


# Receipts for a healthy nature. Exploring municipal officials' framings of biodiversity and human-environmental relationships in Sweden

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 Cities and their governance structures face myriad environmental and sustainability challenges and are often important sites for environmental action. This is the case for biodiversity protection, which is increasingly an urban policy focus. Concomitant to this are conceptualisations of human-environmental relationships. Exploring and problematising such relationships is an increasingly prominent concern within sustainability science, not least around urban planning. In this article, I explore how public officials at four Swedish municipalities frame biodiversity protection within urban planning. The article contributes by increasing knowledge of how the concept of biodiversity is applied at the level of local government. I apply Pålsson's typology of human-environmental relationships. Analysis of these data reveals a predominance of paternalistic views of human-environmental relations. Biodiversity is considered a measurable indicator for wider nature; a feature of place; a source of value and something that can be engineered. Uniting these framings is the paternalistic view of 'nature' as a separate entity to 'society', and that biodiversity is framed as a largely technical issue. The implications of these framings are that alternative views of human-environmental relations and the diversity of society are currently occluded. This is relevant as the public officials participating in this study, including 'ecologists' and 'landscape architects', were equivocal about the prospect of combining biodiversity protection and urban development.

Keywords: urban planning, biodiversity, human-environmental relations, local governance, environmental discourse, public officials

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## Urban planning for biodiversity

If asked to think about biodiversity, one often thinks of wilderness — forests full of animal and plant life, or perhaps great ocean coral reefs teeming with fish. However, urban areas also hum with life. Public parks and private gardens are lovingly tended; myriad unexpected populations of plants and animals thrive on wasteland; and human and nonhuman inhabitants form numerous novel relationships be they desired (as with domestic animals) or reviled (as with so-called vermin). Awareness of this has led to increased efforts to highlight cities' roles as biodiverse landscapes, and to integrate concerns for nonhuman life into urban planning (e.g., Parris *et al.* 2018; Arcari *et al.* 2020; Carver & Gardner 2021; Fjørtoft *et al.* 2021). This then begs the question: how is biodiversity conceptualised within urban planning? In this article, I analyse the framings of human-environmental relations among municipal workers at four Swedish cities, Gothenburg, Malmö, Stockholm and Umeå. The overall aim is to identify the dominant normative assumptions with Swedish planning for biodiversity and highlight what is currently obscured.

In assessing framings of biodiversity, this article contributes to contemporary scholarly interest in human-environmental relationships (e.g., Isaacs & Otruba 2019; Bergöfer *et al.* 2022; Burrows *et al.* 2022; Beery *et al.* 2023; Kurle *et al.* 2023; Milstein *et al.* 2023). This interest arises from the idea that the normative underpinnings of many contemporary societies, largely based on capitalism, are at the root of many environmental problems. Thus, environmental action that fails to problematise these assumptions, in the case of green growth, are considered ultimately doomed (Giampietro 2023). There are therefore calls to incorporate a wider range of perspectives into planning and governance (e.g., Thompson 2008; Dryzek 2013). Generalising, such authors argue that 'uncomfortable knowledge' — information that problematises the fundamental assumptions upon which a given situation is conceived — needs to be brought into policy processes (Rayner 2012).

This article utilises a social anthropological typology of human-environmental relations to assess Swedish public officials' discursive framings of biodiversity. It thus provides a way to assess what information is incorporated into urban planning. My analysis highlights that, within the collected data, biodiversity is framed in a predominantly 'paternalistic' manner. It is considered a measurable indicator for wider nature; a feature of place; a source of value; and something that can be engineered. Typical of paternalism, 'nature' is thus conceived as separate from 'society', with biodiversity framed largely as a technical issue that can be engineered.

I structure this article as follows. In the next section, I present the theoretical approach, after which I outline the discourse analysis methodology. I then present the municipal framings of biodiversity in the analysis sections. This is followed by discussion, presenting conclusions for scholars as well as policy recommendations.

## A typology of human-environmental relations

The primary analytical lens in this article is Pálsson's (1996) social anthropological typology of human-environmental relations. Despite being somewhat overlooked since it was published, this typology has found use in diverse contexts. For example, it has been employed to highlight the variety of viewpoints held by Argentinian fishers, describing how they extend beyond simplistic extractivist framings (González Carman & Carman 2018). Closer to my focus, the typology has also been used to highlight the diversity of values systems that city dwellers articulate about their local neighbourhoods in the US (Gillette & Hurley 2018).

Within Pálsson's typology, three ideal-type paradigms of human-environmental relations are presented: *orientalism* [sic], *paternalism* and *communalism*. According to Pálsson's theory, these types are present in most human societies to varying degrees and none is inherently better than the others. As such, I employ this typology to assess what environmental perspectives are integrated within urban planning for biodiversity. It thus provides insight into what is integrated and what is suppressed, with an eye to anticipating potential future conflict. The intention is thus not to argue that one perspective should inevitably be favoured over others. Rather, I believe that an awareness of the diversity of

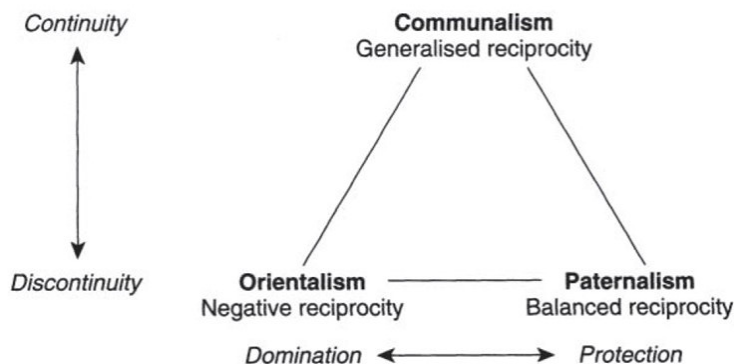
viewpoints is likely to increase the likelihood of creative and just urban planning for sustainability. I take this up again after first summarising Pálsson's theory.

The features of each of Pálsson's paradigms are presented in Figure 1 and Table 1. The variable of key interest for this article is the ordering of nature and humanity, with two posited extremes: cultures/orderings (cf. Kendall & Wickham 2001) where nature and humanity are conceived as totally separate (discontinuous) or unified (continuous). Thus, in orientalist and paternalist contexts, 'nature' is more likely to exist as a distinct category, whereas in communalist contexts other demarcations may be salient. Within a given society, different orderings may exist in different contexts and indeed the analyst often finds people between the poles of the spectrum.

Beginning with discontinuous contexts, stereotypical 'western' models of human-environmental relationships are generally depicted at this extreme. To illustrate this, Pálsson utilises the example of Icelandic post-World War II fishing. He asserts that human-environmental relations during this period were characterised by fishing boat skippers competing for the social honour and economic rewards of the greatest catch — heroic figures extracting resources through mastery and force. At this time, there was little concern for the balance of exchange between nature and society, and no consideration that fish stocks might run out — an orientalist perspective (Pálsson 1996). In contemporary Icelandic fisheries management, this paradigm has given way to paternalism as it became increasingly obvious that fish stocks have been severely depleted. Despite this change in emphasis, the idea that 'nature' exists distinct from 'society' remained. The issue of unsustainability was understood as 'society' taking too much from 'nature', which consequently should be managed. Thus, a shift towards conservation occurred alongside an increasing emphasis on expertise in the form of scientific management.

However, this shift to paternalism was still founded on a conceptual separation between humans and nature, with humans acting on behalf of a distinct nature (cf. Milton 1999; Fletcher 2016). Pálsson (1996, 71) illustrates this with Bourdieu's famous case of Kabyle peasants in Algeria, characterised as thinking of human-environmental relations "in terms of protection and reciprocity". In this case, ill treatment of land will have negative consequences, understood in relational terms. In the case of Kabyle, such a relationship is "modelled on the social bonds among *distant* relatives characterised by respect and formality, by balanced, not generalised, reciprocity" (*ibid.*).

In sum, the human-environment relationship in both of Pálsson's orientalism and paternalism is conceived as *discontinuous*. Human-human relationships are ordered as distinct from human-environmental ones. Within the orientalist paradigm, a state of negative reciprocity occurs between nature and society. By contrast, paternalism aspires to *balanced* reciprocity (Pálsson 1996) — there is an awareness of the ecological consequences of actions. In both cases, humanity masters the separate (distant) nature.



