

E.O. Wilson's concept of biophilia and the environmental movement in the USA

Jana Krčmářová

jana.krmarova@yahoo.com

Charles University in Prague, Faculty of Humanities, U Kříže 8, 158 00, Praha 5, Czechia

Abstract:

J. Krčmářová: *E.O. Wilson's concept of biophilia and the environmental movement in the USA*. – *Klaudyán*, 6, No. 1–2, pp. 4–16. The following article deals with the influence of the environmental movement in America on American ecologist and sociobiologist Edward O. Wilson's concept of biophilia (Wilson 1984). In the first part the reader will be familiarized with the basic thoughts of the biophilia hypothesis, in the following part this hypothesis will be put into the context of the development of the American environmental movement of the 19th and 20th centuries. Parallels and references to the environmental movement in primarily biological theory are interesting examples of the greening of science in the second half of the 20th century. We can understand the biophilia hypothesis as an expression of Wilson's desire for a deep evolutionary analysis for the purpose of solving the crisis of humankind's relationship to nature. The historical evolutionary point of view, which forms the strength of Wilson's arguments, as well as the environmental subtext of the biophilia hypothesis, allow this concept to be included in the field of environmental history. As this hypothesis deals above all with the ethics of humankind's relationship with nature (environmental ethic) it can be classified as belonging to the third level of environmental history (Worster 1988).

Key words:

biophilia hypothesis – E. O. Wilson – evolution of environmental ethic – greening of science – the American environmental movement

1. Introduction

This study shows the parallels between American ecologist E. O. Wilson's concept of biophilia and the thoughts and development of the environmental movement in the United States. In the 1980s Wilson came forth with the idea that human perception of, thought about and behavior towards nature are in many cases guided by irrational psychological mechanisms, which in the past were adaptive. Wilson claims that human relationships to other species, or the value that we attribute to them, are still today influenced by the history of ecological relationships with them over the course of evolution of humans. Thus he came forth with an interesting view on environmental ethics, or the value, which humans assign to other species, ecosystems or generally to natural phenomena. He considers these values or assumptions for their acceptance to be to a certain extent innate and selected upon. He further claims that humans are equipped with brains and minds, which presume contact with nature and only with this contact can they develop normally. With the loss of direct contact with other species

or life in general, psychic deprivation and degradation of the human mind occur. He not only calls for recognizing the necessity for human contact with other species, but also for acknowledging the psychological and ethical heritage, which humans have acquired in the course of co-evolution with other parts of the biosphere.

Wilson set the history of humankind to the story of evolution of life on Earth and extracted from it consequences for the current state of natural systems and for the crisis of humankind's relationship with them. Wilson's historical evolutionary perspective, his captivation with the complex relationship between human society and nature as well as his desire to apply the biophilia hypothesis to nature conservation allow us to put the biophilia concept in a new historical field – environmental history (eg. Jeleček 1994). Study of the projection of the human evolutionary ecology to the ethical system of human society can than be assigned to the third level of environmental history research¹ (Worster 1988), which occupies with the projection of the society-nature relationship to the ideological system of society.

The biophilia hypothesis can be perceived as an interesting manifestation of the greening of science², in this case evolutionary biology. Although the arguments that Wilson uses are primarily scientific, the actual motive for forming the biophilia hypothesis is for its use in nature conservation. One of Wilson's main research questions has a purely environmental subtext – how to ensure more friendly human behavior towards and thinking about other species.³ He then searches for the answer to this question in human evolutionary history. In *Biophilia* as well as in his other environmentally tuned books, Wilson directly refers to the legacy of Henry Thoreau and Aldo Leopold. Also other peculiarities referring to the environmental movement can be found in the biophilia hypothesis. Arguments for the biophilia hypothesis are often interrupted by descriptive passages describing Wilson's personal experiences with nature or aestheticizing passages. This is reminiscent of the “nature writing” of the first environmentalists of the 19th century. These peculiarities make sense within the context of Wilson's life, as he has been dedicated to active nature conservation since the 1970s.

Knowledge of the basic thoughts, as well as circumstances, under which the environmental movement was formed in the 19th and 20th centuries, appear to be key to understanding the concept of biophilia. At the same time Wilson claims that the environmental movement needs a rebirth. He looks for this in the acceptance and application of knowledge gained from research on the biological basis of humankind and its evolutionary history, which this biological base and its interconnectivity with the ecological relationships with other species helps interpret.

2. E.O. Wilson and the biophilia hypothesis

What is biophilia? Wilson calls biofilia “innate tendency to focus on life and lifelike processes“ (Wilson 1984, p. 1), “innate emotional affiliation⁴ of human beings to other living organisms“ (Wilson 1993, p. 31) or „inborn affinity⁵ human beings have for other forms of life, an affiliation evoked, according to circumstances, by pleasure, or a sense of security, or awe, or even fascination blended with revulsion“ (Wilson 1994, p. 360).

If Wilson speaks about an *innate* tendency, he means by that that the structure of our brains at least partially at the time of birth contains certain basic mental facilities, that develop with contact with the external environment in a somewhat predictable fashion. If he speaks about tendencies “to focus,” or “to affiliate emotionally” he means by that that humans use certain cognitive rules, which influence what, under what conditions, and how something will be perceived, how the given sensation will be worked with, stored and called up from memory. Innate cognitive rules in animals are common, as they use them for correctly identifying and imprinting biologically significant elements of the social environment (e.g. the appearance of their parents, or partner) as well as the species specific environment (habitat selection). Cognitive tendencies appear at different ages and are situationally and functionally specific. Wilson named them epigenetic rules of mental development, i.e. both the genetic predisposition and the environment, contribute to them. The existence of similar rules directing cognition for survival-related specifically human elements of the environment is assumed for humans as well (Wilson 1993). In the biophilia hypothesis Wilson

concentrates on the fact that the creation of the human cognition “pattern” during the process of evolution was not contributed to by only the abiotic, and/or social environment, but also the biotic, i.e. other organisms.⁶

