



What can the current debate on ecosystem services learn from the past? Lessons from economic ornithology



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ABSTRACT

Economic ornithology, the golden age of which was 1880s–1920s, can be seen as an antecedent of the concept of ecosystem services. In hundreds of publications, and with official support from prominent government institutions, especially the US Department of Agriculture, economic ornithology emphasized the economic value of services provided by birds. Economic ornithologists underlined the utilitarian character of nature to raise political support for conservation. They contributed to the elimination of bounty laws on birds and feather trade, and to the introduction of bird conservation legislation. However, economic ornithology remained relatively narrow and focused on its core task of identifying useful and harmful birds, especially from the point of view of agriculture. Such an anthropocentric approach, prioritizing narrow and measurable human economic interests, undermined the standing of economic ornithology. Probably most importantly, new developments in the area of industrial pest control made the most highlighted of the birds' services obsolete. This article analyses similarities between economic ornithology and the concept of ecosystem services (in terms of their origins, development, argumentation for conservation, and criticism). It suggests that unless the proponents of ecosystem services carefully rethink the way they argue for environmental conservation, this concept may share the fate of economic ornithology. Moving beyond the narrow utilitarian and anthropocentric focus, and beyond emphasizing the monetary value of nature, are the most important implications for the current environmental conservation discourse based on the concept of ecosystem services.

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Introduction

The concept of ecosystem services emerged as a response to environmental problems, suggesting that destruction of the environment runs counter to humanity's interests. What started in the 1970s with preliminary suggestions that people were undermining the “crucial functions of nature”, “functions of the environment” and “nature's services”, was followed by an avalanche of research and official documents referring to ecosystem services, especially in the 2000s (Braat and de Groot, 2012; Gómez-Baggethun et al., 2010). Large-scale research projects, with the support of international organizations and governments, adopted the concept of ecosystem services to assess the state of the environment and promote its conservation, both at the global (MEA, 2005) and national levels (UK NEA, 2011). Ecosystem services have become important keywords in environmental policies worldwide, major examples of which are the European Union's “Biodiversity Strategy to 2020” and the UN-affiliated Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). Indeed, the

ecosystem services discourse “is driven as much by political agendas as scientific ones” (Potschin and Haines-Young, 2011, p. 575).

The proponents of an ecosystem services approach explicitly moved away from intrinsic values of nature, trying to fit conservation logic into the mainstream anthropocentric and economy-centered paradigm, with the prime example being The Economics of Ecosystems and Biodiversity (TEEB) project (ten Brink, 2011). This project has been highly influential, not least because of the support that it has received from governments of several developed countries, and international organizations. Such an attempt to frame nature as a source of benefits for people, the streams of which need to be consciously managed, was seen as a way to facilitate communication between conservationists and decision makers (using the same language, reflecting the dominant political and economic views) (Daily, 1997; Daily et al., 2009; Luck et al., 2012). Although there are multiple tools and analytical frameworks used to study and discuss ecosystem services, such as mapping, modelling, indicators and institutional analysis (Braat and de Groot, 2012; Potschin and Haines-Young, 2011), the primary logic of ecosystem services favors and supports quantification and valuation or, more broadly, applying economic reasoning to

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environmental management (Atkinson et al., 2012; Laurans et al., 2013). This has resulted in an increase in the use of payments for ecosystem services and market-based conservation instruments, aiming to translate the concept of ecosystem services into a system of transactions within which it pays to protect the environment.

From a broader perspective, the modern concepts of ecosystem services and economic value of benefits provided by nature are a single step in a long history of many similar ideas. While Gómez-Baggethun et al. (2010) searched for notions related to ecosystem services in economic thought, tracing them back to the 17th century, the example of economic ornithology presented in this article indicates that similar ideas also emerged within natural sciences. With hundreds of publications written on this topic, economic ornithology offers an excellent example of an early attempt to frame ecosystems (sometimes with a focus on certain ecosystem components) as a source of services and benefits to humans, and to highlight the monetary significance of these services.

Supported by prominent researchers and government agencies, for some time economic ornithology represented a mainstream approach to bird conservation, similar to the status currently enjoyed by the concept of ecosystem services in discussions on environmental conservation. However, in spite of its importance 100 years ago, economic ornithology has now been almost completely forgotten. Although, in their historical review of the concept of ecosystem services, Mooney and Ehrlich (1997) cited one paper by Stephen Alfred Forbes (1887), who laid the foundations for a scientific study of economic ornithology, this reference was motivated by Forbes' early interpretation of an ecosystem, rather than his work on the economic value of birds. Interestingly, Jedlicka et al. (2011, p. 5), in their paper on ecosystem services and birds, not only mentioned economic ornithology but even suggested that their “study revitalizes economic ornithology in the context of ecosystem services”.

