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ECOLOGICAL AND NORMATIVE FUNDAMENTALS OF VALUE-JUDGEMENTS IN NATURE CONSERVATION: THE CASE OF NON-INDIGENOUS PLANTS

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abstract

There is a tendency among environmentalists to mistake the role of ecology. To question value-judgements based on 'ecology', I present an analysis of values involved in the assessment of introduced plants. Special concern is given to the relation of ecology and values.

I show that the common use of the terms 'neophyte' or 'invader' reveals a conservation bias. I describe, how organismic concepts of the community, the concept of disturbance or the hypothesis of natural stability refer to an idealized nature as an harmonic *cosmos*. Conservationists also tend to idealize pristine nature as intrinsically good, harmonic and stable. They neglect the opposite image of a 'wild' nature that must be controlled and subjected by humans.

Nature conservation is then interpreted as a need for "Heimat", a place that guarantees stability, identity and safety. I claim, that the replacement of original vegetation by a new species is not an 'ecological' damage but requires a comparative norm that is not the result of natural laws but of human decisions. This comparative norm often is the idea of Heimat. Concluding I point out the relevance of my results for nature conservation and environmental ethics.

I. INTRODUCTION

Basic ecology as a value-free natural science is limited to the mere description of nature. The decision to conserve a given state of nature, however, requires value-judgements. Nature conservation, thus, has to bring together two spheres that are traditionally thought to be completely separate: the sphere of facts and the sphere of values and norms. Ecology as a science has to do with facts, whereas values and norms are the subject of ethics.

According to the Baconian programme of modern natural science biologists describe natural phenomena and try to explain them. Explanation means to relate observed phenomena to causes. In generating hypotheses and subjecting them to experimental verification or falsification science seeks to formulate general laws that also allow predictions . This kind of science is expected to be objective and free from any subjective influences (Popper 1973). Scientific knowledge, therefore, is supposed to be value-free. This means, ecologists can describe, explain or predict certain developments but they cannot assess them as good or bad, as desirable or undesirable.

Values and norms, on the other hand, belong to the context of human action. Unlike natural phenomena human actions cannot be explained by causes but are founded in reasons. Social studies and humanities, thus, are epistemologically conceptualized completely different from natural sciences: they rather seek to understand their subject than to explain it. Ethics as the theory of existing moral systems seeks for the rational foundation of norms. Values are considered to be subjective whereas norms are regarded as more universal and obligatory.

Against this background, in which sense can or do ecology and ethics share any common bond? To answer this question I first want to explain, why there is a demand for their connection at all. I than illustrate the problem by giving the example of species introductions. After a short description of my methodology I present some

values that I found to be important in the context of nature conservation and show how these values already enter into supposedly value-free ecological descriptions.

II. BIOLOGY AND ETHICS

1. Ethical constraints of biology and biological constraints of ethics

Scientific discoveries and technological developments can have remarkable impacts on society and the natural environment. With the raise of genetics and gene technology questions of scientific responsibility are discussed among biologists, too. Taking into account that the devastating effects of nuclear weapons were the result of "value-free" physics it was argued, that scientists should themselves reflect on the consequences of what they are doing instead of simply leaving questions of right or wrong to the public. In short: biology should become more ethical with respect to its possible consequences.

At the same time, the reverse argument was proposed, too: Many authors claim that ethics, traditionally concerned with values and norms regarding humans, should become more biological. Taking into consideration that humans are natural beings, they argue that the natural limits of human freedom should also be reflected in ethics. Two different types of constraints are considered in this debate:

Advocates of the so-called "evolutionary ethics" refer to evolution theory and sociobiology. They argue that human action is not as free as classical approaches postulate, but is submitted to biological constraints through human's evolutionary heritage. These constraints should be considered in foundations and contents of ethics (Wuketits 1984; Mohr 1987). The evolutionary approach to ethics, thus, focusses on the inner nature of humans. Opponents of this programme reject it as "biological determinism".