**Fig. 1.** Kinds of Human-Environment relations (Pálsson 1996, 67)

By contrast, the second extreme orders humans and nature as a single entity. For example, the Malaysian Chewong people order their society interwoven with the ecology of the forest in which they live. I interpret their perspective as *communalist*. The ‘Chewong society’ comprises both human and nonhuman inhabitants of their environment. Conversely, those beyond ‘their’ forest (including other Malays) are ordered as ‘outside’ (Howell 1996). There is therefore no concept of non-human nature within Chewong social worlds, and no word for ‘animals’ as a generalised group. In Pálsson’s (1996) terms, the human-environment relationship in communalism is one of *generalised* reciprocity and is *close* and *continuous*. Humans and nonhumans are engaged in general social relationships that do not privilege the human-nature distinction. Often these relationships are expressed in intimate, personal terms (*ibid.*).

In his account, Pálsson describes hunter-gatherer groups extending communalism of relations among humans to environmental relations. Thus “as a child may expect the care of its parents, the environment provides its *unconditional* support, irrespective of what happened in the past” (Pálsson 1996, 74, emphasis in original). He likewise references cases where hunting is conceived as a dialogue (or “love affairs”) with inhabitants “of the *same* world... where animals are social persons and humans are part of nature” (*ibid.*).<sup>1</sup> Thus, what makes communalism different in its *idealised form* (which may not exist) from paternalism is that, as with the Chewong, human-environmental relationships are closer and not based on a fundamental distinction between humans and nonhumans. Rather than maintaining the terms of a deal with distant trading partners, the model is one of social relationships between different types of persons.

Some scholars may suggest that this definition of communalism resembles the posthumanist turn within environmental humanities. Posthumanism is an intellectual movement seeking to “decentre” humanity, integrating it with the non-human (Nayar 2013, 11–12). Thus, in not having a boundary between human and a distinct nature, communalist contexts may appear posthuman. However, posthumanists are critical of “notions of autonomous human agency, the self-determined personal subject, the hierarchical separation of culture from nature, and of human exceptionalism in relation

**Table 1.** Three paradigms of human-environmental relations.

<b>Paradigm</b>	<b>Human-environment relationship</b>	<b>Pálsson’s examples</b>
Orientalism	Humans exploit nature; negative reciprocity with nature; human mastery over separate nature; language of domestication, frontiers and expansion	Icelandic fisher captains competing to ‘conquer’ the ocean by force.
Paternalism	Humans protect nature; balanced reciprocity with nature; human mastery over separate nature; fetishised nature	Algerian Kabyle peasants conceiving their environmental relationships as with distant relatives. Efforts to sustainably manage industrial fisheries.
Communalism	Humans <i>in</i> nature; generalised reciprocity with nature; <i>nature-society</i> rather separate orderings (cf. Milton 1999)	Hunter-gather groups hold intimate, personal relationships with nonhumans in environment.

to other life forms" (Zapf 2022, 6). These other aspects of posthumanism are not part of Pálsson's typology. Communalists may inhabit the same world as various nonhuman persons, but that is not to say there are no distinctions made<sup>2</sup> and likewise different levels of agency, social rules and conventions may be attributed to different beings (cf. Nadasdy 2007). Thus, among Kluane people in Yukon, Canada, a successful hunt is conceived as a hunted animal giving itself to the hunter. However, as anthropologist Nadasdy (2007) has pointed out, just because one is obliged to make a gift (e.g., to be hospitable to guests and offer food and drink) that doesn't mean one wants to. Sometimes one has no choice. Indeed, hunted animals may be manipulated or tricked into giving up themselves unwillingly (*ibid.*). As such, the actual agency of animals giving themselves to hunters is unclear. Communalist societies may or may not reject aspects of human exceptionalism and instrumentalism, but this is not their essential feature in Pálsson's theory. Communalism is rather defined by social relationships within the environment, but not necessarily by decentring humans and redistributing human agency beyond the materiality of the body, or relationships of domination (cf. Nadasdy 2007). Decentring is therefore not part of Pálsson's theory. As such, I do not see communitarianism in Pálsson's typology as synonymous with posthumanism (which it largely predates). Furthermore, Pálsson's work has a different purpose as a tool of classification rather than a philosophical standpoint or call for action (cf. Nayar 2013). Pálsson's approach is thus pragmatic and analytical, whereas contemporary posthumanist approaches largely stemming from the humanities, are allegorical and interpretive. I suspect that the fact that they resemble one another is a consequence of both Pálsson and posthumanists drawing upon accounts of indigenous societies and worldviews (Todd 2016).

### *The advantages of Pálsson's approach*

I consider Pálsson's typology to be valuable for analysing Swedish municipal planning for biodiversity for several reasons. Firstly, its typology provides a way to classify the extent that different views on nature are included or excluded in policy making. It thus presents a tool for assessing which forms of knowledge are integrated or not, and thus what may be missed, sowing the seeds of future conflict. After all, if one values democracy, then it is important to integrate multiple viewpoints as much as possible (Thompson 2008). Secondly, Pálsson's typology avoids several pitfalls inherent to much environmental science. Contemporary environmental science tends to seek common cause with indigenous rights movements (Singleton *et al.* 2023). This often involves contrasting and essentialising 'good sustainable indigenous' worldviews with 'bad unsustainable modern' ones, while recurrently ignoring problems of what constitutes sustainability as a practiced and preached concept (cf. Brightman & Lewis 2017). However, Pálsson's theory allows for communalist, paternalist and orientalist views to exist across all societies. In my eyes, Pálsson's theory thus avoids reification of stereotypes and allows for more nuanced analyses of any given society. For example, it allows us to identify that local people derogatively accused of resisting local developments that they would support elsewhere (so called Not In My Backyard-ism (NIMBY-ism)) may be articulating a communitarian understanding of their local environments. Likewise, Pálsson does not argue that one view of nature is inherently better than others. Rather all are likely extant in most societies in certain contexts. Thus, Pálsson does not suggest that solving many environmental problems is dependent on the widespread acceptance of, for example, a communalist perspective. For me the main value of Pálsson's theory is it provides a way for examining certain types of environmental conflict, when apparently commensurate views are revealed to be quite different (e.g., Nadasdy 2011). As such, by highlighting the (dis)continuity of relationships with nature, Pálsson's theory enables for the identification of misunderstandings by homing in on what conceptualisations of human-environment relations are present within a context. It thus presents a tool for anticipating and ideally ameliorating conflicts before they arise.

### *Putting Pálsson to work*

In this article, I operationalise Pálsson's theory by taking a discourse analysis approach, using data primarily drawn from interviews with municipal workers involved in biodiversity protection and urban planning (see below). Discourse is considered a "a shared way of apprehending the world",

which “construct meanings and relationships, helping define common sense and legitimate knowledge” (Dryzek 2013, 9). Thus, problem definition and solutions are interwoven (Bacchi & Eveline 2010). In doing this, I followed an established research approach, utilising Dryzek’s (2013) discourse analysis method. I thus generated codes attentive to discursive framings of basic entities, agents, metaphors and fundamental assumptions about reality. For example, a respondent describing the identification of biodiversity indicators would be coded as a reference to biodiversity. It would then be subcoded as relating to agents (designers and users of indicators), objects (nonhumans), metaphors and rhetoric (valuation; measurability) and fundamental assumptions (inventories). It then became possible to assess the entities and narratives that underpinned the discourse and concomitant representations of policy problems (Bacchi & Eveline 2010). With the discourse deconstructed, it thus became possible to interpret the relationships to nature it entails utilising Pålsson’s theory.

