

The identity, typification and distribution of *Salsola imbricata* Forsskål

Studies in the Chenopodiaceae of Arabia I

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Summary. The identity of *Salsola imbricata* Forssk. is discussed and a neotype is designated. Synonyms of the species are given as well as its geographical distribution.

Salsola imbricata Forsskål is an overlooked species described from “Lohajae”, Luhayyah, a port north of Hodeidah (Hudaydah), northern Yemen. Forsskål (1775) gave a description of the species, the locality where collected (Lohajae, as it appears in Forsskål, l.c.), its Arabic name, “Harm” and its use as a good camel food.

According to Ib Friis (pers. comm.), the illustration of *Salsola imbricata* which appeared in Forsskål’s later *Icones* (Tab. VIIIC, 1776) was drawn by the German artist Georg Wilhelm Baurenfeind who was a member of the expedition to Arabia with Forsskål and others. The first 20 plates in Forsskål (1776) are all based on Baurenfeind’s drawings from the field and there are reasons to believe that the text, which only consists of short notes to each plate, was written by Zoëga. It appears from the Latin introduction that there were either no explanations to the figures at all or only rather incomplete ones amongst Forsskål’s notes. Friis adds: “the plates have therefore been identified by comparison of figures and descriptions”.

Christensen (1922) comments on *Salsola imbricata* Forsskål: “Doubtful species, perhaps identical with *S. foetida* Del.” and that its type specimen is not reported: “*Non repertum*”.

F. N. Hepper (private communication), who is currently revising and typifying Forsskål’s Herbarium (C), confirms Christensen’s point of view, and describes *Salsola imbricata* as an “obscure species” with no type specimen in Forsskål’s Herbarium. On the other hand, Botschantzev (1975) and Chaudhary & Akram (1986) recognise *Salsola imbricata* but without mention of its type specimen: however, they refer to Forsskål’s illustration as the probable type.

Schweinfurth (1896) comments on *Salsola imbricata* as not to be found in Forsskål’s “inventory”, or, in other words, without a type specimen. This comment follows a description of a new species, *Salsola forskalii* Schweinf. from Eritrea, Ethiopia, Hudaydah (Hodeda), northern Yemen and Aden, southern Yemen. Schweinfurth adds that *Salsola foetida* Del., called “el-Chrêt” in Egypt, serves as a good camel food in the northern desert region,

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and continues: "Moquin Tandon had no authentic specimens of *S. imbricata* Forssk. and gives the size of the leaves as 2–4 × 1 mm [approximately converted from inches], so it cannot possibly be *S. forskalii*. Probably his *Caroxylon (Salsola) imbricatum* is the same as his *Caroxylon (Salsola) foetidum* and probably also both are synonyms of *Salsola imbricata* Forssk."

From all that is mentioned above, it looks as if we are currently dealing with a species with a doubtful nomenclatural status: *Salsola imbricata* Forsskål lacks a type specimen and its illustration in Forsskål's *Icones* was published in 1776, one year after the description. Moreover, the illustration was neither made by Forsskål himself, nor was it made from a type specimen: it was most probably drawn from nature and without definite connection with Forsskål's description. Therefore, the present author feels that typification of *Salsola imbricata* is necessary partly because both Botschantzev and Chaudhary & Akram have used it in the correct sense (but for the wrong reasons) and partly because the Code (1988 edition, Art. 69) no longer permits rejection on the grounds cited by Christensen. A neotype must, therefore, be designated for it. The diagnostic characters given by Forsskål for *Salsola imbricata* are: shrubby, diffuse, unarmed; branches hairy, branchlets imbricate; bracts obtuse, naked (glabrous), imbricate; flowers hermaphrodite, stamens 5, filaments exerted, styles 3. All these characters are in accordance with *J. R. I. Wood* 1184 (K), collected from Hodeidah, Yemen, which is further south than the type locality, but from a similar habitat. It is proposed here to use this specimen as a neotype.

Now, having *Salsola imbricata* typified by its description, we find that it is the same as *S. foetida* Del. ex Spreng. as well as *S. baryosma* (Roem. & Schult.) Dandy; the latter is based on *Chenopodium baryosmon* Schult. ex Roem. & Schult. The following differences between *Salsola imbricata* and *S. baryosma* given by Chaudhary & Akram (1986) are not in my opinion adequate to justify their separation: *S. imbricata*: "bracts smaller than bracteoles; anther lobes separate from each other for $\frac{2}{3}$ their length; stigma about as long as style; *S. baryosma*: bracts as long as the bracteoles; anther-lobes separate from each other for about half their length; stigmas 2–3 times the length of the style." Indeed, the size of bracts and bracteoles (most other authors call them bracts), as well as anther-lobes vary in individual plants within the range given by them. Stigmas which are described as long as the style for *S. imbricata* but 2–3 times the length of the style for *S. baryosma* appear on figure 3 as almost identical for both species. The note given by Chaudhary & Akram for *S. imbricata*: "infested with white-rust or gall-forming insects, . . . emits fish-stinking smell when bruised, . . . Arabic names Khareet and Harm." also apply to what he called *S. baryosma*. Under *S. baryosma* they write: "No authentic specimen was seen from Saudi Arabia . . .". Indeed, both *Salsola imbricata* and *S. baryosma* represent one and the same species which occupies a great area of diverse habitats (see distribution). It is therefore suggested here to treat *Salsola imbricata* as the correct name with synonyms as follows:

Salsola imbricata Forsskål, Fl. Aeg.-Arab. XCVII, CVIII, 57 (1775); Forsskål, Icon. Rer. Natur. T. VIII c. (1776). Type: Yemen, Hodeidah, 9 Sept. 1976, *J. R. I. Wood* 1184 (neotype K).

