



Reassessment of *Poa moabitica* (Poaceae: Pooideae), mistaken identity of *P. chaixii*, and notes on Hayne's *Plants of the Holy Land*

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Summary. Distributions reported for *Poa chaixii* in Plants of the World Online (2023) and Euro+Med Plantbase (<https://europlusmed.org>), based on Mouterde's (1966a) cited collections, apply to *P. moabitica*. *Poa chaixii* does not occur in Syria, or anywhere else in the Levant. *Poa moabitica* is a very rare and distinctive species of sect. *Homalopoa*, known from only three collections. The Hayne type collection location, suggested to be Moab by Bor (1972), is here considered incorrect. Hayne's *Plants of the Holy Land* specimens were collected from Jordan, Palestine, Lebanon and Syria in 1872. It is likely that *P. moabitica*, if it is still extant in nature (which is doubtful), only occurs locally in wet habitats of forested mountains of northwest Syria (Pabot collections), and northern Lebanon (type). The species might also be sought in the adjacent province of Hatay, Turkey. The species is Data Deficient but should probably be considered Endangered Globally and Locally.

Key Words. Collection history, *Homalopoa*, Lebanon, Moab, Pabot, Syria, taxonomy.

Taxonomic Treatment

Poa moabitica Bor, *Notes Roy. Bot. Gard. Edinburgh* 31 (3): 396 (1972). Type protologue: "PALESTINE: Moab, W.A. Hayne s.n. (holo. K)". Type specimen: *Plants of the Holy Land* COLLECTED BY W. A. HAYNE [comm. Rev. H. E. Fox, Oct 1873]. (holotype K! K000789577 [image!]; isotype OXF 00153734N [image!, Fig. 1]).

Discussion

Norman Bor (1972) cited W. A. Hayne for having collected the type of *Poa moabitica*, "likely" on the Moab Plateau, in 1872. I've found scant information regarding Hayne in Google searches: William Amherst Hayne (born 4 October 1847 – died in Sicily 5 February 1873). Bor (1972) indicated there was no inventory of specimens published with Hayne's 1872 paper, or elsewhere that he knew of. Bor was evidently unaware that Hayne had collected more widely in the Levant than Jordan in the Moab region. My reading of Hayne's flora of Moab account provided no clues as to where Hayne might have gathered this *Poa*, instead, suggesting to me, that it could not have come from his Moab expedition. In his 1872 paper (read in August 1872 at the British Association) Hayne (1872) described the vegetation he'd seen during 37 days of February and March, 1872, beginning on the high end of the Moab Plateau (east side of the Dead Sea) and descending to the Dead Sea. He described the Moab Plateau as a tree and shrub-less grassy expanse, except for sparse stunted trees near the summit of Jebel Attrus. Although Hayne encountered

some wet habitats further down from the Plateau (below Nebo at the wells of Moses, and palm oases above the Dead Sea), there seems little or no suitable habitat for a metre or more tall, broad-leaved *Poa* of a species complex that favours mesic to sub-hydric temperate forest slopes and meadows. Moreover, it would be strange for a tall, fairly stout, perennial, mesophilic species of *Poa* to flower so early in the year in this geographic region.

After submitting this paper for publication, I discovered a book of Hayne's letters written between 1869 and 1873 (Fox 1873; an uncle of Hayne) on Google Books (2003, continuously updated). Only one letter (dated 18 Feb. 1872) tells of his travels in the Levant, and that is confined to troubles with local people in Moab region while travelling there with Dr (Henry Baker) Tristram (see Tristram 1873, for a detailed account).