## Methods

### *Comparing four Swedish cities*

In this article I specifically look at the case of urban planning within four Swedish municipalities, Gothenburg (*Göteborg* in Swedish), Malmö, Stockholm and Umeå (hereafter ‘the municipalities’). The emphasis of this study is exploratory. The collected data sample consisted primarily of interviews, supplemented by document analysis. I focus upon the cities’ urban planning for biodiversity protection. In this article, I focus on public officials involved in different roles relevant to urban planning and biodiversity, which in the text I term ‘ecologists’ and ‘landscape architects’ (below). Focus on municipalities is of interest due to Sweden manifesting strong local governance, with municipalities serving as influential environmental actors (von Post *et al.* 2023), with responsibility for much of Sweden’s ‘green infrastructure’ (Sandström 2002). Municipalities have a monopoly on local planning decisions and over the past 40 years have become increasingly involved in multiple issues of urban development (including environmental policy) (Lidström 2015). Power in the Swedish local governance system is ultimately rooted in elected committees who wield it collectively. However, unelected officials have a two-way, increasingly professionalised role in policy-formulation. They thus hold influence through their role in providing expert advice to decision-makers, anticipating their needs, and in the negotiations and discussions about how decisions should be expedited (Montin 2015; Hysing & Olsson 2018).

The municipalities in this article were selected purposively. Gothenburg, Malmö and Stockholm are the three largest urban areas in Sweden and Umeå is the largest city in Norrland.<sup>3</sup> They are thus the epicentres of *urban* planning among Swedish municipalities, and together comprise a large proportion of the country’s population. All four cities expect to grow and have formulated city plans pursuing sustainable development. Thus, Gothenburg states it must develop its green infrastructure (Göteborgs Stad 2022a); Malmö aspires to dense and green growth (Malmö Stad 2018); Stockholm wishes to become “a climate-smart and resilient city” (Stadsbyggnadskontoret 2018, 26–27); and Umeå seeks to create a “sustainable, attractive city” as a “development motor” for northern Sweden (Forsgren *et al.* 2018, 13).

Several reflexive points should be made. Firstly, while Swedish municipalities share a position within the Swedish governance system, each municipality has a certain amount of flexibility to organise itself in meeting national environmental objectives. I thus try to remain alert to and transparent about any discrepancies and differences between different parts of the sample. Secondly, the municipalities sampled here are very large organisations and perform many governance roles. For example, in 2023 Malmö City employed 28,500 people (Malmö Stad 2023). As such, generalising across each municipality is a challenge. Thirdly, there is an integral selection bias — the chosen municipalities are among the most urban. As such, one must be mindful of the limitations of generalising these findings to more rural municipalities. In sum, this article’s perspective remains partial. The conclusion therefore suggests several paths forward for future research.

### *Ecologists and landscape architects*

Swedish public service provision is characterised by professionalism; with municipal workers socialised into national and international professional cultures (Hall 2015). This is reflected in municipal organisation with public officials compartmentalised into different sections with specific purviews. Thus, while there are few rules regarding municipal organisation, similar groups of people with specialist knowledge are extant in many places. As befits an exploratory study, focus is upon the officials with most direct knowledge of biodiversity. Respondents were selected initially purposively and subsequently through snowball sampling (below). Respondents were thus drawn from the groups of public officials interpreted as most relevant to the concept of biodiversity. For the purposes of this study, I classify these as two groups, 'ecologists' and 'landscape architects' which at times overlapped.

The first group, *ecologists* was formed of nine people with biological science backgrounds and roles. Their professional titles include ecologists (*ekologer*), nature conservationists (*naturvårdare*) and environmental investigators (*miljöutredare*). These people had education and experience in ecology and environmental protection. Their roles included adapting planning and construction to reduce environmental damage and to ensure a long-term sustainability perspective. Their role was often to act as 'nature's voice' to a certain extent, rendering ecological considerations visible. In some cases, they were involved in day-to-day management of environmental areas, but the level of hands-on involvement varied.

The second group, *landscape architects (landskapsarkitekter)* contained six respondents and included town architects and city groundskeepers (*stadsträdgårdsmästare*) and landscape engineers (*landskapsingenjör*). These roles entailed direct involvement in the planning of urban areas, including green infrastructure. In this, they seek to enact urban plans in the physical environment as well as maintain areas according to project plans. There is thus a practical dimension to this work, although the extent that respondents were personally involved in practical activities such as maintenance work varied.

### *Data collection and analysis*

Interviews took three forms: 1) Individual in-person interviews in each city; 2) online individual interviews; and 3) an in-person group interview in Stockholm. Interview forms were largely dictated by circumstances and respondent preference. Overall, there were two respondents from Gothenburg; three from Malmö; six from Stockholm; and four from Umeå. We identified respondents based on their experiences around biodiversity protection and urban planning.

A two-person research team collected the data, conducting interviews in Swedish. Where relevant, I also draw on documentary data, such as city plans (Appendix A). All the interviews were recorded, transcribed and checked, taking on average approximately an hour. Transcripts then formed the basis of coding. Quoted text has been translated by the research team. Each respondent filled out a written consent form indicating their willingness to participate. However, respondents also repeatedly voiced concerns over anonymity. As such, they are listed as codes I1-15. All data is stored in line with Swedish legal data protection requirements.

I utilised Nvivo qualitative analysis software to analyse these collated data. My working assumption was that interview transcripts and official documents collectively represent an extant policy discourse on biodiversity and urban planning. As noted elsewhere, coding is inherently problematic, relying on researchers' subjective reading, categorisation and interpretation of texts (Lodge 2011) — in this case a single researcher.

### **Analysis: biodiversities of Swedish municipal urban planning**

All respondents were familiar with the term 'biodiversity' (*biologisk mångfald*) and suggested that it was a common concept within municipal work and planning. The two groups of respondents differed over the level of precision applied to the term. Thus, ecologists commonly were able to provide a scientific definition highlighting multiple dimensions of diversity such as species, environments and

genetics. By contrast, landscape architects would be uncertain about exact definitions, framing it as something left to ecologist colleagues. Both groups agreed that biodiversity protection was important and that municipal practice tended to reduce biodiversity to a series of agreed indicators. Taking respondents' comments together, it was possible to identify multiple overlapping characteristics of biodiversity. These characteristics are interpellated with the various biodiversity practices of each municipality. This section takes these characteristics in turn.

Firstly, *biodiversity is connected to 'nature'* — the natural world upon which human society and cities depend upon. High levels of biodiversity are a sign that the environment is in better health than if biodiversity levels are low. Thus, as one respondent put it “biodiversity is a receipt for the environment” (I3). In this discourse, nature and biodiversity are fundamental to life itself and is threatened by human society through the growth of cities. Nature is considered threatened everywhere, in Sweden and globally. This makes extant urban nature very important. Indeed, the level of anthropocentric impact on the natural world in the Swedish countryside was periodically used to highlight the importance of urban areas as refuges for biodiversity – “In other words, a great proportion of biodiversity exists in cities now, compared to perhaps 500 years ago” (I14).

Secondly, *biodiversity has integral value*. All respondents agreed with the idea that the animals and plants that comprise biodiversity “have a right to exist outside [human] values” (I4). Indeed, several ecologists argued that it was human arrogance to judge the rights of different animals to exist. In this framing a diverse environment was a healthy environment, conserving biodiversity was thus the natural corollary of respecting all life on earth. This was also echoed by various city policy documents, for example Gothenburg's biodiversity and ecosystem services programme consciously cites the UN Convention on Biodiversity, stating that “biodiversity has its own value; nature has value for nature's own sake” (Göteborgs Stad N.D., 8).

However, a third characteristic of *biodiversity is that it has use-value to people*. Respondents argued that identifying this use-value was an important part of urban planning for biodiversity protection. For example, without biodiversity there would be no food production; “we must understand that it is the basis for our whole existence. We must have not just nature, rather diversity within nature” (I14). Biodiversity was thus identified as performing numerous valuable ‘ecosystem functions’. Thus, biodiversity as part of nature forms part of the use-value of a particular area. For example, greater biodiversity in a nature reserve may increase people's appreciation of the place — creating “attractive, green environments that we can stay, train or meet in” (I14). Similarly, respondents would argue for the benefits of nature contact for human psychosocial and physical health and development.

I think biodiversity... when you have a functioning biotope, it can contribute great... cultural value. The experience of a place becomes more inspirational, calming and beneficial to health and blood pressure for people (I4).