In the first listed definition from the book *Biophilia* (Wilson 1984) it is claimed that the human mind is generally focused on “life and lifelike processes”. Wilson views life on Earth materially – the first self-replicating entities originated on Earth 3.5 billion years ago. All organisms come from one ancestor and share the genetic code and basic biochemical processes in the cell. On these shared bases the current biodiversity of metabolisms and forms developed through natural selection, i.e. a process accumulating and sorting slight changes caused by mutations. In the biophilia hypothesis Wilson indicates that the phylogeny of life on Earth is reflected in the structure of the human mind. In his opinion the human mind must be looked at as one of the parts of the biosphere developing in mutual correlation with its individual elements. The history of life on Earth is projected into our understanding of the environment and the perception of our existence. Wilson claims that our mind makes use of a phylogenetic memory, which is passed on from generation to generation and potentially comes from human ancestors. Thus, biophilia can be understood as “inborn affiliation with the rest of life” i.e. the sense of phylogenetic relationship with all life on Earth. Defined like that it has its place within the evolutionary theory of the biosphere (Vernadsky, Lovelock and Margulis).

According to the other two definitions the concept of biophilia can be understood to be “inborn focus on other life forms”, that is a complex of cognitive evolutionary modifications of the human mind, which directs learning relationships to natural phenomena. It developed under prehistoric sociocultural and natural conditions. This is how evolutionary psychologists or human ethologists, anthropologists and sociobiologists understand biophilia. It is a complex, or set, of instincts (Wilson 2002, p. 137), which sometime in the evolutionary past of humankind favored the individual at some level of natural selection. This manifests itself in unconscious and/or irrational reactions to various natural phenomena. These reactions can be considered proximate manifestations of ultimate causes⁷ – e.g. avoiding danger (reactions to snakes and wolves, the preference of landscapes offering look-out points and hiding places, etc.) or finding food (the preference of species-rich systems, being tuned in to warm colored flowers and fruit).

In his arguments Wilson does not only point out the innate rules of perception concerning organisms, but also higher ecological units – habitats or the entire landscape. It is likely that as an evolutionary ecologist,⁸ he understands life forms mainly within their ecological relationships to the abiotic and biotic environment; the organism is thus more of an “organism in an ecosystem”. The innate tendency to react to a life form, such as for example a bear, does not have to be set off only by the physical presence of a bear, but also its species-specific niche: traits of ecosystems in which it lives, i.e. forest or tundra habitats, furthermore specific habitats where it feeds and sleeps the most often, i.e. heaths and blueberry patches and then of course physical signs which the surrounding ecosystem bears of the physical presence of a bear – a deer that has been taken down, torn up tree trunks, torn up blueberry patches surrounded by bear droppings, etc.

Wilson assumes that the human mind reflects and models the external world with the help of a node-link structure. The nodes contain concepts (dog, flight, blood, etc.), but also certain process labels in the form of emotions⁹ – together they form the contents of a certain symbol. Connecting the concepts together and their connection to calling up various emotions was adaptive, for it served to teach adequate reactions to important stimuli (Wilson 1984, p. 85). Most concepts however came out in various symbols. For example the concept of bear is connected with concepts representing signs of its niche and these may be connected to concepts of other important natural phenomena participating in human selection. Connection of variously emotionally colored concepts in individual nodes results in a strongly ambivalent relationship to most natural elements.

The consequent rules for relating with and treating the non-human world form in every individual during the process of enculturation, during which the innate and individual meet with specific traditions. Epigenetic rules are applied in various societies in connection to the specific nature of using the environment. The given sociocultural system can make some selection forces inoperable (e.g. via the change in technology). Wilson however claims that deeply stored concepts derived from

nature stay in us and cultural history only changes their meaning or connection to other concepts, it only assigns them with a different logical sign (Wilson 1994, p. 154).

The original cognitive rules of understanding and dealing with nature have not disappeared even in today's world of artificial artifacts, in which we can only difficultly find natural stimuli. Biophilia, as a complex of weak rules of learning, influences our thinking about nature, the landscape and even about art, myths and environmental ethics. The deeply ingrained cognitive rules have in Western society manifested themselves, for example, in the popularity of zoos, preferential housing on hills with views of water or in phobias (Wilson 1984, p. 32). Many of them are fundamentally connected to avoiding danger or motivation for exploring and exploiting the environment. In traditional societies these biophilic tendencies are functional, as humans there use their environment directly; the exploration goes hand in hand with identifying with other organisms and perceiving and respecting the relationships within the ecosystem. In Western civilization with humans' technical capabilities these tendencies however overload nature; they are not correctly reflected in culture and thus they are not even functional. Many of today's rules for treating nature/other species is the result of a long history of intimate contact with nature and the short period of mechanization of our environment, which has reduced this contact and at the same time greatly changed the way we view the value of other species (Wilson 1975a).

2.1. What is E.O. Wilson's biophilia hypothesis based on?

To support his hypothesis Wilson used several types of evidence. The first is evolutionary logic, which firmly supports his claims, as other evidence is for the time-being thin (Kellert, Wilson 1993, p. 32). Wilson argued that if we admit that human history started at the latest with the origin of the genus *Homo*, we cannot overlook the fact that people over 99 % of their evolutionary history had to rely on exact learned information about key aspects of their environment. Consequently it can be assumed that a psychological mechanisms evolved helping the rapid acquirement of correct reactions to key species of flora and fauna or generally the environment lived in. In specific human cultures of a traditional character then living organisms were further incorporated into various metaphors and myths through the influence of sharing mental predispositions, personal contacts with organisms and the necessity of transferring significant experiences with the local natural environment to the next generation (Wilson 1984, p. 102; Kellert, Wilson 1992, p. 32; Lumsden, Wilson 1983, p. 130).

Within the framework of evolutionary logic Wilson supported his claims with the possibility of phylogenic comparison and he compared human behavior with the behavior of our closest living animal relatives – chimpanzees, apes, primates and Old World monkeys. He points to the fact that chimpanzees for example use primitive tools and are practically knowledgeable about plants and animals. Most genera of Old World monkeys demonstrate fear of snakes including lemurs, which evolved on Madagascar where there are no snakes. He states, that "Somehow, apparently through the routes of instinct, the guenons and vervets have become competent herpetologists" (Wilson 1984, p. 93).

