

A ROADMAP FOR **REWILDING**

ETHICS IN THE ANTHROPOCENE

**A Philosophical Toolkit for Identifying
and Mitigating Ethical Conflicts
in Rewilding Practices**

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SUGGESTED CITATION:

Moyano-Fernández, C., Tafalla, M., Arribas-Herguedas, F., Guerra, M.J., Saavedra, D., Serra, P., Sekulova, F. (2023). *A Roadmap for Rewilding Ethics in the Anthropocene. A Philosophical Toolkit for Identifying and Mitigating Ethical Conflicts in Rewilding Practices*. Fundación BBVA / Universitat Autònoma de Barcelona.



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FUNDING:

This document has been developed, edited and published thanks to the research project “Ética del Rewilding en el Antropoceno: Comprendiendo los Escollos de Regenerar Éticamente lo Salvaje (ERA-CERES)”, with reference PZ618328 / D043600, funded by the Fundación BBVA and hosted by the Universitat Autònoma de Barcelona.



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INTRODUCTION

AIM AND SCOPE OF THIS DOCUMENT

THE TOOLKIT

This document is the result of an interdisciplinary research project carried out in Spain between 2022 and 2023, coordinated by the Universitat Autònoma de Barcelona and the Spanish National Research Council's Institute of Philosophy in collaboration with other academic institutions and private entities.

We have been able to recognize and discuss some of the ethical tensions related to rewilding thanks to the academic and professional work done by project members, fieldwork in rewilding initiatives and the organization of workshops with other experts in rewilding and applied ethics. With this backpack of learning, we have developed a brief theoretical guide for identifying and mitigating potential ethical conflicts of rewilding in an Anthropocene context.

STRUCTURE AND CONTENTS

Following this Introduction, the document is divided into three thematic blocks.

The first is more conceptual and relates to the semantic concept and methodology of rewilding: unravelling the plurality of its meanings and applications deepens our understanding of rewilding and may therefore help to reveal more clearly how it is being applied in a given context.

The second block opens up the moral horizon to consider how rewilding affects non-human beings: moving beyond anthropocentrism and the instrumentalization of wild nature implies maintaining a commitment to the ecocentrism that different scholars recognize in rewilding, but without renouncing ethical concern for individual lives.

The third and final section aims to question how humans are becoming involved in rewilding: attending to social inequalities is necessary if we are to avoid colonialist practices, exclusionary decision-making or biased participation.

WHO IT IS ADDRESSED TO

This toolkit is expected to be of use to a wide and diverse audience, from people interested in the subject, to students, scholars and researchers, conservation biology professionals, and especially rewilding practitioners. The aim is for it to be interdisciplinary, concise and easy to read, but without renouncing a certain technical rigour.

Although it is a theoretical and summarized document, it allows us to identify some of the tolls found along the road to rewilding in order to stop, reflect on them and attempt to take them into account in practice.



A BRIEF DEFINITION OF REWILDING

Rewilding is a conservation biology strategy that, through the restoration of ecological functions, biodiversity and food webs, seeks to regenerate natural ecosystems that have undergone significant anthropogenic disturbances [1,2]. Given the severity of the current ecological crisis, global warming and the mass extinction of species, rewilding represents an effective tool to halt these processes. By limiting human pressure on land and the exploitation of other species, rewilding can facilitate the recovery of depleted species populations; and more wild nature means more carbon can be stored in the atmosphere [3].

Unlike other traditional conservation or ecological restoration approaches, which are based on strict fidelity to maintaining taxonomic precedents, rewilding focuses on reducing human interference and restoring ecosystem functioning to make ecosystems self-sufficient and resilient [4,5].

Thus, before being anchored in the recovery of specific species, it may consider the reintroduction of ecological surrogates (proxies). This makes it a more open, future-oriented and even decolonial approach from a multispecies perspective, since it mostly seeks to regenerate ecological functions so that wild species can manage themselves, without humans having to constantly control nature [6,7]. This open approach is especially relevant in an Anthropocene context, as respecting the autonomy of wildlife may allow it to better adapt to increases in global temperature and other climate impacts.

Although rewilding was initially defined in North America on the basis of the “three C’s” rule (cores, ecological corridors and large carnivores) in order to promote trophic cascade effects [8], a number of different methodologies now exist, depending on the scale at which they are applied (macro- or micro-scale), the location (cities, nature reserves, islands, river systems), the timescale reference (Holocene or Pleistocene) and the type of activity carried out at each stage (trophic reintroduction, passive actions) [9,10].

