pinetum nigrae* Akman, Barbéro and Quézel 1979. Acipinar

*Thlaspio microstyli-Cedretum libani* Varol and Tatli 2001. Cimen Mountain (Kahramanmaras)

*Thlaspo oxyceratis-Pinetum pallasianae* Akman, Barbéro and Quézel 1979. Feke, Sambeyli

*Verbasco amani-Abietum cilicicae* Varol, Ketenoglu, Bingol, Geven and Guney 2006. Baskonus Mountain

ii. Alliance *Lonicero nummulariaefoliae-Cedron libani* Quézel, Barbéro and Akman 1978.

*Alliario officinalis-Cedretum libani* Akman, Barbéro and Quézel 1979. Ciglikara

*Cedretum libani* Bekat 1987. Barla Mountain (Egirdir)

*Diantho cibarii-Quercetum vulcanicae* Kurt, Akman, Quézel, Ekim and Demiryurek 1996. Isparta

*Pinetum pallasianae* Bekat 1987. Barla Mountain (Egirdir)

*Veronico syriaci-Cedretum libani* Saglam 2007. Davras Mountain (Isparta)

iii. Alliance *Ostryo carpinifoliae-Quercion pseudocerridis* Quézel, Barbéro and Akman 1978.

*Asperulo cymosae-Pinetum pallasianae* Akman, Barbéro and Quézel 1979. Pos

*Asyneumo-Quercetum trojanae* Ocakverdi and Cetik 1987. Seydisehir

*Dorycnio graeci-Pinetum nigrae* Tatli, Basyigit, Varol and Tel 2005. Gumus Mountain (Kutahya)

*Fagus orientalis-Vicia aurantia* Akman, Barbéro and Quézel 1979. Amanos, Hatay

*Pino sylvestris-Fagetum orientalis* Tatli, Basyigit, Varol and Tel 2005. Gumus Mountain (Kutahya)

*Pinus brutia-Centaurea babylonica* Akman, Barbéro and Quézel 1978. Mersin

*Tanaceto parthenii-Quercetum pseudocerridis* Akman, Barbéro and Quézel 1979. Feke, Sambeyli, Maran

*Trifolio physodis-Quercetum cerridis* Tatli, Basyigit, Varol and Tel 2005. Gumus Mountain (Kutahya)

iv. Alliance *Adenocarpo complicati-Pinion pallasianae* Quézel, Barbéro and Akman 1978.

*Pinus brutia-Lathyrus tuktensis* Akman, Barbéro and Quézel 1978. Mugla

*Symphyto brachycalicis-Pinetum pallasianae* Akman, Barbéro and Quézel 1979. Ciglikara

v. Alliance *Geranio libani-Cedron libani* Quézel, Barbéro and Akman 1978.

*Helleboro vesicarii-Rhoetum coriariae* Duman 1995. Engizek Mountain (Kahramanmaras)

*Lecokio craeticae-Quercetum infectoria* Duman 1995. Engizek Mountain (Kahramanmaras)

*Thlaspo cataonici-Cedretum libani* Akman, Barbéro and Quézel, 1979. Bakir Mountain

There are also some associations that are directly attached to the order *Quercu-Cedretalia libani*:

*Amygdalo-Bupleuretum subuniflorae* Ocakverdi and Cetik 1987. Seydisehir

*Astragalo-Pinetum brutiae* Serin and Eyce 1994. Aladag (Konya)

*Astrogalo atropurpureus-Quercetum cocciferae* Kargioglu and Tatli 2005. Yandag (Isparta)

*Carecio-Pinetum nigrae* Ocakverdi and Cetik 1982. Gokgedik Hill, Sakirkaraagac (Konya)

*Cisto-Linerietum simplicis* Ocakverdi and Cetik 1982. Omerpinari, Gozkaya and Tokmacik Hill

*Cotoneastero-Papaveretum commutatae* Ocakverdi and Cetik 1987. Seydisehir

*Diantho micranthi-Pinetum nigrae* Tatli, Eyce and Serin 1994. Kiziloren Mountain (Konya)

*Ferulagini macrosciadae-Pinetum caramanicae* Kargioglu 2007. Ahir Mountain (Afyon)

*Fumano aciphyllae-Cotoneasteretum nummularii* Ocakverdi and Cetik 1987. Seydisehir, Akdag (Konya)

