Life forms, reproductive traits and habitat preferences in the endemic flora of Peloponnisos (S Greece)

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Introduction

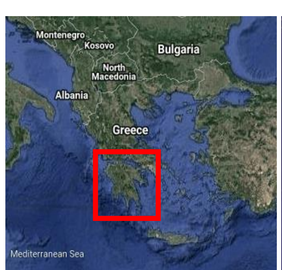
Endemic vascular plants, often having small populations and few localities for conservation intervention, are inherently vulnerable to extinction and thus, targets of conservation efforts. Driving forces that shape endemism are certainly of importance, as they may be used in various models that predict endemism and/or decide on conservation priorities.

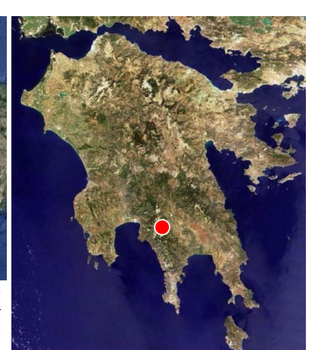
Peloponnisos is the southernmost part of the Greek mainland and comprises several adjacent islands. The Corinth Canal, constructed in 1893, transformed Peloponnisos into an artificial island. Its total surface area (including surrounding islands) reaches approximately 22,140 km^2. The highest altitude is found on Mt. Taigetos, at 2,407 m. Peloponnisos is considered a biodiversity hot spot in the Mediterranean.

Materials & Methods

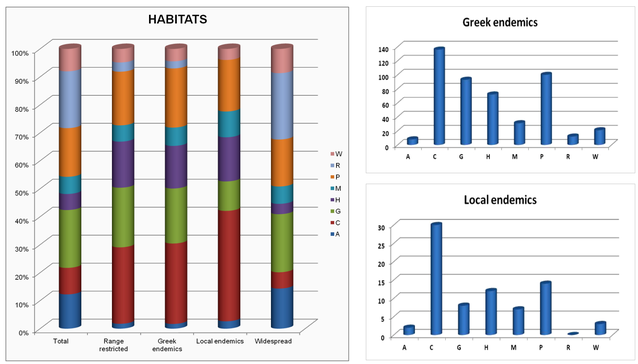
Extensive bibliographic sources, herbarium specimens and the botanical databases maintained in ATH and ATHU herbaria were used to estimate plant richness in Peloponnisos. As far as their distribution is concerned, plant taxa inhabiting Peloponnisos were classified as widespread (not confined to Greece), Greek endemics (distributed within the political borders of Greece), range restricted (populations within a linear distance of up to 500 km, irrespective of political borders) and local endemics (very narrow distribution, within a c. 50 km radius).

Habitat types classification follows the Checklist of the Vascular Plants of Greece. The diaspore categories used are: seed (including single-seeded fruits, for example an achene or caryopsis) and fruit. Fruits were classified as dry or fleshy. Three classes were used for the annual seed production: few (1-50), medium (50-500) and many (> 500). Various dispersal modes are explained when applied.

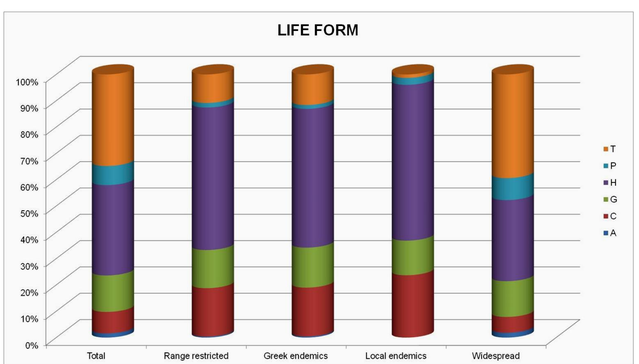


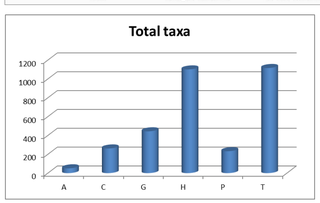


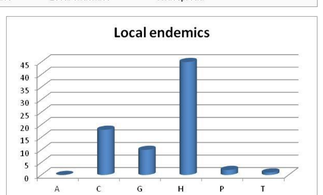
Peloponnisos (red square) covers the southernmost part of the Greek mainland. The highest peak (red dot) reaches 2,407 m a.s.l. (Mt. Taigetos).



The rocky habitats and cliffs (C), the dry phryganic formations (P) and the grasslands at the lowland or at subalpine areas (G, H) host the majority of local and Greek endemics in Peloponnisos. Ruderal (R) and aquatic (A) habitats host only a few taxa. (M): Coastal habitats, (W): Woodlands and scrub.