Furthermore Wilson recommended using intercultural comparison to test the biophilia theory, for he claimed biophilia to be a transcultural trait. Wilson is an advocate of ultimate human nature, which members of all human cultures have as they belong to one species. According to him human nature is made up of species-specific mental habits and tendencies (epigenetic rules) influencing more or less all categories of cognition and behavior (Lumsden, Wilson 1983, p. 83). The pre-prepared mind nonetheless develops in an environment created by the preceding culture, which creates a specific story storied in the memories and archives of its bearers.

Finally Wilson also suggested the use of psychological methods – the repeated observation and measuring of physiological and psychic reactions (phobias, convalescence, concentration) while exposed to pleasant or unpleasant natural and artificial stimuli. With this method it is possible to approach finding answers to questions of heritability of behavioral reactions, the ontogenetic evolution of learning behavioral reactions and the character of reaction to stimuli (i.e. exactly what reaction each stimulus called up). Many studies investigating humankind's innate preferences

or aversions to individual organisms, landscape marks or other situations in nature fall into the theoretical framework that Wilson has laid out. Ulrich (1993) put together an overview of them and did the work of making quotations *de facto* for Wilson.

3. Biophilia and nature conservation

Wilson had hopes for the application of the biophilia hypothesis in nature conservation. According to Wilson the values which we ascribe to nature are innate, immanent and stored deep inside of us. Adaptive cognitive and emotional reactions, in his opinion, do not disappear even in environments without signals activating these reactions – without other organisms. They influence our “thinking about nature, about the landscape, the arts, and mythopoeia, and invite us to take a new look at environmental ethics“ (Wilson 1993, p. 32). Ethical rules evolved through natural selection are however *a priori* obsolete – their functions were for an earlier period that does not correspond to today’s environmental conditions nor humans’ technological capabilities. According to Wilson we must consciously overcome old tendencies such as the tendency to transform nature and use it as if it was infinite. These tendencies were adaptive, we easily accept them as our own, but that does not mean they are moral (Wilson 1975b, p. 43), despite this our conservative genes, which cannot keep up with cultural changes, subconsciously try to convince us of this (*ibid.*).

He pinpoints that sustainable natural resources management and focusing culture towards natural laws and phenomena are viable cultural traits, as well as adaptive human systems. From this position he critically comes out against the exploitative socioeconomic system of Euro-American civilization whose rules do not respect natural limits. The base of the socioeconomic credo that states natural resources are essentially infinite is in Wilson’s opinion partly innate and needs to be rationally reflected upon.

According to Wilson these innate tendencies cannot be ignored due to the state of natural ecosystems, and nature conservation should take them into consideration and attempt to point out those that are destructive, while on the other hand utilizing those that improve human health as well as system stability, i.e. biodiversity. In order to get more people involved in nature conservation he recommends focusing on „the very roots of motivation and understanding why, in what circumstances and on which occasions, we cherish and protect life“ (Wilson 1984, p. 138–139). From human evolutionary history Wilson himself took several recommendations for stimulating motivation to conserve nature. He claimed that frequent and direct contact with natural objects is normal and essential for the brain’s development, thus he promotes local biodiversity studies as a mean to get basic emotional and moral education.

4. Parallels between the concept of biophilia and the thoughts of the environmental movement in the 19th century

E. O. Wilson’s focus on human moral health as well as on the relationship of socioeconomic system to nature brings him close to the thinkers of the environmental movement in the USA. The following 19th century thinkers and conservationists are considered to be the founders of the conservation movement in America: Gorge Perkins Marsh (1801–1882),¹⁰ Henry David Thoreau (1817–1862), John Muir (1838–1914)¹¹ and John Wesley Powell (1834–1902)¹² and female representatives Susan Fenimore Cooper (1813–1894)¹³ and Mary Davis Treat (1830–1923)¹⁴ (Dorman 1998, p. xii). They argued their activities on ethical or religious grounds, linked to the thoughts of Protestantism, Romanticism and agrarian republicanism and were relatively skeptical about government authority. They reflected on the state of society and nature in the New World in the second half of the 19th century, when the first signs of environmental degradation appeared. As a result of the systematic agricultural colonization of the West, and the development of industry and transportation in the 19th century, America was already interwoven with transportation infrastructure, agricultural regions, industrial enclaves and cities. Since mainly wood was used for fuel and heating, forests massively declined in this period. The entire face of the landscape changed. The colonization of North America meant hard work for the settlers and influenced American

religiosity and its interconnectedness with the natural sciences. “The battle with wilderness” culminated in Protestantism’s accent on the power of human reason. Early American natural science of the 17th century, represented by the American Philosophical Society, supported practically oriented research, which “...let light into the nature of things, tend to increase the power of man over matter, and multiply the conveniences or pleasures of life” (as quoted in Dean 2007, p. 72–73). The application of scientific knowledge and technology resulting from science was to be used to neutralize and exploit wilderness. At the same though landscape changes rose and the first voices cried out “this is not what we wanted”¹⁵

In his popular science books, including books about biophilia, Wilson does not hide Henry Thoreau’s inspiration, whose famous cabin is just a few kilometers from Wilson’s current home by coincidence. The foreword to *The Future of Life* (Wilson 2002) is a letter to Thoreau, in which he describes “what happened to the world we both have loved.” (Wilson 2002, p. xiii) during 150 years that separates these two authors. In the 1940s, at the time of Wilson’s childhood, his native Alabama with its species diversity and large landscape inaccessibility was supposedly comparable to Amazonia (Wilson 1984, p. 87), but till then it changed unrecognisably. Wilson states that whereas changes in natural ecosystems continue, the majority of America’s sentiment has not changed since Thoreau’s day. American society still treats nature according to the traditional “colonizer’s ethic” with the motto of “push the forest back and fill the land” [ibid., p. 88]. It can be said that the entire biophilia theory discusses the relationship of American society with nature, which deeply reflects the past, but does not correspond to reality.

