

Making accounting for biodiversity research a force for conservation

Cuckston, Thomas

DOI:

[10.1080/0969160X.2018.1516559](https://doi.org/10.1080/0969160X.2018.1516559)

License:

None: All rights reserved

Document Version

Peer reviewed version

Citation for published version (Harvard):

Cuckston, T 2018, 'Making accounting for biodiversity research a force for conservation', *Social and Environmental Accountability Journal*, vol. 38, no. 3, pp. 218-226.

<https://doi.org/10.1080/0969160X.2018.1516559>

[Link to publication on Research at Birmingham portal](#)

Publisher Rights Statement:

This is an Accepted Manuscript of an article published by Taylor & Francis in *Social and Environmental Accountability Journal* on 03/09/2018, available online: <https://doi.org/10.1080/0969160X.2018.1516559>.

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.



Commentary: Making accounting for biodiversity research a force for conservation

Journal:	<i>Social and Environmental Accountability Journal</i>
Manuscript ID	Draft
Manuscript Type:	Original Article
Keywords:	Biodiversity, Conservation, Sustainable Development, Ecology, Extinction

SCHOLARONE™
Manuscripts

Commentary

Making *accounting for biodiversity* research a force for conservation

Thomas Cuckston, Aston Business School¹

Within the accounting literature, there has recently been a rapid rise in the number of published papers concerned with the issue of biodiversity. The argument expressed within these papers tends to begin by stressing the magnitude of planet-wide biodiversity loss, frequently invoking the warning from some biologists that humanity is causing a modern-day mass extinction event (see Ceballos et al., 2015). The argument then proceeds to suggest that since accounting plays a major role in shaping society, then accounting for biodiversity can/should have a role in addressing biodiversity loss (e.g. Jones & Solomon, 2013). However, within this extant literature there have emerged two distinct approaches to thinking about how accounting can play such a role. A first approach focuses on efforts to bring biodiversity into existing social and environmental accountability mechanisms, such as corporate sustainability reporting. A second approach takes a different starting point, looking instead to biodiversity conservation efforts and then investigating the role of accounting in such efforts. The purpose of this short commentary is to set out the essential features of these two approaches, and to argue that it is this second approach that offers research in accounting for biodiversity the most potential to develop into a force for conservation.

First approach: biodiversity reporting

A major stream of accounting research on the theme of biodiversity has been the study of corporate reporting on this topic. As such, this work is a continuation of social and environmental accounting research into corporate disclosure practices, or what Bebbington and Larrinaga (2014, p. 397) call a ‘sociology of preparers’. Content analyses of biodiversity reporting have covered listed corporations in Sweden (Rimmel & Jonall, 2013), Denmark (van Liempd & Busch, 2013), Britain and Germany (Atkins, Grabsch, & Jones, 2014), as well as corporations in the Fortune Global 500 (Adler, Mansi, &

¹ The author would like to thank the editors, Helen Tregidga and Matias Laine, for their invitation to write this piece. The author is also extremely grateful to Jan Bebbington and Ian Thomson for their insightful comments on earlier drafts.

Pandey, 2018) and large mining companies (Adler, Mansi, Pandey, & Stringer, 2017; Boiral, 2016). The main finding of all this work is that there is not very much corporate biodiversity reporting and what little there is does not enable stakeholders to meaningfully assess a corporation's biodiversity impacts. Schneider, Samkin, and Davey (2014) find a similar lack of useful biodiversity disclosures in reporting by New Zealand local authorities.

One major preoccupation of this research is to evaluate whether the content of biodiversity reporting conveys an ecocentric (i.e. deep ecology) or anthropocentric (i.e. instrumental) perspective. Unsurprisingly, corporate disclosures are broadly found to take an anthropocentric view of biodiversity, seeing it in terms of natural resources that are economically valuable. This perspective is understood to be encouraged by institutions like the GRI, IIRC, professional accountancy bodies and the Big 4 firms (cf. Milne & Gray, 2013). In a content analysis of biodiversity reporting by UK local councils, Gaia and Jones (2017) find that these organisations also represent biodiversity from an anthropocentric viewpoint, largely in terms of its provision of economically valuable ecosystem services (see TEEB, 2010). Given local governments' mandate to ensure the welfare of its citizens, it is perhaps to be expected that they would see biodiversity in terms of the economic benefits it provides.

