Distribution and protection of European yew (*Taxus baccata* L.)

Excerpt from Fred Hageneder: *Yew – A History*, 'Appendix III: Important occurrences of European yew', with kind permission

The European yew occurs in all of Europe. Its northern limit extends from the British Isles to Norway (c. 63º N), Sweden and Finland (61º N), the eastern border runs from the Riga bay (Latvia) through Bialowiecza (Belarus–Polish border) along the 23º meridian to the eastern Carpathians and the Black Sea where Taxus occurs in the Crimean peninsula and across northern Turkey. The southern limit includes Portugal and the Mediterranean countries of Europe, but also Madeira, the Atlas Mountains (Algeria, c. 33º N), the northern Pontus, the Taurus and Amanus Mountains (southern Turkey, northern Syria), the entire Caucasus, and the Elburs Mountains in northern Iran. Within this extensive range, Taxus is missing in the regions influenced by continental climate (i.e. Eastern Europe, the Anatolian Highland, the Hungarian Lowland) as well as in the higher mountains (central Alps, central Carpathians) (see also Chapter 4). Ecologically, eleven types of different plant associations can be distinguished.

Types of yew (*T. baccata*) forest*

1	Bakony yew forests
2	Carpathian yew forests
3	Yew forests of the German–Bohemian highland
4	Yew forest in the margins of Alps
5	Croatian yew forests
6	Yew forests of Greece (Balkan)
7	Yew forests of Turkey
8	Yew forests of Caucasus, Crimea and Iran
9	Iberian and Italian yew forests
10	Algerian yew forests
11	Yew forests of the North European lowlands

* Paule *et al.* 1993, after Majer 1971. Paule *et al.* continue: 'In most cases the plant associations correspond to the *Taxo-Fagetum* with certain subunits e.g., *Taxo-Fagetum bakonyicum*, *Taxo-Fagetum carpaticum* etc. [1, 2, 3, 4, 7, 9, 10] or *Tilieto-Taxetum* [5], *Fagetum orientalis – submontanum taxetosum* [6], *Euonymo-Taxetum* [8] and *Cephalantero-Taxetum balticum* (or *Fagetum boreo-atlanticum* according to Myczkowski (1961)) [11].'

In a number of countries, *Taxus baccata* is included in the Red Books (e.g. in the Czech Republic, Slovakia, Bulgaria, Romania, Russia, Iran), and in several countries it is subject to nature conservation (e.g. Germany, Austria, Poland, Czech Republic, Slovakia, Romania, Russia), albeit to varying degrees. In Italy, for example, only single monumental trees are protected on the national level but in most administrative regions the species is submitted to special protection management on the regional level; and following the indications of the Natura 2000 network, beech forests with *Taxus* and *Ilex* are protected as Sites of Regional Importance (SIC = Siti di Importanza Comunitaria) (Hageneder 2007, personal communication with Prof. B. Schirone). In Switzerland, the tree is not protected either but the management of *Taxus* regeneration and timber production is handled by the single cantons in a sustainable way and with great care. Single old trees are protected, and in two cantons – Basel Land and Schaffhausen – the species is protected entirely (Hageneder 2007, personal communication with J. Hassler). In the Caucasus, some forests within the nature reserves are threatened by ethnical/ political unrest and by military operations against separatist or resistance groups that hide in the mountains. Even more worrying is the situation in Iran where the Hyrcanian Forest is threatened by large-scale logging, forest fires and the traditional practice of wood pasture: between 1970 and 2000, at least 27 per cent of the Hyrcanian Forest was destroyed (Korori *et al.* 2001). The deforestation continues despite *Taxus* being legally protected and the efforts of environmentalists.

Important occurrences of European yew (*Taxus baccata* L.) in individual countries and regions

Eastern European data are from Paule *et al.* 1993. Other data collected from the respective site managements, unless otherwise stated.