The first American conservationists criticized the speed and lack of selectiveness with which natural resources were being turned into dollar bills and how human relationships with the outside world were transformed into business transactions. Already in the 19th century the first conservationists criticized the comfort of the common citizen leading to apathy towards suffering, the destruction of nature and the moral decline of society. In her book *Rural Hours* (Cooper 1850) S. F. Cooper characterized life in mid-19th century America with the constant emergence of newer and newer human needs, the fulfillment of which led to over-indulgence and wasting natural resources. Thoreau pointed out that people living in cities and getting around the countryside in cars or along the railways, in the constant quest to monetize everything possible, did not notice nor respect nature, thus not giving it a proper value. At first glance E.O. Wilson’s biophilia hypothesis claims the opposite – people need nature and search it out and are saddened by the fact that it is in decline or destroyed. On superficial examination it may seem that its name lends it to such an understanding. However, in reality it includes negative subconscious prejudices of the human mind about other species or landscape types, which call up heartlessness towards several life forms. Moreover when people have only intermediary contact with nature, it does not lead to the development of positive biophilic instincts. As opposed to Thoreau Wilson does not stop at the fact that people are not interested in nature, but looks for means to excite their interest in personal contact with nature, which is a prerequisite for its protection and for people’s normality. Wilson’s biophilia also includes a general trend to identify with the conviction that nature is infinite and the desire to discover new “fertile lands”, which in today’s limited world leads to plundering the remaining unblemished nature. Such a notion we can find already in Thoreau’s work, he wrote that „we require that all things be mysterious and unexplorable, that land and sea be infinitely wild, unsurveyed and unfathomed by us because unfathomable“ (Thoreau 2000, p. 306).

The “fathers” and “mothers” of the environmental movement perceived American nature differently than the first Protestant settlers. Wild nature and wilderness were no longer frightening nor places of devilish mystery in their thoughts; they had turned into just the opposite. Putting American wilderness in contrast with human society they celebrated the unique beauty of parts of North America’s¹⁶ landscape that had yet to be touched by modern humans. Thoreau saw wilderness as a symbol of the absolute freedom of humankind. In *Walking* (Thoreau 1995) he stated that humans were created by wilderness and contemporarily proclaimed freedom is incomparably poorer than the one with which they came onto the Earth with. He recommended looking at humans primarily “as an inhabitant, or a part and parcel of nature, rather than a member of society” (Thoreau 2000, p. 205) and claimed that in “..wilderness is the preservation of the world“ (as quoted in Thoreau 2000, p. 224).

He wrote that „We need the tonic of wildness—to wade sometimes in marshes where the bittern and the meadow-hen lurk, and hear the booming of the snipe; to smell the whispering sedge where only some wilder and more solitary fowl builds her nest, and the mink crawls with its belly close to the ground“ (Thoreau 2000, p. 306; highlighted by J.K.) implying that our senses are accustomed to the natural stimuli and anticipating them. Similarly Wilson indicated throughout his entire biophilia hypothesis that most people living in Western society likely suffer from a certain form of deprivation due to a lack of natural and social stimuli, to which their minds are used to, and its normality is only seeming and superficial. He declared contact with natural diversity and order to be essential to the normal mental development of the maturing mind.

Thoreau already suggested locally understanding wilderness, and claimed that in the backyard a whole world can be discovered, if we are observant enough (Rothwell 1991, pp. 126–127). Wilson took this thought from him as well, he considers researching local biodiversity as a way to making a personal relationship with nature, which leads to responsibility, environmental protection and to anchoring people in place and time. Wilson did not refrain himself to just words. For more than ten years he has been advocating the creation of a global digital database of biodiversity that would ease the definition of local species everywhere in the world and thus would facilitate the systematic study of diversity for all. Wilson assumes that the motivation for nature conservation (and the human soul) in all people arises from getting to know the immediate natural surroundings – “To know this world is to gain a proprietary attachment to it. To know it well is to love and take responsibility for it” (Wilson 2002, p. 131). Thoreau saw the development of respect for nature and its protection in a similar sequence as Wilson. This can be noticed for example when he thinks about the name of his favorite pond – Flint’s Pond. In being named after some farmer or another Thoreau saw the manifestation of the arrogance of the European settlers, who as for the natural world, similarly as for the mentioned Flint’s pond “never saw it, who never bathed in it, who never loved it, who never protected it, who never spoke a good word for it, nor thanked God that he had made it” (Thoreau 2000, p. 189).

In 19th-century America investigating nature within science was combined with the religious conviction that it was an examination of God’s work, which leads to understanding God’s sentiment. Thus untouched nature hides God’s greatest wisdom, as indicated by the title of John Ray’s contemporarily important book *The Wisdom of God Manifested in the Works of the Creation* (1691, as cited in Dean 2007). Minister Cotton Mather, the greatest advocate of Ray’s work in the 18th century, proclaimed in 1720 that the investigation of nature was a study that supplemented the study of Christian literature. Within the framework of this tradition, in which the colonization of North America is reflected as both a contest and unification of faith and reason with the utilization of the enormous, rich and beautiful country, transcendentalism entered into the American consciousness. It gained a firm outline with R.W. Emerson’s (1817-1862) book *Nature* (1836). Here this important American academic laid down his idea about the interconnectedness of the human soul with the surrounding world. He challenged everyone to solitary internal contemplation of their relationships with the world and for favoring direct work with it. He himself was an example to his readers when he moved into the wilderness for two years. H. D. Thoreau considered making spiritual relationships with the surrounding world as the moral imperative of every person as well. He required “original relation to the universe” through the body, which in Emerson’s definition was part of the outside world. Through the body the soul contacts the external matter of the world. And because they considered the universe to be infinite, similarly the scope of relationships made could potentially be infinite and miraculous. Thoreau and Emerson described the importance of relating to seasons, ponds and mountains and generally to places, plants, animals and mushrooms. Thoreau confided that when he is alone with nature he does not need other company because nature is surrounding him in its “infinite and unaccountable friendliness” and it is closer to him than any human company (Thoreau 2000, p. 128). Wilson is very similar to both of the figures in personally experiencing nature; he considers his relationship with nature to be a very fundamental part of his personality. He claims that field and theoretical natural science research is essentially penetrated with emotions and works with intuition and creativity. From his popular science works he became famous for arresting passages reflecting his experiences of being in nature, internal harmony with its processes and the ability

to create from details and instances a story that involves all of nature. Wilson agrees with the transcendentalists that it is necessary to listen to oneself, one's intuition, and "heart," which pull people to nature and its conservation. However at the same time he also advises exacting research into the emotions excited by nature through the lens of evolution. With his emphasis on rational understanding and reflection of emotions to nature Wilson differs greatly from the transcendentalists.

