

A new species *Arthrocnemum franzii* Sukhor. is described from the Republic of Cape Verde (Sal, Maio and Boa Vista islands). The species is recognized as distinct from *Arthrocnemum macrostachyum* (Moric.) K.Koch based on differences in the perianth shape, length of the anthers and style, and seed-coat ornamentation. No seed heteromorphism is observed within individuals of either species, despite differences in the size of the central and lateral flowers within each cyme (heteroanthocarpy). The North American *Arthrocnemum subterminale* (Parish) Standl. (syn. *Salicornia subterminalis* Parish) is morphologically distant from Eurasian *Arthrocnemum* or *Salicornia/Sarcocornia* group and should be excluded from these genera. The genus *Arthrocnemum* now comprises only two species (*A. macrostachyum* and *A. franzii*), distributed in the Mediterranean area, Macaronesia, West Tropical Africa and the Saharo-Arabian region. A generic description is here elaborated, clearly delimiting *Arthrocnemum* from morphologically similar species of *Sarcocornia*. A list of current species previously considered as *Arthrocnemum* is provided. It is argued that the taxonomic status of *Salicornia mucronata* Lag. (1817), mentioned in some references as a synonym of *Salicornia macrostachya* Moric. (1820) [\equiv *Arthrocnemum macrostachyum* (Moric.) K.Koch], is indeed a new synonym of *Anabasis articulata* (Forssk.) Moq. (subf. Salsoloideae). Both names merged with *Arthrocnemum macrostachyum* – *Salicornia virginica* Forssk. and *Arthrocnemum glaucum* (Delile) Ung.-Sternb. var. *fasciculatum* Sennen were lectotypified. The typification of the genus *Arthrocnemum* has so far been lacking and requires a special proposal with a conserved type.