WHY AN ETHICS OF REWILDING?

Ethics is an academic discipline and a branch of philosophy, which includes a long tradition of environmental and ecological ethics, consisting of critical reflection on each society's moral convictions and our relations with other species and ecosystems. Ethics is not a matter of personal opinion, but a rational procedure that rigorously elaborates, contrasts and verifies normative judgements about what we consider to be right and wrong.

Ethics orients and guides, it does not dictate what to do. Ethics is not simply about identifying what is good and bad and then campaigning to pursue what is considered good. Ethics is about unravelling the reasons that lead to one kind of behaviour, comparing them with possible arguments behind other behaviours, and justifying what might be more or less ethical in a given context. Thus, another task of ethics is to recognize and address the moral biases and prejudices underlying a given behaviour.

Insofar as rewilding is a process focused on the future, and not reduced to an anchoring in the past but rather committed to new functional ecosystems in the face of the current and changing socio-ecological crisis, it inevitably harbours risks and uncertainties. A rewilding ethics will not necessarily provide greater security or certainty that all will be well when we make room for and give autonomy back to wild species, but it can help raise awareness of some of the moral challenges that may arise during the process and serve as a philosophical tool to address them while minimizing harm.





I

**DELVING INTO THE
CONCEPT OF REWILDING**

RETHINKING THE USE OF THE TERM REWILDING

Does strict terminological and linguistic fidelity have to be maintained?*



Understanding rewilding as “renaturalization” or “recovering nature” may suggest a perpetuation of the human/nature dichotomy [11,12]. But humans are also nature, forming part of ecosystems and the biosphere. It is important to bear this in mind when embracing rewilding: it should not necessarily mean cutting humans off from the rest of nature, but rather mitigating the dominating pressures we exert on wildlife.

An English concept that goes viral acquires considerable socio-cultural significance. The fact that a concept becomes a trending topic can also have the disadvantage that people seek to adapt its theoretical fit and application to any field or context, leading to a distortion of its meaning and exacerbated semantic plasticity. If rewilding seems to mean everything, at the same time it also means nothing [13]. This is why it is important to accept the socio-historical dynamism of a concept without renouncing its very specificity.

Moreover, the adoption of the English term rewilding even in non-native English-speaking countries may carry with it a certain colonial imaginary, like a fashion or theoretical programme imposed from outside. Exploring whether there are reliable translations of the term in other languages can serve to offer a more territorially linked and socially acceptable use of the concept.

It is also important to be critical or nuanced over the way the prefix “re-” can be conveyed in translation, as it leads one to think of a return to the ecological past rather than a look to the ecological future. Although such a prefix is used to associate rewilding with a recovery of wild nature, it could lead to confusion with the meaning and direction of rewilding.

THE TERRITORIAL SCALE

Should all rewilding strategies follow the same guidelines and take place over large areas?

Conservation biologists Michael Soulé and Reed Noss originally thought of rewilding as a strategy that should support the three C's rule, but this was over two decades ago and in relation to the North American context [8].

* In non-English languages, there is concern over how to properly translate the term rewilding in a way that captures its meaning and avoids negative connotations. In Spanish, for example, translations such as “renaturalizar”, “resilvestrar”, “asilvestrar”, “resalvajar” or “asalvajar” have all been suggested.

Today, we can relax this requirement that rewilding must maintain with the three Cs (cores, corridors and carnivores), for two main reasons.

The first is that all non-North American contexts are different. In Europe, for some projects the reintroduction of large herbivores may result in as much or more rewilding as that of large carnivores. In island systems, it may not be feasible to consider large terrestrial carnivores and may make more sense to think about smaller-scale rewilding (e.g. edaphic rewilding) or recovering healthy populations of large marine mammals. When introducing small-scale rewilding in smaller spaces such as cities, it is true that we can aim to respect the three C's rule, by zoning spaces to avoid possible anthropogenic threats to native biodiversity, for example. Such zoning can be achieved by striving to maintain green and vehicle-free spaces – also known as “super-islands” – in strategic areas for wildlife coexistence [14]. While such spaces can be an oasis for some natural predators that visit or settle in cities, such as some canids, mustelids or birds of prey [15], reducing ecological fragmentation in increasingly crowded cities is a multifactorial socio-political challenge that requires careful planning by various sectors.