*Galio ibicini-Quercetum pinnatilobae* Varol and Tatli 2001. Cimen Mountain (Kahramanmaras)

*Galio tenuissimi-Quercetum cerridis* Varol and Tatli 2001. Cimen Mountain (Kahramanmaras)

*Genisto-Styracetum officinali* Serin and Eyce 1994. Aladag (Konya)

*Lagoecio cuminoides-Sytracetum officinalii* Varol and Tatli 2001. Cimen Mountain (Kahramanmaras)

*Lathyro digitati-Quercetum cerridis* Tatli, Eyce and Serin 1994. Loras Mountain (Konya)

*Minuartio globulosi-Juniperetum excelsae* Saglam 2007. Davras Mountain (Isparta)

*Oryzopsido holciformi-Cedretum libani* Akman, Barbéro and Quézel 1979. Ciglikara

*Potentillo crantzii-Fagetum orientalis* Varol and Tatli 2001. Cimen Mountain (Kahramanmaras)

*Pistacio-Amygdaletum orientali* Ocakverdi and Cetik 1987. Seydisehir

*Quercetum boissieri* Behcet 1994. Hizan (Bitlis)

*Quercetum cerridis-anatolicae* Ocakverdi and Cetik 1982. Doganhisar (Konya)

*Quercu vulcanicae-Juniperetum excelsa* Kargioglu and Tatli 2005. Yandag (Isparta)

*Rhamno-Quercetum pubescentii* Ocakverdi and Oflas 1999. Hadim (Konya)

*Salvio-Quercetum cocciferae* Serin and Eyce 1994. Aladag (Konya)

*Sileno squamigeri-Quercetum cerridis* Saglam 2007. Davras Mountain (Isparta)

### 3. *Quercetalia pubescentis* Doing Kraft 1955.

There are 2 associations directly connected to the order *Quercetalia pubescentis*;

*Carpino betuli-Fagetum orientalis* Yarci 2002. Istranca Mountains, Kirklareli

*Pinus nigra* subsp. *pallasiana-Ligustrum vulgare* Akman, Yurdakulol and Demirors 1983. Semen Mountains

*Quercu cerridis-Carpinetum orientalis* Yarci 2002. Derekoy Kirklareli

*Trifolio medii-Quercetum anatolicae* Akman, Barbéro and Quézel 1979. Isik Mountain, Nallihan

There are also some associations directly connected to the class QUERCETEA PUBESCENTIS.

*Ferulagini macrosciadae-Pinetum brutiae* Ekim and Akman 1990. Sundiken Daglari (Eskisehir)

*Pinus nigra* subsp. *pallasiana-Anthyllis vulneraria* Akman and Aydogdu 1986. Ankara

*Pinus sylvestris-Orthilia secunda* Akman and Aydogdu 1986. Ankara

*Pistacio atlantica-Rhamnus graecus* Quézel, Barbéro and Akman 1980. Sakarya and other interpontic valleys

*Quercus pubescens-Trifolium pannonicum* Akman and Aydogdu 1986. Ankara

*Trachystemo orientalis-Fagetum orientalis* Akman, Barbéro and Quézel 1979. Uludag, Mezit Valley, Kaz Mountain

Class QUERCO-FAGETEA (Br.-Bl and Vlieger 1937) Fuk. and Fab. 1968.

### Orders -

**1. *Rhododendro pontici-Fagetalia orientalis*** Quézel, Barbéro and Akman 1980.

i. Alliance *Crataego pentagynae-Fagion orientalis* Quézel, Barbéro and Akman 1980.

*Illici colchicae-Fagetum orientalis* Quézel, Barbéro and Akman 1980. Samsun, Kastamonu

ii. Alliance *Castaneo sativa-Carpinion orientalis* Quézel, Barbéro and Akman 1980.

*Campanulo allianifolia-Castanetum sativae* Quézel, Barbéro and Akman 1980. Between Unye and Trabzon

*Carpino betuli-Populetum tremulae* Korkmaz, Yalcin, Kutbay, Berk and Bilgin 2008. unye (Ordu)

*Epimedio colchici-Pinetum lazicae* Quézel, Barbéro and Akman 1980. Of (Trabzon)

*Erico arboreae-Carpinetum orientalis* Quézel, Barbéro and Akman 1980. Giresun

*Hedero-Castaneetum sativae* Yurdakulol, Demirors and Yildiz 2002. Abana

*Rubo caucasici-Quercetum hartwissianae* korkmaz, Yalcin, Kutbay, Berk and Bilgin 2008. Kuyupinar (Ordu).

iii. Alliance *Alnion barbatae* Quézel, Barbéro and Akman, 1980.

