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TAMARICARIA, A NEW GENUS OF TAMARICACEAE[1]

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SUMMARY

A new monotypic genus *Tamaricaria* Qaiser & Ali of *Tamaricaceae* is described with a new combination i.e. *Tamaricaria elegans* (Royle) Qaiser & Ali.

Desvaux (1825) established the genus *Myricaria* and differentiated it by the presence of monadelphous stamens and the seeds mostly bearing a stipitate coma, while in *Tamarix* stamens are always free and the seeds have a sessile coma at the apex. Ehrenberg (1827) also accepted the two genera *Tamarix* and *Myricaria* on the basis of the characters given by Desvaux. De Candolle (1828) followed his predecessors and emphasized monadelphous stamens as key character for *Myricaria*. Royle (1835) described 2 new species of *Myricaria* from Kashmir (i.e. *M. elegans* and *M. bracteata*). Bentham & Hooker *f.* (1862) emphasized the character of monadelphous stamens for this genus and described a new species *M. prostrata* with a sessile coma. Maximowicz (1889) accepted the presence of both types of seeds (i.e. seeds with and without stipitate coma) in *Myricaria*. Hence, the presence of monadelphous stamens is the only character which can be used for distinguishing *Myricaria* from *Tamarix*.

A critical examination of the material available in different herbaria, revealed that the plant presently known as *Myricaria elegans* Royle does not fit in the genus *Myricaria* due to the presence of free stamens.

Baum (1966) transferred *Myricaria elegans* Royle to *Tamarix*, giving it a new name, *Tamarix ladachensis* because of the preoccupation of the epithet *elegans* under *Tamarix*. He himself mentioned the unique characters i.e. 'this is the only species of *Tamarix* with flat leaves and beaked seeds'. Bobrov (1967) transferred it back to *Myricaria* and restored its old name *Myricaria elegans* Royle.

The scanning electron microscopy of the pollen grains indicates that these are also very different from those of *Myricaria* in their sculpturing pattern. The sculpturing is reticulate in the present taxon (plate 1, a-c), while in other *Myricaria* species (studied so far) it is areolate and not perforated. Thus, *Myricaria elegans* Royle resembles *Tamarix* in having free stamens and reticulate pollen grains but differs from it in having normal leaves, sessile stigma, and seeds with stipitate coma. In *Tamarix* the leaves are always reduced to scale like structures, the styles are conspicous, and the seeds lack stipitate coma. The pollen grains of this species are similar to those of *Tamarix* in sculpturing pattern but differ in size. In the present taxon, the pollen grains are more than 27 μm in diameter, while in all the species of *Tamarix* the pollen grains are less than 23 μm in diameter (Qaiser, 1976).

Myricaria elegans Royle not only differs from both the genus *Tamarix* and the other members of *Myricaria* morphologically, but is also quite different in its chemical con-