IRELAND

Locality	Area (ha)	No of trees	Comments	Source
Reenadinna Forest, Killarney Nat. Park	25		Rainforest: High density of mature *Taxus* trees rooting on very thin soil or even penetrating into fissures in the bare limestone	Hageneder 2007, pp. 267–269

BRITAIN

Locality	Area (ha)	No of trees	Comments	Source
Castle Eden Dene, Co. Durham	22		Steep Magnesian limestone hillsides with ash, hazel and high density of mature yew trees. The name (*Œden*) derives from Saxon *yoden*, 'valley of yew'.	Respective site managements
Kingley Vale, West Sussex	150	30,000	National Nature Reserve; c. 70 ancient yews; soil is clay with flints over upper chalk. The name derives from the bronze age burial mounds on the top of the hill.	
Druids Grove, Norbury Park, Surrey			More than 20 large yews with girths of up to 7m, on chalk slope	
Newlands Corner, Surrey			23 ancient yews (girth between 4m and 7m) scattered over c. 50ha; soil is clay with flints on chalk	
(private) yew woodland, Wiltshire	56		Almost pure yew woodland with many old to ancient specimens	

SPAIN

Locality	Area (ha)	No of trees	Comments	Source
Mt Sueve, Asturias	200	8,000	Currently under threat	Personal communication with Bosco Imbert, University of Navarra, and Ignacio Abella
Sierra Tejeda (Umbría de la Maroma), Málaga			181 individuals recorded in 1997	
Sierra de Guara, Huesca province			Occupying small areas in steep riverbanks; some individuals reach 18m	Tenorio *et al.* 2005, pp. 202–6
Misaclós, Montagut, Girona	4–5		Mixed forest with *Pinus sylvestris* and *Quercus ilex* in 330–350m a.s.l.; highest density of yew: 400 individuals on 0.5ha; oldest trees have 40cm diameter	Personal communication with Bosco Imbert, University of Navarra, and Ignacio Abella

FRANCE

Locality	Area (ha)	No of trees	Comments	Source
Ste Baume, Provence			Mixed forest on north-facing slope; in 1882, 4,000 yew trees were counted of which 2,700 had 30–45cm trunk diameter; today, largest tree (80cm trunk diameter) estimated at c. 800 years, the others at c. 500; protected since 1838, now NATURA 2000 Reserve.	Personal communication with Monsieur Christian Vacquié, forest warden of Ste Baume; also *Der Eibenfreund*, 1: 39.

Distribution map for France at http://junon.u-3mrs.fr/msc41www/pltcli/PC9049.html

CORSICA

900 mature and old trees in various locations; *Taxus* is concentrated to the south of Corte, to the south-east of Calvi and to the west of Porto-Vecchio, also in the north (Cap Corse), south (Montagne de Cagna), east (San Giovani di Moriani) and west (Piana) of the island.

Locality	Area (ha)	No of trees	Comments	Source

ITALY

Taxus occurs as a forest tree along the entire length of Italy, mostly in mountainous settings; a national inventory of stands is under way. Apart from the British Isles, Italy and Sardinia probably have the highest number of old and ancient single specimens in (Western) Europe, among them are Ucca 'e Grille, Sos Niberos, Bono (Sardinia): girth 705cm, height 11m; Nattari, Urzulei, Nuoro (Sardinia): girth 530cm, height 22m; Valle Naforte, Sezze LT, Lazio: girth 500cm, height 15m; Fonte Avellana, Serra Sant'Abbondio PU, Marche: girth 475cm, height 15m.
(Personal communication with Prof B. Schirone)

Locality	Area (ha)	No of trees	Comments	Source

SWITZERLAND

Switzerland has a relatively large number of young yew trees: the overall estimate amounts to c. 700,000 trees with a girth over 10cm, 50,000 of which are located in the Hörnli region (St Gallen/Thurgau/Zürich). Around Zürich there are c. 70,000 young yews with a girth over 4cm.
A. Rudow, ETHZ/BAFU, 2009, 2013–24, and Kurt Pfieffer
More about *Taxus* in Switzerland in Hassler (1999): 'Die Eibe (*Taxus baccata* L.)', Haldenstein (Switzerland), self-published by the author. To order please write to Jürg Hassler-Schwarz, Sum Curtgins 9, CH-7013 Domat Ems, Switzerland.

