Peponium: An interesting genus of Cucurbitaceae from Africa, Madagascar, and the Seychelles

by

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Introduction

Peponium Engl. (Cucurbitaceae) is a dioecious genus including about 20 species ranging from West Africa to Madagascar with a single endemic Aldabran species in the Republic of Seychelles. Species of *Peponium* are climbing perennial herbs with tuberculate roots, simple leaves, and simple or bifid tendrils. The receptacle forms an elongated and subcylindrical tube with 5 distinct lobes and the flowers are showy and always 5-petaled. Fruits are thin-walled, indehiscent, and bacciform with many small, dark seeds. Plants are extremely adaptable and become established readily after dispersal primarily along waterways. *Peponium* frequently occurs in coastal habitats, but also grows in dense forest along rivers wherever there is an adequate water supply.

According to recent molecular phylogenetic analyses([1,2]), *Peponium* belongs to Cucurbitoideae: Sicyeae: Cyclantherinae and is sister to *Lagenaria* Ser. (6 species – 5 African, 1 Madagascar/Comoros, 1 pantropical).

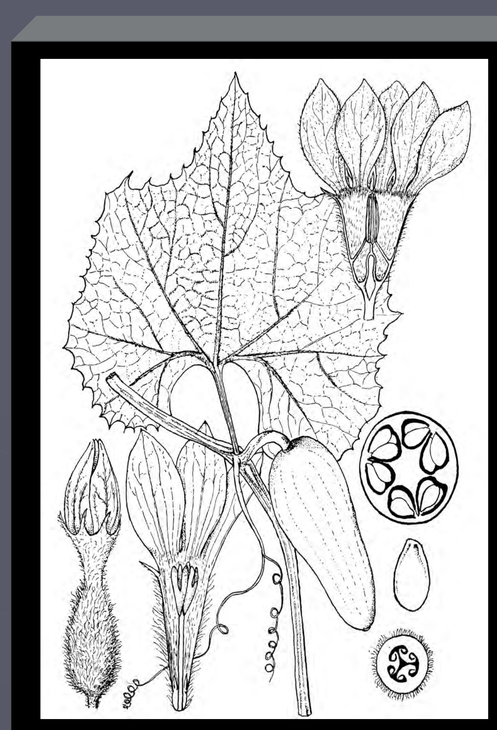

Fig. 1: *Peponium perrieri* Keraudren

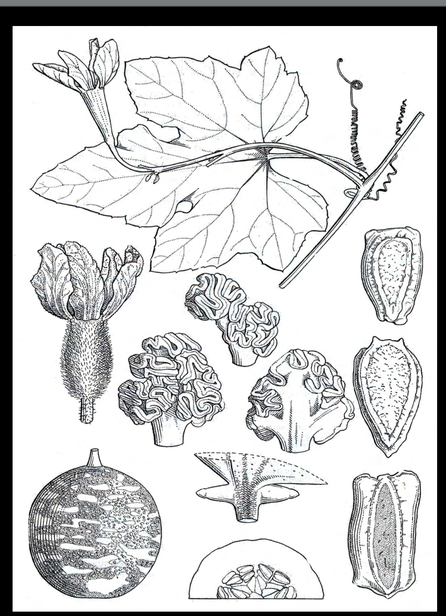

Fig. 2: *Lagenaria* Ser.

Peponium (Fig. 1, 3, 5–6) is distinguished vegetatively by the absence of characteristic stalked, paired petiole glands located just below the leaf lamina (glands present in *Lagenaria*, Fig. 2).The form of the inflorescence and flowers in both genera are rather similar in that staminate flowers have three stamens with free filaments inserted on the floral receptacle tube, but the anthers in *Peponium* are united, included in the tube, and the connectives are narrow and form a vertical column. Anthers in *Lagenaria* are usually extremely contorted and free, or coherent with broad connectives.

Peponium has received little attention in the literature besides a few older treatments in regional floras ([3,4,5]), and the group remains relatively poorly collected except for the widespread African species *P. vogelli* (Hook. f.) Engl. (Fig. 3).

Objective

The objective of our study was to conduct a preliminary taxonomic re-evaluation of *Peponium*.

