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Cultural landscapes and attributes of "culturalness" in protected areas: An exploratory assessment in Greece

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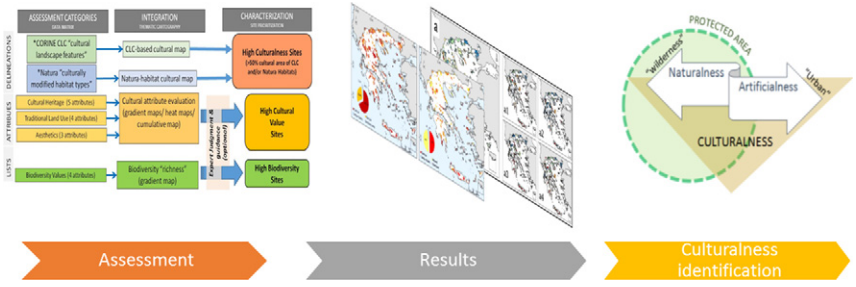
HIGHLIGHTS

- A distance-based assessment provides the first review of cultural landscape features in Greece's protected areas.
- Cultural landscapes and culturally-modified habitat types are prominent in the Natura 2000 protected area network.
- The notion of protected area "culturalness" is introduced for conservation evaluation purposes.
- Assessing cultural attributes of protected areas can be applied even in data-poor regions.

GRAPHICAL ABSTRACT



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ABSTRACT

Cultural landscapes are poorly inventoried and evaluated in protected natural areas. This study presents a novel procedure to assess cultural landscape features and their cultural values in the major protected areas of Greece. After identifying a set of culturally modified land cover types and habitat types the GIS-based survey of the entire Natura 2000 protected area network in Greece (419 sites) shows that roughly 67% of protected area land cover consists of cultural landscape features. This was corroborated by the distribution of culturally modified habitat types which take up approximately 50% of the areal cover in a subset of the nation's Natura 2000 network (241 Special Areas for Conservation). Moreover, a set of 12 cultural attributes involving cultural heritage values, traditional land uses and aesthetic quality indicators were scored to assess these "cultural values" in each site. Gradient maps were produced to express an initial nation-wide site ranking profile. Heatmaps help link instead of solely rank culturally valuable sites that are in proximity to each other, showcasing site clusters of outstanding value. These analyses help define the level of "culturalness" of each site based on human-modified landscape and habitat types and provide a baseline review of cultural values in protected natural areas. This screening-level survey identifies the protected areas that may require special attention for managing cultural elements-of-diversity. Difficulties with data availability and uncertainties are reviewed. This procedure supports a paradigm shift that promotes a more holistic evaluation and management of biodiversity-centered protected areas, where until recently cultural landscapes were rarely appreciated.

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1. Introduction

Cultural landscapes are defined as land areas that have been sculpted by traditional human land-use (Rossler, 2006). Moreover, they are considered as an interface between nature and culture, tangible and intangible heritage, cultural and biological diversity (Naveh, 1995; Taylor and Lennon, 2011; Tengberg et al., 2012; Cartalis et al., 2014). Serious efforts to study cultural landscape dynamics and their conservation within protected natural areas have only recently been promoted in Mediterranean Europe (Phillips, 2002; Philips, 2012; Agnoletti, 2014; Barbera and Cullotta, 2012). In fact, European researchers have recently stated that an urgent priority in biodiversity conservation is the assessment and attention to cultural landscapes (Plieninger et al., 2006; Catsadorakis, 2007; Martínez et al., 2010). However, exploring the cultural attributes of protected areas has been slow and complicated, and in most European countries basic identification, inventories and assessments of the cultural landscapes and cultural values of protected areas are poorly developed (Palang et al., 2006; Martínez et al., 2010; Barbera and Cullotta, 2012). Even basic cartographical work and typologies are based on recent developments (e.g. Vogiatzakis et al., 2006; Zomeni et al., 2008; Mücher et al., 2010). Beyond biodiversity inventories, new inventory and delineation procedures are being developed for specific attributes, for example geological heritage sites in Greece (Zouros, 2007) and Spain (Fernández et al., 2014). Protecting and planning for the varied elements-of-diversity in protected areas has become complex (Collen, 2015) and calls for more integrative action are being promoted; thus, we are moving beyond the static preservation of naturalness into more holistic protected area models (Brown et al., 2005; Mallarach, 2008; Agnoletti, 2014).