On the other hand, so-called "ecological ethics" focusses on the outside nature of humans. Motivated by increasing environmental problems like pollution of air, water

and soil, habitat degradation and species extinctions representatives of ecological ethics claim that nature itself should become an object of ethical reflection and theory. They argue that natural entities are intrinsically valuable and therefore values are not exclusively human (e.g. Rolston 1988). Nature's complexity and self-organization are regarded as limiting human dominion over nature not only factually but also morally. Thus, ecology is expected to provide the conceptual framework and even the values and foundations for ethics. This project of "ecological ethics" or "deep ecology" (Naess 1973, Sessions 1995) gave occasion for the present paper.

2. Critiques of naturalism: the separation of facts and values

Philosophical critiques of the above mentioned biological approaches to ethics usually focus on the problem of the naturalistic fallacy. Already the philosopher David Hume has distinguished between 'Is' and 'Ought' and explained that there is no logical connection between them. The term 'naturalistic fallacy' was first mentioned by George Edward Moore (Moore 1978). According to Moore it has two meanings: First, normative conclusions require at least one normative premise, or in other words: merely descriptive premises do not allow to draw normative conclusions. Second, the term 'good' in a moral and not only functional sense cannot be defined sufficiently in descriptive terms. Thus, no biological or ecological description of nature can legitimate any norms for environmental ethics without further normative premises.

With explicit reference to science a similiar argument was presented by the German sociologist Max Weber. According to Weber every empirical science can only describe what is, not what should be or ought to be done. Value judgements, meaning "practical evaluation of facts as desirable or undesirable" according to Weber are not a question of science (Weber 1917, p. 499). This statement is known as Weber's thesis of science's "freedom from values" (*Wertfreiheitsthese*).

Due to the extensive literature on this topic I will not go into it in more detail. However, I want to direct some attention to the fact that more elaborate positions of deep ecology, like for example the one presented by Arne Naess, explicitly avoid the naturalistic fallacy. Caring much about analytical accuracy, Naess emphasises that he introduces prescriptive statements already at the level of the premises and not only at the level of conclusions (Naess 1989). In his case the verdict 'naturalistic fallacy' fails.

3. An epistemological argument against naturalism

My own critique of the normative upgrading of ecological concepts does not address naturalism as such. It rather is an epistemological argument. I intend to contest the unquestioned supposition, that biology as a science would generate objective and valuefree knowledge about nature. I endorse the historical and sociological view of science that scientific observations and theories reflect presuppositions that are not founded in science but rather in society. My epistemological reformulation of the anti-naturalistic argument, thus, runs in short as follows: Supposed 'empirical facts' are already shaped by certain values and norms. Thus, the putative naturalistic fallacy might often turn out to be circular reasoning.

Although the separation of facts and values is a reasonable norm for science it is contrary to scientific practice. Historians and philosophers of science have shown that science is deeply rooted in and dependend from the historical context (Fleck 1993, Kuhn 1976). As a social enterprise science is necessarily biased. This means, in contrast to the scientific self-image science is not value-free. Besides its own constitutional values it also implies decisions about contextual values and thus takes normative stances (van der Steen 1995). Taking stances is therefore part of the scientific practice. For example, I suppose that many ecologists have a conservationist bias. But - following Weber - such a personal conviction has to be made explicit, so that others can decide whether or not they agree to the conclusions.

I, thus, suppose that ecologists, like everybody else, share certain world views, ideas of good and bad, and that these ideas shape their perception of nature. As long as these preceding values and norms remain hidden in their scientific concepts they cannot be questioned by the public. When these concepts provide the framework for environmental ethics even values that reflect injust structures of society may become ethical norms. This seems to be inappropriate from an ethical perspective.

One important means to transport hidden values or even norms is language. Scientific theories are developed in a context of communication within the scientific community. Language, therefore, is an essential element of science (Haila 1986). Ecological papers comprise lots of expressions that do also have a non-scientific meaning and therefore bear lots of connotations. To talk about 'balance of nature', about 'circles' and 'interconnectedness', about 'diversity' and 'stability', or about 'disturbance' and 'catastrophes' does not leave the scientist emotionally unaffected. Some of these emotional connotations also concern moral feelings and values. I therefore suggest that scientific descriptions of nature already include norms and values and that these normative elements are hidden in language. Values, thus, are not "discovered" or experienced in nature, they rather reappear in ecological theories. Ecological arguments for nature conservation therefore only reproduce values that are common among humans before.