*Theliptero limbospermae-Alnetum barbatae* Quézel, Barbéro and Akman 1980. Rize

The associations directly attached to the order *Rhododendro pontici-Fagetalia orientalis* are: *Abieti-Pinetum sylvestris* Ozen and Kilinc 1995. Alacam, Gerze (Samsun) and Boyabat, Duragan (Sinop)

*Carpino-Fagetum orientalis* Kutbay and Kilinc 1995. Bafra (Samsun)

*Castanea sativa-Sophora jaubertii* Quézel, Barbéro and Akman 1980. Kastamonu, Cide

*Fago-Abietum nordmanniana* Kutbay and Kilinc 1995. Bafra (Samsun)

*Fago-Castanetum sativae* Kutbay and Kilinc 1995. Bafra (Samsun)

*Galio-Fagetum orientalis* Ozen and Kilinc 2002. Kunduz Forest (Samsun)

*Rhododendro-Fagetum orientalis* Kutbay and Kilinc 1995. Bafra (Samsun)

*Trachystemo orientalis-Fagetum orientalis* Akman, Barbéro and Quézel 1979. Sulhiye, Mezit, Kozpinar

**2. Pino sylvestris-Piceetalia orientalis** Quézel, Barbéro and Akman 1980.

i. Alliance Veronico peduncularis-Fagion orientalis Quézel, Barbéro and Akman 1980.

*Fago orientalis-Abietum nordmannianae* Eminagaoglu and Ansin 2007. Karagol, Sahara (Artvin)

*Fago orientalis-Piceetum orientalis* Quézel, Barbéro and Akman 1980. Between Giresun and Trabzon

*Parido orientalis-Piceetum orientalis* Quézel, Barbéro and Akman 1980. Between Rize and Artvin

*Vaccinio myrtilli-Pinetum sylvestris* Quézel, Barbéro and Akman 1980. Giresun, Trabzon

*Veronico melissaefoliae-Fagetum orientalis* Quézel, Barbéro and Akman 1980. Between Erba and Unye

ii. Alliance Geranio iberici-Pinion orientalis Quézel, Barbéro and Akman 1980.

*Abieti nordmanniana-Piceetum orientalis* Eminagaoglu and Ansin 2007. Karagol, Sahara (Artvin)

*Abieti nordmanniana-Pinetum sylvestris* Eminagaoglu and Ansin 2007. Karagol, Sahara (Artvin)

*Daphno glomeratae-Pinetum sylvestris* Quézel, Barbéro and Akman 1980. Zigana

*Junipero communi-Pinetum sylvestris* Eminagaoglu and Ansin 2007. Karagol, Sahara (Artvin)

*Lilio ciliati-Pinetum sylvestris* Quézel, Barbéro and Akman 1980. Between Zigana and Rize

*Picea orientalis-Paris incompleta* Quézel, Barbéro and Akman 1980. Giresun, Trabzon

*Piceetum orientalis-Telekio speciosae* Quézel, Barbéro and Akman 1980. Rize

*Pino sylvestris-Piceetum orientalis* Eminagaoglu and Ansin 2007. Karagol, Sahara (Artvin)

*Quercu ponticii-Betuletum medwediewii* Eminagaoglu and Kutbay 2006. Duzenli, Efeler, Ugurlu, Gorgit forests

**3. Fagetalia sylvaticae** Pawlowski 1928.

i. Alliance Fagion sylvaticae Quézel, Barbéro and Akman 1980.