As such, consuming biodiversity of itself was considered beneficial to people. Furthermore, for many respondents such contact was integral to sustainability transition. Knowledge deficits and a lack of ecological sensibility were considered the root of societal unsustainability. As such, biodiversity was necessary to ensure people gained an ecological mindset.

Linked to the identification of use value is a fourth characteristic, *biodiversity is measurable*. Through analysing this study's empirical material, the meaning of biodiversity in practice for many people involved in urban planning emerges. For many respondents, biodiversity was something that could be *measured and managed*. This formed part of Swedish municipalities' role in steering urban development and planning (Montin 2015). Across the sample, different explicit and implicit normative judgements were performed classifying and valuing areas as more or less important to biodiversity protection. For example, some respondents would describe how highly endangered species could be used to lend weight to arguments around the nature of a development.

The municipalities had different systems for measuring and managing biodiversity. Thus, some municipalities would look at individual species, while others would assess broader categories, such as biotopes, environments or ecosystems. For example, one Malmö document has a classification system for ‘nature areas’ (*naturområden*), ranging from “Highest Nature Value” to “High Nature Value” (Andersson & Wedelin 2012, 14). This involves inventorying and classifying species and environmental



conditions. Malmö city thus takes “responsibility” (*ansvar*) for threatened and uncommon species, particularly those that feed and reproduce within the municipality (Malmö Stad 2018, 50). Similar practices are performed in Umeå. One respondent shared a check sheet for evaluating features of ‘green spaces’ (*grönytefaktor*). Among other things, this involved logging the size and coverage of trees; the number of berry-bearing bushes; water flow; the presence of appropriate species (*naturligt arturval*) and the existence of potential nesting sites. This document was adapted to different types of green spaces such as parks or schoolyards (personal communication). Likewise, in Gothenburg, respondents spoke of areas of “high natural value” (I14) or “hotspots” that should not be exploited (I15); and project documents spoke of species and biotopes (*ansvarsarter* and *ansvarsbiotoper*) the city should prioritise. Prioritisation was based on a combination of local and national status, sensitivity to destruction and ecological function (Göteborgs Stad 2022b).

Fifthly *biodiversity is an indicator of the wider environment*. In practice, this often meant that natural objects in each area could be counted and used to make inferences of the wider environment’s health. Thus, the presence (or not) of white-backed woodpeckers (*vitryggig hackspett* / *Dendrocopos leucotos*) indicated that “200 other species are doing well” (I5). The species thus functions as an indicator for wider environmental health. In this conceptualisation, an indicator becomes shorthand for both biodiversity and the wider natural world within a municipality’s environmental monitoring system.

Different municipalities would draw upon standardised national lists of indicators or adapt their own. This adaptation relates to a sixth aspect of biodiversity, *biodiversity is a normative characteristic of place*. As mentioned earlier, within this discourse, biodiversity is predominantly a positive thing. Its positivity is linked to a concept of place — integral to different places (e.g., ‘biotopes’, ‘sociotopes’, ‘parks’ or ‘residential areas’) are conceptualisations of what *should* be there. The level and nature of biodiversity appropriate to a place is inherently bound up with a place’s identity. One landscape architect asserted that planning involved asking “what function should this place have? And biodiversity can be one of those functions” (I7). Thus, among respondents, the higher the level of biodiversity (or the indicators for biodiversity) the better generally, but there was also awareness that the level and nature of biodiversity would be higher in a nature reserve than in a residential area. Likewise, different nature reserves can represent different biotopes and thus have different appropriate biodiversity.

Biodiversity could also be linked to municipalities’ or even the Swedish nation’s histories, identities and conditions. Biodiversity also related to cultural values regarding nature. Several municipalities were explicit about the need to protect the biodiversity and nature characteristics of ‘their environment’. Thus, biodiversity (and the wider environment) is normatively judged based on a notion of the ‘correct’ form the environment should take. A place’s correct would derive from the natural conditions and contemporary and historic usage of an area. Thus, some landscapes (and their appropriate biodiversity) such as particular farming or rural industrial landscapes were appreciated for their historic stories that characterise a particular city. Species could be then accorded value based on the extent that they characterise a place such as old oaks in Stockholm (I11) or if their local population represented a redoubt of a less common species (I15). Put another way, planners (and public) appreciate the aesthetic, historical and cultural aspects of places and a desire to protect and develop feeds into efforts to protect biodiversity during urban planning.

Notions of place identity emerged prominently in discussion of things that change the characteristics of the environment. This could be in the form of broader environmental trends (such as those driven by climate change) and was notable during discussion of ‘invasive species’. Such species conflicted with the normative ideals about how the local environment should look but also in their most detrimental form could undermine extant biodiversity, spreading to new areas and reducing numbers and variety of ‘local biodiversity’. These inharmonious species could be seen along with unmanaged urban development as disrupting the balance of ecosystem services that nature (and biodiversity) provide to cities and the unique identity that humans and nonhumans generate through their activities in each place (I1; I5).

Measurement, place-identity and consumption all come together in a seventh and final aspect: *biodiversity can be engineered*. Within the discourse, biodiversity could be planned for and encouraged. Thus, planners building new housing areas would consider the green infrastructure to protect, develop

or enhance biodiversity. Technologies for improving biodiversity included the development of roof gardens, planting trees and the rate of cutting of grass in public spaces. In deciding what could be engineered, planners would often depart from a vision of a place and the appropriate nature and biodiversity that it entailed (above). This vision was not solely a planner's dream, it built on the material possibilities and histories of places. Biodiversity was thus something that could be integrated into city planning and engineering. This was the approach that many landscape architect respondents took in their work. For example, one respondent described their desire to create "multifunctional environments" for people and biodiversity (I4). They sought to maintain biodiversity and where possible build for 'better' biodiversity in accordance with collectively agreed plans about the current and future identity of specific places.

An implication of the ability to engineer biodiversity is that sometimes biodiversity can be replaced. Efforts to protect biodiversity sometimes fail. However, because of its measurability and the possibility for engineering it is possible to 'set aside' other places in 'compensation' for an area being developed. Respondents described fighting tactical battles where they would weigh up the value of a particular place alongside the possibilities for developing 'better' places elsewhere. For example, replacing a park with another one under better conditions (I14). Another respondent spoke about how some actions such as building ponds for frogs were relatively easy and cheap (I8). Finally, another respondent described how it was important for urban ecologists to have a sense of perspective — working in the city means one cannot save everything and one seeks to improve conditions for biodiversity in the bigger holistic picture rather than obsessing about particular endangered species (I2).

### *A paternalistic approach*

To summarise, for municipalities, these different aspects of biodiversity are concomitant to the bureaucratic requirement to care for and manage the environment within their boundaries. This manifests in a variety of practices through which the status of the local natural environment is identified, measured, monitored and given normative value. The collection and classification of information about biodiversity is framed as integral to its management and protection within urban planning. Consequently, the four cities discussed here identify priorities for actions around biodiversity conservation. There are various methods for weighing up the value of biodiversity versus other imperatives within cities — for example the need to build new housing for growing populations. Likewise, it opens up the possibility of exchange and compensation — it becomes possible to 'replace' certain areas' biodiversity by developing and protecting places elsewhere. A balanced relationship is envisaged. At the same time, respondents would voice a belief that biodiversity has a right to existence beyond its value for humans. In this section, I discuss how the human-environmental relationship is framed in the discourse, using Pálsson's typology. I then discuss the implications of this with reference to sustainability science literature.

Assessing the sample's biodiversity discourse, a first feature is very clear. Human-nature relations are characterised by distance. Nature itself is a largely inert source of valuable things (e.g., 'ecosystem services'), but accorded little agency of its own and is potentially malleable and interchangeable. Thus, for example, one respondent described the process of evaluation and compensation:

if during [a] green infrastructure investigation we say "yes, we identify that there is in all probability high natural value here, for example, linked to biological diversity", then we perform a natural value inventory as part of planning. ... And then you have it in black and white, what is there. "Yes, this value exists, it is high here and here and here and here." ... then you try to take that into account, but it may not work because "no, we're actually going to place this big factory here, so somewhere we're going to affect these values". And then you have to choose who it will affect... Okay, and then we look at it [and decide] we need to compensate for this. ... [W]ithin the [municipality], we have a guideline that says that when ... planning projects, when the city builds itself, when the city is a construction operator, we must always compensate for lost value. (I14)

Within the discourse, aspects of nature relevant to biodiversity are largely objectified — species will spread given the right conditions automatically which may be positive (e.g., in the case of endangered species) or negative (e.g., in the case of invasive species). While urban living is embedded in and

dependent upon nature, consistently the empirical material characterises nature as an *other*, something important yet distant (cf. Pálsson 1996).