Following, I elaborate this argument by giving an example: I analyze the assessment of introduced non-indigenous plants. I've chosen this example because the assessment of species introductions is highly controverse. On one hand ecological arguments play an important role in the debate, on the other hand explicitly non-scientific values are brought into discussion.

III. THE PROBLEM OF NON-INDIGENOUS PLANTS

Plant species that reach new areas by means of human transportation are called "non-indigenous". The ecology of introduced species and their impact on indigenous species and ecosystems was first described by Elton (1958). Especially on oceanic islands the introduction of new species by Europeans has caused the extinction of many species and considerable changes of the original ecosystems. Concerned about the environmental impacts of introduced species the Scientific Committee on Problems of the Environment (SCOPE) initiated a huge international research programme concerning so-called "Biological Invasions" (Groves and Burdon 1986; Kornberg and Williamson 1986; MacDonald, Kruger et al. 1986; Mooney and Drake 1986; Joenje 1987; Drake, Mooney et al. 1989; Mooney and Drake 1989; Di Castri, Hansen et al. 1990). Meanwhile, import, naturalisation, and spread of new species are considered one of the major threats to global biodiversity (U.S. Congress 1993, McNeely, Gadgil et al. 1995).

1. The European situation

The historical and biogeographical situation of Central Europe is significantly different from the one of the above mentioned oceanic islands and also from the continental United States. Due to the barrier effect of the Alpes the European flora mainly consists of species, that settled in Europe only after the last Ice Age. Many of them didn't reach the region on their own but profited by the import of Asian plant species as food crops. Non-indigenous plants that were introduced very early and are established elements of today's flora are called *Archäophytes* in the European terminology. On the other hand plants that were introduced not before 1500 A.D. are called *Neophytes*. This date was chosen because the European settlement in the Americas and the increasing international trade resulted in a significant rise in intercontinental exchange of species.

Archäophytes and *Neophytes* pose opposite problems for nature conservation: Many of the ancient non-indigenous plants are endangered due to the industrialisation of agriculture today, whereas some of the newcomers are increasing. Although both of them are not originally indigenous they are, thus, assessed differently. The decrease of the 'Archäophytes' is considered undesirable in terms of biological diversity, whereas the increase of the only recently introduced neophytes is considered a threat to natural ecosystems and to the native flora.

Some neophytes locally reduce species diversity, replace native vegetation or threaten rare or endangered plant species. Hence, they can afflict aims of nature conservation. The involved criteria for these assessments are the diversity of animals and plants as well as the beauty and uniqueness of the traditional landscape. In case of conflicts with nature conservation spreading introduced plant species are subjected to measures of control.

However, this policy is subject of a highly controverse discussion. Its opponents question the preference of native species (e.g. Reichholf 1996). The suspicion which I want to discuss further in the following is that the assessment of non-indigenous plants is influenced by a xenophobic bias.

2. Biased science or biased evaluation?

Coming back to the problem of value-judgements in ecology and nature conservation I want to discuss this suspicion in more detail. My question is: Which values influence assessments in nature conservation and where do they come from? Is it true, that ecology is value-free or do ecological descriptions and theories comprise evaluations?

First I want to illustrate the suspicion that the public discussion about non-indigenous species tends to be biased in an irritating way by quoting two representative examples: In 1991 the German popular magazine '*natur*' titled:

> "**Green invaders**. *Foreigners* on their way to success. *Alien* plants override *German* herbs" (Finck 1991, translation and italics by UE).

The other example is from the United States. A newsletter by the Park Service of the Grand Canyon (Arizona, USA) informs the visitor:

> **"Alien Invaders**: The Grand Canyon is *under attack* from *alien* plants! You can help protect *our native* plants by joining the habitat restoration team in removing these *nasty invaders*" (Grand Canyon Visitor Information, April 1996, italics by UE).

