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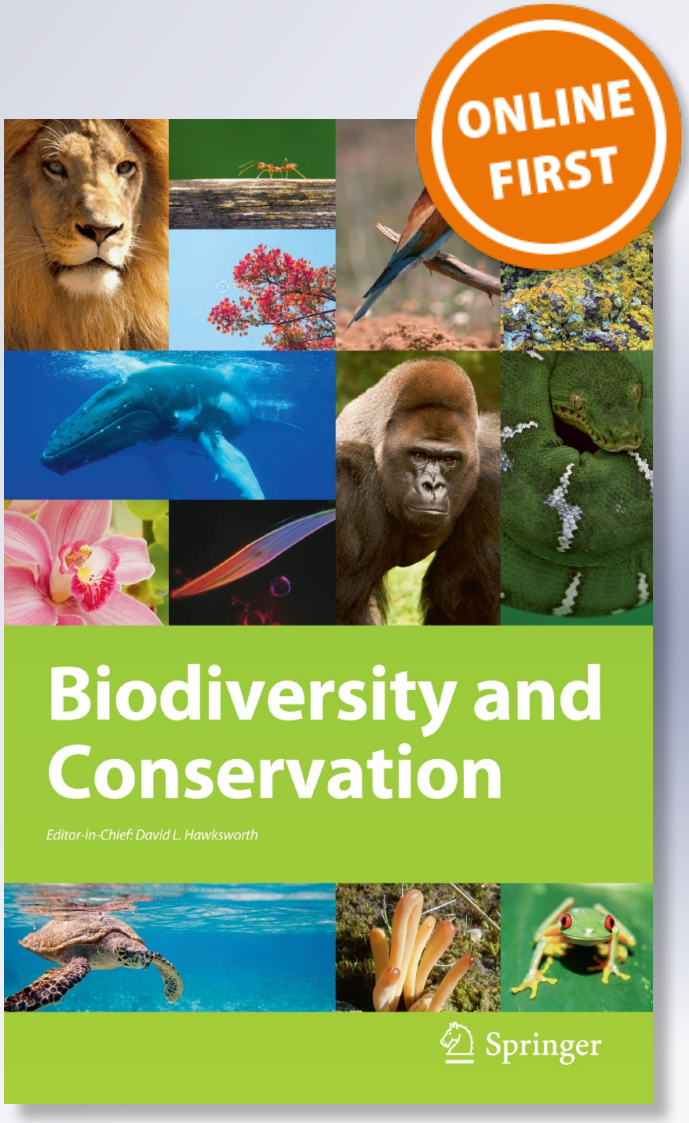

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ORIGINAL PAPER

IUCN and perspectives on biodiversity conservation in a changing world

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Abstract Biodiversity conservation is not a clear-cut practice and there is no blueprint solution to the question how to best halt the loss of biological diversity. Various conservation approaches are surrounded by a variety of basic assumptions about the world, nature and the human-nature relationship. These assumptions are more often implicitly hidden in practices and discourse than purposefully produced and deployed at a conscious level. The aim of our paper is to contribute to the on-going discussion on how to halt the loss of biodiversity in a dynamic global socio-ecological system. We will present an analysis of the worldview(s) and management style(s) of the oldest and largest global conservation organization: the International Union of Nature Conservation (IUCN). Popular in many conservation organisations is the strategy of integrating conservation in policy, business and society. Our discourse analysis demonstrates that although IUCN employs a strongly pluralistic practice of conservation, it is difficult to speak of a truly integrative approach yet.

Keywords IUCN · Biodiversity conservation · Cultural perspectives · Sustainable conservation · Integrative conservation approach

Introduction

Three years after the globally set 2010 deadline of halting biodiversity loss, the decline of the diversity of life is still a growing global issue. The loss of biological diversity is a typical wicked, persistent and complex problem (Grosskurth 2009). Its causes are plural and are interrelated with many societal, economic and cultural factors. Main drivers of biodiversity loss are identified as being part of larger global changes such as climate change, invasive species and poaching. Landscape fragmentation caused by urbanization

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and land use changes for agriculture are recognized as the largest causes for biodiversity loss (MEA 2005; CBD 2012). What kind of conservation practice will be able to deal with a changing planet and an uncertain future in the long run?

Biodiversity conservation is not a clear-cut practice and there is no blueprint for how to best halt the loss of biological diversity. It involves much more than saving flagstone species (Caro 2010) in nature reserves and national parks. Various conservation approaches are surrounded by a variety of basic assumptions about the world, nature and the human-nature relationship. These assumptions are more often implicitly hidden in practices and discourse than explicitly accounted for in the conservation discourses. It becomes increasingly important to be aware of the various types of human-nature relationships that exist. These relationships define the way conservation practices are envisioned and produced. They express certain worldviews and management styles within the conservation practices and discourses. Sometimes these practices co-evolve and sometimes they seem to compete with each other to achieve the same good cause.

Traditionally, measures to reverse the trend of biological loss have been largely developed in the context of 'conventional' conservation practices, which were often dichotomizing nature and culture (Soper 1995). Protected areas and wildlife reserves, national parks, natural heritage sites and species recovery programmes all have in common to save nature, wilderness or wildlife in specific locations outside of humanly cultivated ecosystems.

With the increasing awareness about need to address and understand the interconnected complexities of our time (Crutzen and Stoermer 2000; Rees 2010) and in order to guide transitions towards a sustainable world (Steffen et al. 2005; Loorbach 2002; Kemp et al. 2007; Loorbach 2007), increasing attention has been given by major conservation organisations like IUCN and WWF to developing so called 'integrated' conservation approaches (IUCN 2012d; Christoffersen 1997). Mainly these approaches have been directed at integrating with (official) development assistance (ODA) and engagement in new partnerships, with for example businesses (Adams 2013). Via the lens of Cultural Theory (Verweij et al. 2006; Thompson et al. 1990; Thompson 1997) we ask: how 'integrative' are these new 'integrated' approaches to conservation really? Are they able to transcend the ancient dichotomy between nature and culture? Do they fit our complex and uncertain world? Are they able to contribute to gaining new perspective on how to work towards sustaining healthy global ecosystems? In brief: do they represent the idea that the total can be more than the sum of the parts?

The aim of our paper is to contribute to the on-going discussion on how to halt the loss of biodiversity in a pluralistic and dynamic global socio-ecological system. We will present an analysis of the worldview(s) and management style(s) of the oldest and largest global conservation organization: the International Union of Nature Conservation (IUCN). The organisation presents a wide variety of conservation approaches and the organization looks far beyond its central role of the conservation of species, populations and genetic diversity: links to climate change, energy, human well-being and the economy are all included (IUCN 2011a; Christoffersen 1997). Nevertheless, our discourse analysis demonstrates that although IUCN employs this strongly pluralistic approach to conservation, it is difficult to speak of a truly integrative approach yet.