Concern over this anthropocentric approach to current reporting practices has led to two separate attempts to define a normative framework to encourage organisations to embed ecocentric thinking into their biodiversity reporting. The first of these has been developed by Samkin, Schneider, and Tappin (2014), drawing on principles of deep-ecology philosophy (Naess & Sessions, 1984) and setting out a tool for assessing the degree to which reporting is consistent with this philosophy. They apply their framework to the annual reporting of what they refer to as an 'exemplar organisation' (p. 555) – the New Zealand Department of Conservation – and find that the majority of its disclosures do reflect ecocentric thinking. However, an ecocentric view of biodiversity would appear to be consistent with this organisation's mandate to manage the nation's conservation estate. It is less clear how Samkin et al's framework applies to organisations whose main purpose is to generate financial profits.

A similar attempt to develop a normative framework for corporate reporting is set out in three recent papers – Atkins and Maroun (2018), Maroun and Atkins (2018), and Atkins, Maroun, Atkins, and Barone (2018) – describing the notion of "extinction accounting". The framework claims to be emancipatory and transformational by encouraging a corporation to develop a narrative account of its own understanding of species extinction and how it is acting to prevent extinctions. The framework is described as 'a hybrid of both anthropocentric and deep ecological views' (Atkins &

Maroun, 2018, p. 761). Thus, on the one hand corporations are encouraged to consider the business risk of extinction by estimating the economic value that might be lost if a species were to go extinct but, on the other hand, they are also encouraged to recognise their own moral imperative to help prevent species extinctions. In a content analysis of the reporting of South African listed companies, Atkins et al. (2018) find that some corporations are disclosing contributions they have made to rhinoceros conservation projects and conclude that this reporting of these philanthropic gestures represents a shift in the way these corporations are thinking about extinction:

In the authors' views, this points to deep ecological framing. There is a sense that species must be preserved, not because of the immediate business case, but because of the moral and social costs of failing to take immediate action as well as because of the rhinoceros' intrinsic value (Atkins et al., 2018, p. 693).

The extinction accounting framework thus rests on the hope that if corporations can be encouraged to provide accounts of their own impacts on species extinctions then this could have the effect of changing the prevailing mindset within the corporation, which in turn could lead to changes in organisational behaviour.

A fundamental problem with accounting research that promotes corporate reporting as a means of addressing biodiversity loss (including species extinction), is that this research has thus far provided very little in the way of a theoretical basis for explaining what connection, if any, this corporation-centred accounting has with biodiversity conservation. Most research in this stream does not address this at all. The extinction accounting framework does address it, but the explanation given is limited to suggesting that corporations will be impelled into action by a combination of self-interest (by recognising business risks associated with species extinction) and a desire for legitimacy. This is not an adequate explanation because, in a world in which corporations are ultimately constrained by short-term financial imperatives, they will simply not have the capacity to act in ways that achieve conservation (cf. Gray, 2010). Within a capitalist economic system, corporations do not have the option of sacrificing profits, which benefit their own shareholders, for conservation work that will benefit the biosphere and wider society. The only viable option for corporations is to engage in impressions management, with notional token activities (such as donations to conservation projects) dressed up in corporate reporting as a symbol of their commitment to the conservation cause (cf. Tregidga, Milne, & Kearins, 2014). Research into corporate biodiversity reporting has not, thus far, explained how this form of accounting can create any form of agency – the capability to act (MacKenzie, 2009b) – to conserve biodiversity, or prevent species extinctions.