Sure enough, these statements are not scientific. They want to raise consciousness for problems caused by introduced species and to motivate people to prevent their further spread. Nevertheless, the language that is used appeals to xenophobic, nationalist or even racist feelings that have to be rejected. If scientific assessments were based on such prejudices as well, they ought to be questioned.

Fortunately, there is a growing awareness among scientists about this problematic tendency in talking about 'natives' and 'aliens'. For example, James Brown stated in the global volume of the SCOPE-Programme on Biological Invasions:

> "There is a kind of a irrational xenophobia about invading animals and plants that resembles the inherent fear and intolerance of foreign races, cultures, and religions. [...] This xenophobia needs to be replaced by a rational, scientifically justifiable view of the ecological roles of exotic species" (Brown 1989, p. 105).

Other ecologists try to eliminate offensive terms from the debate and explicitly reject unreflected patriotism (Garthwaite 1993; Binggeli 1994). But still many scientists do not see that scientific concepts and theories themselves could reflect such worldviews and therefore be value-laden.

In the following I want to show that ecological 'facts' themselves refer to certain ideas of nature. Therefore, assessments of environmental impacts of introduced species do not only depend on ecology but on the underlying philosophy of nature and humans. To uncover some of these values and relate them to the assessment of introduced species is the aim of the following presentation.

IV. RE-READING SCIENTIFIC TEXTS: A SEMIOTIC APPROACH

Supposing that scientific research is shaped by contingent social, political and historical circumstances I researched through scientific publications about non-native plants. My sought was to find hints at non-scientific influences on the scientific writing. I used specific papers about species that are considered problematic in Central Europe context (Schwabe and Kratochwil 1991; Hartmann et al. 1994; De Waal et al. 1994; Pysek et al. 1995; Cronk and Fuller 1995), as well as more general and international publications, especially the results of the SCOPE-Programme on Biological Invasions (Groves and Burdon 1986; Kornberg and Williamson 1986; MacDonald et al. 1986; Mooney and Drake 1986; Joenje 1987; Drake et al. 1989; Mooney and Drake 1989; Di Castri et al. 1990).

I used the following semiotic approaches:

1. Analysis of the **semantic field** of concepts by using **polar opposites**. I tried to figure out how the opposites nature/ culture, natural/ unnatural, alien/ native and wilderness/ cultural landscape form part of the concept of 'nature conservation' on one hand and of 'neophytes' on the other hand. My hypothesis was that the semantic fields of both concepts hardly overlap and that neophytes are, therefore, seen as afflicting conservation goals.

2. Reading signs as **traces**: This method supposes that signs, that are used in a text, not only denote one precise meaning but also refer to other meanings. These meanings are less obligatory, they are rather subjective and emotional sometimes

even speculative. Like a detective the interpret of a text searches for traces of hidden informations. This involves unconventional reading: using a word's connotations it is deliberatly associated to different contexts. Like for an analyst the aim is to track unintended messages of intentional phrases.

V. VALUE-JUDGEMENTS CONCERNING SPECIES INTRODUCTIONS

My research can be broken down into three levels.

1. the semantic level where I analyze the extend of implicit values in certain ecological concepts and theories,

2. the idealistic level where I identify the objective of nature conservation in more detail, reconstruct its historic context, and contrast it with traits of non-indigenous plants, and

3. the psycological and emotional level where I analyze the relation between outside and inside nature and their implications for nature conservation.

1. Values within Ecology

Biased terminology

In contrast to the scientific self-image the ecological terminology concerning species introductions is not value-free: "Immigrants", "Alien invaders" "Colonizers" and the like bear a connotation of not belonging or being undesirable. According to Webster's New Encyclopedic Dictionary (1993) 'invasion' means: "1. [...] entrance of an army into a country for conquest; 2. [...] the entrance or spread of some usually harmful thing". These notions of aggressiveness and harm necessarily lead to the assumption that invasive species pose a threat to others.