Methodology

We evaluated the IUCN conservation discourse in the context of the main drivers of global change: the human species (Wackernagel and Rees 1996; Steffen et al. 2005; MEA 2005;

Crutzen and Stoermer 2000) and our cultural basic assumptions (Verweij et al. 2006; Beumer and Martens 2010). In analysing our case study we asked two questions:

Which basic assumptions about nature, the human-nature relationship and which management styles are represented in the IUCN discourse?

Do the ideas and basic assumptions of biodiversity conservation within the IUCN match the reality of a complex, dynamic and globalizing world?

For our analysis we selected various IUCN reports that reflect the organisation's vision, mission, communications and practices. We used the publication timeframe 2007–2013 in order to gain insight in contemporary conservation discourses. We chose qualitative, written and publicly (online) available texts. Based on a triangulation of text-types reflecting 'idealistic views', 'practical discourse' and the way IUCN 'communicates' its achievements and practices to the outside world, we categorized the documents into 'Annual Reports (AR)', 'Vision and Mission Reports (VM)', 'Practice Reports (PR)' and 'Communication and Public Awareness (CA)' documents. Accessibility was best for the AR of the 'Business and Biodiversity Programme' (IUCN 2007a, 2008b, 2009e, 2010c, 2011d). For the years 2010 and 2011 general IUCN annual reports were available online (IUCN 2011f, 2012d). Two annual reports of the Commission for Education and Communication were also included in the analysis (IUCN 2011c, 2013b). The CA documents we analysed were issues of the World Conservation Magazine (IUCN 2008d, f, g, 2009a, b, 2010f, 2011b). The PR and the VM documents consist of various other general reports about IUCN activities, vision and mission (IUCN 2007b, 2008c, 2009d, 2010e; Adams 2006; IUCN 2005, 2008a, e, 2010b; Marton-Lefèvre 2012; Marton-Lefèvre and Xinsheng 2012; IUCN 2012c).

Cultural Theory (CT), as applied in Beumer and Martens (2010), was used as an analytical framework for an in depth deductive qualitative content analysis of the narratives of the documents (Hsieh and Shannon 2005; Elo and Kyngas 2008; GAO 1989). The framework is based on a 'grid' and a 'group' axis, indicating lower or higher autonomy in a social context and lower or higher conformation to societal norms, rules and regulations (Verweij et al. 2006; Beumer and Martens 2010). Content analysis is a set of procedures that aim to transform non-structured oral or written information into a format that allows analysis. Qualitative content analysis has an established reputation in health sociology and its popularity has increased in other fields of research (Hsieh and Shannon 2005; Elo and Kyngas 2008). It focuses on the characteristics of language as communication and pays attention to the contextual meaning of text (Holstein and Gubrium 2004; Hsieh and Shannon 2005). The method facilitates analysts in making structured inferences about the characteristics and meaning of the material (GAO 1989). Qualitative content analysis in brief can be defined as a "research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns (Hsieh and Shannon 2005, p. 1278)".

In preparation of the narrative analyses, we carried out a broad literature study to explore the various cultural perspectives on biodiversity and conservation existent in the academic literature and in popular scientific books, newspaper and magazine articles. We did this in order to map the existent perspectives on nature and on-going management approaches in the conservation field. The studied literature contained texts ranging from conservation theory and practice (Whittaker and Fernandez-Palacios 2007; Sarkar 1999; Rands et al. 2010; Heywood 1995; Sala et al. 2000; Chapin et al. 2001; CBD 2010, 2011; Caro and O'Doherty 2001; Caro 2010; Adams 2013; Bethge 2007; Chan 2007; Hagerman et al. 2010; Norton 1987; Redford et al. 2006; Minteer and Miller 2011; Miller et al. 2011; Minteer and Collins 2012; Peterson et al. 2003; Margules and Pressey 2000; Meine et al.

2006; Robinson 2011), global reports (MEA 2005; CBD 2010; UNEP-CBD 2011; CBD 2011; TEEB 2009; Gitay et al. 2002), ecological theory (McCann 2000; Tilman 2000; Hagen 1992; White 1967; Opschoor 1998; Groot et al. 2002; Rosenzweig 2003; Cumming et al. 2005; Begon et al. 2006; Norton and Noonan 2007; Hart 2007; Ives and Carpenter 2007; Whittaker and Fernandez-Palacios 2007; MacDougall et al. 2013), biology, evolution theory and complexity (Larson 2001; Jagers 2012; Folke et al. 2004; Palmquist 2007; Whittaker and Fernandez-Palacios 2007; Capra 1996; Prigogine 1996; Boogerd 2007; Gleick 1998; Gunderson and Holling 2002; Rees 2010; Steffen et al. 2005; Young et al. 2006), sustainable development (White 1967; Hardin 1968; Harlem 1987; Wackernagel and Rees 1996; Giddings et al. 2002; Banerjee 2003; Robinson 2004; Williams and Millington 2004; Castro 2004; Jackson et al. 2004; Adams 2006; Martens 2006; UNCSD 2012; Martens 2013) and philosophy (Soper 1995; Takacs 1996; Sarkar 1999; Posey 1999; Naess 1995; Abrams and Primack 2011; Adams 2006; Aitken 2012; Böhme 1992; Bortoft 1996; Crutzen and Stoermer 2000; Diamond 2005; Mitman 1996; Norton 1987; Noske 1988; Schulz 1985). Novels (Carson 1962; Leopold 1966; Mowat 1963), documentaries and movies (Genton 2006; Fothergill et al. 2007) were also part of the literature assessment. The goal was to compile a general categorized working list of key words and phrases and position them in the framework of CT worldviews in order to extrapolate assumptions about biodiversity and conservation strategies (Beumer and Martens 2010).

Based on the resulting list, we explored an adaptation and restructuring of the existent CT perspective descriptions by Thompson and his colleagues (Thompson et al. 1990) by elaborating some of the perspectives of the *classical* CT framework that are usually not applied in studies using CT (Offermans et al. 2009; Offermans 2012; Beumer and Martens 2010). We found the fatalist and especially the autonomous (or hermit) perspectives abundantly present in the assessed sources on biodiversity and conservation. We also estimated that within the field of sustainability and conservation literature the *clumsy approach* of Verweij and his colleagues—which is an approach integrating elements from various perspectives (Verweij et al. 2006)—may be seen rather as an additional perspective on its own than just an *integrative approach*. Therefore, we renamed the clumsy approach the *Dynamic Integrator* (Beumer and Martens 2010).