Wilson is also well known for his atheism. Many of his assertions have been made to fit today's American Protestant majority society, in which he is trying to promote his environmental goals. This society significantly differs than the one Emerson addressed. Current public opinion polls indicate that more than 50 % of people in the USA (and in 2005 more than 80 %) ¹⁷ hold extremely creationist beliefs: that humankind and the rest of the Earth was created by God less than 10,000 years ago. What more current research in the USA indicates that literal faith in the Bible correlates to low financial support for nature conservation. ¹⁸ It is then understandable that Wilson systematically points out the interconnectedness of socioeconomic and cultural historiography and natural history, i.e. physical-geographic and biotic. He considers the creationist thinking of Americans as a problem, not only because he believes that evolution is the "truth", but because this point of view translates into insufficient nature conservation, and just the opposite as it causes people to treat nature as if it were an infinite commodity.

For similar reasons he criticizes social science disciplines whose discourses lead to the practical underestimation of the total dependence and value of nature for people. The American Protestant, or as Wilson sometimes calls it "coloniser's ethic" still exists in most of the USA. Therefore he tries to convince his fellow citizens that the species they see around themselves did not originate with people several thousand years ago, but are often older than humankind itself. Wilson himself recommends seeing the value of a species or ecosystem in its age and in the ecological connections with other species or communities, i.e. partially independent of people.

5. The concept of biophilia in the context of the environmental movement in the 20th century

The practical orientation of the natural sciences on exploiting nature, which stood at the heart of modern Western science, ensured that the technological development of Euro-American civilization was exceptionally dynamic. With the escalation of industrialization, agricultural technology and urbanization however the face of the landscape changed and the first signs of reduced environmental quality came: polluted rivers, smog and degradation of all elements of the environment. The romantic protests of the 19th century against the negative accompanying phenomena of progress culminated in the 20th century in the boisterous rejection of science by the environmental movement. The contemporary ecopsychologist Theodore Roszak represents a classic example of refuting the scientific approach to rectifying the environmental crisis. He takes up the transcendentalist conception of human relationships to nature of the 19th century and he searches for a renewal in spiritual energy, however he simultaneously reflects on how Western science grew from the Judeo-Christian tradition (ibid., p. 25).

Wilson on the other hand claims that science has an influential role in rectifying environmental damage. According to Wilson for nature conservation (not exploitation) it is necessary to use all technological and economic tools possible (i.e. Wilson 2002, p. xxiii). His forced affirmation of what simply is (the technoscientific progress), can be explained as the worldview of an evolutionary ecologist, who suspects there is no return and we must build upon what we are given. This approach is perhaps, considering the character of Western society, somewhat more constructive than "throwing sand in the gears of industrialized society" (Wilson 1984, p. 122), or to refute the entire scientific tradition, as ecopsychology does for psychology. However, does he not at the same time support the costly development of a new generation of technology and a maniacal faith in technology, as Roszak claims?

Wilson almost caricatures the arguments of techno-maniacs who refuse to see the flipside of long-term support of large scientific breakthroughs such as the colonization of space or molecular biology. His relationship with Western science is well illustrated by the following imaginary answer to a rhetorical question about what our descendants will remember about the 21st century in 1 000

years. He shows that from the classic accounts: „...the technoscientific revolution continued, globalized, and unstoppable; computer capacity approaching that of human brain; robotic auxiliaries proliferating; cells rebuilt from molecules; space colonized; population growth slackening; the world democratized; international trade accelerated; people better fed and healthier than ever before; life span stretched; religion holding firm.“, a detail was left out. In order to do all of this, it was necessary for “much of the rest of life, and part of what it means to be a human being” to get lost (both Wilson 2002, p. 129). He describes the techno/maniacs as dreamers, who dream about an unreal world, whose natural resources are not limited. He ascribes their view to a lack of reflection on the stereotypes of human relations to natural resources (biophilia), which reflect the technology of the Stone Age and do not suit the modern era (Wilson 2002, p. 23). According to him the discovery and colonization of America contributed to their one-sided view (and the enormous development of American science) as “the American frontier called up the old emotions that had pulled human populations like a living sheet over the world during the ice ages” (Wilson 1984, str. 11). Now, however, Western society cannot grasp that there are no new geographic horizons, no “Wild West”. He stably comes out against growth-concentrated economy of the USA that does not take into account neither nature conservation nor the world’s humanitarian problems. He rejects a government that pretends America is still a land of infinite Western horizons and non-depletable resources, as it seemed at the start of European colonization.¹⁹

The fact that the cognitive map of European civilization after the colonization of America was closed and the world was no longer infinite (Wilson 1984, p. 11) is reflected in the transformation of viewing environmental problems as well. In his book *The Shaping of Environmentalism in America* (1991) Victor Scheffer, a historian of the American environmental movement, points out that with increasing research on nature the idea of nature as “continuous and responsive, self-renewing and virtually closed system” (Scheffer 1991, p. 9) begins to dominate in the general discourse and the planet Earth becomes an icon of the environmental movement. The cult of the unity of life on Earth according to the author manifested itself in the publication of the *Whole Earth Catalog* (1968) or the founding of the organization Friends of the Earth (1969), or the development of the radical Earth First! organization (1971). The “people’s environmentalism” wave culminated for example in the massive first Earth Day celebration in May of 1970. One of the manifestations of fundamental change in the approach to environmental problems at the international level was the historic 1972 UN conference on the environment in Stockholm. The official report stated that: “As we enter the global phase of human evolution it becomes obvious that each man has two countries, his own and planet Earth”. This changed view of human activity in nature was reflected in the rise of the greening of politics, economics, and thought since about the 1970s and its gradual penetration into all areas of social life. The closeness and cohesion of human activity with its surroundings is also reflected in the four basic rules of ecology of the biologist and ecosocialist Barry Commoner listed in his book *The Closing Circle* (Commoner 1971): 1) Everything is Connected to Everything Else; 2) Everything Must Go Somewhere; 3) Nature Knows Best; 4) There Is No Such Thing as a Free Lunch.²⁰