Otherness and distance are features of two of Pálsson's types of human-environmental relations, orientalism and paternalism (above). Within the sample's discourse, orientalism appears framed as a feature of wider society. Flawed humanity is conceived as having a natural tendency to consume nature unless it is curbed — in essence, people tend to have a negative reciprocal relationship with their environment. Several respondents, for example, would identify, for example, building companies as having a natural interest in consuming nature, often unsustainably. In general, within this framing people if left unchecked will take more than can be sustained. One respondent lamented "humans don't have much of [an ecosystem] function... we just destroy. So, then maybe it's us who should be removed" (I11).

However, in framing biodiversity as a measurable, engineerable indicator of the health of places the sample overwhelmingly articulates a paternalistic view of human-environmental relations. The municipalities' role is to ensure that the relationship between society and people remains *balanced*. Within municipalities, ecologists monitor development and ensure that nature's voice is heard, while landscape architects juggle different imperatives to design mutually agreeable cities. The various municipal measurement and planning practices outlined above are interpretable as efforts to ensure and maintain this balance. Furthermore, the importance of expert groups holding knowledge distinct from that of lay people is likewise characteristic of paternalism (Pálsson 1996).

Within this framing, municipalities have a responsibility to monitor, manage and protect the environment that exists around it. Similarly, many ecologist respondents framed their role as a guardian advocating for nature's rights in the city. At times in respondents' framings, nature took on a sacred quality (Pálsson 1996; Milton 1999) and they expressed frustration that they had to fight within the urban planning system to get others to appreciate this:

And we are often told "yes, but you have to take into account other interests as well, it's not just ecology that you can focus on, you have to think about this and this and this too". And then I usually think "yes, but when will ... others think about nature conservation then?" We are always told "... you can't just think about the white-backed woodpecker". Yes, but it is like the basis of our welfare. When should we start respecting biological diversity, so that it can have its own value and avoid being a benefit to someone? Because it is so incredibly important! (I5)

As such, while many respondents evidenced a view of sacred nature, their acceptance of their place in the Swedish governance system highlights that other discursive objects are similarly valuable. These were the locally democratic, consensus-based system of Swedish local governance (Montin 2015) and the idea that urban development in the form of growth and expansion was positive (Milton 1999). All respondents were embedded in organisations pursuing growth-based urban development and their roles entailed acceptance of this. Respondents thus picked and chose their battles and accepted that valuing nature was subservient to the greater object, democratic legitimacy.

Thus, biodiversity as a concept become a tool and a symbol for arguing for the rights of nature within the dominant paradigm of mandated growth. The various municipal measurements and valuations applied to it are interpretable as an effort to render nature protection technical — a process of triage (Biermann & Mansfield 2014). Through these practices nature-advocates seek to demonstrate the importance of nature (the contributions of biodiversity to society) as an apolitical fact — "one must have a "use" [to argue for biodiversity]. And it is clear we adapt to this... because we also hold the value that [nature protection] is important. It is deadly important" (I8). The sample articulated mixed views of their prospects. City plans would paint an optimistic vision of Swedish cities developing to maintain a balanced relationship with the environment. Respondents also asserted that progress was being made and that biodiversity protection (and thus nature's interests) were further up political and bureaucratic agendas, successfully influencing urban development. Respondents would thus call for further development of biodiversity measurement techniques for greater precision and understanding of complex socio-environmental systems. There were also calls for stronger laws to support biodiversity protection — paternalism should be strengthened; nature required higher valuation.

However, this technicalisation of biodiversity had an interesting effect, it placed the definition of 'correct' nature very much in the hands of experts. A clear example of this was in interviews, where

ecologists would periodically describe the public having preferences 'bad' for biodiversity, for example, enjoying beautifully tended grass lawns rather than wilder, more meadow-like gardens. Thus, biodiversity measurements became a way to render apolitical the deeply political question of what form nature should take. As such, in common with a view of sacred nature, many respondents were keen to 'mainstream' their views both inside municipalities and wider society. They argued it was important to educate and inform politicians, bureaucrats, companies and the public of the importance of biodiversity to human society and thus the need to protect it. Put another way, increasing the value of nature vis-à-vis the other sacred cows of local governance and development — a desire for an adjustment to the dominant value system rather than an outright revolution (Thompson 1979[2017]). This required inculcating ecological values. This was something that biodiversity was considered particularly beneficial for — exposure to diverse nature was framed not only as beneficial to individuals and communities (above) but also for environmental mindsets. Experiencing nature was framed as "very important" (I2). Thus, exposure to biodiversity was hoped to provide a mechanism for inculcating a paternalistic view of nature within wider society, which would then allow for a change to conceptualisations of urban development.

### **Discussion: the consequences of paternalistic planning**

If respondents' discursive framings of biodiversity protection around urban planning are, as argued above, a manifestation of a paternalistic conceptualisation of human-environmental relations several points arise. A first reflection relates to the nature of paternalism as a concept, its application depends on the interest of the 'pater' — the municipality — in its responsibilities towards the environment. If the pater is neglectful then one would expect the ecological situation to deteriorate. This risk is acknowledged by respondents, who seek to use biodiversity and its measurement to demonstrate the need for society to care for nature. However, there were also risks to this, what if the pater becomes fixated on indicators rather than the holism of nature? For example, some respondents were critical of colleagues tasked with assessment, who lacked the imagination or motivation to fully evaluate a given area. One told a story of a colleague assessing an area by simply glancing at it and stating "[there were] no pines" before driving off (I10). Thus, respondents argued that there was a need to educate and nudge society towards a broader valuation of biodiversity. In such examples, policymakers and the public should be convinced of the sacredness of nature as a distinct category and concomitantly other sacred objects such as 'urban growth' should be relatively devalued. A first, obvious consideration point is thus that paternalistic biodiversity protection is always vulnerable to shifts in the political economy of values within society.

A second, related consequence of respondents' discursive framing is that using biodiversity as tool to render nature technical does not end the possibility of future conflict. On the one hand, it provides a way to determine some forms of nature better (e.g., meadows) than others (e.g., grass lawns) but it can occlude the possibility that different people may hold different views of what 'correct nature' is. For example, in other places, local fondness for introduced 'invasive' species has clashed with scientific biodiversity concerns (Milton 2000). Likewise, communalistic indigenous hunters have been known to clash with paternalist scientists over environmental management (Blaser 2009; Nadasdy 2011). Thus, a further point is that rendering biodiversity a technical concern only reduces conflict when there is agreement over the correct form of nature.

Staying with the issue of conflict, it is also striking that respondents' framing of wider society is largely homogenous. This can be scrutinised around two points: regarding human-environmental relations and regarding the make-up of society itself.

Beginning with framings of human-environmental relations, respondents would problematise the dominant conceptualisation of human-environmental relations in Swedish urban planning. This was framed at times as orientalist — incorrect and needing to be converted to paternalism or educated to the correct form of biodiverse nature. However, this is unlikely to be completely accurate. As Pálsson (1996) himself notes, all three types of human-environmental relationship are likely extant in all societies. As such, the dominant discursive framing of Swedish society within the sample is simplistic, occluding the extant diversity of human-environmental relations that exist in contemporary

Sweden. It is particularly notable that within the empirical material there is sparse evidence of communalist perspectives, the third form of human-environmental relations in Pálsson's typology. The only explicit mention within the interviews was when one respondent contrasted Navajo worldviews with 'western' values (I8). The implication was that such groups held a 'healthier' approach to nature, one the west would do well to adapt. This is a familiar trope within environmentalism (Milton 1999). Within these data, there is little mention of social relationships with non-human persons. At times there are hints of communalistic understandings of human-environmental relations. For example, a respondent marvelling at a woodpecker in their garden during their interview highlighted potentially closer individual relationships with the environment than the bulk of respondent discourse (I15). Likewise, respondents periodically voiced frustration at having to find use-value based arguments, for example, "I have always felt that ecosystem services are a rather bizarre concept... for we focus so very much on use-value" (I14). One could interpret this as a desire for a more generalised relationship with the environment. However, these hints of communalism are largely subsumed within the technical system within which respondents endeavour to ensure balanced reciprocity between cities and their environment. Thus, the complexity of respondents' personal relationships with their environment were seldom explicit in their discursive framing of municipal policy and action, where paternalism appears to predominate.