The gained key assumptions, words and phrases were categorized into perspective groups. Each perspective was labelled with a specific colour. These label-colours were used to code units of the texts of the documents. We numbered the paragraphs of the texts and in a process of close reading we coded words and phrases assigning weights related to the frequency of their occurrence and to their intensity. The frequency was counted by giving *perspective points* to the title (1 point), the subtitle (1 point), to single words (1 point), phrases (2 points) and paragraphs (up to 5 points). Sometimes words or phrases reflect more perspectives at the same time. In such cases we double- or even triple-coded the fragments with the corresponding perspective colours. When one phrase was coded in three (or even more) colours, we added an additional line in the margin with the colour that refers to the dynamic integrator. Weighing the intensity of meaning was also accomplished by coding the text margin with a perspective colour when the intensity occurred to be strong. Intensity coding requires the analyst to recognize more subtle connotations of the text (Holstein and Gubrium 2004; GAO 1989). The notion of subtext was also accounted for with coding the text margin. This process of analysis remains largely subjective (Holstein and Gubrium 2004).

We checked the reliability of our qualitative assessment by cross checking our results by means of a triangulation. First, two research assistants carried out the same coding process for the same documents. The analysed documents were finally coded three times in total.

The gained weights were assembled and calculated in a prepared excel sheet and the numerical results were transformed into percentage tables. This coding process resulted in the representation of percentages of perspectives per document category (see Table 1). We discussed the results in a small focus group in a semi-structured qualitative way to compare the outcomes and their validity. Within the focus group it was decided that based on the shared interpretation of the context the tripled analysis was of significantly overlapping character in order to positively approve the validity of the results once a further sensitivity-analysis would also deliver proximate results.

We carried out the sensitivity analysis using the text-mining software MAXQDA for a lexical search. We counted frequencies of 7 key words per perspective (see Fig. 1). Here, the hierarchist scored highest (33 %). The egalitarian (24 %) and the individualist (21 %) scored close to each other. Table 2 shows that the fatalist (6 %) and the autonomous (6 %) perspectives scored equally low and the dynamic integrator (10 %) a little lower than in the manual analyses (see table 2). We found that the differences with the manual analyses can be attributed to the contextual interpretations of the researchers. This—together with the student validation—allowed us to consider our manual results reliable.

The aim of the qualitative review was to reveal the assumptions underlying the narratives of the IUCN documents. Illuminating the discourses used by conservation organisations like IUCN will help policymakers and conservationists to better discuss the development of resilient solutions for future biodiversity and ecosystem protection.

Results

Generally, all analysed report-categories represent a rather consistent view (see Tables 3, 4). In brief, the hierarchist, egalitarian, and individualist perspectives are best represented in all the documents. The fatalist and the autonomous perspective are underrepresented in the IUCN documents. With an appearance of 14.80 % the dynamic integrator occurs quite steadily but moderately throughout the documents (see Table 3).

The Vision and Mission (VM) documents represent the highest egalitarian score (29 %), immediately followed by the hierarchist (28 %). The individualist (20 %) and the dynamic integrator (18 %) are close to each other too (see Table 4).

In the category of Annual Reports the egalitarian perspective scores highest (32 %), which is basically attributed to the high egalitarian representations in the Reports of the Commission on Education and Communication. The individualist (25 %) scores highest in the AR of the *Business and Biodiversity Programme* (BBP).

The IUCN Practice Reports (PR) category score highest on the hierarchist and egalitarian perspectives (both 29 %), followed the individualist (23 %). All PR put effort in promoting and explaining the strategic shift towards engaging with the private sector, linking economic development to biodiversity conservation (IUCN 2010e). Rather than speaking about adversities, an optimistic language about sensitive issues (such as biodiversity loss, the economic crisis and poverty issues) seen as opportunities to cooperate with the business sector stands out in all the PR documents.

The Communication and Awareness (CA) discourse is based on the World Conservation Magazine of the period 2007–2011. The magazine appeared once or twice per year for more than 50 years. The magazine used to be a platform for debate and for airing the wide variety of views within IUCN. In 2011 the last issue was released (IUCN 2013a). In the CA category the egalitarian perspective scores highest (31 %). The individualist perspective is relatively well represented (24 %) and the hierarchist (22 %) scores slightly lower than in

Table 1 Research assistants' results of the qualitative content analysis

Hier	Ega	Ind	Fat	Aut	Dyn	Total
203	159	237	37	8	153	
25 %	20 %	30 %	5 %	1 %	19 %	100 %

Hierarchist	Egalitarian	Individualist	Fatalist	Autonomous	Dynamic
human	nature	resource	uncertainty	wilderness	dynamic
management	participation	opportunity	coping	harmony	complex
law/legislation	equality/equity	economy	adapting	lifestyle	(eco)system
policy	awareness	innovation	decline	love	integration
governance	precaution	goods/services	lack/little	culture	scenario
risk	community	benefit	loss	reduction	network
control	vulnerable	price	acceptance	footprint	evolution

Fig. 1 Keywords per perspective used in the MAXQDA lexical search

Table 2 Frequencies and perspective percentages of the MAXQDA lexical search

Hier	Ega	Ind	Fat	Aut	Dyn	Total
3935	2,850	2,495	704	758	1,137	11,879
33 %	24 %	21 %	6 %	6 %	10 %	100 %

Table 3 Overview perspectives of the IUCN documents ($N = 30$, mean in %)

Perspective	*N*	Range	Minimum	Maximum	Sum	Mean	SD
Hierarchist	30	20	15	35	768	25	6.106
Egalitarian	30	41	17	58	917	30	8.274
Individualist	30	36	11	47	704	23	9.336
Fatalist	30	14	0	14	105	3	3.026
Autonomous	30	7	0	7	57	2	1.709
Dynamic	30	24	8	32	444	14	4.286

Table 4 IUCN perspectives percentages per document category

Category	Hier	Ega	Ind	Fat	Aut	Dyn	Total
VM	196	201	140	24	8	129	
	28	29	20 %	3 %	1 %	18 %	100 %
PR	117	118	94	13	4	55	
	29 %	29 %	23 %	3 %	1 %	14 %	100 %
AR	258	321	247	17	20	135	
	26 %	32 %	25 %	2 %	2 %	14 %	100 %
CA	156	216	170	38	20	98	
	22 %	31 %	24 %	5 %	3 %	14 %	100 %
Frequency total	727	856	651	92	52	417	2,795
Percentage total (%)	26	31	23	3	2	15	100

the other publication types. The other three perspectives score more or less similar compared to the other publication categories: fatalist 5 %, autonomous 3 % and the dynamic 14 %.