Conservation is an active process of organising the world in ways that are conducive to protection of wildlife (Hamblen & Canney, 2013; Jepson & Ladle, 2010). Accounting can play a vital role in this organising (cf. Miller & Power, 2013). Thus the challenge for accounting researchers is to explain this role: how is accounting, in whatever form, implicated in conservation activities? How is accounting acting as what Miller and Power (2013, p. 558) call a 'productive force'? Extant work on biodiversity (or extinction) reporting has not adequately addressed these questions. There is currently a gaping hole between assertions that biodiversity loss (or species extinctions) must be addressed and the subsequent descriptions of corporate reporting. The challenge for scholars wishing to pursue this approach to accounting for biodiversity research is to develop a credible theoretical basis for explaining how corporate reporting and conservation are actually connected in a meaningful way.

Second approach: accounting and conservation

There is a second stream of research on accounting for biodiversity that perhaps offers more promise as a means of contributing to society's efforts to address biodiversity loss. Rather than simply seeking to extend the "sociology of preparers" programme of social and environmental accounting, this approach instead begins by seeking out efforts to conserve biodiversity and then looks to identify and explain the role played by accounting, in whatever form that is found. This is consistent with Bebbington and Larrinaga's (2014) call for researchers to begin their work by focussing on the sustainable development challenges facing society (such as biodiversity loss). Within the extant literature, this approach has manifested in shifting the analytical focus onto different organisational forms: conservation organisations, market mechanisms, and socio-ecological systems. The remainder of this section will briefly discuss this extant work and highlight potentially fruitful directions for further research.

There are thousands of organisations in the world dedicated to biodiversity conservation. These range from local groups committed to conserving a particular patch of habitat or locally important species, through to national and international organisations with multi-million pound budgets. There has been surprisingly little research within the accounting literature on these entities, which are so crucial to holding back biodiversity loss. A major exception is Powell and Tilt's (2017) study of an organisation that has worked to protect vast areas of Australian bushland, and thus the indigenous species within these areas, by establishing parks for carefully managed eco-tourism. Powell and Tilt examine the inevitable conflicts between the conservation and business objectives of

the organisation and how these played out in the design of its accounting and performance management systems, finding that these conflicts were ultimately very damaging to the implementation of this organisation’s “business model”. Thomson’s (2014) study of the development of UK biodiversity indicators also provides insights into how conservation performance is being constructed and measured. Conservation organisations potentially offer rich sites for research into how accounting plays a role in achieving biodiversity conservation. Conservation organisations have limited resources and must make decisions about how these are allocated. How are these decisions made? What kinds of performance measurement systems are deployed? How are these organisations made accountable for these decisions and their implementation? There is an emerging literature on accountability within non-governmental organisations (Dhanani, 2018; Gray, Bebbington, & Collison, 2006; Hall & O’Dwyer, 2017), which could offer useful insights for pursuing these kinds of questions. The challenge here will be to develop theoretically credible explanations of how conservation organisations use accounting in their pursuit of conservation, and how different forms of accounting affect the conservation strategies employed by these organisations.

There is currently a rapid proliferation of various kinds of market mechanisms to try to shape the conditions for organisational decision-making towards conservation (see TEEB, 2010). For example, the Reducing Emissions from Deforestation and forest Degradation (REDD) mechanism aims to create a financial value for intact tropical forests, so as to provide economic incentives for their protection. This requires the application of carbon accounting techniques to forests, which shapes the nature of the forest protection activities, with consequences for wildlife and indigenous peoples (Cuckston, 2013, 2018a). Product certifications, or “eco-labels” are another kind of market mechanism that purports to ensure goods have been produced in ways that do not harm biodiversity (Elad, 2001, 2014; Lanka, Khadaroo, & Bohm, 2017; Thomson & Georgakopoulos, 2005). A particularly controversial form of market mechanism, which is rapidly proliferating around the world, is biodiversity offsetting. Accounting researchers have traced the accounting calculations performed within these mechanisms to equate a biodiversity loss in one place with a biodiversity gain in another place, so as to derive a “net loss/gain in biodiversity”. In the mechanisms studied, these have been found to be highly problematic and unlikely to produce genuine conservation, leading to the conclusion that they are little more than tools for legitimisation and impression management (Ferreira, 2017; Sullivan & Hannis, 2017; Tregidga, 2013). Similarly, formal decision-making processes that purport to take account of the value of biodiversity have been found to act as mechanisms for justifying habitat destruction (Hrasky & Jones, 2016). It may be that, if well designed and properly implemented, new market mechanisms might have the potential to help

