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## *Taxus baccata* in Morocco: a tree in regression in its southern extreme

### Supplementary Material

Locality descriptions with the sources of data: bibliographical references, herbarium vouchers (herbaria acronyms after Index Herbariorum), unpublished data from different botanists and authors' field notes. The localities found or confirmed in the field are marked with '!' followed by the year of the visit at the end of the note, while localities reported only in the literature or in herbaria are marked by (?) along with the year of field work. Data reported before 1960 and not confirmed in the field are treated as possibly historical even when not searched for in the field. The original data from herbarium labels and literature, when available, are included after particular notes in subscript form.

The basic descriptions of occurrence conditions were made by the authors in the field or were retrieved from other source data when possible: Substrate rock: LM – calcareous rocks; BA – basalts; SA – sandstones; SI – siliceous rocks; IN – undefined; Relief forms: CX – convex forms including rocks; SL – slope; CC – concave forms, including gutters on the slopes, couloirs and stream valleys; Aspect: N, NE, E and other main and intermediate geographic directions.

### West Rif

National Park Jbel Musa, IPA. Jbel Moussa; reported by Font Quer and Maire (in Jahandiez & Maire, 1931). Some isolated individuals near the top of the mountain, in a karst zone, 5.40°W, 35.85°N, at altitudes of between 500 and 800 m, on the northern slopes (Emilio Blanco 2014, oral communication), 500–800 m, LM, CC, N.

Jbel Kelti, 5.27°W, 35.35°N; a few isolated trees at altitudes 1850–1900 m in *Cedrus atlantica* forest above Tamalout on the northern slopes of valleys; !2005, 1850–1900m, LM, SL, N.

Above Tamalot at 950–1500 m (Font Quer, 1929), Tamalout at 1650 m (Benabid, 1984).

Talassemtane National Park, IPA. Jbel Tissouka; Isolated trees on the northern slopes above Azilane and others above Beni M'hamed 5.20°W, 35.15°N, at altitudes of 1500–1800 m, !2005, !2013; 1500–1800 m, LM, SL, N.

Entre Jbel Kalâa y Tissouka, 1500 m, Font Quer, 15.06.1928, BC, GDA, BM, 1500 m, LM, SL, NW; Jbel El Kalâa, Aïn Tissimlane,

1062 m, Romo 13141, BC 911845; J. Tissouka, vers 1800 m dans la sapinière à *A. maroccana* vu en 2007, A. Dobignard unpublished data.

Talassemtane National Park, IPA. Jbel Lakrâa (Laqra or Adrar Lechâab/Lexhab), 5.13°W, 35.11°N. One of the major populations in Morocco; the studied plot was established in the SE of the massif area, on the NW slopes of Bou Slimane, above Bab Er-Rouida, at altitude of 1500–1600 m, LM, SL, N; !1995, !2005, !2013, !2014; 1420–1620 m, LM, CX, NW

Bab Er-Rouida (Emberger & Maire, 1941); ibidem, Muñoz Medina, 1950, GDA; ibidem, 1420 m, LM, SL, NE, in the population of *Abies maroccana* (Muñoz Medina, 1951); Environs de Bab Er-Rouida, 1500 m (Raynaud & Sauvage, 1974), 1500 m, LM, SL, SE; Vallée de Tasnoute, 1450 m (Raynaud & Sauvage, 1974); Timchat, 1460 m, Talassemtane (Benabid, 1984); Tasnut, bajando del pinsapar, en asociación con plantas rupícolas, hay *Taxus baccata* (Ruiz de la Torre, 1955); Taznoute, 1620 m, Talassemtane (Benabid, 1984), 1620 m, LM, SL, NW; Jbel Bouhalla 1600 m (Draper et al., 2003).

Talassemtane National Park, IPA. Jbel Kalâa, above Aïn Tissimlane 5.23°W, 35.18°N, at altitude of 1550 m; !2009; 1550 m, LM, SL, N.

Entre Jbel Kalâa y Tissouka, 1500 m, Font Quer, 15.06.1928, BC, GDA, BM; Jbel El Kalâa, Aïn Tissimlane, 1062 m, Romo 13141, BC 911845; rare (Mateos & Valdés, 2009); 1062 m, LM, SL, N.

### Central Rif

Jbel Dedokh, 4.65°W, 34.87°N, at altitudes of between 1800–1900 m, in the association *Polysticho setiferi-Prunetum lusitanicae* (Deil, 1984); 1800–1900 m, LM, SL, N.

IPA. Jbel Tidirhine (Tidighine), 4.58°W, 34.83°N, single trees in the cedar woods between 1600 and 2000 m; !1995, !2005; 1750–2000 m, LM, SL, N.