Chenopodium baryosmon Schult. ex Roem. & Schult., Syst. Veg. 6: 269 (1820); **synon. nov.** Type: In Aegypto superiore, Tentyrae (Upper Egypt, Dendera) Sieber, (holotype BM; isotype LE).

Salsola foetida Del. ex Spreng., Syst. Veg. 1: 925 (1824); non Vest. in Roem. & Schult., Syst. Veg. 6: 238 (1820). Type: Egypt, Delile (holotype ? MPU, not seen).

Caroxylon imbricatum (Forsskål.) Moq. in DC., Prodr. 13 (2): 177 (1849).

Salsola foetida var. *gaetula* Maire, Bull. Soc. Hist. Nat. 27: 257 (1936); **synon. nov.** Type: In planitiebus salsis desertorum maroccanorum: in ditone Tafilalet; in valle amnis Dades inter Quarzazate et Scoura (holotype MPU, not seen).

Salsola baryosma (Roem. & Schult.) Dandy in F. W. Andrews, Fl. Pl. Anglo-Egypt. Sudan 1: 111 (1950).

DISTRIBUTION. Arabia, eastwards to India; Egypt, northwards to Syria; southwards to Socotra, Ethiopia, Somalia, Kenya; westwards from North Africa to Mauritania, Senegal, Mali, Niger, Chad, Sudan and Central African Republic.

Shortly after this paper was submitted for publication, Freitag (1989) published an account on the chenopod flora of Egypt. The following are comments on his results with respect to the nomenclature, typification, and taxonomy of *Salsola imbricata* Forsskål. Notes on the Arabic vernacular names and other general remarks are also given.

a. *Nomenclature*: According to Freitag, l.c., p. 159, "the name *S. imbricata* should be discarded definitively". He used *Salsola baryosma* (Schult.) Dandy subsp. *baryosma* to replace *S. imbricata* Forsskål. As the basionym for *S. baryosma* is *Chenopodium baryosmon* Schult. ex Roem. & Schult., Syst. Veg. 6: 269 (1820), the correct authority should read: *S. baryosma* (Schult. ex Roem. & Schult.) Dandy, or: *S. baryosma* (Roem. & Schult.) Dandy, not *S. baryosma* (Schult.) Dandy as given by Freitag, l.c.

The second subspecies recognized by Freitag, l.c., p. 159, subsp. *gaetula* (Maire) Freitag., stat. nov., is not validly published according to article 33.2 of the International Code of Botanical Nomenclature (Greuter *et al.* 1988), as he failed to indicate a full and direct reference to the author and place of publication of the basionym.

b. *Typification and taxonomy*: Botschantzev (1975) revived the name *Salsola imbricata* described by Forsskål (1775) from the Red Sea coast at Lohaja in Yemen and designated fig. VIIIc in Forsskål (1776) as its type, a point of view also adopted by Chaudhary & Akram (1986). Freitag (1989) comments: "The type has disappeared, and fig. VIIIc in Forsskål (1776) which had been designated as iconotype by Botschantzev actually shows *S. longifolia*, with rather large and clearly decussate leaves". Freitag, l.c., adds: "two *Salsola* species do occur fitting into the diagnosis: *S. baryosma* and *S. spinescens* Moq. (= *S. forsskalii* Schweinf.)". However, the description of *S. imbricata* by Forsskål (1775) clearly shows that the plant is unarmed "inermis" which excludes *S. spinescens*. The branchlets are imbricate "ramulis imbricatis" and the bracts are obtuse, naked (glabrous), imbricate "Bracteae nudae, obtusae, imbricates" which exclude *S. longifolia* Forsskål (1775, p. 55) with linear, terete, long, acuminate, opposite leaves. For the reasons given earlier, the figure VIIIa in Forsskål (1776) is left out as a type for *Salsola imbricata* Forsskål and a neotype is designated.

c. *Arabic vernacular names and general remarks*: Chaudhary & Akram (1986, p. 70) write: "*S. imbricata* is a very common plant in Saudi Arabia," not uncommon as

might be understood from what Freitag, l.c., p. 159 cites: "some specimens collected in Saudi Arabia." Chaudhary & Akram, l.c. add: "This species emits fish/stinking smell when bruised. It is rarely grazed except by camels. It also invades agricultural areas as a weed. Arabic names of this taxon are Khareet and Harm." Freitag, l.c. supports Schweinfurth's suggestion that *S. imbricata* is identical to *S. spinescens* because the latter is "very common" in the area of the type locality (Lohaja, Yemen) and carries the Arabic name "Harm" which is cited by Forsskål and agrees with his remark "camelis gratum pabulum". Indeed both species are grazed by camels and the Arabic vernacular names may not be taken as a strong criterion for separating or uniting two species, especially in the absence of good taxonomic evidence. Moreover, the Arabic names for *S. spinescens*, according to Chaudhary & Akram, l.c. p. 83 are: "Araad" and "Jereem" (small plants); both names are obviously different from those applied to *S. imbricata* in Saudi Arabia.

In Kuwait, *S. imbricata* is very common as in Saudi Arabia, also called "Khareet" and "Harm" and is grazed by camels. As a matter of fact, the plant is grazed especially in summer by old camels which lack strong teeth as it is spineless, hence the name "Harm" which means old in Arabic. During the spring time, however, when many other palatable species are found in abundance, the plant is less palatable or seems to be avoided by livestock.

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