The hierarchist

The hierarchist believes nature is stable within limits. He is risk avoiding, anthropocentric, aiming for a world of justice and organised stability and favouring sound scientific and expert knowledge over other kinds of knowledge (Verweij et al. 2006; Beumer and Martens 2010). The hierarchist in IUCN is mainly represented by the discussion of the institutional structure of the organization, strengthening the institutional capacity, and its emphasis on the role expert-knowledge to guide and influence policy-making on global, national and local levels. The hierarchist discourse can be distinguished in phrases like "avoiding catastrophic tipping points", "setting professional standards", "implementing the Convention", "mainstreaming environmental policy", "strengthening legal and administrative instruments", "knowledge management", "developing more effective and strategic interventions", "planning, implementing, monitoring and evaluating the conservation work", "using and developing indicators to measure progress (i.e. the IUCN Red List of Threatened Species)", "providing structures and frameworks", "achieving strategic objectives and scalable targets" and the "reputation (of IUCN) for generating and disseminating sound scientific knowledge"(IUCN 2010b). The hierarchist discourse is also represented in the goal of biodiversity conservation to ensure food security, poverty eradication and healthy societies and to avoid dangerous ecological tipping points. The controlist approach of the hierarchist can be distinguished in the assumption that the loss of biodiversity can be 'halted'. As an institute of "expertise" and "credible knowledge on the status of the earth's natural resources" IUCN develops "key indicators" and "standards" such as the IUCN Red List of Threatened Species and the Protected Areas Category System. IUCN also employs its credibility built on its expertise in order to influence and help constitute national, regional and international policies, regulations and governance arrangements, particularly through its Commission on Environmental Law (IUCN 2008e, p. 26) which includes both soft and hard law instruments. A belief in the reversibility of the trends of environmental degradation through strong and knowledge based ecosystem management shows the hierarchist belief in the controllability of problems and also the idea that nature is tolerant within limits. These limits should be identified and defined by the best available science. The negative impacts of globalisation and market processes (for example invasive alien species, wildlife crimes and resource exploitation) should be kept under control by regulation and concerted regional and international actions.

The egalitarian

The egalitarian believes that awareness should be raised about the fragility of nature. The egalitarian engages in civil movement, NGOs an participatory approaches to conservation and strives for the empowerment of vulnerable groups. The precautionary principle is guiding in decisive issues. Most IUCN documents score best in the egalitarian quadrant. The egalitarian discourse is largely made up by the focus on the idea that business as usual will not achieve the mission of halting biodiversity loss (IUCN 2010, p. 4). In *Shaping a Sustainable Future* (IUCN 2008e), IUCN recognizes and emphasizes the intrinsic value of nature and focuses on the vulnerability of nature and the importance of enabling natural processes to proceed. Land use change, overuse of natural resources and other human

activities and cultural values (undervaluing nature, or seeing it primarily as a resource for production and consumption) are seen as the main pressures on the fragile ecological system and on biodiversity. Other central egalitarian issues discussed in the document are "democratic and open communication between civil society and governments (IUCN 2005, 2008a, e, 2010b)." Most documents consider nature to be "vulnerable", "fragile" or "sensitive". Egalitarian conservation approaches can be found in the discourse on the focusing on stakeholder participation and engagement of community groups, stressing the important role of empowering indigenous peoples, local communities and women, fair and equitable sharing (of benefits derived from natural resources and/or ecosystem services [individualist]), policy and governance reforms and including traditional ecological knowledge (TEK). Communication and awareness-raising, especially within governance institutions and the private sector, is considered a relevant approach to conservation too. This should be accomplished by setting up "constructive dialogue among sectors (IUCN 2010b, p. 8)".

The discourse of the documents of the Commission on Education and Communication (CEC) (IUCN 2011c, 2013b) and the video "Love not Loss" (IUCN 2010a) are aimed to change narratives from 'scaremongering' and making people feel guilty, towards making people act by inspiring and "celebrat[ing] the awe and wonder we all feel for nature (IUCN 2011c)." The CEC increased its activity in social media channels like Facebook, Twitter and YouTube. Also a new video *How to tell a Love Story* (IUCN 2012a) was released in 2012 based on the message of regaining our innate love for nature.

The individualist

The individualist is optimistic about the future. He believes in the resilience of nature and may there be cases of collapse, the human capacity to invent innovative technologies will help to substitute for suffered losses. For many individualists the guiding principle is the free market. The individualist sees opportunities instead of problems. In almost all IUCN documents a kind of individualist optimism is presented about the new opportunities for conservation due to partnerships with private parties. The gravity, urgency and complexity of biodiversity loss are tackled with the feeling that the "challenges are not insurmountable (IUCN 2008e, p. 8)."

Much of the IUCN discourse is oriented on the sustenance of economic growth through saving 'ecosystem goods and services' and emphasising the benefits derived from these goods and services and the conservation of natural 'resources' for human well-being, livelihoods and the economy. Environmental values should be internalized in economy, policy and markets through the use of economic incentives. One of the main 'tools' discussed is the strategy of setting up partnerships with large business corporations, especially the so-called 'large-footprint industries' like Shell, Holcim Group, Total, Rio Tinto, E.ON and the ACCOR Hotels Group. In the Annual Report for 2011 IUCN states that the "growing work with business is a key part of delivering the Union's mission. IUCN is more often optimistic than critically reflective in its narratives about the public–private partnerships and about the 'chances' and 'opportunities' these collaborations generate. Biodiversity loss is optimistically referred to as a 'challenge' to be tackled instead of a humanitarian or ecological 'problem' or 'disaster'. Conservation tools that are mentioned are amongst others: 'Markets for Ecosystem Services', 'Market Opportunities for Biodiversity Business', 'Ethical Trade', 'Leaders for Nature', 'Capacity Building for Engagement with the Private Sector' and 'Financial Offset Schemes'.

In the latest *World Conservation* issue (IUCN 2011b) the economic crisis is mentioned as a catalyser for new ideas on economic development and the popularity of the Green Economy idea as "an attractive alternative to a bruised and weakened economic model (IUCN 2011b, p. 8)." Critics of the Green Economy, who see this model as "supporting the capitalist status quo (IUCN 2011b, p. 9)" are told that, "whether they like it or not", a transition towards a Green Economy transition is "bound to happen; if not by design, then by default (IUCN 2011b, p. 9)."

The fatalist

The fatalist waits and sees. He does not believe in active and concerted solutions to global problems and believes he has to learn to cope with changes and environmental unpredictability. He has the capability to question the approaches of the other perspectives and may be seen as the critical voice in debates. In the IUCN rhetoric the fatalist is only mentioned in passages about the continuing decline of biodiversity.

The autonomous

The autonomous perspective regards individual retreat from the established system as a solution towards a more sustainable planet. Footprint reduction, self-sufficiency and downshifting consumption are his strategies. These strategies should be based on a fundamental change of values and they require a strong amount of creativity and outside-the-box thinking. The autonomous is modest and a minimalist in many ways and he does not try to dictate others to engage in his lifestyle. Nevertheless, he may inspire other people to change values and live off-the-grid as well. The autonomous perspective resembles the so called Cultural Creatives (Ray and Anderson 2000). In the IUCN documents, the autonomous perspective is represented in a very limited way.