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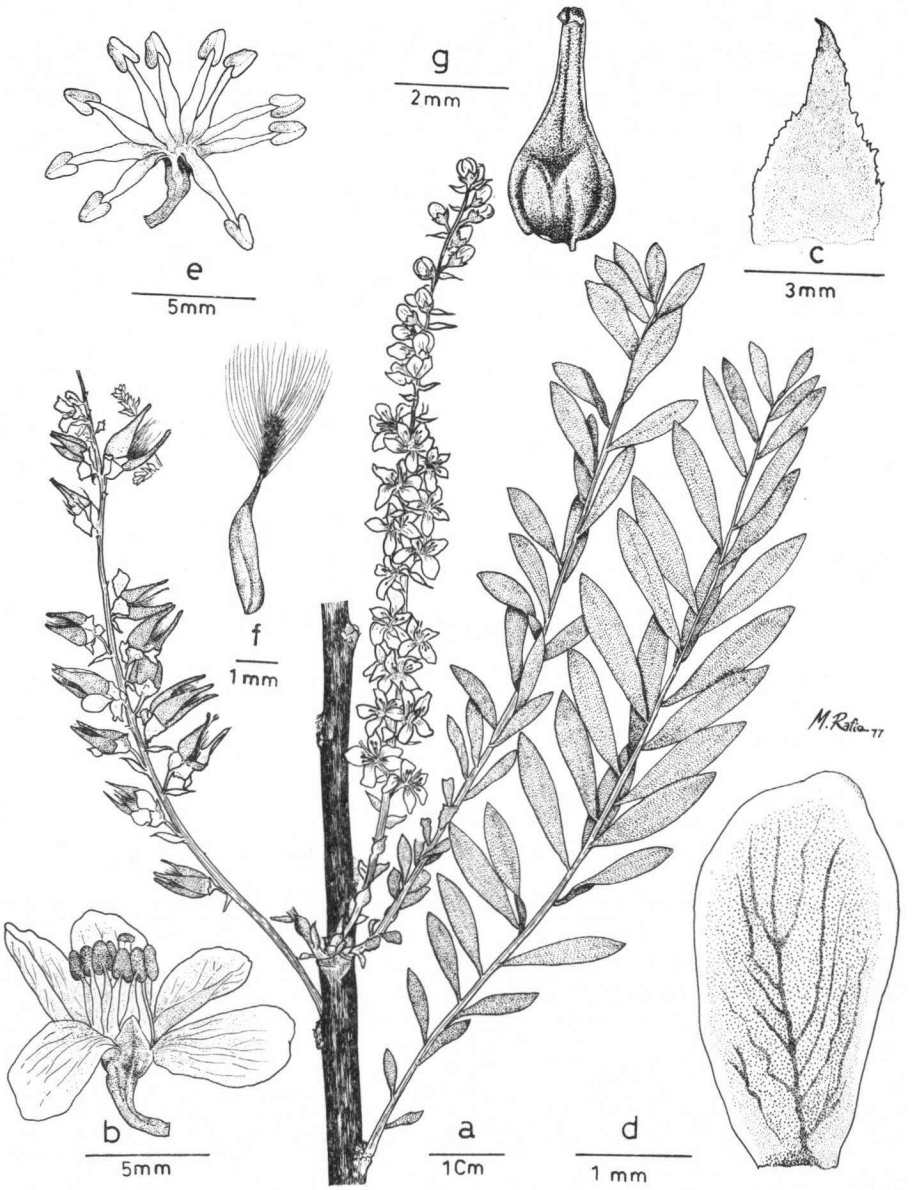

Figure 1. *Tamaricaria elegans*. a. twig; b. flower; c. bract; d. petal; e. androecium; f. seed; g. ovary.

stituents. The presence of unidentified aminoacid 'C' makes it very distinct from both genera. Ellagic acid, which is present in *Tamarix*, is absent in this taxon. Likewise, anthocyanadin, which is present in other species of *Myricaria*, is not present in this species. The presence of an unidentified phenolic acid, which is absent from all the other members of *Tamaricaceae*, gives it a unique position. (Qaiser, 1976).

In view of the points discussed above a new genus *Tamaricaria* Qaiser & Ali is being described here to accomodate this taxon. As the name indicates it occupies an intermediate position between the two genera *Tamarix* and *Myricaria* by sharing the common characters of both.

TAMARICARIA Qaiser & Ali, *gen. nov.*

Myricaria Desv. sect. *Parallelantherae* Ndz. in E. & P., Nat. Pfl. Fam. 3, 6 (1895) 296. — *Myricaria* Desv. series *Elegantae* Bobrov, Bot. Zhurn. 52 (1967) 930, *p.p.*

Frutex procerus. *Folia* non squamata, alterna, exstipulata, sessilia, elliptico-lanceolata vel oblongo-ovata. *Spicae* laterales, raro terminales. *Bracteae* lanceolatae ovatae. *Calyces* quinquelobi, lobis triangulato-ovatis. *Petala* 5, libera, inserta infra discum obsoletum. *Stamina* 10, filamentis liberis non monadelphis, alterne longioribus et brevioribus, antherae sagittatae, persistentes. *Stigma* 3-lobum, capitatum, sessilium; ovarium pyramidatum, placenta basali, ovulis pluribus. *Semina* plura, rostrata, comata ad basin.

Tall shrub. *Leaves* not reduced or scale like, alternate, exstipulate, sessile, elliptic-lanceolate to oblong-ovate. *Calyx* 5-lobed, lobes triangular-ovate. *Petals* 5, free, inserted below the almost obsolete disc. *Stamens* 10, alternately long and short, free, never monadelphous; anthers sagittate, persistent. *Stigma* 3-lobed, capitate, sessile; ovary pyramidal with basal placentas, ovules numerous. *Seeds* many, beaked at apex, base comose.

