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Non-Native Species and Biodiversity Assessment

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Climate change and direct effect of human activities imply the necessity to establish the biological pollution nature and magnitude; set objectives; consider the full range of alternatives; determine risk; assess benefits versus risks [1-2]. With increased human populations, and consequent demands for more resources, there will be an ever increasing number of species at risk [3-5]. Advances in sampling technology permit to survey previously unexplored areas and improve assessment of biodiversity, a fundamental step in defining the state of exploited specie and the environmental changes [6]. Several different approaches may be applied to discriminate among species, including analysis of geographic variations in morphometric and meristic characters [7], electrophoresis and isoelectric focusing [8], immunological methods [9] and, more recently, proteomic analysis [10] and DNA microarrays [11]. Generally, these techniques, especially isoelectric focusing, have been widely used and proved to be reliable and discriminative. Therefore, the application of DNA technology to species identification grew enormously during the last two decades [12]. The advent of recombinant DNA techniques generated more reliable genetic markers useful to address the problem of genetic identification of species with high sensitivity and specificity. Although both nuclear and mitochondrial DNA are theoretically available for species identification, vertebrate and invertebrate mitochondrial genes present a high mutation rate which allows the discrimination of even closely related species [13]. Nevertheless, the design of a great variety of universal primers for polymerase chain reaction (PCR) amplification of specific mitochondrial DNA (mtDNA) sequences, has promoted the use of mtDNA markers for species identification [14,15]. Most studies assume that non-native species can affect negatively native Mediterranean biota, while a few others contend that allochthonous in coastal waters seem to play a beneficial role in ecosystem functioning [16]. Any case if species at risk are relatively easy to identify, saving them is another matter. There has been an upsurge in scientific research aimed at guiding management and conservation of species at risk and/or rational and sustainable use of water resources. They highlight the importance of understand the natural disturbance regimes, recognizing the scope, scale, and temporal patterns of change [17]. Evolutionary history or phylogeny provides one natural measure of biodiversity through the popular phylogenetic diversity (PD) measure. The evolutionary model underlying PD means that it can be interpreted as quantifying the relative feature diversity of sets of species. Quantifying feature diversity measures possible future uses and benefits or option values. Interpretation of PD as counting-up features is the basis for an emerging broad family of PD calculations, of use to both biodiversity researchers and decision makers [18]. To save species at risk, in fact, we must manage, our protected and other areas, within the framework of ecological integrity and understand that this can only be accomplished in community and regionally acceptable models. To address these aspects, our journal solicits its potential readers and authors to send their original research articles, comments, discovery notes and reviews on biological pollution studies for biodiversity conservation strategies.

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