Oxford University (OXF) has a substantial set of the collections from this expedition "*Plants of the Holy Land* COLLECTED BY W. A. HAYNE", which Hayne noted in his published account that he and Miss Fox consulted with Oxford botanists on for determinations. Stephen Harris, Curator of OXF, kindly provided me with notes and collection data, many with images, for 48 Hayne specimens, three from the UK (in 1864, 1867) and two others from somewhere in Europe (in 1865). The other 43 have "*Plants of the Holy Land* COLLECTED BY W. A. HAYNE" labels. Harris wrote that these came "from the herbarium of Henry Elliott Fox (1841 – 1926), which was bequeathed to George Claridge Druce (1850 – 1932; who was curator of OXF from the 1880s until his death". Much more of OXF remains to be databased. Some specimens of this set were sent to Kew (K), "received

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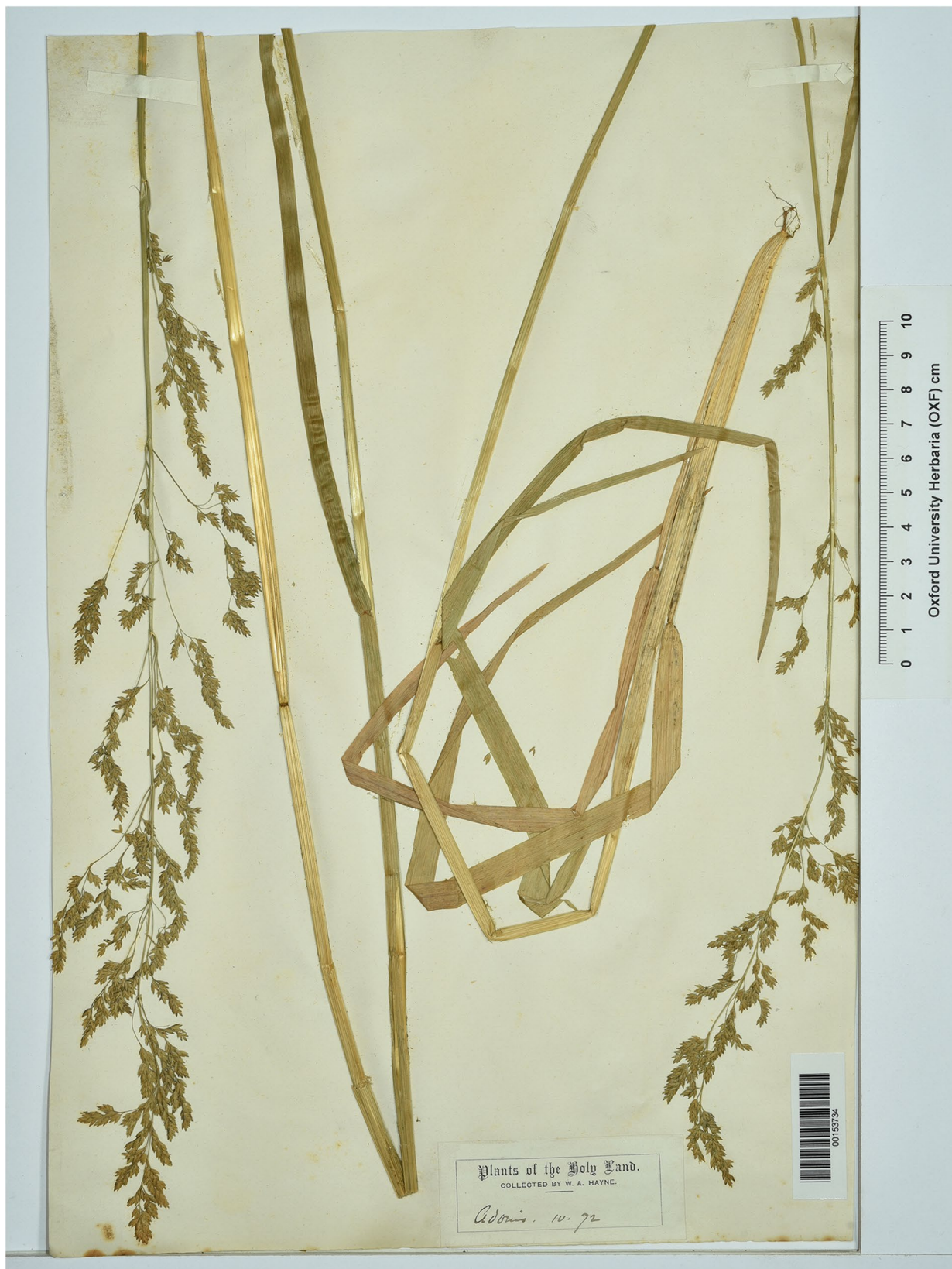