Even the more neutral terms 'neophyte' and 'invader' reflect a conservation bias. They include a tendency for the species to expand and this expansion is seen as

bearing negative consequences for the native flora and fauna. Unfortunately, only few authors make their conservation bias as explicit as Cronk and Fuller (1995).

Nature as *cosmos*

The concept of resistance is of major importance for the explanation of successfull invasions. It refers to the theory, that diversity leads to stability and, thus, to immunity against species invasions. Charles Elton (1958) published this theory in his classical book on biological invasions. Natural communities, Elton says, are in balance with the qualities of their habitat. Due to a long coevolution, every niche in a natural community is occupied, so there is no room for newcomers.

This 'balance of nature'-idea is very common among environmentalists and ecologists. It is based upon the idea of an harmonic order of nature, which is quite often reflected in ecological theories and even more often in their popular receptions. This premodern idea stems from the Greek image of nature, the so-called *cosmos*. In these times, science seeked to understand the cosmic order. As human behaviour had to be oriented following this cosmic order, nature was a normative concept.

The assumption of a natural order implies that every human change causes disorder. Thus, the image of nature as a *cosmos* implicitly leads to the value-judgement that the natural state is 'better' than the one produced by human action.

The organismic concept of the plant community

The use of the term resistance for the ability of a natural community to repulse 'invaders' suggests that the community itself is conceptualized as an organism. Organismic (holistic) concepts of the community regard the fact that certain species live together at one site as if they belonged together for intrinsic reasons. Every species is seen as having a necessary function for the community - and the whole of the community is assumed to be more than the sum of its parts.

The conceptual frame of 'resistance' is immunology. Within this framework immunity appears as a capability of an organism that is actively achieved. Immunity requires the discrimination between 'own' and 'alien' and the repulsion of the alien. Immunity works as a safeguard for health. Health, however, is not a value-free concept but a normative one. Health is better than disease. Thus, the concept of resistance already implies a value-judgement: The successful invasion of something alien in this context necessarily leads to the destruction or at least endangering of the whole.

The concept of disturbance

The assumed resistance of a natural community can either be overcome by the aggressiveness of the invading species or by a preceeding disturbance. Disturbance is considered the most important factor for the success of an introduced species. From a theoretical perspective the concept of disturbance is difficult to understand. It only makes sense in relation to a concrete object. What appears as disturbance on a lower level of the hierarchy can be necessary to achieve stability on a higher level. However, the term 'disturbance' bears negative connotations. Compared to an harmonic and balanced nature disturbance seems to be unnatural.

Despite this negative connotation ecologists today regard disturbance rather as a rule than as exception (e.g. Pickett and White 1985). Nevertheless descriptions of biological invasions often refer to some kind of natural integrity that is spoiled by means of human intervention. This idea has an interesting parallel in the fact that pristine nature is often discribed as 'virgin'. Within this metaphoric framework the normative aspect of the concept of anthropogenic disturbance is obvious: Contact with man is inevitably an irreversible disruption of the natural integrity.

2. Values in nature conservation

The Nature of nature conservation

To find out, in which way spreading non-indigenous plants afflict nature conservation aims I opposed characteristic traits of nature and neophytes. I supposed that neophytes are "in some way" unlike valuable nature. At first sight, the following opposition seems plausible: The objective of nature conservation is "nature". Introduced species are not natural but depend on humans. Thus, they cannot be an objective of conservation (see table 1a).

However, things are more complex. On one hand, the object of nature conservation is not nature but the traditional cultural landscape. Valuable nature, thus, does not necessarily have to be "natural". On the other hand, the spread of a species within a new area and the displacement of the previous species are "natural" phenomena. Nevertheless they are perceived as undesirable. It is therefore necessary to name the involved criteria and values more precisely.