Ad ripam dextra flumen Ketama, infra Badú, specimen unicum, lg. Font Quer, 13.07.1929, BC; Subida al Tidighine, lg. Cabezu-do, Nieto, 16.05.1990, GDA; Koudiet Imougras, sobre Tleta Ketama, lg. S.Castroviejo, 28.05.1981, MA 228855; C Rif, Bab Chiker, dense *Cedrus* forest on schist, lg. S. Jury 5.10.1950, E; Khandak, 1450 m, Ketama Bab Berred (Benabid, 1984); Aanassar, 1400 m, Ketama Bab Berred (Benabid, 1984).

Jbel Taghant, 1 km SW Ketama, 9 km to top Jbel Tidighine, 4.34°W, 34.53°N, 1750 m, lg. E. Jury et al 20.06.1992, RNG; 1750 m, LM, SL, N.

Jbel al Hasnout (Jbel al Hanout), 4.62°W, 34.90°N.

To this jbel we referred the locality given by Davis: Haout, (probably Jbel al Hanout) 4.62°W, 34.90°N, P.H. Davis, 12.07.1973, BM; Ulrich Deil, who studied this region, did not find the yew.

Jbel Inaou Chabane (Jbel Arz); 4.43°W, 34.82°N, between 1550 and 1590 m, cedar woods, (Deil, 1984), 1550–1590 m, SI, SL, NW.

At this station a dense *Taxus baccata* woodland is found on WNW aspect and moderate slope, 15°, (Deil, 1984); the same author described *Polysticho setiferi-Prunetum lusitanicae* subass. *taxetosum* from this locality.

Jbel Tahomar, 4.62°W, 34.88°N, 1550–1900 m, SI, SL, NW.

Between 1550 and 1900 m in *Polysticho setiferi-Prunetum lusitanicae* association (Deil, 1984).

Jbel Bouzid, 4.73°W, 34.98°N, 1800 m, SI, SL, NE.

In *Polysticho setiferi-Prunetum lusitanicae* (Deil, 1984).

IPA. Jbel Azrou Akechar, 3.82°W, 34.78°N. !2003; 1900–1950 m, LM, SL, N.

Aknoul, Tizi Ouzli, road to Jbel Azrou Akechar, 1950 m, N slopes, A. Romo, 8.05.2003, BC 911949.

## Middle Atlas

National Park Tazekka, IPA. Jbel Tazekka, 4.18°W, 34.08°N; one tree near the summit, in the cedar wood at an altitude of 1980 m; !2005, !2013; 1550–1980 m, LM, CX, N.

Bosques subhúmedos de *Cedrus atlantica*, macizo esquistoso de Tazekka (Charco, 1999); Cédraie de Tazekka, 1750–1980 m (Sauvage, 1954); Tazekka, Jbel Tazekka 04.18°W, 34.10°N, 1920 m, Jury et al. 6.07.1993, RNG, and K552971; 1920 m, LM, SL, N.

National Park Tazekka, IPA. Bab Bou Idir to Jbel Tazekka, 30SUC9172, 1700 m, in *Cedrus atlantica* and *Taxus baccata* woodlands (Draper et al., 2005), 4.10°W, 34.07°N, 1700 m.

Near Bab Bou Idir and Jbel Tazekka, at 1700 m, in *Cedrus atlantica* woodlands (Draper et al., 2005); Bab Bou Idir, 1550–1600 m, chênaie de chêne verte (Sauvage, 1954); Iliçaie de Bab Bou Idir, 1600 m (Fougrach et al., 2007).

National Park Tazekka, IPA. Forêt de Bab-Azhar, 4.27°W, 34.02°N, 1400–1500 m, forêt de chêne verte et bords des eaux (Sauvage, 1954).

Kissarit, 5.32°W, 33.28°N; A few yew trees in a mixed formation of cedar woods with evergreen oaks. !2008; 1880 m, LM, CX, N.

Aïn Kahla (Forêt d'Aïn Kahla), 5.23°W, 33.23°N; a dozen individuals buried deep in the cedar forest, most of which are still in a good state. A few saplings and young trees were observed in an enclosed area, free of grazing. !2012; 2080 m, LM, SL, N and NE.

Près la maison forestière d'Aïn Kahla, 12 km SE of Aïn Leuh, 36°92'N 8°39'W, 2080 m, lg. E. John, 04.08.1968. SEV; Aïn Leuh, E (Lecompte, 1969).

Sehb (Forêt de Sehb), 5.17°W, 33.42°N; all the yew trees grow in favourable conditions and are in a good state. Near this forest there is a volcanic outcrop

with a crater where around twenty young trees can be found growing with *Acer monspessulanum* and *Crataegus laciniata*, where they are safe from human interference due to difficulty of access; !2012; 1850 m, BA, CX, N and NW.

Jbel Hebri, 5.16°W, 33.39°N, 1950 m, lg. S. Jury 14.07.1977, MA616628; ?2005, ?2014.

