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## E

Ecosystem services are the many and varied bene ts to humans provided by the natural environment and from healthy ecosystems. Such ecosystems include, for example, agro ecosystems, forest ecosystems, grassland ecosystems and aquatic ecosystems. ese ecosystems, functioning in healthy relationship, o er such things like natural pollination of crops, clean air, extreme weather mitigation, human mental and physical well-being. Collectively, these bene ts are becoming known as 'ecosystem services', and are o en integral to the provisioning of clean drinking water, the decomposition of wastes, and resilience and productivity of food ecosystems [1].

While scientists and environmentalists have discussed ecosystem services implicitly for decades, the Millennium Ecosystem Assessment (MA) in the early 2000s popularized this concept. ere, ecosystem services are grouped into four broad categories: provisioning, such as the production of food and water; regulating, such as the control of climate and disease; supporting, such as nutrient cycles and oxygen production; and cultural, such as spiritual and recreational bene ts. To help inform decision-makers, many ecosystem services are being evaluated in order to draw equivalent comparisons to human engineered infrastructure and services [2].

## D

Per the 2006 Millennium Ecosystem Assessment (MA), ecosystem services are "the bene ts people obtain from ecosystems". e MA also delineated the four categories of ecosystem services supporting, provisioning, regulating and cultural discussed below.

By 2010, there had evolved various working de nitions and descriptions of ecosystem services in the literature. To prevent double counting in ecosystem services audits, for instance, e Economics of Ecosystems and Biodiversity (TEEB) replaced "Supporting Services" in the MA with "Habitat Services" and "ecosystem functions", de ned as "a subset of the interactions between ecosystem structure and processes that underpin the capacity of an ecosystem to provide goods and services" [3].

## С

Detritivores like this dung beetle help to turn animal wastes into organic material that can be reused by primary producers. e Millennium Ecosystem Assessment report 2005 de ned ecosystem services as bene ts people obtain from ecosystems and distinguish four categories of ecosystem services, where the so-called supporting services are regarded as the basis for the services of the other three categories [4].

ese include services such as nutrient cycling, primary production, soil formation, habitat provision and pollination. ese services make it possible for the ecosystems to continue providing services such as food supply, ood regulation, and water puri cation. Slade et al outline the situation where a greater number of species would maximize more ecosystem services [5]. • erapeutic (including Eco therapy, social forestry and animal assisted therapy)

As of 2012, there was a discussion as to how the concept of cultural ecosystem services could be operationalized, how landscape aesthetics, cultural heritage, outdoor recreation, and spiritual signi cance to de ne can t into the ecosystem services approach. Who vote for models that explicitly link ecological structures and functions with cultural values and bene ts? Likewise, there has been a fundamental critique of the concept of cultural ecosystem services that builds on three arguments [6]

1. Pivotal cultural values attaching to the natural/cultivated environment rely on an area's unique character that cannot be addressed by methods that use universal scienti c parameters to determine ecological structures and functions.

2. If a natural/cultivated environment has symbolic meanings and cultural values the object of these values are not ecosystems but shaped phenomena like mountains, lakes, forests, and, mainly, symbolic landscapes.

3. Cultural values do result not from properties produced by ecosystems but are the product of a speci c way of seeing within the given cultural framework of symbolic experience [7-10].

e Common International Classi cation of Ecosystem Services (CICES) is a classi cation scheme developed to accounting systems