This article's starting point is that understanding complex, potentially conflictual issues like urban planning requires an awareness of different perspectives (González Carman & Carman 2018). Failure to appreciate this diversity may lead to urban planners missing what it is people care about in their lives regarding nature (Gillette & Hurley 2018). Rendering biodiversity a technical issue rooted in a paternalistic worldview risks blocking out the 'uncomfortable knowledge' that may be the key to dealing with environmental issues (Rayner 2012). The point of this analysis is to highlight that the discourse of municipal urban planning fails to assess the variety of understandings of human-environmental relationships extant within Swedish society. Echoing earlier literature, 'noisy and argumentative' yet constructive interactions between people with different worldviews may reveal knowledge useful to urban planning for both biodiversity protection and sustainable development. Likewise, those embedded in hegemonic knowledge systems will be surprised when knowledge from an alternative standpoint makes itself heard (Thompson 2008). Awareness of this is arguably implicit to respondents' discourse. In arguing for curated contact with nature to disseminate understanding of society's need for a balanced relationship with nature, respondents also implicitly highlight the possibility of developing communalistic relationships. Through contact with the nonhuman, new social relationships become possible. This is not to suggest simplistically that municipal urban planning would be inherently better from a communalist perspective, rather that extant communalist perspectives are largely absent from municipal discourse, reducing planning opportunities for biodiversity.

Likewise simplistic are respondents' discursive framings of society as largely homogenous. Outside of the public sector the only differentiation that emerged was in descriptions of how private sector organisations 'naturally' pursue their interests to the environment's detriment. The generic solution voiced by respondents is that the private sector and public need to be steered through education and mechanisms, complementing efforts to raise the valuation of nature in the public sector (above). Society is thus to be addressed as a unified whole. This however raises questions of environmental justice. That is, how will different social groups be affected by such efforts to further enact and institutionalise a paternalistic view of nature? Will some people benefit or lose out and will this aid or constrain efforts to protect biodiversity? After all, greening urban areas can contribute to complex social trends like gentrification (McCabe 2016) and enacting particular place identities (McKinzie 2019), which contribute to inequity (Sandberg 2014). If one accepts the argument that sustainable societies must be just societies (Agyeman 2010) then one must also consider how biodiversity protection should be for both nature *and* contribute to social justice (cf. Dymén et al. 2013). At present, respondent discourse frames the 'value' biodiversity contributes to wider society. However, simultaneously the diversity of society itself is rendered discursively invisible — an issue for elected committee members within municipalities rather than for professional municipal staff whose purview attends to the environment or enacting plans. The point is that biodiversity advocates within

urban planning should also be conscious of 'technical' biodiversity protection's relationship to wider complex social and political dynamics and issues. This consciousness can aid planning even if the ability of many individual workers to react may be limited within the municipal planning system.

## Conclusion

In conclusion, this article has presented a discourse analysis of urban planning for biodiversity protection in four Swedish cities among respondents representing the municipal workers most concerned with biodiversity and urban planning. Utilising Pálsson's typology of human-environmental relations, I have argued that respondents articulate a largely paternalistic worldview towards nature — arguing that 'sacred nature' should be carefully stewarded from a conceptually separate 'society'. Within this, biodiversity largely emerged as source of positive, consumable objects and became rendered technical as a tool for measuring nature's health and for converting people to an environmentalist view of nature. While respondents noted successes, they also at times expressed pessimism that urban development and biodiversity protection can truly complement one another. At present, respondents suggest that the challenge for municipalities was to act in sufficiently paternal fashion. Respondents' voiced solution was a greater dissemination of pro-biodiversity views and control mechanisms within municipalities and wider society. Effectively arguing for a deepening paternalism.

Building on this, I argue that respondents should remain aware of several points. Firstly, framing biodiversity as a technical issue risks occluding extant societal disagreements about what nature is. Linked to this, there is a risk that society itself is rendered inaccurately homogenous. Thus, the diversity of attitudes and relationships towards nature among urbanites is presently largely invisible. This has consequences for the success of environmental interventions, potentially inhibiting the information municipalities deem relevant to protecting biodiversity. Likewise, the variable impact of environmental initiatives upon different social groups is hidden. Thus, biodiversity's embeddedness in wider social issues should not be neglected as they hold the seeds of future conflict — both over orientalist building plans and over communalists' personal relationships with nonhuman persons in the city. If planners cannot see a diversity of worldviews, then they are likely to be surprised when uncomfortable knowledge makes itself heard.

As an exploratory study, the findings of this article suggest several paths forward. Firstly, there is the possibility of greater interrogation of the wider context of municipal workers lives. If, as hinted above, respondents aspire to or personally enact a more communalist relationship with their environment, the relationship this has with the paternalistic governance system they form a part of could be interrogated ethnographically. Secondly, the analytical object could be enlarged, there is scope to explore how respondents — experts on biodiversity — interact with and differ from other groups at each municipality. The empirical material has highlighted a process of political struggle, which affects policy. Such an exploration would look at the extent that orientalism is also present within Swedish municipal governance, something respondents bemoaned. Thirdly, wider comparison would be desirable. As noted earlier, the municipalities discussed here are among the most urban of Sweden. It would thus be interesting to explore how planning for biodiversity manifests in the many much smaller and rural municipalities within the Swedish governance system. Finally, there is scope for comparison with the governance structures of other countries. Thus, one could explore the extent that paternalism predominates in different places and the extent that communalist perspectives manifest in urban planning. All these potential studies would provide insight into the actions municipal workers employ to alter the dominant perspectives of their employers and the prospects for success or failure.

## Notes

<sup>1</sup> The extent that such a characterisation can be accurate is the source of some discussion in anthropology (see Knight 2012 and subsequent responses in the same issue; likewise, see also

Nadasdy 2007, endnote 2). However, for the purposes of this article (and Pálsson's typology) the idealised relationship is illustrative.

<sup>2</sup> For example, the relative status of 'outsider' non-Chewong humans is unclear in Howell's (1996) account.

<sup>3</sup> Norrland is the most northerly and sparsely populated of Sweden's traditional 'lands', comprising 60 per cent of Sweden's total area.