*Fagus orientalis-Rubus coesius* Akman, Barbéro and Quézel 1979. Kaz Mountain

*Trachystemo orientalis-Fagetum orientalis* Akman, Barbéro and Quézel 1980. Kastamonu, Daday, Azdavay

There is also an association directly attached to the order:

*Abies bornmuelleriana-Hieracium oblongum* Akman, Yurdakulol and Demirors 1983. Ilgaz Mountain

*Abies bornmuelleriana-Pinus sylvestris* Akman, Yurdakulol and Demirors 1983. Ilgaz and Semen Mountains

*Abies nordmanniana* subsp. *bornmuelleriana-Fagus orientalis* Akman, Yurdakulol and Demirors 1983. Semen Mountains

*Fagus orientalis-Castanea sativa* Akman, Yurdakulol and Aydogdu 1983. Bolu

*Fagus orientalis-Rhododendro ponticum* Akman, Yurdakulol and Aydogdu 1983. Bolu

*Fagus orientalis-Cicerbita variabilis* Akman, Yurdakulol and Aydogdu 1983. Bolu

*Pinus sylvestris-Abies bornmuelleriana* Akman, Yurdakulol and Demirors 1983. Ilgaz and Semen Mountains

*Saniculo-Abietetum bornmuellerianae* Ozen and Kilinc 1995. Alacam, Gerze (Samsun) and Boyabat, Duragan (Sinop)

**4. Populetalia albae** Br.-Bl. Ex Tchou 1948.

*Pterocaryo pterocarpae-Alnetum glutinosae* Quézel, Barbéro and Akman 1980. Samsun

*Salici-Platanetum orientalis* Kutbay and Kilinc 1995. Bafra (Samsun)

**Class** ALNO-POPULETEA Knapp 1959

**Order** Platanetalia orientalis Knapp 1959.

Alliance Platanion orientalis Karpati and Karpati 1961.

*Alno pubescentis-Liquidambaretum orientalis* Akman, Kurt, Demiryurek, Quézel, Kurt, Evren and Kucukoduk 1993. Burdur, Isparta, Antalya

*Irido xanthosporiae-Liquidambaretum orientalis* Akman, Kurt, Demiryurek, Quézel, Kurt, Evren and Kucukoduk 1993. Fethiye, Marmaris, Denizli

*Periploco-Liquidambaretum orientalis* Vural, Duman, Guner, Donmez and Sagban 1995. Koycegiz Dalyan

*Quercu ilicis-Liquidambaretum orientalis* Ozturk, Celik, Guvensen and Hamzaoglu 2008. Aydin

**Class** VACCINIO-PICEETEA Br.-Bl. 1939.

**Order** Vaccinio-Piceetalia orientalis Br.-Bl. 1939.

The associations below are directly attached to the order;

*Abies nordmanniana* subsp. *bornmuelleriana-Fagus orientalis* Akman, Yurdakulol and Aydogdu 1983. Bolu

*Hieracio tossiani-Abietetum bornmuellerianae* Quézel, Barbéro and Akman 1980. Kastamonu, Ilgaz Mountain

There is an association directly attached to the class VACCINIO-PICEETEA; *Rhododendro luteum-Vaccinium myrtillus* Kilinc and Karakaya 1992. Cambasi (Ordu)

Phytosociological studies in Turkey dated back to the 1960's. Many vegetation types such as forest, steppe, maquies and frigana were studied in detail from the phytosociological point of view and there have been still considerable amount of studies on this account.

In many papers published in Turkey the International Code of Phytosociological Nomenclature were not followed. Although the forest vegetation of Turkey has been studied exclusively, there were many invalidly published names and a chaos among the syntaxonomical units that we met in the course of the preparation of this review. According to the code, the validity of a publication of a

newly defined category, the publication must be done in a regularly published and widely distributed journal. But some of the associations have been unfortunately represented as a presentation in congress or published in some sources that is not easy to reach.

It was observed that in some papers, the alliances which were included in newly defined associations, were connected to an inappropriate order. In this review, the alliances were assumed to be major correct units and attached to the appropriate orders. In some papers, upper limits, in which the associations were included, were not declared. Only the associations were cited. These sort of old dated works were neglected.

In some papers, the phytosociological units given in tables and results are different from the ones given in discussion part. Also in some cases, newly defined associations were connected to an alliance in results part and to the other alliance in discussion part. The phytosociological tables were needlessly complicated with the units of steppe, maquis and frigana vegetations, although it was defined from a forest.

Within the list given in the text, some associations were cited under various categories due to the description of the associations under same name in different publications. In spite of their similar names, it can be easily seen from the tables and similarity indices that they have different floristic compositions.

For the preparation of this paper, we tried to reach all the papers on forest vegetation and we exclude project reports, oral and poster presentations and also Ph.D. theses according to the code.

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