Ecology has become another icon of the environmental movement. Humanist T. Roszak declared in 1972 for example that of all sciences ecology has gotten the closest to the integration of wisdom – not physics, but ecology, and it is ecology that is the science of the future. Current significant environmental movements, such as deep ecology and ecofeminism (Gardner, Stern 1996, p. 57), arose from basic ecological knowledge about the connections between different elements of natural systems with human activity, but in the second half of the 20th century these ideas slowly penetrated into society at large. Since the 1970s (with the exception of short periods of economic crisis) nature conservation has had a stably higher place in the value ladder of Americans of all social categories than economic growth (Mitchell 1990; Dunlap 1991; Dunlap, Gallup, Gallup 1993). Social and political scientist Ronald Inglehart ascribes this to the advanced development of Western countries, which support the development of post-materialist values in people (1990). Other authors however ascribe it to the gradual penetration of ecological knowledge into majority society, i.e. the creation of a new environmental paradigm (NEP) (e.g. Dunlap 1978) in which humans are looked at in relation to their ecological ties to the environment.

Despite these stably high environmental values Americans still take top place in consuming natural resources. Wilson repeatedly draws attention to unsustainable consumption by using the ecological footprint (e.g. Wilson 2002). And he warns that we are born into today's socio-cultural fabric with brains tailored to a different time. Biophilic tendencies are a part of human nature, and lead the way we relate to the outside environment, they are an innate subconscious base for accepting the rules of environmental ethics in the most abstract meaning of the word (i.e. a functional collection of rules for dealing with nature). He points out that several rules that our genes force us to see as "good" are today no longer adaptive, but that we are capable of reflecting on today's evolutionary thought. He emphasizes that good and morals are temporal and to an extent relative – that there is "good" for genes, individuals, populations – culture, human ecosystems (communities) and even for the entire biosphere. And last but not least that the humankind when equipped with current knowledge is able to reflect this relativity of "good" in its activities (Wilson 1984, pp. 144–145).

By accenting various temporal levels of moral contemplation Wilson *de facto* refers to the pioneer of the ecocentric ethic – American conservationist of untouched American nature from the turn of the 20th century Aldo Leopold (1887–1948). Leopold claimed that social responsibility should expand from society to a higher ecological level, i.e. to the entire landscape and its inhabitants – animals and plants. He emphasized the necessity to learn to look at the functioning of the landscape through the lens of ecological ties between its individual elements, including human society.²¹ Wilson thought that those societies, which were not able to functionally codify the past experience and use it for solving actual problems experienced, were lesser prone to survive. By stating this he paraphrases Aldo Leopold, who similarly talks about ethics as „a set of rules invented to meet circumstances so new or intricate, or else encompassing responses so far in the future, that the average person cannot foresee the final outcome“ (as quoted in Wilson 1984, p. 120). With his statement Wilson among other things indicates that the environmental ethic of humans was (going by traditional nations) naturally an ecocentric ethic, for it contained in itself a value of ecosystem integrity and stability, which guaranteed that values useful for humans were kept.

Wilson is therefore optimistic about the intuitive nature of humans. Within the biophilia theory he claims that humans are born not just with a tendency to exploit, but also to protect their environment,²² or to put it better to be a "good shepherd". It is however necessary to have a better understanding of biological tendencies and their interactions. "Expansion and stewardship may appear at first to be conflicting goals, but they are not. The depth of the conservation ethic will be measured by the extent to which each of the two approaches to nature is used to reshape and reinforce the other" (Wilson 1984, p. 140).

6. Conclusion

Wilson's biophilia concept deals with innate human tendencies to acquire various convictions about other species or other natural phenomena in general. These psychological mechanisms reflect the technologic possibilities of humanity in prehistoric times, and were in mostly formed in an era when human interaction with other species and the environment was in large part direct and frequent. The course of these interactions was one of the main selection factors and thanks to them the mentioned psychological automatic behaviors were created. A significant transformation in the utilization of ecosystems in human evolutionary history has been taking place over the last several centuries. Wilson claims that the genetic base of humans could not fully adapt to cultural changes sufficiently and many psychological mechanisms are obsolete and/or functionless. The mechanization of humanity increased by multitudes the chance that, under the influence of these out-of-date tendencies, nature would be rapidly and irreversibly destroyed through the extraction of natural resources or, for example, the elimination of everything that humans "do not like" without regard to the ecological function of the given phenomena for the survival of humanity. Inadequate reflection on these old tendencies to judge the value of other species or ecosystems in our current thinking and making decisions is one of the origins of the current ecological catastrophe.

Many references to the thoughts of the environmental movement can be found in the biophilia hypothesis. Wilson addresses the normality of the relationship between humans and nature, and human

society and the environment with an unveiled desire for a transformation of these relationships. He tries to think over the current environmental crisis from the position of an evolutionary biologist. The biophilia hypothesis is thus a good example of the 20th century greening of science. In the interpretation of E.O. Wilson's biophilia concept we can see direct references to the environmental movement thinkers – Henry D. Thoreau or Aldo Leopold. Wilson takes from Thoreau, for example, an emphasis on the value of the antiquity of nature or on local biodiversity research. The need for experiencing nature solitarily, which we find with both of them, refers probably further – to Emerson's individual transcendentalism. The biophilia hypothesis reflects the interests of American environmentalism in the second half of the 20th century, such as rejecting technocratic solutions to the ecological crisis and consumerism. Wilson sees the solution to the crisis in transforming the natural sciences from financially costly fields to classic biology dealing with the systematic research of local biodiversity. Besides this he also advises looking at our irrational preferences for various natural phenomena and reflecting on our innate sources for motivating conserving nature, or not conserving it. Wilson's interest in learning from the history of human evolution, which took place within the framework of multiple ecological links with other species and natural phenomena, allows the concept of biophilia to be classified as part of environmental history.