The dynamic integrator

The dynamic integrator is a systems thinker. He believes nature is complex and dynamic. Therefore anticipation is the best attitude towards the future. Integrative approaches are needed to maintain the dynamic balance of evolutionary processes. The dynamic integrator is represented moderately through words and phrases referring to 'networks' and 'integration', 'integrative approaches', 'linkages' and 'adaptation' to 'constantly changing conditions' and the 'complexity' of the issues at stake. The dynamic integrator was also identified in phrases where 'local communities, policymakers and the private sector' where mentioned in one breath and where the 'complex interface between environmental, economic and socio-cultural components' became equally related to sustainable development. *The IUCN Programme 2013–2016* (IUCN 2012c), which discusses the conservation strategies adopted by the IUCN World Conservation Congress in Jeju, September 2012 is a document with a relatively high occurrence of the dynamic integrator perspective (23 %). Central to the document is the notion of 'nature-based solutions'. This approach emerged as a novel way to contribute to the objectives of the UN Framework Convention on Climate Change (UNFCCC) to find solutions for mitigating and adapting to climate change (IUCN 2012c). It should also help the conservation community to reach beyond its traditional frames, addressing the complex interconnections of climate, biodiversity and human societies. Through the One Programme Charter (IUCN 2011e)—endorsed in May

2011 by the IUCN council—IUCN seeks to better connect the different parts of the organisation in order to maximize its programme results.

Scientifically, a shift can be identified from a disciplinary research orientation of monitoring species towards more integrated studies on the complexities and the functional relations of socio-environmental systems and the links between species. Fundamental cultural and institutional differences should be overcome and academic traditions should be complemented with traditional ecological knowledge and other knowledge systems (IUCN 2008g). Diversifying stakeholders and engaging in new partnerships are regarded crucial strategies for successful conservation.

Discussion

IUCN is more than just a conservation organisation. It is an ideological actor as well. As the world's oldest and largest conservation institution it produces and circulates a "definition of what constitutes conservation (MacDonald 2003, p. 1)." Having illustrated the basic perspectives disseminated by the four categories of IUCN publications, the results of our analysis open up corridors for discussion. Some of these corridors we highlight in the hope that they may contribute to the discussion on the future of biodiversity conservation.

In the early years the Union's strategy was to form opposition against nature-exploiting (governmental) regime players by delivering knowledge based on sound scientific methods (Christoffersen 1997). IUCN's approach for engaging with the private sector only became more visibly framed in 2004 as the *Private Sector Strategy* (IUCN 2009c).[1] Within this strategy, IUCN believes that large resource extracting businesses can be helped to change from within through working with them and raising the awareness of the opportunities that ecosystem services and biodiversity provide for their long term existence (IUCN 2012b; TEEB 2009). Some of IUCN's "Business and Biodiversity" partnerships are highly controversial, such as the partnership with Royal Dutch Shell, which was signed in 2007. In August 2011 UNEP released a report confirming Shell's role in large scale oil pollution in Ogoniland, Nigeria (UNEP 2011a). On-going large environmental and social problems in areas where Shell drills and a lack of concrete improvements during the years of partnership could raise the question whether institutions as IUCN can maintain their integrity and can continue pursuing their mission according to their vision if their projects become entangled with the activities of large multinationals (Turner 2010; FOEI 2009). Also, IUCN support to investigate the aspirations of Shell to drill for oil in the Artic could negatively impact the image and integrity of IUCN as a nature-protecting organisation (IUCN 2013c).

Under the umbrella of the shift towards a 'Green Economy', the 'Business and Biodiversity' approach of IUCN seems to be directed at maintaining the economic growth paradigm without questioning it much. There is an inherent individualistic optimism—or perhaps egalitarian naivety—revealed by the IUCN discourse about the good intentions of the partnering corporations. It may be worthwhile to remember that, although it may indeed be a very valuable and necessary strategy to build bridges between conservation and business and to create more awareness in businesses about their long-term dependence on ecosystems, ecosystem services and biodiversity, their utmost goal remains to make profit. Personal consumption reduction of affluent citizens, value changes and alternative life styles as represented by the autonomous perspective are avoided as topics in the analysed

[1] The Private Sector Strategy was endorsed by the IUCN Council in 2004 (Council Decision C/60/58).

documents. Instead, discourse and practices are directed at empowering local communities in developing countries: much effort revolves around helping these already relatively low environmental impact communities to more efficiently and sustainably use the environmental resources surrounding them and to participate as stakeholders in decision-making processes related to the use, access to- and benefit sharing of land and life-forms (IUCN 2010d).

In February 2011 UNEP released an extensive report on the Green Economy (UNEP 2011b). The concept was at the heart of the *Rio+20 Conference*, which was held in Rio de Janeiro in June 2012. In many of the analysed documents it becomes clear that IUCN wholeheartedly embraced the *green economy*. Recently, increasing criticism on the green economy is coming from various corners (Kenis and Lievens 2012): being fixated on niche markets and consumer products the green economy is still lacking a systemic view, while maintaining an optimistic faith in enduring economic growth (Pauli 2010). The green economy is often used to *green-wash* certain activities and products (Hoedeman 2012; Plec and Pettenger 2012). It is based on the same old thinking and it distracts the debate from the real drivers of the environmental crisis (Spash 2012). It is a narrow, economy centred re-orientation of the much broader concept of sustainable development (Morrow 2012). The green economy model is keeping old regimes and powers in their saddles and extending corporate control into natural areas by commodifying nature through the use of price mechanisms designed to protect it (ETC-Group 2011). The green economy concept is also depoliticising the societal debate about important issues such as the transition towards a more sustainable world (GesNaT and BUKO 2012; Patel and Crook 2012). For these and other reasons, it is questionable whether a green economy can sustain a growing world population without compromising biodiversity in the long run. "A Green Economy will only be able to reposition (the planetary) limits (GesNaT and BUKO 2012)." Organisations like IUNC may benefit by opening a more critical discussion on this green economy approach and may also embrace other perspectives, such as the autonomous as an important contributor to the conservation of biodiversity.

Conclusion

We will conclude by answering the questions we started with: firstly, which basic assumptions about nature, the human-nature relationship and which management styles are represented in the IUCN discourse? Analysis of the chosen IUCN documents portrays the Union as a basically egalitarian-hierarchist-individualist organisation. The dynamic integrator is steadily present, aiming to connect the three basic perspectives. Sometimes, but not too often, the more fundamental complexity-view of the integrator is operationalized as well. The fatalist and the autonomous perspective are hardly represented.

