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# Appendix 1.2

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**The following material is Appendix 1.2 for Chapter 1 of: Fowler, C.W. 2009. Systemic Management: Sustainable Human Interactions with Ecosystems and the Biosphere. Oxford University Press**

## **1 Species-level failure to thrive**

*Homo sapiens*, like other species, is but one of many that temporarily occupy a place in the Earth's ecosystems as one of Nature's experiments. Accepting this almost trivial concept is critical; facing the risk of our own extinction is part of the reality to be included in accounting for complexity. Accepting death is important in the psychological health of individuals (Yalom 1980). Accepting the reality of extinction, especially human extinction, logically follows the perception of our nature as a species (Tiger and Fox 1989).

Critical to the way of thinking behind systemic management is overcoming the dualism of thinking that our species is so different from other species that we are immune to natural processes that impact all species (in violation of Management Tenets 1 and 2). Accepting ourselves as a species in this regard is necessary but not simple; no species has evolved solutions to all problems,<sup>1</sup> and imperfections have to be recognized (Williams 1992). However, collectively, the information nonhuman species represent is wisdom beyond that produced by the intelligence we like to ascribe to ourselves.<sup>2</sup>

We have experienced temporarily what seems like freedom from the constraints more inclusive systems place on constituent species, especially in terms of our population size (Catton 1980)—and face the long-term consequences of attempts at breaking Nature's laws. This temporary situation, however, leads to the issue of altered relationships with Nature in a more general context,<sup>3</sup> which can

be viewed in two ways. First are the effects on humans of experiencing environments that are themselves reacting to abnormal levels of human influence. On top of this is our attempt to minimize the effects of Nature (distance ourselves from Nature), whatever its condition, followed by the effects these efforts have had on what we are as a species. It is important to know to what extent the human species is abnormal and to identify the individual- and species-level experiences of this abnormality.

At the individual level, we know that children who grow up without human (especially parental) contact develop a condition called reactive attachment disorder of infancy or hospitalism (American Psychiatric Association 1980). Products of an abnormal situation, they fail to thrive without the benefits of that association.<sup>4</sup> There is the risk that we humans, as a species, are experiencing a parallel phenomenon resulting from increasingly abnormal relationships with the nonhuman (part of which would be the Nature-deficit disorder; Louv 2005). In addition to the ecological factors covered in this book, we must consider other more individual-level effects on our species stemming from abnormal relationships with nonhuman systems and its numerous effects (whether we judge them to be positive or negative). Does our species need a less sheltered association with Nature to thrive? We must consider the complexity of this issue in examining the variety of ways we might be experiencing in the limited time most of modern society spends in direct contact with other species.

The interdependencies among species, including humans, are undoubtedly beyond those currently known and are too complex to be addressed by conventional science. Humans are dependent on ecosystems for much more than material products.<sup>5</sup> When individuals of other species are withdrawn

from natural settings to live (and especially to be born) in captivity, their reintroduction to natural habitats is often fatal without extensive retraining and habituation. We have succeeded in separating ourselves from Nature in temporarily solving the “problems” of natural constraints. In the process we may have placed ourselves in a predicament similar to that of captive reared wild species. The brain development of children occurs in the first five years of life. For most of modern society this occurs in exposure to what is primarily a manmade environment of machines, buildings, televised “reality”, and packaged food from grocery stores.

The entire ecopsychological endeavor (e.g., Roszak 1995) is directed toward the emotional, psychological, and spiritual aspects of human relationships with Nature, and the implications of our separation from (abnormal interactions with) Nature.<sup>6</sup> The variety of symptoms that arise when such interactions are disrupted are important in exploring the benefits of more open, continuous, and direct exposure to Nature in a more natural state.<sup>7</sup> Gore (1992) suggests that current human society is dysfunctional; the Nature-deficit disorder (Louv 2005) may be more pervasive than we are aware. It is important to know how disrupted relationships with Nature (ecosystems) contribute to problems we are experiencing, especially if some exacerbate the contributing causes of problems such as overpopulation (American Society of Mammalogists 1970, Calhoun 1962, Galle *et al.* 1972, McMichael 1993, Metzner 1995, Tainter 1988).

Such aspects of the species-level failure we may be experiencing are linked to our own risk of extinction. Degraded ecosystems, lack of normal exposure to natural ecosystems (even Nature, or reality in general), and being abnormal among species in many ways, may be manifested in many of the problems humans currently face but that are often attributed to other factors. During most of our evolutionary history (but much less today), humans had continuous and intimate direct contact with Nature and living organisms during both the formative years, and in establishing social identity.<sup>8</sup>

It is possible, then, that there is a society/species-level counterpart of reactive attachment disorder of infancy that results from the separation of humans from a natural biotic environment. As a syndrome,

it may have a variety of symptoms, including:

- Ecological indications that our species is at risk of extinction.
- Loss of benefits through homeostatic processes of constraint, including natural selection.<sup>9</sup>
- Altered (especially unrealistic) perceptual views of the world.
- Individual experiences that collectively contribute to a variety of social problems.