change the “rules of the game” of capitalism, creating conditions in which it is made possible for corporations and governments to act to conserve biodiversity (cf. Callon, 2009; MacKenzie, 2009a). These mechanisms are growing in scale and scope, defining how people see and comprehend the value of biodiversity. As such, accounting research explaining how these mechanisms delineate and calculate such values is important and urgent (see Bebbington, Larrinaga, Russell, & Stevenson, 2015). By developing this kind of understanding, researchers might potentially be able to articulate how these mechanisms can be made better, so that the purported conservation objectives of these mechanisms can be realised.

Conservation is an organisational activity: human and non-human life must be organised in ways that are conducive to protecting biodiversity (Hamblen & Canney, 2013; Jepson & Ladle, 2010). As such, accounting researchers can usefully study the role that various forms of accounting play in this organising. This requires a shift in conceptualisation of the accounting entity, away from organisations *per se*, and towards the socio-ecological systems that are being organised. Indeed, the seminal accounting for biodiversity work of Jones (1996, 2003) focuses on cases where land was being actively managed for conservation. The conceptualisation of socio-ecological systems as accounting entities is more explicitly developed in Dey and Russell’s (2014) study of the role played by counter accounts in a campaign to restore the River Garry in Scotland. This study re-centred the analytical focus onto the river basin as an accounting entity. Researchers have also begun to analyse some of the tools that conservationists use in their organising of socio-ecological systems. Cuckston (2017) conceptualises a degraded blanket bog habitat as an accounting entity and traces the accounting devices used to manage its ecological restoration. Feger and Mermet (2017) analyse how the Natural Capital Project toolkit is used as a basis for evaluating ecosystem management performance. Cuckston (2018b) studies the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species to explain how species extinction risk is created as a calculable accounting object that is used, in various ways, to make certain kinds of conservation strategies thinkable and possible. A shift in thinking, so as to see conservation as an act of organising socio-ecological systems, offers the potential to open up a rich vein of research into the power of accounting to address sustainable development challenges such as biodiversity loss. How is accounting implicated in this organising? And how, therefore, might future developments in this accounting play a role in enhancing this organising to more effectively conserve biodiversity?

Making *accounting for biodiversity* research a force for conservation

In their exposition of accounting for sustainable development, Bebbington and Larrinaga (2014, p. 396) describe how they are ‘motivated by a desire to keep open the possibility that the discipline of accounting might, under certain conditions, allow organisations to address sustainable development challenges’. A similar motivation drives this short commentary on accounting for biodiversity. Gray and Milne (2018, p. 831) warn that ‘species extinction, as with other examples of environmental degradation, is a systematic consequence of humanity and its current ways of organising’. As such, it is imperative that researchers seek to understand the organising of humanity’s relations with other species on the planet, so as to be in a position to see how things might become re-organised in ways conducive to conservation. Indeed, it is at this level of theoretical, conceptual explanation of the organising of human-nature relations that accounting academe can contribute to the cause of conservation (cf. Russell, Milne, & Dey, 2017).