Nature as 'homeland'

The traditional cultural landscape was historically addressed to as 'Heimat'. The German and intranslatable term 'Heimat' originally denotes the place where You come from, where You feel at home. Valuing nature as a home means to estimate a familiar nature rather than a strange. The home-nature is not wilderness, it is under man's dominion. To be a home nature has to be well-known and safe, it has to have history and tradition and thus an unmistakable identity

Spreading non-indigenous plants do not fulfil these requirements. Being either escaped from cultivated land or introduced unintentionally they grow wild, they are hardly under control. They are new in a region, thus, they are unfamiliar and not traditional. By replacing the original vegetation the make every place look alike. From

the perspective of 'Heimat' successfully spreading introduced plants are not too un-natural but too natural to appear valuable (see table 1b).

The naturalness of nature

'Naturalness' is a value diametrically opposed to 'home'. Pristine nature is not familiar and well-known but necessarily strange and wild. It follows its own rules, it is perceived as autonomous and self-organized, as independent from human action and evaluation. It is untouched by humans, it is "virgin" - and therefore intrinsically good. This image of nature is spoiled by introduced species, too. They are strange and wild but they destroy the illusion of virginity (see table 1c). Neophytes, thus, are "natural" because they are independent from human cultivation, but they are not the precious kind of nature.

'Good' nature, 'bad' humans?

The concept of 'Heimat' not only denotes a specific familiar region, but also stands for an idealised relation between humans and nature. The traditional farmer is a model of this kind of relation: He uses natural resources wisely without overexploiting them. He adapts himself to the natural conditions. Romanticism idealizes this traditional way of life as peaceful coexistence of humans and nature, and champions it over the modern industrial exploitation of nature. From the conservative perspective that is inherent in the concept of 'Heimat' humans have unlawfully surmounted their natural boundaries.

This view, again, refers to the concept of an harmonic natural *cosmos* that we already found in some ecological theories about biological invasions. Opposed to the well-ordered *cosmos* humans are seen as destructing the natural order. From the conservative perspective of 'Heimat' modern humans change the world according to their needs instead of adapting and subordinating themselves under the laws of nature.

Invasive plants symbolize this misanthropic concept of humans rather than the harmonic and balanced nature. In expanding their populations beyond their natural boundaries invasive plants are too human-like. Only under the presupposition of an idealized nature 'natural' is equivalent to 'good' whereas 'human-like' means 'bad'. Bearing this concept of nature in mind spreading introduced plants are too un-natural.

3. The moral function of Nature

Refering to the fact, that unwanted introduced plants successfully resisted any control efforts one scientist exclaimed at a Conference "These plants are terribly potent". This reference to Freudian terminology was certainly not intended by him. Nevertheless, I think it is an important hint to the emotional quality of the debate. I suspect that some attributes of the species in question do cause some kind of moral indignation.

The 'bad' nature

Reading and interpreting the current characterisations of invasive species I found many hints on implicit evaluations. Successful "invaders" are often characterised as "aggressive", they "dominate" the native vegetation, they form a "monopoly". Thus, they behave in a ruthless and inconsiderate manner. I dare say that these species are fought off in nature, because they represent forbidden sides of the human nature.

Modernity conceives humans as autonomous subjects. Autonomy requires humans' control over the natural environment as well as the individual subject's mastery over his or her human nature. To become autonomous the individual has to suppress his or her needs, desires, and instincts. This requirement is essential to understand my above statement.

Uncontrolled and instinctive sexuality and reproduction threaten the autonomy of the human self. They must therefore be carefully controlled. As a consequence, these unwellcome and denied parts of the self are also projected on others and opposed

there, too. Historically, nature as well as women or indigenous peoples have served as these 'Others': they were seen as the opposite of man, the opposite of reason. This means, they were assumed to be worthless.

The 'good' nature

On the other hand, the antique idea of a *cosmos* and romantic idealism hold up nature as a moral example for humans. Some ecological theories and the above mentioned programme of ecological ethics also sustain such an image of an intrinsically good nature.

Nature is supposed to be adaptive, harmonius, balanced and pure. Successful "invaders" are just the opposite: they are beyond control, they reproduce in high rates and they spread at the expense of the community. Hence, spreading introduced species do not fit into the image of a 'good' nature, they are 'bad' nature' (see table 2).

