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**TURNER REVIEW No. 9 Ecosystem services: an ecophysiological examination**

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**Abstract**

This review aims to discuss ecosystem services, provide illustrative case studies at catchment and local scales and present future research needs. This review discusses the following:

(1) Ecosystem services (ES) are those goods and services that are provided by or are attributes of ecosystems that benefit humans. Examples of ES include the timber derived from a forest, the prevention of soil and coastal erosion by vegetation and the amelioration of dryland salinity through prevention of rises in the water table by trees. The provision of ES globally is in decline because of a lack of awareness of the total economic value of ES in the public, policy and political fora.

(2) Providing a scientific understanding of the relationships among ecosystem structure, function and provision of ES, plus determining actual economic value of ES, are the central challenges to environmental scientists (including triple-bottom-line economists).

(3) Some ES are widely dispersed throughout many different ecosystems. Carbon accumulation in trees and the contribution of biodiversity to ES provision are two examples of highly dispersed attributes common to many ecosystems. In contrast, other ES are best considered within the context of a single defined ecosystem (although they may occur in other ecosystems too). Mangroves as 'nursery' sites for juvenile fish is one example.

(4) Examples of catchment-scale and local-scale provision of ES are discussed, along with future research issues for the nexus between ES and environmental sciences.

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