Secondly, do the ideas and basic assumptions of biodiversity conservation within IUCN match the reality of a complex, dynamic and globalizing world? A truly integrative approach to conservation that is also adaptive to changing global circumstances and that is able to gather all the human forces necessary to save biodiversity for the future, may require more than integrating conservation with development assistance, cross-sector policies and engagement of the private sector. The autonomous perspective—where individual creativity, downshifting and alternative lifestyles are advocated—gets ample space in the assessed IUCN texts, even though the perspective is representing a rapidly increasing civil 'movement' of highly engaged individuals in global society (Ray and Anderson 2000). Integrative approaches to conservation need better inclusion of

fundamental debates on our lifestyles and our consumption patterns and attitudes. Although very open to many perspectives, ideas and strategies for conservation, IUCN now seems to have chosen the pathway of engaging with an individualist discourse where *nature* ("wilderness and its constituent elements (MacDonald 2003, p. 7)" is replaced by *natural resources* ("the environmental basis of building economies (MacDonald 2003, p. 7)." For IUCN to become like a dynamic integrator in the conservation field, the autonomous perspective has to become better recognised and included in the debate and the design of strategies for biodiversity conservation. Until that time is ripe, it may be necessary to put critical fatalist question-marks by the effectiveness and integrative character of the employed strategies to halt global biodiversity loss.

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References

Abrams NE, Primack JR (2011) The new universe and the human future. Yale University Press, London

Adams WM (2006) The future of sustainability: re-thinking environment and development in the twenty-first century. University of Cambridge, Department of Geography, Cambridge

Adams WM (2013) Conservation in the anthropocene: biodiversity, poverty and sustainability. In: Roe D, Elliot J, Sandbrook C, Walpole M (eds) Biodiversity conservation and poverty alleviation: exploring the evidence for a link. John Wiley and Sons, Chichester

Aitken S (2012) The value of diversity. Biodiversity 13(1):1

Banerjee SB (2003) Who sustains whose development? sustainable development and the reinvention of nature. Organ Stud 24(1):143–180

Begon M, Townsend CR, Harper JL (2006) Ecology: from individuals to ecosystems, 4th edn. Blackwell Publishing Ltd., Oxford

Bethge P (2007) Eisbaeren zum Suedpol? Der Spiegel 47:168–169

Beumer C, Martens P (2010) Noah's ark or world wild web? Cultural perspectives in global scenario studies and their function for biodiversity conservation in a changing world. Sustainability 2(10):3211–3238

Böhme G (1992) Natührlich Natur. Über Natur im Zeitalter ihrer technischen Reproduzierbahrkeit. Suhrkamp Verlag, Frankfurt am Main

Boogerd FCBe (2007) Systems biology: philosophical foundations. Elsevier, Amsterdam

Bortoft H (1996) The wholeness of nature. Goethe's way toward a science of conscious participation in nature. Lindisvarne Books, New York

Capra F (1996) The web of life: a new scientific understanding of living systems. Anchor Books, New York

Caro T (2010) Conservation by proxy. Indicator, umbrella, keystone, flagship, and other surrogate species. Island Press, London

Caro TM, O'Doherty G (2001) On the use of surrogate species in conservation biology. Conserv Biol 13(4):805–814

Carson R (1962) Silent spring. Houghton Miffin Company, New York

Castro CJ (2004) Sustainable development: mainstream and critical perspectives. Organ Environ 17(195):195–225

CBD (2010) Global biodiversity outlook 3. Convention on Biological Diversity, Montreal

CBD (2011) Strategic plan for biodiversity 2011–2020 and the aichi targets: living in harmony with nature. UN-CBD-UNEP, Montreal

CBD (2012) Cities and biodiversity outlook. CBD, Montreal

Chan KM (2007) When agendas collide: human welfare and biological conservation. J Conserv Biol 21(1):59–68

Chapin FS, Sala O, Huber-Sannwald E (eds) (2001) Global biodiversity in a changing environment: scenarios for the 21st century. Springer-Verlag, New York

Christoffersen LE (1997) IUCN: a bridge-builder for nature conservation. green globe yearbook 1997, p 59–70

Crutzen P, Stoermer EF (2000) The Anthropocene. IGBP Newsletter 41

Cumming SG, Alcamo J, Sala O, Swart R, Bennet EM, Zurek M (2005) Are existing global scenarios consisten with ecological feedbacks? Ecosystems 8:143–152

Diamond J (2005) Collapse: how societies choose to survive or to fail. Peguin Books, London
Elo S, Kyngas H (2008) The qualitative content analysis process. J Adv Nurs 62(1):107–115
ETC-Group (2011) Who will control the green economy?. ETC-Group, Ottawa
FOEI (2009) Letter of withdrawal from IUCN. Letter of withdrawal from IUCN edn. Friends of The Earth, Gland
Folke C, Carpenter S, Walker B, Scheffer M, Elmqvist T, Gunderson L, Holling CS (2004) Regime shifts, resilience, and biodiversity in ecosystem management. Annu Rev Ecol Evol Syst 35:557–581
Fothergill A, Linfield M, Megahey L (2007) Earth. Disney Nature, UK
GAO (1989) Content analysis: a methodology for structuring and analyzing written material. United States General Accounting Office, Washington
Genton G (2006) Planet Earth. Planet Earth, BBC, Great Britain
GesNaT, BUKO (2012) Ten theses of a critique of the Green Economy. Working Group Societal Relationships with Nature (GesNat) of the Federal Coordination of Internationalismus (BUKO). http://rio20.net/en/documentos/ten-theses-of-a-critique-of-the-green-economy. Accessed 4 Mar 2013
Giddings B, Hopwood B, O'Brien G (2002) Environment, economy, and society: fitting them together into sustainable development. Sustain Dev 10:187–196
Gitay H, Suarez A, Watson RT, Dokken DJ (eds) (2002) Climate change and biodiversity. IPCC technical paper. Intergovernmental Panel on Climate Change, Geneva
Gleick J (1998) Chaos: the amazing science of the unpredictable. Vintage books, London
Groot RSd, Wilson MA, Boumans RMJ (2002) A typology for the classification, description and valuation of ecosystem function, goods and services. Ecol Econ 41(3):393–408
Grosskurth J (2009) Regional sustainability: tools for integrated governance. Maastricht University, Maastricht
Gunderson LH, Holling CS (eds) (2002) Panarchy: understanding transformations in human and natural systems. Island Press, Washington
Hagen J (1992) An Entangeld bank: the origins of ecosystem ecology. Rutgers University Press, New Brunswick
Hagerman S, Dowlatabadi H, Satterfield T, McDaniels T (2010) Expert views on biodiversity conservation in an era of climate change. Glob Environ Change 20:192–207
Hardin G (1968) The tragedy of the commons. Science 162:1243–1248
Harlem G (1987) Our common future. United Nations World Commission on Environment and Development (WCED), Rio de Janeiro
Hart JL (2007) Biodiversity and edge effects: an activity in landscape ecology. J Nat Resour Life Sci Educ 36:103106
Heywood VH (ed) (1995) Global Biodiversity Assessment. Cambridge University Press, Cambridge
Hoedeman O (2012) RIO+20 and the greenwashing of the global economy. In: Environmental justice: part of the economic justice programme, Trans National Institute, Issue 13 January 2012. Retrieved from http://www.tni.org/article/rio20-and-greenwashing-global-economy. Accessed 16 Oct 2013
Holstein AA, Gubrium JF (2004) Context: working it up, down, and across. In: Seale C, Gobo G, Gubrium JF, Silverman D (eds) Qualitative research practice. Sage, London
Hsieh HF, Shannon SE (2005) Three approaches to qualitative content analysis. Qual Health Res 15(9):1277–1288
IUCN (2005) Our planet needs solutions. IUCN, Gland
IUCN (2007a) Transforming business risk into conservation opportunities. IUCN, Gland
IUCN (2007b) Working for conservation. IUCN, Gland
IUCN (2008a) A 2020 Vision for IUCN: a global union for sustainability. IUCN Strategy 2009–2020. IUCN, Gland
IUCN (2008b) Building Bridges. Annual Report 2007. Business and Biodiversity Programme. IUCN, Gland
IUCN (2008c) Building the Future. A Report on the IUCN Programme 2005–2008. IUCN, Gland
IUCN (2008d) Globalization: the good, the bad and the ugly. World conservation magazine, Gland
IUCN (2008e) Shaping a sustainable future. The IUCN programme 2009–2012. IUCN, Gland
IUCN (2008f) Sixty: is time running out? World conservation magazine. IUCN, Gland
IUCN (2008g) A world without biodiversity? World conservation magazine. IUCN, Gland
IUCN (2009a) Last call: Climate and nature. World conservation magazine. IUCN, Gland
IUCN (2009b) Life support: Human health and the environment. World conservation magazine. IUCN, Gland
IUCN (2009c) Operational guidelines for private sector engagement, vol 2.0. IUCN, Gland
IUCN (2009d) Results of the IUCN programme 2005–2008. IUCN, Gland
IUCN (2009e) Synergies. Annual Report 2008. Business and Biodiversity Programme. IUCN, Gland
IUCN (2010a) Love not loss. IUCN. http://www.youtube.com/watch?v=BvIdwOEzreM. Accessed 24 Aug 2011

