Summary

A monograph of the genus Sterigmostemum

An account is given of the general, pollen and trichome morphology and of the taxonomy of genus *Sterigmostemum,* a member of the tribe Hedsperideae.

The present study, founded on herbarium material, is the first comprehensive treatment of *Sterigmostemum*. Descriptions of the genus and its seven recognized species are presented; a key for their identification is provided and their distribution illustrated by dot maps. All names, synonyms included, have been typified. Ecological and chorological characteristics of the genus and its subordinate taxa are discussed. Chromosome numbers have been recorded from the litterature. An historical outline introduces the general part which deals with the generical definition and with the relationship of *Sterigmostemum* and allies within the tribes *Hesperideae* and *Matthioleae,* and accordingly with the systematics of these two tribes.

The species belong to the lowland and highland flora but not stricly to the mountain flora of the irano-turanian region.

Sterigmostemum caspicum is a steppic, somewhat halophilous, perennial, never glandular (it is an exception in the genus but a very stable diagnostic feature), which ranges from the Saissan Nor to the Lower Volga Basin. The northern limit of its distributional area fits quite well with the northern boundary of the turan desertic flora, as defined by the soviet chorologists, but *S. caspicum* curiously lacks in the turan area sensu stricto. *S. caspicum* has only few localities on the western shore of the Caspian Sea and is totally absent from Transcaucasia. Records of this species from the Caucasian area actually refer to *S. incanum*.

S. incanum is a very polymorphic annual or biennial, occasionally "pseudoperennial" species with a very large irano-anatolian distribution. Its siliqua is very variable in shape, size and "indumentum" and often its "typical" scabrid glandular hairs are lacking. That point was the main source of confusion with *S. caspicum.*

S. sulphureum is an annual steppic but also weedy species native from the mesopotamian subregion of the irano-turanian region, and curiously once recorded (as a weed) from North Yemen; its distribution pattern is more or less that of the "Fertile Crescent". *S. sulphureum* is very rare in Iran, often confused with *S. incanum;* the anatolian specimens previously determined as *S. sulphureum* subsp. *glandulosum* have been attributed to *S. incanum.* Central asiatic (Gobi, Tian Shan, ...) records of *S. sulphureum* refer to taxa of closely related genus *Oreoloma*.

Lomentaceous non dehiscent constricted siliqua and orophilous tendencies link *S. ramosissimum* with the genus *Anchonium*, from which, however, it differs in its floral morphology; this species is restricted to a very small area in the north-eastern Khorassan and south- western Turkmenistan.

The annual species *S. acanthocarpum* was described from the vicinity of Nakhitchevan, where it shows clear halophilous affinities; but it grows also on volcanic rocks or on sandy soils. The distribution area of *S. acanthocarpum* extends from the southern part of the Armenian S. S. R. to central Iran up to Shiraz in the south, and to the Khorassan in the north; toward the East, it vanishes in the Dasht-e Kavir: it has never beeen surely recorded from Afghanistan. Noteworthy is the absence of *S. acanthocarpum* in the eastern part of Anatolia. When fruiting, the species is easily recognized by the long glandular "setae" on the siliqua.

Well developped specimens of *S. longistylum* are easy to determine, too, by their almost stalkless siliquae and long bilobed styles. This therophytic species is an endemic from mid-western Iran.

Non connate inner stamens, peculiar subglobulous glands and white or pale pink flowers feature *S. purpurascens* as an "heretic" member of the genus. However, *S. purpurascens* shares other morphological characters ("indumentum" included) with no other genus but *Sterigmostemum* and furthermore, from the chorological point of view, there is no discordance with other species of the genus: therefore, this species has to be maintained in *Sterigmostemum*. Nevertheless, it will be

attributed to a new sub-genus, *Petiniotia*. *S. purpurascens* is an annual species endemic from central and south-eastern Iran and western part of Pakistan.

Cytologically investigated species are diploid and the chromosome numbers ($2n = 14$) are in accordance with $x = 7$, a very usual basic number in *Brassicaceae*.

Sterigmostemum appears to be a good representative of the irano-turanian element, as far as the the northern, western, south western parts of its area are concerned. More problematic is the characterization of the eastern part of the generic area; the absence of the genus in the Turan area s. str. is quite enigmatic. In this respect, one should question wether it is appropriate to use the epithet "irano-turanian" in this case.

Systematic SEM-investigations of the "indumentum" have been made within the genus *Sterigmostemum* and its closely related genera *Anchonium, Zerdana, Oreoloma* and also *Iskandera*. These investigations have been enlarged to all asiatic members of both tribes *Hesperideae* and *Matthioleae* and have provided the bases for an attempt at description and classification of trichomes in these two tribes. As a result, trichome morphology seems to be a valuable Ariadne's clew in the study of generic relationship. On the other hand, the separation between *Hesperideae* and *Matthioleae* appears to be quite unnatural. Furthermore, if one considers floral and trichome morphology within both tribes *Hesperideae* and *Matthioleae*, connate longer stamens, branched hairs and stipitate pluricellular glands point out to the fact that *Sterigmostemum* and related genera are a quite homogenous evolutionary group (stamens of *Iskandera* are free). The group is beleived to have originated from a central asiatic ancestor. it seems reasonable to assume that the spreading of *Sterigmostemum* westwards was initiated by the dessication of the Paratethys and that the irano-anatolian area has been a quite recent center of speciation of the genus. However, it has to be underlined that no evidence of introgressive processes have been observed between the iranian annual species which are believed to be the more recently evolved ones.