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Articles

### Can ecosystem properties be fully translated into service values? An economic valuation of aquatic plant services

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We carried out an integrated analysis of ecosystem services in the Doñana social-ecological system (southwestern Spain), from the providers (different aquatic plant functional groups) to the beneficiaries (different stakeholders living in or visiting the area). We explored the ecosystem services supplied by aquatic plants by linking these services to different plant functional traits, identifying relevant ecosystem services and then working our way backward to ecosystem properties and the functional traits underpinning them. We started from 15 ecosystem services associated with aquatic systems (freshwater marshes, salt marshes, ponds on aeolian sheets, temporal coastal ponds, and estuaries) and related them to plant traits (directly or indirectly through intermediate ecosystem properties). We gathered information from the literature on the functional traits of 144 plants occurring in the aquatic ecosystems of Doñana. We analyzed the species × trait matrix with multivariate classification and ordination techniques and obtained seven functional groups with different potentials for delivering ecosystem services. A survey was then administered to 477 stakeholders to analyze, through the use of a contingent valuation exercise, how the ecosystem services provided by the different functional groups were valued. We identified connections between individual plant traits, ecosystem processes, and ecosystem services, but a mismatch appeared between the functional groups and the economic values placed on them by the beneficiaries. We found that contingent valuation applied to ecosystem services tended to ignore the ecosystem properties and biodiversity underpinning them. Our results cast doubts over the suitability of the economic valuation framework of ecosystem services to capture the full value of biodiversity and ecosystems to people.

Key words: [aquatic vegetation](#), [beneficiaries](#), [contingent valuation](#), [Doñana social-ecological system](#), [ecosystem services](#), [functional diversity](#), [providers](#)

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