Locality	Area (ha)	No of trees	Comments	Source
special case Hörnli region		50,000+	The Hörnli region comprises a large-scale and original yew population of at least 50,000 individuals with a trunk diameter up to 10cm. For its sheer numbers it has been dubbed a 'yew mekka' of Europe. Single sites are at Bauma, Bichelsee-Balterswil, Bütschwil, Degersheim, Fischenthal, Fischingen, Ganterschwil, Kirchberg (SG), Lütisburg, Mogelsberg, Mosnang, Oberhelfenschwil, Sternenberg, Turbenthal, Wila	A. Rudow, ETHZ/BAFU, 2006–2024

Noteworthy local yew sites (* within the Hörnli region)

Palius da Tuora, Cauma Su, Uaul da Salums – all near Sagogn, Graubünden	80	100	mixed spruce communities (yew as pioneer?)	A. Rudow, ETHZ/BAFU, 2006–2024
Gigerwald, Pfäfers, St. Gallen	3	30	1300m a.s.l. (Calfeisental), up to B2; rather hard to access	
Bruederwald, Mosnang, St. Gallen*	26	600	high density, up to B1, potential area for seed harvest	
Iddaberg Burgwald, Kirchberg, St. Gallen*	4	400	very high density, up to S1	
Griesenberger Tobel, Hüttlingen, Thurgau	22	800	high density, up to B2, potential area for seed harvest	
Bannhalde, Winterthur, Zürich*	20	1500	very high density, up to B3	
Unterwilerberg, Baden, Aargau	6	200	ETH reservation, high density, up to B2	
Brenntrain, Baden, Aargau	2	100	very high density, particular straight trunks (spruce-like)	
Engelberg, Oftringen, Solothurn	27	300	up to B3	
Gorges du Seyon, Neuchâtel, Neuenburg	40	1000	high density, up to B1	
Bois noir, Saint-Maurice, Wallis	13	130	mixed spruce community (yew as pioneer?)	
Blindtal, Naters, Wallis	7	50	relict population, relatively continental, up to B3	

Locality	Area (ha)	No of trees	Comments	Source
Zürich: Adliswil, Langnau am Albis, Horgen, Hirzel, Üetliberg; Albis/Sihltal	2000	70.000	very high density; all yew trees over 4cm trunk diameter	Kurt Pfieffer
Areuse-Schlucht, Neuenburg, Boudry	120	ca. 1000	incl. yews < 17.5cm trunk diameter	

Locality	Area (ha)	No of trees	Comments	Source
Halbmil, Chur, Graubünden	9	250	200 young planted trees protected individually; best yew population in Kanton Graubünden	Jürg Hassler
Motata, Ramosch, Graubünden	(c. 30)	1	One old and many planted young trees, protected individually. The only yew trees in Engadin. Site is a prehistoric settlement.	

For *Taxus* in Switzerland see also www.seba.ethz.ch

GERMANY

Locality	Area (ha)	No of trees	Comments	Source
Paterzell	90	1,600	30ha of which comprise the public nature reserve	Hageneder 2007, pp. 267–269
Rudolstadt	128	6,000	mostly young trees	
Lengenberg	23	4,500	mostly young trees	
Wasserberg Gössweinstein	10	4,100	mostly young trees	

AUSTRIA

Locality	Area (ha)	No of trees		Source
Pichlwald, Vöcklabruck, Upper Austria	2.6		mixed yew forest in 480–530m a.s.l.; lakeside slope	Personal communication with Dr Berthold Heinze, Federal Research Centre for Forestry, Vienna
Stiwollgraben, Graz region, Steiermark	17.0		mixed yew forest in 580–700m a.s.l.	
Hinterstein, Kufstein, Tyrol	28.4		mixed yew forest in 900–1,050m a.s.l.	
Bad Vellach (Völkermarkt, Kärnten)		2	900–950m a.s.l., steep slope	