It is well known, that in Mediterranean climate areas, the long-term human interactions with the land have created diverse species assemblages and characteristic ecological patterns (Blondel et al., 2010; Bagella et al., 2016). Many habitat types rely on human influence and disturbance regimes (Ostermann, 1998; Halada et al., 2011), since the use of fire by early man and ancient traditional agricultural uses, including livestock grazing, have shaped many landscape features for millennia (Terkenli, 2001; Grove and Rackham, 2003; Blondel, 2006). These human activities contribute to the existence of high biodiversity through intermediate levels of exploitation that mimic natural vegetation perturbation regimes, such as megafaunal herbivore grazing and wildfires (Pineda and Montalvo, 1995; Blondel et al., 2010). Furthermore, in many cultural landscapes, long-term traditional management of natural resources resulted in landscapes with high aesthetic and cultural heritage values (Stara et al., 2015); yet there is mounting evidence that these values are rarely accounted for in existing protected areas (Plieninger and Bieling, 2012).

It is also interesting to note that in the Mediterranean basin traditional cultural landscapes have largely been devalued or misinterpreted in protected areas, until rather recently (Grove and Rackham, 2003). Cultural landscape features were rarely targeted or utilized in biodiversity conservation in Greece or in other Mediterranean countries; the focus was on "natural areas" and forests (Thirgood, 1981; Rackham, 2003). For a long time, many cultural landscapes were considered so-called ruined landscapes (sensu Rackham and Moody, 1996). However, their biodiversity interest, in terms of flora and birdlife in particular, promoted delineation of many of these open landscapes within the EU Natura 2000 protected area network as a result of the EU Nature Directives implementation. In Greece, as in most EU Mediterranean countries, there has been a "boom" in protected areas creation, promoted by the EU Birds and Habitats Directives, especially after the mid 1990s (Papageorgiou and Vogiatzakis, 2006). Designated protected area cover has grown from less than 3% in 1990 to 27% today (PAF, Prioritised Action Framework, 2014). After the success of increasing the nation's protected area cover attention is beginning to focus on management and the effectiveness of these areas in achieving natural heritage conservation and sustainability goals. The question of protecting living landscapes, where traditional land-uses are being practiced, is still perplexing and difficult. The exclusive focus on nature preservation sites is increasingly questioned by researchers and stakeholders since it bypasses the critical importance of protecting the wider landscape and managing protected areas for the livelihood of the local populations and for traditional cultural heritage as well (Catsadorakis, 2007; Fischer-Kowalski et al., 2011). There is no doubt that the development of the concept of protecting non-forested cultural landscapes has been a recent and remarkable paradigm shift for Mediterranean protected areas.

Calls for landscape protection have been late in coming, but are many and varied. The European Landscape Convention - ELC (Council of Europe, 2000) promotes the protection, management and planning of all landscapes. During the last decades, widespread land-use changes are taking place that affect cultural landscape features, influence associated biodiversity, ecological conditions and resources (Moreira et al., 2001; Grove and Rackham, 2003). Vos and Klijn (2000) described the following trends of the transformation in European landscapes: a) Intensification and increase in agriculture that degrades wetlands and natural areas into agricultural land; b) Urban sprawl, infrastructure growth and urbanization; c) Specific tourist and recreational land use development at an accelerating speed in coastal and mountainous regions; d) the extensification of land use and land abandonment that affects remote rural areas with less favorable and declining social and economic conditions and poor accessibility. The evidence of homogenization and fragmentation of authentic landscapes is notable (Jongman, 2002; Keenleyside et al., 2010; Kizos et al., 2013), but most works have focused on case-study areas (e.g. Tzanopoulos and Vogiatzakis, 2011; Zogaris et al., 2015); reviews of state-wide conditions are scarce (e.g. Symons et al., 2013).

Due to their biodiversity interest, many new protected areas are dominated by features such as traditional livestock grazing and rural

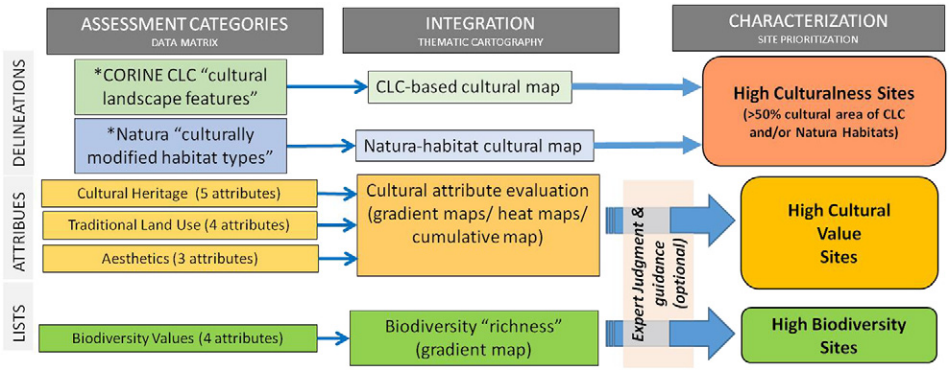

Fig. 1. Flow chart of the cultural assessment procedure applied in Natura 2000 sites in Greece. The assessment categories include existing geographical delineations. In parallel, a simple standardized biodiversity evaluation was also executed for comparison. Assessment category attributes are analyzed in Table 1.