While therophytes (T) constitute an important percentage in the total flora of Peloponnisos, similar to that of hemicryptophytes (H), their contribution drops dramatically among the Greek and local endemics. Likewise, local endemic phanerophytes (P) are very few and less than 20 local chamaephytes (C) are found in the area. (A): Aquatic short-lived or perennial herbs, (G): Geophytes.

Results & Discussion

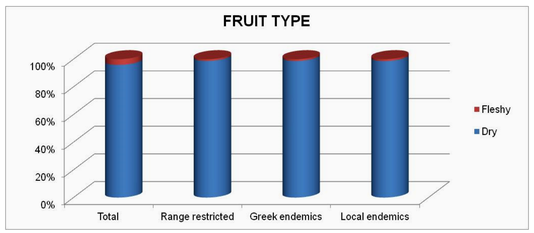
Peloponnisos comprises at least 3,212 vascular plant taxa (species and subspecies), which constitute almost half of the Greek flora. At least 475 taxa are Greek endemics, including 4 endemic genera: *Hymenonema*, *Laserocarpum* (in press), *Thamnosciadium* and *Phitosia*. Not less than 518 taxa are considered as range restricted. Notable is also the number of local endemics reaching 77 taxa.

The investigation of life form spectra shows a clear predominance of therophytes (34,8%) in the total flora, followed by hemicryptophytes (34,3%). In contrast, among endemic or range restricted taxa, a dramatic drop of the percentage of therophytes is noted. There are about 55 Greek endemic therophytes (11,6%) and just one local endemic (1,3%).

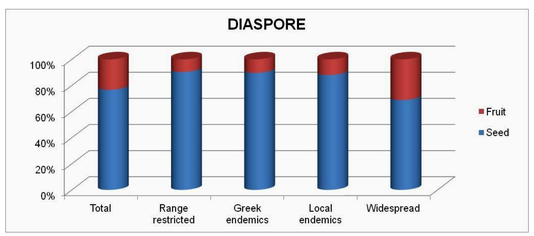
With respect to fruit characters and dispersal modes, fleshy fruits are rare in the flora of Peloponnisos. Diaspores are predominately seeds or single-seeded fruits, a trend even more pronounced in the endemic and range restricted flora. Annual seed production does not exhibit any significant variation among the widespread taxa and taxa with restricted distribution. A preliminary investigation of dispersal syndromes showed that within specialized genera the percentage of endemicity may vary considerably. For example, endemism in the myrmecochorous genera *Euphorbia*, *Viola* and *Crocus* ranges from 3% (*Euphorbia*) to almost 43% (*Crocus*).

Regarding habitat preferences, the majority of the Peloponnesian endemics are inhabiting rocky, calcareous habitats and cliffs. These habitats often act as refugia for the local endemic flora. Dry, phryganic formations are also rich in endemics, followed by the grasslands at the lowland or subalpine areas. Ruderal and aquatic habitats have an insignificant contribution to endemism.

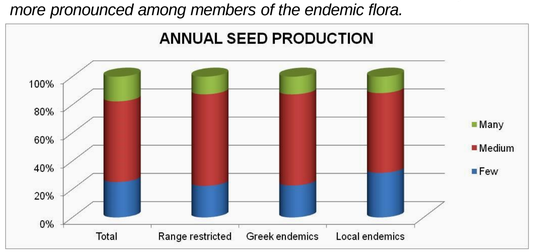
The genus Hymenonema *(Asteraceae) consists of two species, both endemic to Greece.* H. laconicum *(left) is an impressive plant distributed in phrygana and scrub formations of SE Peloponnisos, usually at an altitude lower than 1,000 m. It flowers in late spring to early summer.* Thamnosciadium *(Apiaceae) is a monotypic genus, endemic to Greece.* Th. junceum *grows in Peloponnisos and Sterea Ellas. It forms scattered populations on the mountains of north Peloponnisos, usually above 1,500 m. It flowers in summer.*



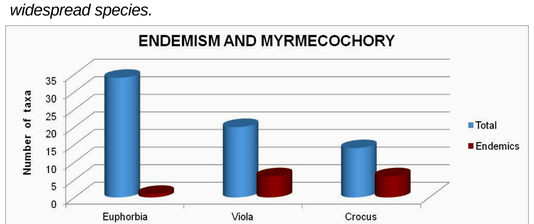
Fleshy fruits are rare in the flora of Peloponnisos and even rarer among endemics.



Most plants disperse seeds or single-seeded fruits: this tendency is even more pronounced among members of the endemic flora.



Annual seed production shows no significant variation among local and widespread species.



Seeds with an elaiosome are usually dispersed by ants (myrmecochory). The percentage of endemicity in three myrmecochorous genera (Euphorbia, Viola, Crocus) *varies significantly.*

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