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## References

- Agyeman, J. (2010) Toward a 'just' sustainability? *Continuum* 22(6) 751–756. <https://doi.org/10.1080/10304310802452487>
- Arcari, P., Probyn-Rapsey, F. & Singer, H. (2020) Where species don't meet: invisibilized animals, urban nature and city limits. *Environment and Planning E: Nature and Space* 4(3) 940–965. <https://doi.org/10.1177/2514848620939870>
- Bacchi, C. & Eveline, J. (2010) Approaches to gender mainstreaming: what's the problem represented to be? In Bacchi, C. & Eveline, J. (eds.) *Mainstreaming Politics: Gendering Practices and Feminist Theory*, 111–138. University of Adelaide Press, Adelaide. <https://doi.org/10.1017/UPO9780980672381.009>
- Beery, T., Stahl Olafsson, A., Gentin, S., Maurer, M., Stålhammar, S., Albert, C., Bieling, C., Buijs, A., Fagerholm, N., Garcia-Martin, M., Plieninger, T. & Raymond, C. M. (2023) Disconnection from nature: expanding our understanding of human–nature relations. *People and Nature* 5(2) 470–488. <https://doi.org/10.1002/pan3.10451>
- Berghöfer, U., Rode, J., Jax, K., Förster, J., Berghöfer, A. & Wittmer, H. (2022) 'Societal relationships with nature': a framework for understanding nature-related conflicts and multiple values. *People and Nature* 4(2) 534–548. <https://doi.org/10.1002/pan3.10305>
- Biermann, C. & Mansfield, B. (2014) Biodiversity, purity, and death: conservation biology as biopolitics. *Environment and Planning D: Society and Space* 32(2) 257–273. <https://doi.org/10.1068/d13047p>
- Blaser, M. (2009) The threat of the Yrmo: the political ontology of a sustainable hunting program. *American Anthropologist* 111(1) 10–20. <https://doi.org/10.1111/j.1548-1433.2009.01073.x>
- Brightman, M. & Lewis, J. (2017) Introduction: the anthropology of sustainability: beyond development and progress. In Brightman, M. & Lewis, J. (eds.) *The Anthropology of Sustainability. Beyond Development and Progress*, 1–34. Palgrave Macmillan, New York. [https://doi.org/10.1057/978-1-137-56636-2\\_1](https://doi.org/10.1057/978-1-137-56636-2_1)
- Burrows, S., Olive, R., O'brien, S. & Galloway, T. (2022) Connection is key when there's no planet B: the need to innovate environmental science communication with transdisciplinary approaches. *Science of The Total Environment* 853 158435. <https://doi.org/10.1016/j.scitotenv.2022.158435>
- Carver, E. H. & Gardner, C. (2021) Multispecies conservation movements and the redefinition of urban nature at Berlin's Tempelhof airfield. *Environment and Planning E: Nature and Space* 5(4) 2307–2331. <https://doi.org/10.1177/25148486211047394>
- Dryzek, J. S. (2013) *The Politics of The Earth*. Oxford University Press, Oxford.
- Dymén, C., Andersson, M. & Langlais, R. (2013) Gendered dimensions of climate change response in Swedish municipalities. *Local Environment* 18(9) 1066–1078. <https://doi.org/10.1080/13549839.2012.752802>
- Fjørtoft, I., Sudo, T. & Ito, K. (2021) Nature in the cities: places for play and learning. In Ito, K. (ed.) *Urban Biodiversity and Ecological Design for Sustainable Cities*, 125–141. Springer, Tokyo. [https://doi.org/10.1007/978-4-431-56856-8\\_6](https://doi.org/10.1007/978-4-431-56856-8_6)
- Fletcher, R. (2016) Connection with nature is an oxymoron: a political ecology of "nature-deficit disorder". *The Journal of Environmental Education* 48(4) 226–233. <https://doi.org/10.1080/00958964.2016.1139534>
- Giampietro, M. (2023) Reflections on the popularity of the circular bioeconomy concept: the ontological crisis of sustainability science. *Sustainability Science* 18 749–754. <https://doi.org/10.1007/s11625-022-01267-z>

- Gillette, M. B. & Hurley, A. (2018) Vision, voice, and the community landscape: the Missouri place stories pilot project. *Landscape and Urban Planning* 173 1–8. <https://doi.org/10.1016/j.landurbplan.2018.01.005>
- González Carman, V. & Carman, M. (2018) A coexistence of paradigms: understanding human-environmental relations of fishers involved in the bycatch of threatened marine species. *Conservation and Society* 16(2) 205–216. <https://doi.org/10.4103/cs.cs.17.45>
- Hall, P. (2015) The Swedish administrative model. In Pierre, J. (ed.) *The Oxford Handbook of Swedish Politics*, 229–314. Oxford University Press, Oxford. <https://doi.org/10.1093/oxfordhb/9780199665679.013.17>
- Howell, S. (1996) Nature in culture or culture in nature? In Descola P. & Pálsson G. (eds.) *Nature and Society*, 127–144. Routledge, London.
- Hysing, E. & Olsson, J. (2018) *Green Inside Activism for Sustainable Development: Political Agency and Institutional Change*. Palgrave Macmillan, Cham. <https://doi.org/10.1007/978-3-319-56723-5>
- Isaacs, J. R. & Otruba, A. (2019). Guest introduction: more-than-human contact zones. *Environment and Planning E: Nature and Space* 2(4) 697–711. <https://doi.org/10.1177/2514848619855369>
- Kendall, G. & Wickham, G. (2001) *Understanding Culture*. SAGE, London.
- Knight, J. (2012) The anonymity of the hunt: a critique of hunting as sharing. *Current Anthropology* 53(3) 334–355. <https://doi.org/10.1086/665535>
- Kurle, C. M., Cadotte, M. W., Seo, M., Dooner, P. & Jones, H. P. (2023) Considering humans as integral components of “nature”. *Ecological Solutions and Evidence* 4(1) e12220. <https://doi.org/10.1002/2688-8319.12220>
- Lidström, A. (2015) Swedish local and regional government in a European context. In Pierre J. (ed.) *The Oxford Handbook of Swedish Politics*, 414–428. Oxford University Press, Oxford. <https://doi.org/10.1093/oxfordhb/9780199665679.013.51>
- Lodge, M. (2011) Risk, regulation and crisis: comparing national responses in food safety regulation. *Journal of Public Policy* 31(1) 25–50. <https://doi.org/10.1017/S0143814X10000218>
- Malmö Stad (2023) Personalredovisning. 15.04.2024. <https://malmo.se/Redovisningar/Personalredovisning.html> 25.10.2023.
- McCabe, R. (2016) Restoring nature, renewing the city: local narratives and global perspectives on urban sustainability. In McDonagh, P. & Murphy, F. (eds.) *Envisioning Sustainabilities: Towards an Anthropology of Sustainability*, 131–150. Cambridge Scholars Publishing, Newcastle upon Tyne.
- McKinzie, A. E. (2019) You don't miss it 'til it's gone: insecurity, place, and the social construction of the environment. *Environmental Sociology* 5(3) 232–242. <https://doi.org/10.1080/23251042.2019.1574463>
- Milstein, T., Thomas, M. O., Hoffmann, J. & Carr, J. (2023) “Even I am a part of nature”: unraveling the human/nature binary to enable systems change. *Environmental Communication* 17(4) 421–436. <https://doi.org/10.1080/17524032.2023.2199946>
- Milton, K. (1999) Nature is already sacred. *Environmental Values* 8(4) 437–449. <https://doi.org/10.3197/096327199129341905>
- Milton, K. (2000) Ducks out of water. Nature conservation as boundary maintenance. In Knight J. (ed.) *Natural Enemies. People-Wildlife Conflicts in Anthropological Perspective*, 229–246. Routledge, London.
- Montin, S. (2015) Municipalities, regions, and county councils: actors and institutions. In Pierre, J. (ed.) *The Oxford Handbook of Swedish Politics*, 367–382. Oxford University Press, Oxford. <https://doi.org/10.1093/oxfordhb/9780199665679.013.22>
- Nadasdy, P. (2007) The gift in the animal: the ontology of hunting and human-animal sociality. *American Ethnologist* 34(1) 25–43. <https://doi.org/10.1525/ae.2007.34.1.25>
- Nadasdy, P. (2011) “We don't harvest animals; we kill them” agricultural metaphors and the politics of wildlife management in the Yukon. In Goldman, M. J., Nadasdy, P. & Turner, M. D. (eds.) *Knowing Nature: Conversations at the Intersection of Political Ecology and Science Studies*, 135–151. University of Chicago Press, Chicago.
- Nayar, P. K. (2013) *Posthumanism*. Polity Press, Cambridge.
- Pálsson, G. (1996) Human-environmental relations. Orientalism, paternalism and communalism. In Descola, P. & Pálsson, G. (eds.) *Nature and Society. Anthropological Perspectives*, 63–81. Routledge, London.
- Parris, K. M., Amati, M., Bekessy, S. A., Dagenais, D., Fryd, O., Hahs, A. K., Hes, D., Imberger, S. J., Livesley, S. J., Marshall, A. J., Rhodes, J. R., Threlfall, C. G., Tingley, R., van der Ree, R., Walsh, C. J., Wilkerson, M. L. & Williams, N. S. G. (2018) The seven lamps of planning for biodiversity in the city. *Cities* 83 44–53. <https://doi.org/10.1016/j.cities.2018.06.007>
- von Post, M., Knaggård, Å., Alkan Olsson, J., Olsson, O., Persson, A. S. & Ekroos, J. (2023) The Swedish green infrastructure policy as a policy assemblage: what does it do for biodiversity conservation? *People and Nature* 5(2) 839–851. <https://doi.org/10.1002/pan3.10456>