IUCN (2010b) A new vision for biodiversity conservation. Strategic plan for the convention on biological diversity (BCD) 2011–2020. IUCN, Nogoya, Japan
IUCN (2010c) On the Move. Annual Report 2009. Business and Biodiversity Programme. IUCN, Gland
IUCN (2010d) REDD+ and Benefit Sharing. Experiences in forest conservation and other resource management sectors, IUCN Forest Conservation Programme, Gland
IUCN (2010e) Report on the Implementation of the IUCN Programme in 2009. IUCN, Gland
IUCN (2010f) Saving biodiversity. An economic approach. World conservation magazine, Gland
IUCN (2011a) About IUCN. IUCN. http://www.iucn.org/about/ Accessed 10 Mar 2013
IUCN (2011b) The big plan. World conservation magazine. IUCN, Gland
IUCN (2011c) Communicating Biodiversity. CEC Annual Report 2010. Commission on Education and Communication (CEC), Gland
IUCN (2011d) Investing in Nature and People. Celebrating the international year of biodiversity 2010. Annual Report 2010. IUCN ROWA, Amman Jordan
IUCN (2011e) IUCN one programme charter. Working together to maximize Programme results. IUCN, Gland
IUCN (2011f) The Nature of Progress. Annual Report 2010. IUCN, Gland
IUCN (2012a) How to tell a love story. IUCN, Gland
IUCN (2012b) IUCN Business Engagement Strategy. IUCN, Gland
IUCN (2012c) THe IUCN Programme 2013–2016. In: IUCN (ed) IUCN world Conservation Congress, 2012, Jeju, Republic of Korea. IUCN, Gland
IUCN (2012d) Solutions, Naturally. 2011 IUCN Annual Report. IUCN, Gland
IUCN (2013a) Blog. The inside track on global conservation. IUCN. http://portals.iucn.org/blog/. Accessed 1 Mar 2013
IUCN (2013b) CEC Annual Report. A global community that loves and values nature. IUCN, Gland
IUCN (2013c) IUCN-Shell: Sustainable development in the Arctic. Developing cross-sector industry standards. IUCN. http://www.iucn.org/about/work/programmes/business/bbp_work/by_engagement/bbp_shell/energy_sector/arctic/industry_standards/. Accessed 22 Aug 2013
Ives AR, Carpenter SR (2007) Stability and diversity of ecosystems. Science 317(5834):58–62
Jackson T, Jager W, Stagl S (2004) Beyond insatiability: needs theory, consumption and sustainability. Working paper series number 2004/2. Centre for Environmental Strategy University of Surrey
Jagers G (2012) De Soortenstorm. KNNV Uitgeverij, Zeist
Kemp R, Loorbach D, Rotmans J (2007) Transition management as a model for managing processes of co-evolution towards sustainable development. Int J Sustain Dev World Ecol 14:78–91
Kenis A, Lievens M (2012) De Mythe van de Groene Economie. Samenwerkende Uitgevers VOF
Larson EJ (2001) De proeftuin van de Evolutie. Van Amstel, Olympus
Leopold A (1966) A Sand County Almanac. Oxford University Press, Oxford
Loorbach D (2002) Transition management: governance for sustainability. In: Conference for governance and sustainability: new challenges for the state, business and society, 2002
Loorbach D (2007) Transition management: new mode of governance for sustainable development. Erasmus Universiteit Rotterdam, Rotterdam
MacDonald KI (2003) IUCN: a history of constraint (trans: Geography Do). University of Toronto, Toronto
MacDougall AS, McCann KS, Gellner G, Turkington R (2013) Diversity loss with persistent human disturbance increases vulnerability to ecosystem collapse. Nature 494:86–89
Margules CR, Pressey RL (2000) Systematic conservation planning. Nature 405:243–253
Martens P (2006) Sustainability: science or fiction? Sustain Sci Pract Policy 2(1):36–41
Martens P (2013) Grey, green or blue economy? It's sustainability, stupid!, vol 10. Pim Martens, Brunssum
Marton-Lefèvre J (2012) Putting protected areas to work to address global challenges. IUCN. http://www.iucn.org/about/work/programmes/gpap_home/pas_gpap/gpap_perspective/?11555/Putting-Protected-Areas-to-Work-to-Address-Global-Challenges. Accessed 20 Feb 2013
Marton-Lefèvre J, Xinsheng Z (2012) Nature in 2012: a look back and a look ahead. IUCN, 18 December 2012. Retrieved from: http://www.iucn.org/about/union/members/resources/news/?uNewsID=11682. Accessed 16 Oct 2013
McCann KS (2000) The diversity-stability debate. Nature 405:228–233
MEA (2005) Ecosystems and human well-being: biodiversity synthesis. Millennium Ecosystem Assessment. World Resources Institute, Washington DC
Meine K, Soulé M, Noss RF (2006) "A mission-driven discipline": the growth of conservation biology. Conserv Biol 20(3):631–651
Miller TR, Minteer BA, Malan L-C (2011) The new conservation debate: the view from practical ethics. Biol Conserv 144:948–957

