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The Role of Evolution in Environmental Education

The upsurge in human population and technological advancement in the twentieth and twenty-first century has undoubtedly impacted life on Earth on both grand and individualistic scales. Natural areas are lost to development, and people are more often surrounded by man-made structures that create a narrow experience of the world, with potentially negative effects on human mental health. In recent years, the global average of atmospheric carbon dioxide has consistently stayed above the milestone of 400 parts per million, resulting in record breaking highs of global surface temperature and lows in Arctic sea ice cover (NOAA 2015; Lynch 2016). Such trends are expected to have dire consequences in the years to come which highlights the need for environmental education and a broader perspective of human existence in the global environment. Interpretation is an approach of environmental education that provokes personal connections to environmental issues, ultimately in an effort to inspire positive action on those issues. A basic understanding of evolutionary biology supports the goals of environmental interpretation by providing a foundational connection between humans and all life on Earth through the genetic code, and the evolutionary history of humans reveals the longstanding importance of natural environments to our wellbeing. Successful interpretation and understanding the bigger picture of how we have interacted with nature in the past can help shift our impact from degradation to stewardship while addressing the psychophysiological detriments of living in modern, urbanized environments.

In interpretation, people form personal connections to plants or animals by understanding their plights through universal concepts—intangible emotions, experiences, or ideas about the human condition that anyone can relate to (Ham 2013). The goal of interpretation is to use relatability to provoke a personal understanding about something in nature; understanding then begets appreciation, and appreciation inspires action (Ham 2009). In evolution, the struggle for existence is an example of an interpretive universal that people can relate to. Dobzhansky (1973) describes the DNA-RNA genetic code as a biologic universal, a tangible characteristic that unifies all life and alludes to a primordial ancestor. The intangible connections fostered by any

interpretive program can be strengthened with scientific evidence of biological interconnection through the genetic code. Additionally, the idea of a common ancestor can help provoke consideration of the greater context of human life in relation to all of life in evolutionary history.

In a literature review concerning the shift from natural to man-made environments in human evolution, Gullone (2000) describes how the biophilia hypothesis persists in modern life. The hypothesis proposes that humans have spent the vast majority—over 99 percent—of their evolutionary history as hunter-gatherers, and their survival depended on their understanding and connection with nature. While a fearfulness of nature protected people from danger, knowledge led to sources of food and water, and appreciation restored physical and mental health. Gullone (2000) concludes that humans are still adapted to natural environments, and incorporation of natural elements in our current environment would be beneficial for our wellbeing. Interpretation essentially rests on the understanding that humans evolved an affinity for nature, and the idea of provoking personal meaning is a way of reawakening that affinity for the benefit of humans and the environment.

Capaldi et al. (2015) found that virtual experiences of nature with videos or photos can improve mood and wellbeing, but direct contact with nature maximizes those benefits. One of the roles of environmental education is to help people understand and experience those benefits. Having a foundation of evolutionary biology in environmental education or interpretation makes sense because provides scientific evidence and reasoning for how we are connected to nature and why we should be stewards. Social apathy and the consequences of climate change can be addressed with such stewardship.

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