Acknowledgement

This article could be written thanks to support from State Research Plan MSM 0021620831 “Geographical Systems and Risk Processes in Context of Global Changes and European Integration”.

Notes

¹⁾ „...The first deals with understanding nature itself, as organized and functioning in past times...The second level, in this history brings in the socioeconomic realm as it interacts with the environment. Here we are concerned with tools and work, with the social relations that grow of that work, with the various modes people have devised of producing goods from natural resources...Then, forming a third level for the historian is that more intangible and uniquely human type of encounter – the purely mental or intellectual, in which perceptions, ethics, laws, myths, and other structures of meaning become part of an individual's or group's dialogue with nature“ (Worster 1988).

²⁾ Jeleček (2000) uses this term in connection with the development of the environmental movement.

³⁾ The same crucial question is posed by another environmental field – conservation psychology.

⁴⁾ Affiliation [Longman p. 22] = the fact that something involves me or that I am a member of something.

⁵⁾ Affinity [Longman, p. 22] = a strong feeling that I like or understand someone because we share the same thoughts or interests OR the close connection of two things on the basis of characteristics or traits that they share.

⁶⁾ The idea (concept) of the adaption of the human mind to the natural environment in the biological tradition was not born with Wilson. The biophilia hypothesis reflects for example the thoughts of American biologists René Dubos and Hugh H. Iltis. Their work discusses the transformation of the environment and stimuli from primarily biotic and diverse to abiotic and monotone brought about by people and the possible results on the mental development of humans (Dubos 1968, Iltis et al. 1970). In the same period in Europe Austrian ecologists Konrad Lorenz and his student Iräneus Eibl-Eibesfeldt (Eibl-Eibesfeldt 1989) addressed the psychological adaptation of humans to the ancestral environment. In Lorenz's work the thought that changes in the immediate environment of humans can have an impact on their aesthetic and ethical development can be found (Lorenz 1997).

⁷⁾ Ultimate causes – the significance of behavior for the survival of the individual/group/species and proximal causes – such as behavior is psychologically ensured (Tinbergen, *Study of an Instinct*).

⁸⁾ As opposed to for example a morphologist.

⁹⁾ Any physiological movement that we can feel is counted as an emotion, even if at the same time we are unable to precisely name it.

¹⁰⁾ Diplomat, philosopher, ecologist and author of the famous book *Man and Nature* (1864).

¹¹⁾ Natural scientist, conservationist and the author of books about American nature. He advocated the conservation of the Yosemite Valley, and was the founder of the oldest environmental organization in the USA, Sierra Club (1892). WORSTER, D. (2008): *A Passion for Nature: The Life of John Muir*. Oxford University Press, Oxford-New York, 535 p.

¹²⁾ Geologist and explorer of the American West known for his fervor for conservation. His expedition was the first to sail through and document the Grand Canyon at the end of the 1860s. For the latest compare Worster. WORSTER, Donald (2001): *A River Running West: The Life of John Wesley Powell*. Oxford University Press, Oxford-New York, 673 p.

¹³⁾ Natural scientist and author of many works about nature. Famous for writing a journal that describes how the development of her town Cooperstown is reflected in the surrounding nature.

¹⁴⁾ Botanist and entomologist, an early support of Charles Darwin's theory, abolitionist.

¹⁵⁾ According to the Czech philosopher and historian of natural sciences Professor Komárek (2008) environmental thought is a reflection of a long European tradition reaching back to antiquity. Feelings of displacement from an intimately known (natural) environment led during the industrialization process (the formation of the industrial phase of societal development) to fears not so much about the state of the external environment, but more about our internal states. He writes: "Contamination, de-naturizing, deformation of our psychical contents is primarily what these feelings (concerns about pollution – note J.K.) call up and leaves them metaphorically and emphatically visible in the external world around us." [Komárek 2008, p. 247].

¹⁶⁾ J. Muir is connected to the Yosemite Valley and J.W. Powell with the Grand Canyon.

¹⁷⁾ The results of a USA Today poll of 1007 Americans older than 18 from June 2007 on human evolution, see http://www.usatoday.com/news/politics/200706-07-evolution-poll-results_N.htm?csp=34

¹⁸⁾ General Social Survey conducted in 1993 among 1600 Americans.

¹⁹⁾ The new American president Barack Obama declared this year that America can longer "consume the world's resources without regard to effect.", and Wilson compares this turnaround to "blinds being opened to let light beam into a dark room." (whole article from The Boston Globe in: http://www.boston.com/bostonglobe/editorial_opinion/oped/articles/2009/01/24/outside_things_are_looking_brighter/)

²⁰⁾ From Commoner's basic ecological rules we can get an idea of how the environmental movement defines itself – it is against everything that tries to deny humanity's dependence on nature or otherwise the people's influence on nature. Since the beginning, who have environmentalists criticized the most and who has opposed them? They are manufacturers, directors of corporations, mine owners, developers and some economists [Scheffer 1991, p. 10]. Furthermore they are "hard scientists" – techno-maniacs who declare ecological claims to be pseudoscientific. Religious leaders also protest, as they refuse to come to terms with an evolutionary explanation of human history and the Earth and they attack environmentalists for worshipping nature and heresy [ibid., p.14]. If we look at Wilson's résumé, he confronts the same opponents as environmentalists – techno-maniacs, molecular scientists and creationists.

²¹⁾ In reference to A. Leopold from whom environmental history arises.

²²⁾ Here we mean by the environment the area with which a person somehow interacts (this area is influenced by physical, chemical and biological factors on the one hand and social factors on the other). Human life takes place in this environment (i.e. people execute their physiological, material, social, cultural and spiritual needs here).