Accounting for biodiversity research has been driven largely by a shared concern regarding planetary biodiversity loss, and a passionate desire to do something to help stem this ecological crisis. But research in this fast-emerging field has, thus far, overall, lacked the kind of theoretical rigour that will ultimately be necessary to make a significant impact on conservation efforts (cf. Bebbington & Unerman, 2018; O'Dwyer & Unerman, 2016). Research questions are driven by our conceptual and theoretical understandings of the world (Chua, 1986). Therefore, the formulation and pursuit of research questions that will generate insights useful to conservation will require the development of explanatory theoretical frameworks that enable rich conceptualisations of the problem of biodiversity loss and the possibilities for re-organising human-nature relations. That is, there is a need for theoretical work to explain how society can be (re-)organised so that it has a collective capacity to conserve biodiversity. Actor-network theory offers one possibility, enabling researchers to trace how calculability – and, consequently, agency – can be collectively achieved by organising people and devices into socio-technical arrangements (Callon & Law, 2005; Cuckston, 2018b). But development of a rich theoretical resource for this programme of research will require going beyond the usual toolkits found in the accounting literature. Engagement with research on conservation and human-nature relations – such as in the disciplines of conservation biology (see Bennett et al., 2017) and human geography (see, e.g. Castree, 2014; Eden, Tunstall, & Tapsell, 2000; see also Cuckston, 2017) – will be vital in this regard.

In conclusion, this short commentary has suggested that an extension of the social and environmental accounting project into issues of biodiversity reporting currently offers very little in the way of explaining how accounting can contribute to addressing biodiversity loss. In contrast, a

shift in empirical and theoretical focus, so as to seek out the work of organising conservation and then to develop theoretically credible explanations for the role of accounting in this organising, might enable accounting for biodiversity research to become a force for conservation.

References

- Adler, R., Mansi, M., & Pandey, R. (2018). Biodiversity and threatened species reporting by the top Fortune Global companies. *Accounting, auditing and accountability journal*, 31(3), 787-825.
- Adler, R., Mansi, M., Pandey, R., & Stringer, C. (2017). United Nations Decade on Biodiversity: a study of the reporting practices of the Australian mining industry. *Accounting, auditing and accountability journal*, 30(8), 1711-1745.
- Atkins, J., Grabsch, C., & Jones, M. (2014). Corporate biodiversity reporting: exploring its anthropocentric nature. In M. Jones (Ed.), *Accounting for biodiversity*. Oxford: Routledge.
- Atkins, J., & Maroun, W. (2018). Integrated extinction accounting and accountability: building an ark. *Accounting, auditing and accountability journal*, 31(3), 750-786.
- Atkins, J., Maroun, W., Atkins, B., & Barone, E. (2018). From the big five to the big four? Exploring extinction accounting for the rhinoceros. *Accounting, auditing and accountability journal*, 31(2), 674-702.
- Bebbington, J., & Larrinaga, C. (2014). Accounting and sustainable development: an exploration. *Accounting, organizations and society*, 39(6), 395-413.
- Bebbington, J., Larrinaga, C., Russell, S., & Stevenson, L. (2015). Organizational, management and accounting perspectives on biodiversity. In A. Gasparatos & K. Willis (Eds.), *Biodiversity in the green economy*. London: Routledge.
- Bebbington, J., & Unerman, J. (2018). Achieving the United Nations Sustainable Development Goals: an enabling role for accounting research. *Accounting, auditing and accountability journal*, 31(1), 2-24.
- Bennett, N., Roth, R., Klain, S., Chan, K., Christie, P., Clark, D., Cullman, G., Curran, D., Durbin, T., Epstein, G., Greenberg, A., Nelson, M., Sandlos, J., Stedman, R., Teel, T., Thomas, R., Verissimo, D., & Wyborn, C. (2017). Conservation social science: understanding and integrating human dimensions to improve conservation. *Biological conservation*, 205, 93-108.
- Boiral, O. (2016). Accounting for the unaccountable: biodiversity reporting and impression management. *Journal of business ethics*, 135, 751-768.
- Callon, M. (2009). Civilizing markets: carbon trading between in vitro and in vivo experiments. *Accounting, organizations and society*, 34(3-4), 535-548.
- Callon, M., & Law, J. (2005). On qualification, agency, and otherness. *Environment and planning D: society and space*, 23(5), 717-733.
- Castree, N. (2014). *Making sense of nature*. Oxford: Routledge.
- Ceballos, G., Ehrlich, P., Barnosky, A., Garcia, A., Pringle, R., & Palmer, T. (2015). Accelerated modern human-induced species losses: entering the sixth mass extinction. *Science Advances*, 1(5), e1400253.
- Chua, W. F. (1986). Radical developments in accounting thought. *The accounting review*, 61(4), 601-632.
- Cuckston, T. (2013). Bringing tropical forest biodiversity conservation into financial accounting calculation. *Accounting, auditing and accountability journal*, 26(5), 688-714.
- Cuckston, T. (2017). Ecology-centred accounting for biodiversity in the production of a blanket bog. *Accounting, auditing and accountability journal*, 30(7), 1537-1567.