CZECH REPUBLIC

Locality	Area (ha)	No of trees	Comments	Source
Krivoklát		5,000	mostly young trees	Hageneder 2007, pp. 267–269
Moravian Karst		2,000	mostly young trees	
Stechovice		418	mostly young trees	
Kanice, Domazlice around the summit of Mt Netreb		200	yews in mixed woodland	

POLAND

Locality	Area (ha)	No of trees		Source
Wierzchlas	18	3,500	mostly young trees	Hageneder 2007, pp. 267–269

SLOVAKIA

Locality	Area (ha)	No of trees	Comments	Source
Harmanec	860	(160,000) *	mostly young trees	Hageneder 2007, pp. 267–269
Gader	513	(17,000)*	mostly young trees	
Plavno	27	(9,000)*	mostly young trees	
Slovenský raj	230	1,560	mostly young trees	
Lučivná		1,000	mostly young trees	

** These figures are older data and in the meantime the numbers have decreased dramatically, e.g. in Harmanec due to red deer browsing, natural mortality, etc. Forest statistics are a double-edged sword anyway, as forests are not static but in constant flux.*

HUNGARY

Locality	Area (ha)	No of trees	Comments	Source
Bakony	287	(120,000)*	mostly young trees	Hageneder 2007, pp. 267–269

** These figures are older data and in the meantime the numbers have decreased dramatically, e.g. in Harmanec due to red deer browsing, natural mortality, etc. Forest statistics are a double-edged sword anyway, as forests are not static but in constant flux.*

ROMANIA

Locality	Area (ha)	No of trees	Comments	Source
Forest Tudora	125	1,095	mostly young trees	Hageneder 2007, pp. 267–269
Forest Comarnic	4	1,025	mostly young trees	
Dosu Stoglui		763	mostly young trees	
Cenaru	383	741	mostly young trees	
Cartsoara	25	600	mostly young trees	

BULGARIA

Locality	Area (ha)	No of trees	Comments	Source
Vitosha		276	mostly young trees	Hageneder 2007, pp. 267–269

UKRAINE

...

Locality	Area (ha)	No of trees	Comments	Source
Knyazhdvir (Kolomyja)	30	22,000	yew trees up to 30cm diameter (in 1976) as understorey of mixed woodland dominated by beech (80%) and fir (*A. alba*, 20%) not older than 100 years; steep sandstone slopes	Boratynski *et al.* 2001
Ugolka	208	10,000	mostly young trees	Hageneder 2007, pp. 267–269

GREECE

The first national *Taxus* inventory in Greece (1995) shows that the species is in decline, but still present in 173 yew stands (usually not exceeding 50 individuals) in 117 forests across the country, mostly in areas of central and northern Greece, with small natural stands in the Peloponnese and on the island of Evia; woods are dominated by beech, fir, black pine and oak, yew occurs most often with juniper and holly; 80% of yew populations occur in ravines (mostly 500–1,500m a.s.l.), especially along the Pindos mountain range, Mt Olympus, Mt Rodopi and Mt Cholomontas in Halkidiki. (Kassioumis *et al.* 2004) Voliotis (1986) also lists the following mountain regions: Voras; Tzena; Paikon; Kerkini, Orvilos; Falakron; Pangaeon; Athos; Vermion; Vourinos; Tymfi; Lakmos (Peristeri); Athamanika Ori; Koziakas; Agrafa; Pieria; Ossa; Pilion; Tymfristos; Oxya, Oeta; Giona; Parnassos, Kyllini; Oligyrtos, Chelmos; Maenalon; Parnon; Dirphys; Xerovouni; Skotini; Ochi Euboeae; Hypsarion in Thasos; - Fengari in Samothraki; also Kryoneri; Olympias; north-eastern Chaldiki; Perivoli, Grevena; Aghia Paraskevi; Trikala; Imathia; Parnassos.