Fig. 1. *Poa moabitica* Bor, isotype (OXF 00153734N [image! Oxford University Herbaria, Department of Biology]), *W. A. Hayne*, Adonis, April 1872.

from Rev. H. E. Fox in 1873” (nine K types collected by Hayne are online in JSTOR Global Plants (2023, continuously updated); W has some duplicates of Hayne’s *Plants of the Holy Land*; surprisingly, BEI has none (fide N. Sinno Saoud, pers. comm. Dec. 2023); nor does CGE or Trinity College (fide Amber L. Horning, Maria Giovanna DeSimone Dec. 2023) where Hayne received a B.A. Herbarium acronyms follow Thiers (2023, continuously updated). All cited specimens were seen by me unless otherwise noted as “images!”

Poa moabitica (type; and two *Pabot* specimens cited below) has distinctive characteristics. The specimens are stout, culms reaching over 1 m in height; ligules are short (c. 1 mm) and membranous, with densely long-ciliate, cottony, apex and back; collars are densely ciliate on margin and on inner side flanking the ligule; sheaths are broad and strongly keeled, with margins fused to just below collar; panicles are large, 42 – 48 cm long, branches eventually widely spreading (to 13 cm long); lemmas have prominent intermediate nerves extending to a very brief membranous margin below the apex, the surfaces are subchartaceous; floret calluses are dorso-laterally pinched in, glabrous (when immature) or with a distinct dorsal tuft of woolly hairs (web) at least on basal floret(s). This is a very odd *Poa* in having broad, flat leaf blades (to 12 mm wide), 20 – 35 cm long, gradually tapered to a slender apex, and strongly keeled sheaths. In my judgement, it is a member of *P.* sect. *Homalopoa* Dumort. and is related to *P. asiae-minoris* H.Scholz & Byfield (endemic to north-west Anatolian Turkey, Bolu Province), *P. chaixii* Vill., *P. hybrida* Gaudin, and *P. remota* Forselles. These species are known to be diploids ($2n = 14$) (teste E. Cabi for *P. asiae-minoris*), and the latter three are centred in Europe, with peripheral extensions in Asia for *P. chaixii* and *P. remota*.

While reviewing *Poa* collections at G (Geneva: 30 May – 12 June 2023), focusing on the Flora Orientalis herbarium (G-BOIS) and G (general) collections from the same floristic region (I have G, E, and some smaller loans (B, K, P) of *Poa* from Turkey, and the Palestinian region (HUJ) at US, and have reviewed collections at ANK, B, GAZI, ISTE, ISTF, K, KNYA, NAKU, NGBB, P and VANF, in preparing a revision of the genus in Turkey), I encountered, in the G Asian folder of *P. chaixii*, two newer collections of *P. moabitica*!, a species up to that point known only from the type reported to be from “Moab”!

These two sheets have printed labels:

“HENRI PABOT. Plantes de la Syrie et du Liban récoltées de 1951 à 1958. Collection originale acquise par le Conservatoire botanique de la Ville de Genève en 1972 et intercalée dans l’Herbier général dès 1974.”

Pabot’s handwritten collection labels report:

- 1) “Ain Aramié (Bassit, - Quenzeul Dagh) forêt de *P. Brutia*. “hygrophile!”. 5-5-1954.” [det: *Poa*?

- 2) “Ain Aramié (Quenzeul Dagh – Bassit. 22 Jul 1955”. [dets: *Poa*?, *Catabrosa*?, and then *Poa chaixii* Vill. by O’Byrne {no date}].