VI. CONCLUSIONS

The aim of my paper was to question the role of ecology for nature conservation as well as for environmental ethics. On the basis of the assessment of species introductions I have shown that ecology cannot provide particular 'ecological' values. Value-judgements in nature conservation necessarily have to rely on values related to human needs. Nevertheless, these values can and have to be critically discussed.

1. Nature conservation is related to human needs

I have explained that the idea of conservation of nature is based on two contradictory images of nature. On one hand pristine nature is regarded as intrinsically good, sometimes even in a moral sense of the word. Human activities are, then, supposed to spoil the natural integrity. On the other hand, nature is regarded as wild and dangerous. To survive, it is of existential importance for humans to gain control over the forces of nature. From this perspective, only nature under man's dominion, the cultivated landscape, can be valuable. Both of these images reappear in ecological texts about species introductions and in the environmentally concerned literature.

I've shown further that expanding introduced plants do not fit into any of these images. First, they obviously are not pristine nature. If they are natural at all, they are a symbol of the 'bad' nature. Thus, they spoil the idea of a natural harmony. Monospecific stands of an introduced plant do not fit into the ideal of a balanced, diverse and stable nature. In resisting control efforts, they are nature beyond human control, a threat not only to ecosystems but also to humans. Second, spreading non-indigenous plants are not a part of 'Heimat' in every sense of the word. They are not only 'aliens', what is more, they afflict the major functions of Heimat: to guarantee stability, safety and identity.They change the environment more rapidly than humans and others can adopt to it.

This means, that 'naturalness' is not the main criterion for the assessment of species introductions. On the contrary, I've shown that spreading non-indigenous plants do represent 'nature' - but a nature that is unwanted by humans. The values to assess the spread of introduced species, thus, have to be related to human needs (see table 3): To meet human requirements nature has to be safe and reliable. Uniqueness is important for identification and diversity for the enrichment of life. All of these values can be afflicted by neophytes. However, not nature or ecology set the criteria for this assessment but humans.

2. The role of humans in ecological ethics

As I already mentioned there is a tendency in the environmentally concerned literature to idealize nature and to despise humans. From the 'ecological' perspective humans appear as a species that has become a pest for planet Earth. This opinion can also be found in papers about species introductions, e.g.:

> "The species *homo sapiens* itself is without question the super invader of all time" (Wagner 1993, p. 3).

This parallel between humans and "invasive" species was already drawn by Charles Elton:

> "The reason behind this, the worm in the rose, is quite simply the human population problem. The human race has been increasing like voles or giant snails, and we have been introducing too many of ourselves into the wrong places" (Elton 1958, p. 144).

I think, from an ethical perspective such a reduction is unsatisfactory. Obviously, humans are a biological species and their behaviour might still be influenced by their evolutionary inheritance. But the interpretation of human actions merely in terms of biology represents an inadmissible oversimplification. Population growth, landuse-systems, industrial production and species introductions depend much more on economy and politics than on population biology. If we want to solve these problems, we need more than biology.

An appropriate environmental ethics should take the possibility of a fruitful interaction of humans with nature into consideration. It should acknowledge that humans can act responsibly and not only instinctively. The perception of humans as a pest fails to notice this capacity. To preserve a world worth living we don't need to idealize nature and condemn humanity. I think, it is much more helpful to regard the conservation of nature as a humane affair.

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Tables

table 1a: Opposing nature and neophytes

Nature	**Neophytes**
natural	unnatural

table 1b: the perspective of nature as home

Nature	**Neophytes**
home	Alien
culture	Wild
well-known	Strange
traditional	New

table 1c: the perspective of naturalness

Nature	**Neophytes**
nature as such	man-made
original	modified by humans
natural	Artificial
independent	introduced by humans

table 2: Opposing moral nature and problematic neophytes

attributes of nature as a moral example	**attributes of problematic neophytes**

adaptation	Displacement
harmony	Aggression
purity	Pollution
balanced	Instinctive
'good'	'bad'

table 3: Opposing valuable nature and problematic neophytes

attributes of valuable nature	**attributes of problematic neophytes**
safe	dangerous
reliable	unpredictable
unique	replaceable
diverse	uniform