Ifrane National Park, IPA. Ras-el-Ma, 5.13°W, 33.45°N; Very abundant population with some magnificent and probably old specimens with a height of 5–15 m; some of them show a yellowing of the leaves on the extreme branches, several individuals with lopped and/or pruned branches and even felled; !2012; 1600–1700 m, LM, SL and CX, N and NE.

Ras-el-Ma, près Ifrane, 5.10°W, 33.97°N (Jahandiez & Maire, 1931); Gorge de Ras el Ma, sur calcaire, 1600 m (Maire, 1924: 143); Ifrane, at cascade des Vierges, 1580 m, lg. P.H. Davis, 11.07.1973, E94066, BM55121; Ifrane, 1700 m, lg. P.H. Davis 08.04.1969, E 94067; Ifrane, 1400 m, lg. J. Lewalle, 16.05.1990, BM; Ifrane, N. (Lecompte, 1969); Cédraie, environs d'Ifrane, 1700 m, (Sauvage, 1954); Oued Tisguile, près Ifrane 1950 m (Sauvage, 1954).

Daya de Bou-Jerirt (Bou-Jirirh), dessus Ras el Ma, 5.17°W, 33.50°N (Jahandiez & Maire, 1931).

Ifrane National Park, IPA. Dayet Hachlaf, 4.90°W, 33.57°N; 1600–1650 m. Very abundant in a cedar formation with evergreen oak on the north-facing slopes with inclination of about 30–40%. Most of the specimens are in a poor state: apart from the dead individuals, many are partially or completely cut down. !2008; 1600–1650 m, BA, SL, N.

Bekrit, Assaka Naouan, 5.20°W, 33.08°N, altitude 1860–1890 m. Riparian forest located in narrow gorges. Studied population. !2011; 1860–1890 m, LM, CC, N; LM, CC, NW.

Bekrit, 1850 m, gorges calcaires de l'Amengous, lg. E. Jahandiez 03.06.1924, E94069, MA; Bekrit, près l'Oued Amengous, lg. A. Romo, 10.06.2011, BC; Bekrit (Jahandiez & Maire, 1931).

Vallée du Senoual near Bekrit, 5.22°W, 32.97°N (Jahandiez & Maire, 1931).

Jbel Tichoukt (Taleb & Fennane, 2016), 4.65°W, 33.42°N; !2010; 1900 m, LM, CX and CC, N and NW.

IPA. Jbel Bou Iblane, 4.16°W, 33.65°N, altitude 1900–1960m; A few isolated trees in the forest of *Cedrus atlantica* of Taffert; !2008; 1900–1960 m, LM, CC, N.

Bou Iblane, Cédraie de Taffert, 1900 m, exp. N, inclination 30%, marnes, Tableau 29 (Barbero et al., 1981); In Atlante Medii montibus Bou-Iblan, in silva Taffert, lg. R. Maire, 21.06.1927, MA; Bou Iblane (Jahandiez & Maire, 1931).

Talzemt, 4.17°W, 33.59°N, altitude 1820 m, two trees in the calcareous ravine above Achaad forest house, E of Talzemt; !2008, 1820 m, LM, SL, NW.

Jbel Telaghine, 5.23°W, 32.87°N, altitude 1750 m, lg. F. Damblon 26.06.1981, MA 598919; 1750 m, LM, N.

## High Atlas

IPA. N'Fiss valley, 8.30°W, 30.88°N, altitude 2350 m, marabout of Sidi Moussa, not far from Moulfdikht above Tazzat, on northern slopes of Adrar Aoulin, (Emberger & Maire, 1941; Sauvage, 1941, 1943; Maire, 1952; Fennane & Ibn Tattou, 1998); ?2011.

Jbel Ahad, 7.48°W, 31.45°N, altitude 1900 m (Emberger & Maire, 1941; Sauvage, 1941, 1943; Maire, 1952); ?2008, ?2011.

Plateau de l'Iferouane, Jbel Ahad, 31.45°N, 7.48°W / 31.08°N, 7.77°W, between Zat and R'dat valleys (Sauvage, 1941; Emberger & Maire, 1941; Maire, 1952).

Zaouiat Ahansal, 6.10°W, 31.75°N, altitude 2300 m. The yews are mere bushes of around 1.5 to 2.0 m high. The old specimens, mutilated by shepherds, show no sign of regeneration. Ahansal, Gorges de l'Akka n'Tazert vers 2300 m avec *Buxus sempervirens* vu en 1986, A. Dobignard; 2300 m, LM, SL, N.

IPA. M'Goun, 6.48°W, 31.60°N; two well-developed individuals of a height of 2–4 m and with compact but irregular habit observed with binoculars in 2014 on steep, inaccessible slopes and shaded cliffs with *Lonicera arborea*, 2050 m. Jbel M'Goun, vallée de l'assif Arrhous vers 2050m, avec *B. sempervirens*, vu 06.2014, A. Dobignard; 2050 m, LM, SL, N.

National Park the High Atlas, IPA. Imilchil (Fennane & Ibn Tattou, 1998). ?2011

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