Pabot illustrated on each sheet the general site characteristics where the plant was found, with small idiomatic diagrams of the terrain and habitat. On the first specimen the diagram indicates a stream crossing bordered by a shrub or wetland, with pine forest on both sides. On the second, a pine or mixed forest on one side of a slope leading to a stream crossing. There is a small triangle below each diagram, presumably pointing to the position in the terrain where the plant was gathered. These suggest forest margins by water (“hygrophile!” noted).

But where in the Levant region was this Ain Aramié? (I found nothing relevant in Google searches). On returning to the Smithsonian, I consulted Paul Mouterde (1966a) for this location. In the Index Toponymique (p. IL – LXXIX), the location of Ain Aramiyé was noted as “Orthographe usuelle mais inexact. Vois. ‘Ain-el-Haramiyé”. Under that orthography: “عين الحرمة S. [= Syria] Source dans les boisements du Bassit, au sud de Kessab”. Under Kessab: “S. Nord de Lattaquié, près de la frontière turque, sous le Jabal ‘Aqra.” Knowing that the second *Pabot* specimen had been identified as *Poa chaixii*, I then checked the taxonomic account in Mouterde. On page 102 *P. chaixii* is described (hairy ligules noted), and noted as flowering in “mai – juin. Lieux boisés. S. *NLatt*. Boisements du Bassit, vers ‘Ain-el-Haramiyé (Pb, Mt).” [Pb = Henri A. Pabot, 1916 – 1990, professor at Damascus University; Mt = Paul S. J. Mouterde, 1892 – 14 Jan. 1972, of St. Joseph University in Beirut]. This narrowed the area to somewhere in northwest Syria, but I still did not know precisely where this was.

Searching Google and Google Earth for more detail on the location it became apparent that Jabal ‘Aqra (AKA Mount Kılıç; or Mount Cassius or Casius) is in the southernmost Hatay region of Turkey, with its southern forested slopes extending into Syria. *Pinus brutea* Ten. forests occur on the lower slopes and valleys extending to or near to the coast toward the more southern town of Basit and beyond. A Google search on “Quenzeul Dagh” lead further north to Kurd Dağ, Halab Province, Syria, but, as noted, that is sometimes confused with Jabal al Akrad in the north of Latakia Province where Basit (mentioned by Pabot) is located and where Mouterde’s gazetteer led me.

After translating the French ‘Ain-el-Haramiyé into Arabic (using Google Translate), and searching the web with that transliteration, Mapcarta (2023, continuously updated) provided a location for عين الحرمة of 34.65°N 36.25°E, c. 300 m elevation, about 1 – 1.5 km N of the river Nahr El Kabir, just N of Al Bahluniya, and about 3 km SSW of Talkalakh, in NW Syria, Latakia Province, near the border with Turkey (Mapcarta.com/12690128).

These *Pabot* specimens are not *Poa chaixii*, a northern species that reaches south in Turkey only in the

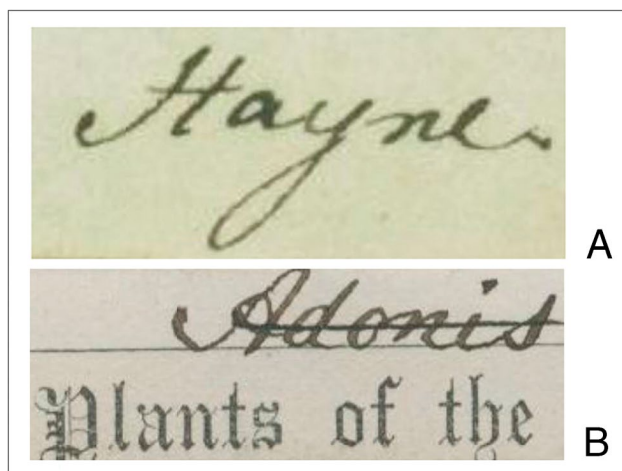


Fig. 2. **A** W. A. Hayne signature from a *Plants of the Holy Land* collection label of *Astragalus austriacus* Jacq. (W0025129 [image!]); **B** “Adonis” crossed out, from the holotype (K000789577) of *Poa moabitica* Bor.