- Cuckston, T. (2018a). Creating financial value for tropical forests by disentangling people from nature. *Accounting forum*, *In press*.
- Cuckston, T. (2018b). Making extinction calculable. *Accounting, auditing and accountability journal*, *31*(3), 849-874.
- Dey, C., & Russell, S. (2014). Who speaks for the river? Exploring biodiversity accounting using an arena approach. In M. Jones (Ed.), *Accounting for biodiversity*. Oxford: Routledge.
- Dhanani, A. (2018). Identity constructions in the annual reports of international development NGOs: preserving institutional interests? *Critical perspectives on accounting*, *In press*.
- Eden, S., Tunstall, S., & Tapsell, S. (2000). Translating nature: river restoration as nature-culture. *Environment and planning D: society and space*, *18*, 257-273.
- Elad, C. (2001). Auditing and governance in the forest industry: between protest and professionalism. *Critical perspectives on accounting*, *12*, 647-671.
- Elad, C. (2014). Forest certification and biodiversity accounting in the Congo basin countries. In M. Jones (Ed.), *Accounting for biodiversity* (pp. 189-211). Oxford: Routledge.
- Feger, C., & Mermet, L. (2017). A blueprint towards accounting for the management of ecosystems. *Accounting, auditing and accountability journal*, *30*(7), 1511-1536.
- Ferreira, C. (2017). The contested instruments of a new governance regime: accounting for nature and building markets for biodiversity offsets. *Accounting, auditing and accountability journal*, *30*(7), 1568-1590.
- Gaia, S., & Jones, M. (2017). UK local councils reporting of biodiversity values: a stakeholder perspective. *Accounting, auditing and accountability journal*, *30*(7), 1614-1638.
- Gray, R. (2010). Is accounting for sustainability actually accounting for sustainability ... and how would we know? An exploration of narratives of organisations and the planet. *Accounting, organizations and society*, *35*(1), 47-62.
- Gray, R., Bebbington, J., & Collison, D. (2006). NGOs, civil society and accountability: making the people accountable to capital. *Accounting, auditing and accountability journal*, *19*(3), 319-348.
- Gray, R., & Milne, M. (2018). Perhaps the Dodo should have accounted for human beings? Accounts of humanity and (its) extinction. *Accounting, auditing and accountability journal*, *31*(3), 826-848.
- Hall, M., & O'Dwyer, B. (2017). Accounting, non-governmental organisations and civil society: the importance of nonprofit organizations to understanding accounting, organizations and society. *Accounting, organizations and society*, *63*, 1-5.
- Hamblen, C., & Canney, S. (2013). *Conservation*. Cambridge: Cambridge University Press.
- Hrasky, S., & Jones, M. (2016). Lake Pedder: accounting, environmental decision-making, nature and impression management. *Accounting forum*, *40*(4), 285-299.
- Jepson, P., & Ladle, R. (2010). *Conservation*. Oxford: Oneworld Publications.
- Jones, M. (1996). Accounting for biodiversity: a pilot study. *British accounting review*, *28*(4), 281-303.
- Jones, M. (2003). Accounting for biodiversity: operationalising environmental accounting. *Accounting, auditing and accountability journal*, *16*(5), 762-789.
- Jones, M., & Solomon, J. (2013). Problematising accounting for biodiversity. *Accounting, auditing and accountability journal*, *26*(5), 668-687.
- Lanka, S., Khadaroo, I., & Bohm, S. (2017). Agroecology accounting: biodiversity and sustainable livelihoods from the margins. *Accounting, auditing and accountability journal*, *30*(7), 1592-1613.
- MacKenzie, D. (2009a). Making things the same: gases, emission rights and the politics of carbon markets. *Accounting, organizations and society*, *34*(3-4), 440-455.
- MacKenzie, D. (2009b). *Material markets: how economic agents are constructed*. Oxford: OUP.
- Maroun, W., & Atkins, J. (2018). The emancipatory potential of extinction accounting: exploring current practice in integrated reports. *Accounting forum*, *42*, 102-118.