Locality	Area (ha)	No of trees	Comments	Source

CRIMEA

57 yew stands are known; mixed forest with oak, beech, hornbeam and juniper
(Pridnya 2002)

Locality	Area (ha)	No of trees	Comments	Source

TURKEY

Usually on slopes between 1,000 and 1,900m altitude. Black Sea region: Alapli; Yenice; Düzce; Rize forest; Kürtün (Gümüshane); Ayancik (Sinop); Yedigöl above Devrek (1,000m a.s.l.), Bolu; Demirköy. In the south: Hatay (1,800–1,900m a.s.l.), Amanus Mountains; Canakkale province in the Kaz Mountains; Denizli province on Mt Akdag (1,800m a.s.l.); Icel, Cilician Gates (Gülek Bogaz).
Davis 1978, Aksoy 1998

Locality	Area (ha)	No of trees	Comments	Source
Alapli (near Eregli), Zonguldak	200		200ha with yews in nature reserve of 11,000ha; valley with ancient yews in open beech-oak-yew forest	Hageneder 2007, pp. 267–269
Yenice, Karakuk			ancient yews scattered among oak, beech *(Fagus orientalis*), fir (*A. bormulleriana*), pine (*P. nigra* and *P. sylvestris*); nature reserve also rich in old box (*Buxus sempervirens*)	

CAUCASUS

There are 130 (!) known yew stands in the Western Caucasus alone of which the Batzara Reserve (also called Batzvara) in Kakhetia (c. 80km north-north-west of Tiblisi in Georgia) is the largest. Batzara has been protected since Queen Tamara in the twelfth century, it was sacred to the local population before that, and now is a European Biosphere Reserve.
Pridnya 2000a, 2002

Locality	Area (ha)	No of trees	Comments	Source
Batzara	237	220,000	yew-beech-wood in 900–1,500m a.s.l. is part of the Bazari Canyon that covers 3,000ha; yew dominates 11ha with about 80% of the woody mass; only c. 13,000 trees are older than 100 years, single trees are 1,500–2,000 years old	Pridnya 2000b
Khosta	190		mixed forest of yew, beech, laurel, oak, ash, hornbeam, lime and maple, with an understorey of box, usually on limestone slopes with eastern or north-eastern exposition; 15ha of the area have 50–90% yew, another 36 have 10–40%; majority of yews c. 600–c. 1,000 years old; sparse regeneration	Pridnya 2000a, 2002
Sochi	301		largest yew c. 2m trunk diameter and 30m height	*Der Eibenfreund*, 1: 44

IRAN

The Hyrcanian Forest covers the northern expositions of the Elburs Mountains, facing the Caspian Sea which supports a mild and moist climate (600–2,000mm annually). (Lickl and Heinze 2001) It is huge – its original size is c. 1.3 million hectares – and it is an extremely unique ecotope because without being affected by glaciation during the last Ice Age it had 10 million years to develop a rich diversity of tree species. It consists mainly of deciduous trees – Oriental beech, hornbeam, Caspian alder (*A. subcordata*), Caspian oak (*Q. castaneifolia*) and velvet maple (*A. velutinum*) – with an understorey of box (*B. hyrcana*) and yew (between 900 and 2,000m a.s.l.)
Sagheb-Talebi and Lessani 2001. Conifers other than *Taxus* are rare, only cypress and juniper in some drier and higher places (Lickl and Heinze 2001).

Locality	Area (ha)	No of trees	Comments	Source
d'Afra-Takhté, eastern Elburs Mts	150		high density of yew, especially on c. 28ha at Punearam (over 75% of the trees are yew); average trunk diameter over 60cm, (After an evaluation from 1971; *Der Eibenfreund*, 1: 44) age of yews 500–800 years; sparse regeneration	Sagheb-Talebi and Lessani 2001
Arasbaran (near Kallaleh), Azarbaijan				Shanjani 2001

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