Minteer BA, Collins JP (2012) Species conservation, rapid environmental change, and ecological ethics: rethinking conservation values in the 21st century. Nat Educ Knowl 3 (10):14
Minteer BA, Miller TR (2011) The new conservation debate: ethical foundations, strategic trade-offs, and policy opportunities. Biol Conserv 144:945–947
Mitman G (1996) When nature is the zoo: vision and power in the art and science of natural history. Osiris 2(11):117–143
Morrow K (2012) Rio+20, the green economy and re-orienting sustainable development. Environ Law Rev 14(4):279–297
Mowat F (1963) Never cry wolf. Back Bay Books, London
Naess A (1995) The Shallow and the Deep, Long-Range Ecology Movement: a Summary. In: Drenson A, Inoue Y (eds) The deep ecology movement: an introductory anthology. North Atlantic Books, Berkeley
Norton B (1987) Why we preserve natural variety?. Princeton University Press, Princeton
Norton BG, Noonan D (2007) Ecology and valuation: big changes needed. Ecol Econ 63:664–675
Noske B (1988) Mens en dier: vriend of vijand?. Van Gennip, Amsterdam
Offermans A (2012) The perspectives method. Towards socially robust river management. Maastricht University Press, Maastricht
Offermans A, Haasnoot M, Valkering P (2009) A method to explore social response for sustainable water management strategies under changing conditions. Sustain Dev 19(5):312–324
Opschoor JB (1998) The value of ecosystem services: whose values? Ecol Econ 25:41–43
Palmquist S (2007) Emergence, evolution, and the geometry of logic: causal leaps and the myth of historical development. Found Sci 12:9–37
Patel R, Crook M (2012) At Rio+20, the green economy won't save the planet. But green democracy will (trans: Bureau CA). Institure of Common Wealth Studies, London
Pauli G (2010) The blue economy: 10 years, 100 innovations, 100 million jobs. Report to the Club of Rome. Paradigm Publications, Taos
Peterson G, Cumming G, Carpenter S (2003) Scenario planning: a tool for conservation in an uncertain world. Conserv Biol 17(2):358–366
Plec E, Pettenger M (2012) Greenwashing consumption: the didactic framing of exxonmobil's energy solutions. Environ Commun J Nat Cult 6(4):459–476
Posey DA (1999) Cultural and spiritual values of biodiversity: a complementary contribution to the global biodiversity assessment. United Nations Environment Programme, Nairobi, Kenya
Prigogine I (1996) The end of certainty: time, chaos, and the new laws of nature. Free Press, New York
Rands MR, Adams WM, Bennun L, Butchart SH, Clements A, Coomes D, Entwistle A, Hodge I, Kapos V, Scharlemann JP, Sutherland WJ, Vira B (2010) Biodiversity conservation: challenges beyond. Science 329(5997):1298–1303. doi:10.1126/science.1189138
Ray PH, Anderson SR (2000) The cultural creatives: how 50 million people change the world. Harmony Books, New York
Redford KH, Amato G, Baillie J, Beldomenico P, Bennet EL, Clum N, Cook R, Fonseca G, Hedges S, Launay F, Lieberman S, Mace GM, Murayama A, Putnam A, Robinson JG, Rosenbaum H, Sanderson EW, Stuart SN, Thomas P, Thorbjarnarson J (2006) What does it mean to succesfully conserve a (vertebrate) species? Biol Sci 61(1):39–48
Rees WE (2010) Thinking 'Resilience'. In: Heinberg R, Lerch D (eds) The post carbon reader: managing the 21st century's sustainability crises. Watershed Media, Post Carbon Institute, Santa Rosa
Robinson J (2004) Squaring the circle? Some thoughts on the idea of sustainable development. Ecol Econ 48(4):369–384
Robinson JG (2011) Ethical pluralism, pragmatism, and sustainability in conservation practice. Biol Conserv 144:958–965
Rosenzweig ML (2003) Reconciliation ecology and the future of species diversity. Oryx 37(2):194–205
Sala O, Chapin FS, Armesto JJ, Berlow E, Bloomfield J, Dirzo R (2000) global biodiversity scenarios for the year 2100. Science 287:1770–1774
Sarkar S (1999) Wilderness preservation and biodiversity conservation: keeping divergent goals distinct. Bioscience 49(5):405–412
Schulz M (1985) Paradise preserved: recreations of Eden in eighteenth and nineteenth century england. Cambridge University Press, New York
Soper K (1995) What is nature?. Blackwell, Oxford
Spash CL (2012) Green economy, red herring. Environ Values 21(2):95–99
Steffen W, Sanderson A, Tyson PD, Jaeger J, Matson PA, Moore B III, Oldfield F, Richardson K, Schellnhuber HJ, Turner BL II, Wasson RJ (2005) Global change and the earth system: a planet under pressure. The IGBP series. Springer, Berlin

Takacs D (1996) The idea of biodiversity: philosophies of paradise. John Hopkins University Press, Baltimore
TEEB (2009) The economics of ecosystems and biodiversity for national and international policy makers: summary: responding to the value of nature. UNEP, Bonn
Thompson M (1997) Cultural theory and integrated assessment. Environ Model Assess 2:139–150
Thompson M, Ellis R, Wildavsky A (1990) Cultural theory. Westview Press, Boulder
Tilman D (2000) Causes, consequences and ethics of biodiversity. Nature 405:208–211
Turner SD (2010) Review of the collaborative partnership agreement between Shell International and IUCN. IUCN and SHELL, Alkmaar
UNCSD (2012) The future we want: outcome document adopted at RIO+20. UNCSD, Rio de Janeiro
UNEP (2011a) Environmental Assessment of Ogoniland. United Nations Environment Programm, Nairobi, Kenya
UNEP (2011b) Towards a green economy: pathways to sustainable development and poverty eradication. UNEP, Nairobi
UNEP-CBD (2011) Report of the tenth meeting of the conference of the parties to the convention on biological diversity. UNEP, Nagoya
Verweij M, Douglas M, Ellis R, Engel C, Hendriks F, Lohmann S, Ney S, Rayner S, Thompson M (2006) Clumsy solutions for a complex world: the case of climate change. Public Administration 84(4):817–843
Wackernagel M, Rees W (1996) Our ecological footprint: reducing human impact on the earth. New Society Press, Gabriola Island
White L (1967) The historical roots of our ecologic crisis. Science 155:1203–1207
Whittaker RJ, Fernandez-Palacios JM (2007) Island biogeography: ecology, evolution, and conservation. Oxford University Press, Oxford
Williams CC, Millington AC (2004) The diverse and contested meanings of sustainable development. Geogr J 170(2):99–104
Young OR, Berkhout F, Gallopin GC, Janssen MA, Ostrom E, Svd Leeuw (2006) The globalization of socio-ecological systems: an agenda for scientific research. Glob Environ Change 16:304–316