Materials and Methods

1. A preliminary investigation of *Peponium* was carried out to ascertain the taxonomic and nomenclatural status of all known and described taxa belonging to the genus.
2. Taxonomic and specimen-based data were evaluated and captured on the Missouri Botanical Garden's TROPICOS® database (http://www.tropicos.org).
3. A total of 257 herbarium collections (including nomenclatural types) were studied from several herbaria([6]): BM, BR, COI, G, K, EA, LISC, MO, P, TAN.
4. Geographic distribution maps based on TROPICOS data were created with ArcGIS software.
5. A preliminary conservation status was assigned for each species following IUCN Categories and Criteria([7]). The summary of the conservation analyses are available from the authors by request.

Fig. 4: Distribution of the eighteen species of *Peponium*.
(dark grey areas indicate the low elevations and dark red areas indicate the highest elevations)

Results and Interpretations

1. Broader DNA sampling is needed to adequately address the circumscription and biogeography of *Peponium* (only two African species included in published phylogenies).
2. We recognize 18 species of *Peponium* (10 Malagasy, 7 African, and 1 Aldabran species).
3. The taxonomic status of a few poorly known species and the three Malagasy varieties remains unclear.
4. Most species apparently have relatively narrow geographic distributions (Fig. 4). Six of the 10 species from Madagascar are probably only known from one or two collections.
5. The widespread *Peponium vogelii* shows the greatest morphological variation and the largest geographic distribution of any species, ranging from Côte d'Ivoire and Bioko eastward to Ethiopia, and southward through Angola, the Congo, Tanzania, and Mozambique. The species also has the widest elevation range of all other species (50–2375 m). A more thorough analysis of *Peponium vogelii* is needed to ascertain if the heterogeneous complex includes more than one species.
6. We identified 77 published names belonging to the genus (54 species names and 13 varietal names). All names used for currently recognized taxa were validly published.
7. At least 17 names require effective typifications (four other names probably lack effectively published typifications). Only two names were unquestionably effectively typified in publications appearing subsequent to the protologue.
8. Seven Malagasy species and two African species are currently rare enough to qualify as threatened in the Critically Endangered, Endangered, or Vulnerable category.

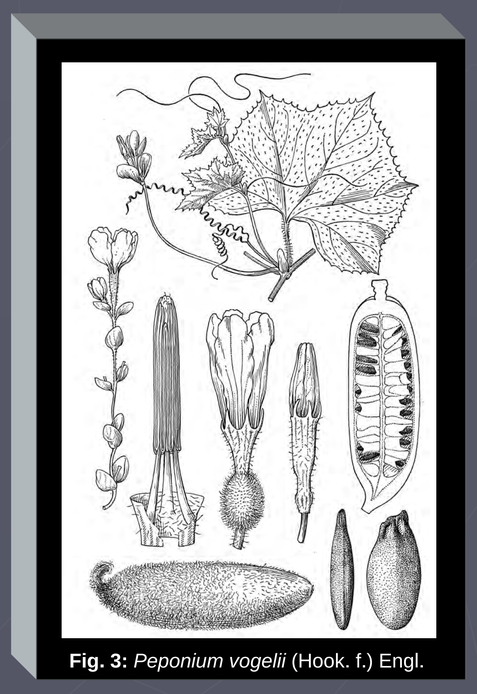

Fig. 3: *Peponium vogelii* (Hook. f.) Engl.

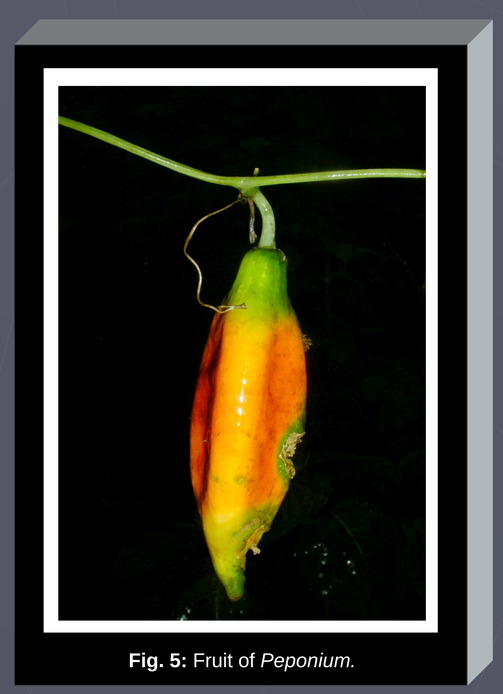

Fig. 5: Fruit of *Peponium.*

Fig. 6: Flowers and fruits of Malagasy *Peponium.*

References

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