References

- COMMONER, B. (1971): *The Closing Circle: Nature, Man and Technology*. Alfred Knopf, New York, 326 p.
- COOPER S. F. (1850): *Rural Hours*. George P. Putnam, New York, pp. 521.
- DEAN, B. P. (2007): *Natural History, Romanticism and Thoreau*. In Lewis M. (Ed.): *American Wilderness. A New History*. Oxford University Press., New York, 290 p.
- DORMAN, R. L. (1998): *A Word for Nature. Four Pioneering Environmental Advocates, 1845–1913*. The University of North Carolina Press, London, 256 p.
- DUBOS, R. (1968): *So Human an Animal: How We Are Shaped by Surroundings and Events*. Scribner Book Company, New York, 267 p.
- EIBL-EIBESFELDT, I. (1989): *Human Ethology*. Aldine De Gruyter, New York, 848 p.
- EMERSON, R. W. (FERGUSON A. R. ed.) (1971): *The Collected Works of Ralph Waldo Emerson*, Harvard University Press, Cambridge (Massachusetts), 368 p.
- GARDNER, G. T., STERN, P. C. (1996): *Environmental Problems and Human Behavior*. Allyn&Bacon, Needham Heights (Massachusetts).
- IKTUS, H. H., LOUCKS, O. L., ANDREWS, P. (1970): *Criteria for an Optimum Human Environment*. *Bulletin At. Sci.* 26, pp. 2–6.
- JELEČEK, L. (1994): *Nová historiografie? Environmentální dějiny v USA: vývoj, metodologie, výsledky*. *Český časopis historický*, 92, No. 3, pp. 510–540.
- KELLERT, S., WILSON, E. O., eds. (1993): *The Biophilia Hypothesis*. Shearwater Books, Washington, D.C., 484 p.
- LORENZ, K. (1997): *Odumírání lidskosti*. Mladá Fronta, Praha, 195 p.
- LUMSDEN, C., WILSON, E. O. (1981): *Genes, Mind and Culture*. Harvard University Press, Cambridge (Massachusetts), 428 p.
- LUMSDEN, C., WILSON, E. O. (1983): *Promethean Fire: Reflections on the Origins of Mind*. Harvard University Press. Cambridge (Massachusetts), 216 p.
- ROTHWELL, R. L., ed. (1991): *Henry David Thoreau: An American Landscape*. New York, 225 p.
- SCHEFFER, V. B. (1991): *The Shaping of Environmentalism in America*. University of Washington Press, Washington D.C., 315 p.
- THOREAU, H. D. (1995): *Chůze*. Zvláštní vydání, Brno, 55 p.
- THOREAU, H. D. (CRAMER J. S. ed.) (2000) *Walden*. Yale University Press, London, 370 p.
- WILSON, E. O. (1975): *Human Decency is Animal*. *New York Times Magazine*, Oct 12, pp. 38–50.
- WILSON, E. O. (1984): *Biophilia, the Human Bond With Other Species*. Harvard University Press, Cambridge (Massachusetts), 157 p.
- WILSON, E. O. (1993) *Biophilia and the Conservation Ethic*. In: Kellert S. a Wilson E.O. (eds.): *The Biophilia Hypothesis*. Shearwater Books, Washington, D.C., pp. 31–40.
- WILSON, E. O. (1994): *Naturalist*. Shearwater Book, Washington, D.C., 380 p.
- WILSON, E. O. (2002): *The Future of Life*. Alfred A. Knopf, New York, 256 p.
- WORSTER, D. (1988): *Appendix: Doing Environmental History*. In: *The Ends of the Earth. Perspectives on Modern Environmental History*. Ed. by D. Worster, Cambridge University Press, pp. 293.

Shrnutí

Koncept biofilie E. O. Wilsona a environmentální hnutí v USA

Článek se zabývá výkladem hypotézy biofilie amerického evolučního ekologa a sociobiologa Edwarda O. Wilsona (Wilson 1984). Zejména se soustředí na ovlivnění této primárně biologické teorie vznikem a vývojem environmentálního hnutí v Americe. V první části článku je čtenář seznámen se základními myšlenkami konceptu biofilie ve světle díla jejího autora či obecně evoluční ekologie. V druhé části článku je poukázáno na významné paralely a odkazy hypotézy biofilie na myšlenky některých čelních zástupců amerického environmentálního hnutí konce 19. století a první poloviny 20. století.

Wilson biofilii rozumí komplex lidských psychologických adaptací vzniklých v průběhu evoluce v kontaktu s přírodními jevy různé povahy. Hypotéza biofilie má dvě fasety. Biofilie je jednak „vrozený pocit, že jsem součástí života“, tj. prociťování fylogenetické příbuznosti všeho života na Zemi. Takto lze hypotézu biofilie chápat v rámci evolučních teorií biosféry (Vernadsky, Lovelock a Margulisová). Hypotéza biofilie je také „vrozené soustředění na jiné životní formy“, komplex kognitivních evolučních uzpůsobení lidské mysli které směřují učení se vztahům k přírodním jevům v prehistorických sociokulturních podmínkách. Takto ji chápou evoluční psychologové, etologové, antropologové či sociobiologové.

Hypotéza biofilie má silný environmentální náboj. Wilson se pokouší o hlubší evoluční analýzu lidského vnímání, rozumění a chování se vůči mimolidskému světu a chápe přitom lidskou evoluci jako součást příběhu evoluce života na Zemi. Domnívá se, že jen se zohledněním ekologických souvztažností, jež vedly k vývoji člověka jako druhu, lze porozumět environmentální krizi a pokusit se jí vyřešit. Koncept biofilie je pěknou ukázkou procesu environmentalizace věd. Historický úhel pohledu na lidské chování spolu s viditelnou ambicí přispět k řešení krize vztahu lidské společnosti a přírodních systémů, dovoluje koncept biofilie zařadit do oboru environmentálních dějin. Použijeme-li Worsterův teoretický rámec, můžeme Wilsonovu hypotézu zařadit nejlépe do třetí roviny výzkumu, neboť se zabývá historií vzniku environmentální etiky (Worster 1988).