The second reason why rewilding's commitment to the three C's rule could be relaxed is that the preservation of larger areas such as national parks also poses a difficult socio-political challenge and may generate distrust among local human communities due to their perceiving a risk of being excluded from their settlements or activities. This fear is not entirely unfounded, since the creation of protected areas has at times led to environmental justice conflicts [16]. Therefore, when promoting rewilding sites, it is necessary to analyse the territory carefully and be sensitive to local communities, and to opt for public engagement that may benefit from the buffer zones surrounding the core zones, or for a conservation model based on shared land stewardship [17].

In short, although it is most desirable for rewilding initiatives to be deployed over vast natural areas (and to this end take advantage of protected areas such as national parks or, in Europe, Natura 2000 network areas), a broad geophysical scale should not be the sole aim.

Rewilding can be done at different scales, some more ambitious and others more modest, in one's own private garden or in small public spaces that are heavily anthropized or in disuse, for example [18]. And the methodologies, actors and results will differ for each of these scales.



THE REFERENCE TIMESCALE

How far back is it ethical to go to recover a species or an ecosystem?

It is common in conservation biology to discuss what time horizon ecological restoration efforts should aim for. The Shifting Reference Syndrome claims that each generation accepts as “normal” the nature that we knew as children or that was explained to us by our predecessors, using this as a reference to evaluate change [19]. The result of this “generational amnesia” is that the level of reference gradually slips, with the progressive disappearance of certain species being forgotten and accepted, as well as the appearance and continued presence of others. As a result, insufficient objectives may be established for conservation and restoration measures, as the target level is lowered and the extinction of species or disappearance of entire ecosystems is accepted.

Therefore, rewilding must use objective data on the past situation of what is to be conserved and restored as a reference. This gives rise to another problem, however: which time in the past?

Some assert that this historical reference point should be during the early Holocene period (prior to the Anthropocene and industrialization), while others place it in the late Holocene or even Pleistocene period (prior to the Recent Dryas, over 12,000 years ago) [20,21]. This is important, because different ethical conflicts may arise depending on the time period established for the recovery of an ecosystem or key species.

Some conservationists argue that species or functionalities of species that became extinct due to non-anthropogenic causes should be recovered. Thus, the idea of going back to the late Pleistocene is sometimes rejected due to doubts over whether it was humans or the glaciation period that produced the mass extinctions of megafauna during the late Quaternary.



Although there is growing evidence that human action was the main trigger for these extinctions and we should therefore conceive of ourselves as responsible [22], this would still not fully justify macrofauna being reintroduced in all and any contexts in order to recover Pleistocene ecological functionalities. Some ecosystems and landscapes have changed too much and our societies and human policies have not adapted to these changes, which in turn might make our cultural background a very limiting factor, leading to systematic opposition and boycotts of projects aiming at a strictly Pleistocene-committed rewilding.

Moreover, in a context of socio-ecological crisis where we must rapidly move towards degrowth [23], it is unclear what the cost-benefit balance of developing and applying the high-tech de-extinction of distant species (such as the woolly mammoth, the migratory pigeon or the cloning of Przewalski horses) might be [24]. Decision-making on how to conserve the environment may also be impaired if rewilding seeks to de-extinct Pleistocene species, rather than restore historically closer species [25].

Thus, the further back in time a rewilding practice goes, the more resistance it may encounter on many levels. Hence the importance of adopting a holistic approach to rewilding, by taking into account the complexity of human-nature relationships and the plurality of human values [26].

In addition, since human impacts are now so pervasive and irreversible, historical baselines are often not feasible or even desirable to achieve, and future-oriented targets tailored to the Anthropocene are needed [27].

It is therefore important that trophic reintroductions in rewilding converge with socio-cultural acceptability, political-legislative protection and sensitivity to the changing context of the Anthropocene.

Rather than being obsessed with bringing back distant species and remaining faithful to historical references to a distant past, it is crucial to be forward-looking [28]. This may lead to ecological restoration via functional analogues that could benefit from a greater convergence of the factors described above [29].

The background of the entire page is a close-up photograph of parched, cracked earth in shades of yellow and orange. The cracks are irregular and deep, creating a textured, grid-like pattern across the surface. A large white rectangular area is centered on the page, containing the text.