A monotypic genus, basically a Central Asian element, distributed in the Western Himalayas, Northern Tibet, South and West Kashgharia (Yarkand).

It is worth mentioning that Arnott (in Wight & Arnott, Fl. Pen. Ind. Or. 1, 1834: 40) created a genus *Trichaurus* Arn., enumerating partially the same morphological characters as of *Tamaricaria* Qaiser & Ali, particularly of beaked seeds (in seeds with stipitate coma). Unfortunately, the species which he transferred under *Trichaurus* i.e. *Trichaurus ericoides* (Rottl. & Willd.) Arn. (Basionym: *Tamarix ericoides* Rottl. & Willd.; Lectotype: Ges. Naturf. Freunde Berlin Neue Schriften 4, 1803: 214, t. 4) and the specimen which Arnott had quoted from Peninsula India Orientalis *Wight 951* (E! & P!), being devoid of beaked seeds, agree with *Tamarix*. It is not unlikely that Arnott might have based his description on some foreign element, which had beaked seed. Decaisne (1843) followed Arnott and described one species of *Tamarix* under *Trichaurus* i.e. *T. aucherianus* Decaisne and transferred *Tamarix pycnocarpa* DC. under this genus. But none of these taxa have the characters of beaked seeds, therefore these species were finally transferred to the genus *Tamarix*.

Tamaricaria elegans (Royle) Qaiser & Ali, *comb. nov.* — **Fig. 1**

Myricaria elegans Royle, Illustr. Bot. Himal. 1, 6 (1835) 214; Dyer in Hook. *f.*, Fl. Brit. Ind. 1 (1874) 250; Parker, For. Fl. Punj. & Haz. ed. 3 (1956) 26; Bobrov, Bot. Zhurn. USSR. 52 (1967) 931.

Shrub, 3—4 m tall with reddish brown to blackish brown bark, branches spreading-straight, glabrous. *Leaves* 8—15 mm long, 3—4 mm broad, entire, subobtuse, with attenuate base. *Racemes* 10—25 cm long, 1—1.5 cm broad, sterile for a considerable length. *Bracts* herbaceous, acute-acuminate, 3—4 mm long, 1.5—2 mm broad, pedicel 2.5—3 mm long with 5—7 mm long flowers. *Sepals* fused about half of their length, lobes ovate to triangulate-ovate, 2.5—3(—3.5) mm long, 1.0—2.5 mm broad. *Petals* obovate to obovate-oblong, rarely slightly notched on one side, 5—7 mm long, 3—4 mm broad. *Stamens* 10, somewhat dilated at the base, shorter filaments 3 mm, longer 4 mm long;

anthers 1.5 mm long. *Stigma* very minutely 3-lobed, sessile; ovary triquetrous-pyramidal, 7—8 mm long. *Capsule* 8—10 mm long, 2—3 mm broad. *Seeds* beaked, beak comose from the apex.

Holotype: Lippa in Kunawar, *Royle s.n.* (LIV!).

Chitral Dist.: Yarkhun, *S. A. Bowes Lyon 967* (BM). — Gilgit: Naltar valley, Gilgit, near stream, ± 11,000 ft, *R. R. Stewart 26464* (BM; RAW); common along Naltar Nallah, *A. Ghafoor & Z. L. Butt 781* (KUH). — Kashmir: Kashmir, *Strachey 20/2* (K); Khordong George at 12,000' down to Shyok Valley, *R. C Clifford 22* (K); Dras Valley, Kashmir, *c.* 9,200 ft., *B. B. Osmaston 112* (K); left side of Nubra Valley, *Schlagintweit 2243* (G); left side of Shyok River, across the pass, North of Digger, *Schlagintweit 6954* (G); Rongdu, Shyok Valley, ± 10,970 ft., *R. C. F. Schomburg 29* (BM); Kashmir, *F. Ludlow 8344* (BM); near Lippa, Bashar State, *J. H. Lace 1127* (E). — Baltistan: Hushe Valley, *F. Ludlow 355* (BM, K); *Royle* (G); Hushe River valley, 3 miles N. of Kandu, *Grady Webster & Nasir 5953* (G, K, RAW); Satpura Lake, *c.* 4.5 miles South of Skardu, ± 10,000 ft, *Webster & Nasir 5843* (G, RAW); Kandu to Hushu, *Nasir & Webster 5943* (RAW); Upper Satpura Nallah, Baltistan, ± 10,000 ft, *M. A. Siddiqui, Y. Nasir & Z. Ali 4146* (K, RAW); Marpu Nullah, 11—12,000 ft, *J. F. Duthie 11834* (BM); Satpura Nullah, above Skardu ± 9,000', *R. R. Stewart 20308* (RAW); Barpu Glaciers, Oblaition Valley, right bank, 9—11,000' *R. S. Russel 1143* (BM); Biafo Glaciers, *Hans Hartmann 960* (RAW); ibid, *R. R. Stewart 21039* (RAW); Karakorum Pass, *Raja Bashir s.n.* 1962; (RAW); Thallela, Baltistan, *R. R. Stewart 20600* (RAW); Hispar Valley, Karakorum, 9—11,000 ft, *R. S. Russel 1183* (BM, E); Karakorum, *C. B. Clarke 30106* (BM); ibid, *C. B. Clarke 10/77* (K); near Sat Village, *W. M. Conway 14* (K); ibid, Yarkand Expedition, *Henderson s.n.*, 1872 (K); Ladakh, Ka Karabu, 8—10,000 ft. *C. C. Burtt 15* (E).