The objective of this article is to draw lessons from economic ornithology which could be of value for the current discussion of ecosystem services. It is particularly useful to check why economic ornithology disappeared, and whether similar problems are likely to affect the current success of the concept of ecosystem services. Furthermore, if the proponents of the ecosystem services approach repeat the problems manifested in the case of economic ornithology, what do we need to change in our environmental conservation discourse to have a more lasting effect?

Indeed, there are many discussions on ecosystem services, many of which refer to elementary issues such as definitions and measurement, appropriateness of valuation, and the different approaches to valuation (for an overview, see Dempsey and Robertson, 2012). Much of the current critique of ecosystem services is linked to concealing the complexity of ecosystems (Norgaard, 2010; Peterson et al., 2010), the anthropocentric focus, and the risk of commodifying nature (Kosoy and Corbera, 2010; MacDonald and Corson, 2012; Spash, 2011). The very notion of “the value of nature” is also ambiguous (Robertson and Wainwright, 2013) and it is most often reduced to a “commensurable quantity, which can be compared across groups and across outcomes” (Tadaki and Sinner, 2014, p. 142), with money most often used as its denominator. These discussions link to the broader problems with the use of market-based instruments in environmental conservation (Roth and Dressler, 2012; Sandbrook et al., 2013), which are often seen as part of a neoliberal approach, prioritizing the role of markets and private interests in the socio-economic system (Bakker, 2010; Büscher and Dressler, 2012; McCarthy and Prudham, 2004). The historical case of economic ornithology further demonstrates the relevance of these critiques.

This article investigates the history of economic ornithology (section ‘Economic ornithology’), then the linkages between economic ornithology and the modern notions of ecosystem

functioning, ecosystem services and the economic value of nature (section ‘Early variants of ecosystem services discourse within economic ornithology’). This overview is followed by a discussion of the most important implications for the current debate on ecosystem services, with particular emphasis on the four main reasons for the demise of economic ornithology (section ‘Discussion – lessons for ecosystem services’).

Methods

This article is based on a literature review. The literature on economic ornithology dates from the 19th and early 20th centuries. Most publications were accessed through publicly available internet archives (such as the Internet Archive <http://archive.org> and the Searchable Ornithological Research Archive <http://sora.unm.edu>) and academic libraries. ‘Snowballing’ was used to identify the largest possible number of articles, starting with some of the best-known key articles in the field and recent reviews. These sources provided additional references. Most attention was paid to general papers, which revealed the philosophy of economic ornithology research, its basic tenets and research approaches, while very specific papers focusing, for example, on selected species were mostly avoided. While the primary focus of this article is on the situation of economic ornithology in the US, where it was most influential, several references are also made to other countries (in particular the UK), to illustrate the global reach of this field.

Economic ornithology

Development

Economic ornithology emerged in the 19th century as a response to the wholesale killing of birds, within the framework of bounty laws (introducing rewards for the destruction of birds deemed harmful to agriculture), for feathers and skins (used in millinery and other fashion industries), for prized collections (which served as a status symbol, especially among the landed gentry), and for food and pleasure (Bircham, 2007; Doughty, 1975; Jones, 1972). The main premise of the new field was that killing birds was against economic reasoning because birds provided important services. The ‘economic status’ of birds (whether useful or noxious) required further investigation, based on what the birds actually consumed. While such work had already been carried out earlier in the 19th century, the creation of relevant institutions in the US in the 1880s provided an important boost to the development of economic ornithology.

The American Ornithologists' Union established a Committee on Bird Protection in 1884 to collect data on the agricultural benefits of passerines and birds of prey to counter the claims that those birds were noxious (Doughty, 1975). The work of this committee led to the creation of a separate section responsible for economic ornithology within the US Department of Agriculture in 1885. The section became an independent Division of Economic Ornithology and Mammalogy in 1886, and in 1896 it turned into the Division (later Bureau) of Biological Survey (Palmer, 1900). Initially, the Division focused on assessing what birds consumed (to clarify concerns over birds alleged depredation on crops), and on educating the public on the ‘the value of birds’. Several states followed by creating similar divisions within their state administrations. In other countries, in spite of calls for similar institutionalization of economic ornithology (c.f. Cathcart, 1892; Collinge, 1913), this process took much longer. For example, British ornithologists persuaded Oxford University and the Ministry of Agriculture to provide space and official funds for research on the economic aspects of birds only in 1930 (Bircham, 2007).

Fig. 1 presents the numbers of economic ornithology publications published per year, based on the two most comprehensive

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