


Principles of Ecology and Management:

International Challenges for Future Practitioners

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Introduction to Ecology and Management

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Learning objectives

After reading this chapter, you will be able to:

- Situate environmental thinking in a historical context
- Apply basic concepts in environmental science
- Identify factors impeding managers' adoption of an ecological approach

■ The ecological mindset

Since the dawn of history, most cultures have devoted considerable intellectual resources to the question of humankind's connection to its natural environment. In prehistoric times, before advances in technology and science gave thinkers more rational means for analysing this relationship, the predominant attitude was to fear nature's power and potential for harming human populations through natural disasters (floods, droughts and fires), dangerous animals or starvation (crop failure). Such fears were compounded by general ignorance of the physical processes underlying events over which ancient humans had little if any control. Early animists would often attribute a spirit to a place – its so-called 'genius loci' – and view natural elements as moody gods with the power to nurture or destroy humankind. Precautionary tales about nature's revenge were present in many ancient civilisations, exemplified in Greek mythology by the tales of Prometheus or Icarus being punished or killed because they sought, respectively, to steal fire or fly close to the sun. More than living in harmony with the natural world, early populations felt it wise to obey it.

Over time, most societies would assume a more aggressive stance towards nature even as some voices continued to advocate humility. In the Judaeo-Christian Bible, this ambivalence is witnessed in the contradictory statements from the book of Genesis that humans should 'work and preserve the land' (2:15) but also 'be fruitful and multiply; fill the earth and subdue it; rule over the fish of the sea and the birds of the air and every living creature moving on the ground' (1:26). Eastern religions also offered mixed messages, with many of Hinduism's Vedic scriptures expressing reverence for the elements even as others doubted the reality of the physical world. Without purporting to review the sum total of historical attitudes towards nature, it might be generalised that as different civilisations would gain confidence in their ability to control aspects of nature, the physical world lost its mystical properties and began to be seen as an object for potential subjugation – all the more so given widespread belief in the inexhaustibility of natural resources (and the Earth's capacity to withstand the by-products of human activity).

Ultimately, the combined effects of population growth, industrialisation and resource demand would create a situation where many if not most inhabitants of Planet Earth took their physical environment for granted, appropriating its bounties and neglecting the ecological

balances needed to sustain life. Over time, this would spawn a counter-reaction from observers disturbed by the disastrous consequences of such **anthropocentric** paradigms and focusing instead on the need for a **stewardship** of nature. The mindset that this latter constituency would propose came to be known as ecological.

■ **Anthropocentrism:** View that humans are the central feature of all existence.

■ **Stewardship:** Idea that one entity has a practical if not moral obligation to take responsibility for another.

It is important to clarify the diversity of the strands comprising ecological thinking today. Each has its own history and reflects different sensitivities that can best be understood in the context of the historical economic circumstances where it arose.

■ Early strands of ecological thinking

It was in 1869, shortly after Charles Darwin published his text on the scientific principles driving the evolution of species, that German philosopher Ernst Haeckel is said to have coined the term 'ecology', derived from the Greek words for house (οἶκος or *oikos*) and speech (λόγος or *logos*). Thus, ecology discusses every aspect of a community's ability to inhabit a certain place – an approach that is, intentionally, **holistic**. Unlike other sciences that have more of a singular focus and are therefore less capable of fully accounting for the complex web of physical interdependencies and evolutionary interactions between living beings and their surroundings (Begon *et al.* 2006), ecology is multidisciplinary, always viewing its objects of study in the context of the many different factors enabling survival. Over time, this has enabled the constitution of a whole body of theories, principles and discoveries specific to this new discipline.

■ **Holistic:** View that a system is defined by the interactions between its components rather than by their sum total.

Haeckel was not the first to engage in what would be recognised today as ecological thinking. In the late 18th century, for instance, the English demographer Thomas Malthus devised a series of laws showing how population growth will cause a crisis in situations characterised by finite resources, with Malthus himself focusing on the likelihood of war. His paradigm continues to be applied today. Some analysts focus on the social alienation affecting large segments of a population whenever a narrow constituency acquires a disproportionate share of available resources (Chamberlain 1970). A newer Malthusian approach involves linking globalisation and new solvent demand from emerging economies such as China or India to **resource depletion**, which will be discussed in Chapter 2, or the **degradation of the biosphere**, the focus of Chapter 3 (Friedman 2009). In many cases, ecological distress is best analysed in light of the size of the population concerned.

■ **Resource depletion:** Exhaustion of irreplaceable stocks of raw physical commodities consumed as a result of human activity.

■ **Degradation of the biosphere:** Where damage, often in the form of pollution caused by human activities, is done to the natural support systems sustaining life.

Chapter extract

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