Distribution: India, Pakistan, Tibet, China, & Russia.
Flowering period: June—August.

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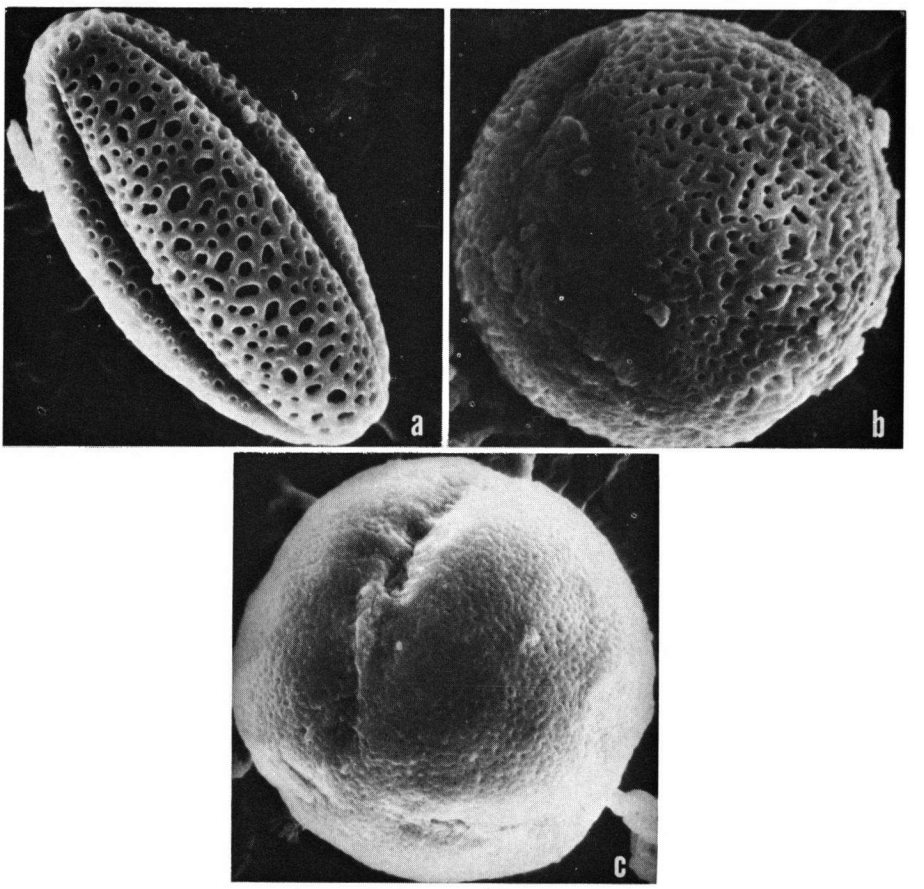

Plate 1. S.E.M. photographs of pollen grains. a. *Tamarix stricta*, showing reticulate sculpturing, ×6320; b. *Tamaricaria elegans*, ditto, ×4750; c. *Myricaria germanica* subsp. *alopecuroides*, showing areolate sculpturing, ×4750.