- Rayner, S. (2012) Uncomfortable knowledge: the social construction of ignorance in science and environmental policy discourses. *Economy and Society* 41(1) 107–125. <https://doi.org/10.1080/03085147.2011.637335>
- Sandberg, L. A. (2014) Environmental gentrification in a post-industrial landscape: the case of the Limhamn quarry, Malmö, Sweden. *Local Environment* 19(10) 1068–1085. <https://doi.org/10.1080/13549839.2013.843510>
- Sandström, U. G. (2002) Green infrastructure planning in urban Sweden. *Planning Practice and Research* 17(4) 373–385. <https://doi.org/10.1080/02697450216356>
- Singleton, B. E. & Gillette, M. B. (2023) Mutiny on the boundary? Examining ILK-Based conservation collaborations through the lens of rubbish theory. *Ethnobiology Letters* 14(2) 83–91. <https://doi.org/10.14237/ebi.14.2.2023.1830>
- Singleton, B. E., Gillette, M. B., Burman, A. & Green, C. (2023) Toward productive complicity: applying 'traditional ecological knowledge' in environmental science. *Anthropocene Review* 10(2) 393–414. <https://doi.org/10.1177/20530196211057026>
- Thompson, M. (1979[2017]) *Rubbish Theory. The Creation and Destruction of Value*. Pluto Press, London.
- Thompson, M. (2008) Clumsiness: why isn't it as easy as falling off a log? *Innovation: the European Journal of Social Science Research* 21(3) 205–216. <https://doi.org/10.1080/13511610802404922>
- Todd, Z. (2016) An indigenous feminist's take on the ontological turn: 'ontology' is just another word for colonialism. *Journal of Historical Sociology* 29(1) 4–22. <https://doi.org/10.1111/johs.12124>
- Zapf, H. (2022) Posthumanism or ecohumanism? Environmental studies in the anthropocene. *Journal of Ecohumanism* 1(1) 5–17. <https://doi.org/10.33182/joe.v1i1.1743>

## Appendix A Municipal literature reviewed

### Gothenburg

- Göteborgs Stad (no date) Göteborgs Stads program för biologisk mångfald och ekosystemtjänster 2019–2025 [report]. <https://goteborg.se/wps/wcm/connect/88ce109f-6ec0-44cc-bdb9-6388f09f4591/G%C3%B6teborgs+Stads+program+f%C3%B6r+biologisk+m%C3%A5ngfald+och+ekosystemtj%C3%A4nster+2019-2025.pdf?MOD=AJPERES> 20.10.2024.
- Göteborgs Stad (2005) Park och naturförvaltningen. Naturvårdsprogram [report]. [https://tekniskhandbok.goteborg.se/wp-content/uploads/1D\\_101\\_Park-och-naturvardsforvaltningens-Naturvardsprogram\\_2005\\_2017-10.pdf](https://tekniskhandbok.goteborg.se/wp-content/uploads/1D_101_Park-och-naturvardsforvaltningens-Naturvardsprogram_2005_2017-10.pdf) 20.10.2024.
- Göteborgs Stad (2022a) Göteborgs grönplan för en nära, sammanhållen och robust stad 2022–2030 [report] 20.06.2022. [https://goteborg.se/wps/wcm/connect/63a24271-5818-428b-999a-0a402cb4b36a/G%C3%B6teborgs+gr%C3%B6nplan+2022\\_tillg%C3%A4nglig\\_.pdf?MOD=AJPERES](https://goteborg.se/wps/wcm/connect/63a24271-5818-428b-999a-0a402cb4b36a/G%C3%B6teborgs+gr%C3%B6nplan+2022_tillg%C3%A4nglig_.pdf?MOD=AJPERES) 20.10.2024.
- Göteborgs Stad (2022b) Översiktsplan för Göteborg. <https://oversiktsplan.goteborg.se/> 22.11.2022.

### Malmö

- Andersson, T. & Wedelin, M. (2012) Naturvårdsplan för Malmö stad. Programdel [report]. <https://docplayer.se/29767548-Naturvardsplan-for-malmo-stad.html> 20.10.2024.
- Malmö Stad (no date) Miljöprogram för Malmö stad 2021–2030 [report]. <https://miljobarometern.malmo.se/content/docs/miljoprogram-malmo-stad-2021-2030.pdf> 20.10.2024.
- Malmö Stad (2018) Översiktsplan för Malmö. Planstrategi [report] 31.05.2018. <https://www.scribd.com/document/428783098/O-VERSIKTSPLAN-FO-R-MALMO-antagen-31maj2018> 20.10.2024.
- Vinnova and Malmö Stad (no date) BiodiverCity. Om grön innovation i det urbana rummet [report]. <https://docplayer.se/14179829-Biodivercity-om-gron-innovation-i-det-urbana-rummet.html> 20.10.2024.

### Stockholm

- Hjorth, G., Bugren, N., Dahlberg, J., Edström, A., Egerö, U., Malmberg, K., Pirard, J., Pontén, J., Rothman, M., Sannebro, M., Virgin, H. & Wiborn, P. (2020) Handlingsplan för biologisk mångfald i Stockholms stad [report] 30.10.2020. <https://miljobarometern.stockholm.se/content/docs/tema/natur/hpbm/Handlingsplan-biologisk-mangfald.pdf> 20.10.2024.
- Stockholms Stad (2022) Grönare Stockholm. Stockholms stad. <https://vaxer.stockholm/tema/utemiljo/gronare-stockholm/#:~:text=Stockholms%20unika%20gr%C3%B6na%20ytor%20har,f%C3%B6rnyas%2C%20f%C3%B6rb%C3%A4ttras%20och%20rustas%20upp> 16.02.2023.

Stadsbyggnadskontoret (2018) Översiktsplan för Stockholms stad [report]. <https://vaxer.stockholm/siteassets/stockholm-vaxer/tema/oversiktsplan-for-stockholm/oversiktsplan-for-stockholms-stad-godkannandehandling-2020-10-03.pdf> 20.10.2024.

Stadsledningskontoret (2017) Grönare Stockholm. Riktlinjer för planering, genomförande och förvaltning av stadens parker och naturområden [report]. <https://miljobarometern.stockholm.se/content/docs/mp19/planer/gronare-stockholm-2017.pdf> 20.10.2024.

#### Umeå

Forsgren, I., Sjöström, S., Pietroni, E., Fahlgren, S., Grellmann, D. & Helmersson, P. (2018) Översiktsplan Umeå kommun. Fördjupning för Umeå. Umeås framtida tillväxtområde [report]. <https://www.umea.se/download/18.4b3572ec191fd9d354f2ffad/1728552738452/F%C3%B6rdjupning%20f%C3%B6r%20Ume%C3%A5.pdf> 20.10.2024.

Helmersson, P., Jonsson, H., Lagervall, M., Lindström, D., Myrén, A., Pietroni, E. & Sjöström, S. (2018) Översiktsplan Umeå kommun — vägvisning till planens delar, teman och aktualitet [report]. <https://www.umea.se/download/18.250f9659174ae4b97941187/1601371952404/%C3%96oversiktsplan%20Ume%C3%A5%20kommun.pdf> 20.10.2024.

Lindberg, H. (2016) Strategisk plan 2016–2028 [report]. 29.03.2016 <https://www.umea.se/download/18.55c0dfaf18bcf08e7cb4e6aa/1700743034271/Strategisk%20plan,%20Ume%C3%A5%20kommun,%20%202016%E2%80%932028.pdf> 20.10.2024.

Umeå Kommun (no date) Strategier för hållbar tillväxt — Umeå kommun. <https://www.umea.se/byggaboochmiljo/oversiktsplanochdetaljplaner/oversiktsplan/umeamot200000invanare/strategieforhallbartillvaxt.4.408bf0f71744%E2%80%A6> 14.09.2022.

Umeå Kommun (2023) Bostadsförsörjningsprogram. Umeå kommun 06.12.2023. <https://www.umea.se/byggaboochmiljo/bostader/bostadsforsorjningsprogram.4.7d7d901172bb372c5d186.html> 14.09.2022.