Fundamental Adaption and Dominant Mediterranean Climatic Conditions

Carl Linnaeus*

Department of Ecology, Swedish University of Agricultural Sciences, Uppsala, Sweden

Commentary

Received: 03-Jun-2022, Manuscript No. JBS-22-66507;
Editor assigned: 06-Jun-2022, PreQC No. JBS-22-66507(PQ);
Reviewed: 20-Jun-2022, QC No. JBS-22-66507;
Revised: 27-Jun-2022, Manuscript No. JBS-22-66507(R);
Published: 04-Jul-2022, DOI : 10.4172/2320-0189.11.5.002

***For Correspondence:**
Carl Linnaeus, Department of Ecology, Swedish University of Agricultural Sciences, Uppsala, Sweden
E-mail: linnacarl@slu.se

ABOUT THE STUDY

Evergreen in Mediterranean oaks and its relatives has long been attributed to a fundamental adaptation to the region's dominant Mediterranean climate. Summer drought, cyclonic winter rain and a mean annual temperature of 15.5°C describe them. This pattern may be seen in various parts of the world around 35 degrees latitude, where prevailing actualism in geobotany places a great emphasis on the presence of *physiognomically* and adaptively comparable, convergent vegetation species (American *chaparral*, S African *fynbos*, Australian *mallee*, Chilean *matorrales*). The majority of modern plant ecology research has been drawn to this trend. When compared to the temperate forest's winter deciduous trees, evergreen oaks are drought resilient. Under these conditions, summer dry, evergreen forest ecosystems appear to thrive. Their species have thick, leathery, hard-surfaced, drought-resistant, long-living *sclerophyllous* leaves with waxy coatings that allow them to endure water loss during severe summer droughts while also benefiting from the winter.

The rationale of the evolutionary success of the *sclerophyllous* model characterizing the plant cover in the Mediterranean region is centered on the observed links between the adaptive traits of these oaks, those of their associates and the ruling climate. Nevertheless, their evergreens are primary in the history of the taxon and in the history of most of their woody associates, achieved long before the onset of a Mediterranean type climate in the old World. *Phylogenetic* relationships with an array of evergreen subtropical oaks from the Himalayan or SE Asian range, such as *Quercus baloot*-holly oak and *Quercus floribunda*-moru oak, a tall tree very closely related to *Q. ilex*, are suggested by shifting degrees in mediterranean evergreen oaks of *sclerophylly* facing *laurophylly* (and for some authors, its asian form). Molecular evidence also suggests that *Q. aucheri*, *Q. alnifolia*, *Q. coccifera*, and *Q. ilex* are related to *Q. floribunda* and *Q. baloot* from the Himalayas.

These and other ilicoid oaks (*Q. semecarpifolia*-Brown oak, *Q. leucotrichophora*-woolly oak, *Q. glauca*-blue Japanese oak) belong to the subgenus *Cerris sensu Denk*, which evolved from an originary, late neogenic indo-malesian stock, similar to fossil western eurasian evergreen macrothermic oak species from the late neogene. As a result, a geographical continuity in the evolutionary processes of species and ecosystems between the modern mediterranean region and the Asian laurel woods must be assumed. When the *coenological* (i.e., biological community) history of these formations is taken into consideration, the similarity between the five enclaves of Mediterranean type ecosystems across the world is undoubtedly at least partly inaccurate. Indeed, only the jumbled evaluation of today's mediterranean evergreen broadleaved woodland biome dominated by *sclerophyllous* oaks is comparable to them all. Late successional recovery of these evergreen oak woodlands should shift the comparisons to climatically dissimilar regions of the old world, where the prominent mediterranean evergreen oaks share much of their evolutionary history with laurel forest species.

In the context of its evolutionary ties to East Asian equivalents, the Canary Islands laurel forest can provide significant insights into the development of the Mediterranean broadleaved forest biome. Pontic rhododendron (*rhododendron ponticum*), laurel (*laurus nobilis*, *laurus azorica*), portugal laurel (*prunus lusitanica/prunus laurocerasus*), English holly (*Ilex aquifolium*), box (*Buxus sempervirens/Buxus balearica*), mediterranean palm (*Chamaerops humil* during the warm and humid late tertiary, their ancestors were common throughout paleo-europe. However, at the end of the paleogene, numerous waves of cooling and aridification wiped off the majority of the *laurophyllous* lineages. Only a few remnant *laurophylls* remained in southern european refuges when the present day mediterranean climate emerged (about 4.5 ka B.P.). Many of these relic laurophylls are currently found only in macaronesia and the Western Caucasus, where the climate remains damp.

Only a few of them, on the other hand, can be found in the mediterranean, due to low winter temperatures and a lack of precipitation. Relic *laurophylls* can be found in extrazonal groves when the microtopography provides enough moisture to meet their *termo-hygrophilous* needs. Following the recent environmental decline, these extrazonal habitats serve as modern refugia for *laurophylls*. As a result, the biogeography of *laurophylls* is closely linked to that of mediterranean oaks and their associated species. The *laurophyllous* vegetation and its constituents may have given rise to the existing evergreen oaks of europe. Mediterranean oaks do, in fact, have East Asian relatives that lived in the eocene subtropical-tropical forest. While all existing Asian oak species now grow in areas impacted by monsoon climatic conditions, which provide seasonal high amounts of precipitation, their Mediterranean ancestors flourish in the drier mediterranean macroclimate. Thus, in the context of a fundamentally distinct paleoecological and paleogeographical scenario, the evolutionary history of mediterranean oaks and their ecosystem has been stretched far beyond the current environmental assessment of Eurasia.