If an inability to recognize such a disorder is one of its symptoms, examining it through research and debate may be difficult, but is all the more important.

## Notes

1. See Potter (1990) for consideration of the collective problems humans face as the product of such evolution as a “fatal flaw”. This is related to the matter of “selfish genes” and the realization that selection at the individual level cannot be relied upon to produce adaptive species-level properties (Dawkins 1976—also expressed in “evolutionary suicide” as developed in Chapter 3).
2. Bateson (1979) clearly argues that the wisdom, intelligence, or mind embodied in the information-based aspects of the living natural world would lead to this conclusion. Schull (1990; see also the reactions to Schull’s paper in the pages following his paper in the same journal) actually attributes the quality of intelligence to the information-based nature of species.
3. The concept of separation from Nature, as manifested in a variety of ways, is mentioned in a number of works (e.g., Ehrenfeld 1993, Louv 2005, Mander 1991, McMichael 1993, Orr 1994, Ponting 1991, Potter 1990, Roszak 1992, Roszak *et al.* 1995, Tiger and Fox 1989).
4. One of the benefits of this association may be learning the limits of functional participation as an individual. These would include learning about boundaries, risks, and harmful behaviors that, over the long term, are detrimental to individuals through reactions from larger systems (families, societies, etc.) within which such behaviors are not tolerated.
5. The Outward Bound program (and growing numbers of similar programs, including animal- or horticulturally-assisted approaches) of therapeutic treatment for emotional, personal, and psychological problems embodies the concept of Nature as an environmental context for learning, change, and healing. The draw of the outdoors for recreational purposes indicates a primal need for a break from conditions so foreign to

those under which our species evolved. These experiences of reconnecting with Nature are superficial and inconsequential in comparison to living in and directly experiencing the natural environment (especially its constraints and risks) characteristic of aboriginal cultures and the circumstances under which we evolved.

Are there limits, boundaries and risks that a species integrates by way of having its individuals in more intimate contact with natural forces that are constant reminders of their existence?

6. Included in this must be the emotional issues of realizing what we have become as a species. If a psychologically healthy person were to suddenly realize that something they are doing results in the death of other people, they would predictably have strong emotional reactions (causing the death of one person per year is about 100 times the average rate people cause death, assuming that all humans die because of what other humans do, that is, killing one person per year is probably actually several orders of magnitude more than average). Such reactions are adaptive in that they prevent the loss of other individuals, some of whom may carry related genes. There may be a parallel emotional reaction to knowing that, as a species, we may be doing things that result in the extinction of other species that is nine or more orders of magnitude higher than for other species (see Chapter 6). If there is emotion in such reactions, and the reaction contributes to society's assumption of responsibility for change, we may be "preadapted" to survive as a species. If not, or if there are feelings that such effects are justified for individual goods, the chances of leading ourselves to our own extinction are much greater.

7. This would include loss of language to communicate many of the relationships between humans and Nature understood through experiential learning in connection with Nature (Armstrong 1995). Other losses would include mythological and religious or social customs that have the effect of preventing problems like those we see today, even if there is not a detailed, or mechanistic, understanding, or even intention, of their function (see, e.g., Metzner 1995, Stevens 1994, Tudge 1989, World Wildlife Fund 1986). If the ability to evaluate our environment is inherent (at the core of the biophilia hypothesis, Kellert and Wilson 1993), what happens if its phenotypic development is precluded by lack of exposure to the complexity of life in the richness of natural (especially normal) ecosystems? If there is an innate intelligence that relates to the perception and understanding of natural patterns (Gardner 1995), what happens if its development depends on direct exposure to Nature? What might be the collective effect experienced by our species in the loss of these and other processes yet to be identified?

8. The subtitle to Bateson's (1979) book, *Mind and Nature: a Necessary Unity*, is relevant to the point of this section. This and others of Bateson's books lay out the process of understanding as it is manifested in human thought and analogous processes in Nature. To the extent that these processes are learned and necessary (even taken for granted) among aboriginal peoples who live in close association with the natural world, there is hope for a more refined definition of the syndrome referred to here as species-level failure to thrive. To the extent Bateson's "unity" has been disrupted in modern society, we are experiencing the syndrome.

9. We have escaped many of the forces of natural selection that suppress genetic code for a variety of conditions, traits, and genetic diseases that are undoubtedly gaining prevalence within our species (Carney 1980). These add to genetic variability and, at the species level might be a benefit in providing future options, but at what cost in future suffering and medical expense to society? Our medical system is one of interfering with the process of natural selection, simultaneously making us more dependent on resources and more vulnerable to ecosystem forces (e. g., the effects of disease).

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