- 1
2
3 Miller, P., & Power, M. (2013). Accounting, organizing, and economizing: connecting accounting
4 research and organization theory. *The academy of management annals*, 7(1), 557-605.
- 5 Milne, M., & Gray, R. (2013). W(h)ither ecology? The triple bottom line, the Global Reporting
6 Initiative, and corporate sustainability reporting. *Journal of business ethics*, 118, 13-29.
- 7 Naess, A., & Sessions, G. (1984). Basic principles of deep ecology. *Ecophilosophy*, 6, 3-7.
- 8 O'Dwyer, B., & Unerman, J. (2016). Fostering rigour in accounting for social sustainability.
9 *Accounting, organizations and society*, 49, 32-40.
- 10 Powell, L., & Tilt, C. (2017). The examination of power and politics in a conservation organisation.
11 *Accounting, auditing and accountability journal*, 30(3), 482-509.
- 12 Rimmel, G., & Jonall, K. (2013). Biodiversity reporting in Sweden: corporate disclosure and preparers'
13 views. *Accounting, auditing and accountability journal*, 26(5), 746-778.
- 14 Russell, S., Milne, M., & Dey, C. (2017). Accounts of nature and the nature of accounts: critical
15 reflections on environmental accounting and propositions for ecologically informed
16 accounting. *Accounting, auditing and accountability journal*, 30(7), 1426-1458.
- 17 Samkin, G., Schneider, A., & Tappin, D. (2014). Developing a reporting and evaluation framework for
18 biodiversity. *Accounting, auditing and accountability journal*, 27(3), 527-562.
- 19 Schneider, A., Samkin, G., & Davey, H. (2014). Biodiversity reporting by New Zealand local
20 authorities: the current state of play. *Sustainability accounting, management and policy*
21 *journal*, 5(4), 425-456.
- 22 Sullivan, S., & Hannis, M. (2017). 'Mathematics maybe, but not money': on balance sheets, numbers
23 and nature in ecological accounting. *Accounting, auditing and accountability journal*, 30(7),
24 1459-1480.
- 25 TEEB. (2010). *The economics of ecosystems and biodiversity: ecological and economic foundations*.
26 London: Earthscan.
- 27 Thomson, I. (2014). Biodiversity, international conventions, government strategy and indicators: the
28 case of the UK. In M. Jones (Ed.), *Accounting for biodiversity*. Oxford: Routledge.
- 29 Thomson, I., & Georgakopoulos, G. (2005). Organic salmon farming: risk perceptions, decision
30 heuristics and the absence of environmental accounting. *Accounting forum*, 29(1), 49-75.
- 31 Tregidga, H. (2013). Biodiversity offsetting: problematisation of an emerging governance regime.
32 *Accounting, auditing and accountability journal*, 26(5), 806-832.
- 33 Tregidga, H., Milne, M., & Kearins, K. (2014). (Re)presenting 'sustainable organizations'. *Accounting,*
34 *organizations and society*, 39, 477-494.
- 35 van Liempd, D., & Busch, J. (2013). Biodiversity reporting in Denmark. *Accounting, auditing and*
36 *accountability journal*, 26(5), 833-872.
- 37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60