Pontic Mts/Kuzey Anadolu Dağları (northern slope) above Trabzon and Rize, subalpine c. 2350 – 2500 m [*Soreng & Cabi* 8964 (NAKU, US); *Balansa* 1544 (G-BOIS)], and two other collections cited by Edmondson (1985) but not yet verified by me. Nor are these *P. asiae-minoris*, which is endemic to NW Anatolia, NW of Bolu, c. 800 m [*Soreng* 4263 (US)], and SW of Bolu, 1350 m [*A. J. Byfield*; *R. Fitzgerald* B-2351 (B and ISTE types), and *Soreng & Cabi* 8821 (NAKU, NGBB, US)], in wet meadows to mesic mixed deciduous-coniferous forest. Within *Poa*, only *P. asiae-minoris* exhibits the densely hairy ligules of *P. moabitica*. This, combined with other features, tall stature and long and open panicles, wing-keeled sheaths with margins fused to near the top, make these two taxa distinctive. *Poa asiae-minoris*, approaches *P. moabitica*, but has ligules 2.5 – 4 mm long (vs c. 1 mm), shorter lower culm leaf-blades (6 – 10 vs 20+ cm). Closer study is needed.

Hayne evidently had botanical training before his 1872 excursion to Moab, as he expressed familiarity with the Palestinian flora in his article, and he knew how to collect plants. OXF has databased some *Hayne* collections made in 1865 and 1867 in the UK and Europe. Hayne is also reported to have collected with Miss Fox & E. G. Post (Harvard Index to Botanists (2023, continuously updated), likely having visited E. G. Post in Beirut, Lebanon. Given the *Pabot* collections are only the second and third specimens known of *Poa moabitica*, I suspected that the type collection was made further north in the Levant, not in Moab. Neither Post (1896), Post & Autran (1897), Post (1933; Dinsmore ed.), Rechinger (1959; where Ain Aramié is mentioned, with reference to Col. Du Cassius), nor Mouterde (1966a), mention *Hayne* as a collector. However, Post’s herbarium duplicates were often circulated

without names of collectors who provided the specimens. Among these accounts only Mouterde (1966a, b) mentions *P. chaixii*, or any other species that might be allied to sect. *Homalopoa*. Pabot’s first collection was roughly illustrated in Mouterde (1966b. Pl. XXX, f. 6.).

Nine W. A. Hayne collections at K turned up in JStor Global Plants (2023, continuously updated). These have tickets headed by “Plants of the Holy Land” COLLECTED BY W.A. HAYNE” and tags “Recd. from Rev. H. E. Fox, Oct 1873”. These sheets have scant locations and dates, but indicate Hayne collected beyond the Moab Plateau (February and March). One label indicates April, another indicates “Sea of Galilee”, another “Huela” north of that, and [Jzura?] “Hermon” (Mt Hermon on the border of Lebanon and Syria). OXF, in addition to other collection sites in Israel or Palestine, has records of one *Hayne* collection from Syria (Damascus), and three from Lebanon (Beirut, Tripoli), all gathered in April 1872. And to my surprise, one determined as *Poa* sp. from “Adonis. iv. 72” (OFX 00153734N!; databased as Palestine), here recognised for the first time as a *P. moabitica* isotype (Fig. 1).

The K *Poa moabitica* holotype label has “Adonis” written in Hayne’s hand, crossed out by someone (Fig 2A & B). Adonis (not the genus) is a municipality in Lebanon (34.077°N 35.722°E), c. 25 – 48 km NNE of Beirut, just N of the Ibrahim River/Yahchouch River Waterfalls. The newly identified isotype at OXF has the label data, Adonis, April 1872. This area, with forest and wet habitat, is evidently where *P. moabitica* was collected by Hayne.

In short: The type of *Poa moabitica* is from Lebanon, not from Moab, *P. chaixii* does not occur in the Levant, and we know a little more about the short life and travels of William Amherst Hayne.

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Declarations

Conflicts of Interest The author declares that he has no conflicts of interest.

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