II

BEING ETHICAL WITH NONHUMAN SPECIES

PERCEPTIONS OF THE SPECIES AND PRIORITIZATION

Is there bias regarding which species are to be recovered?

Many trophic reintroductions follow a pattern of prioritizing the conservation or restoration of species such as canids and mustelids, leaving others such as dasiurids and viverids behind, even though they may have the same vulnerability status according to the IUCN [30].

This may be due to aesthetic and cultural aspects, or for instrumental economic reasons, where it is assumed that a species that will attract more attention will receive a greater public response and achieve greater awareness, resulting in it obtaining more resources and efforts for its conservation or restoration. This is known as “prioritizing flagship species” [31,32,33] and may be a reasonable justification if a project or initiative has few resources and requires a campaign to be mobilized quickly and effectively, for example. Making empathetic species visible can serve as a greater motivation for the general population.

However, this may have the undesirable effect of reifying society’s perception of the species, perpetuating cultural patterns that do not necessarily respond to biological criteria, or maybe even exalting species that do not need as much protection as others. If the most lauded species are prioritized for unscientific reasons, then although this may achieve good public acceptance or even be economically profitable in the short term, it could also lead to a long-term opportunity cost for ecosystem regeneration.

Rewilding aims to prioritize the recovery of keystone species [7]. In theory, by focusing on the ecological function of species rather than taxonomic fidelity or aesthetic and cultural perception, it may even prefer to reintroduce proxies into some environments. But de-fetishizing species and prioritizing less emblematic ones can hinder and slow down the social, political and economic reception of rewilding.

These limitations must be considered if the aim is to garner support from other sectors (e.g. financial) to achieve short and medium-term results. While rewilding aims to restore entire ecosystems, and to this end places a premium on ensuring the important functional role that keystone species can play in the wild, then achieving human acceptance of this - not necessarily anthropocentric - coexistence in the territory may represent a procedural pitfall.



TOWARDS COMPASSIONATE CONSERVATIONISM

Can more compassionate conservation methods be applied to affected individuals?

Sometimes, tragic decisions can be taken in order to conserve human livelihoods and activities considered important, such as allowing the hunting of keystone species, including apical carnivores able to spark trophic cascades, scavengers that heal ecosystems and prevent the spread of disease and herbivore ecosystem engineers. This can also be said of rewilding conflicts that might be caused by agriculture and extensive livestock farming, or green energy transition projects deployed in the vicinity or on the borders of areas designated for the preservation of wildlife. On other occasions, it is believed that invasive alien species should be sacrificed to protect key native species. In all these scenarios, it would seem that the only solution is to sacrifice wildlife. But perhaps this is not always the right conclusion to reach.

Are there less violent alternatives that will facilitate coexistence with wildlife? Even if these initially seem difficult to implement because of their economic costs, social efforts, cultural transformations, or even practical feasibility: are there alternatives? If there are, then we are facing not only a moral dilemma of coexistence with wildlife, but also issues related to the economy, resources and socio-cultural considerations, among others.

Efforts should be made to identify which non-violent (or less violent) alternatives exist, since this will make it easier to then identify what other conditions are needed to ensure coexistence with wildlife and work towards achieving them in practice [34]. Recognizing alternatives to eradication or accidents that may be suffered by some non-human individuals in the areas surrounding rewilding sites transforms a moral conflict into a problem with alternative solutions [6].

Being compassionate towards the individuals that rewilding seeks to manage implies conceiving them as beings with intrinsic value [35,36] whose effects on ecosystems are not only the result of atomized and individual capacities, but of a whole network of relationships and interdependencies. Thus, for example, we may attempt to understand keystone species as being either culturally or contextually keystone [37], or invasive alien species as refugee species adapted to a context of abrupt ecological change [38,39]. Rather than demonizing or sacrificing certain individuals, therefore, it is important to identify the causes that have led to their presence and adaptation in new areas; and if these causes are anthropogenic, to instigate efforts to make them visible and transform them in order to address the root of the conflict in a more compassionate way and without blaming non-human life.

Only 4% of the planet's mammal biomass corresponds to wild animals, while the rest is allocated between humans (36%) and, above all, livestock (60%) [40]. Given this distribution, rewilding is presented as a strategy that aims to give back more space and provide optimal

conditions for non-human and non-domesticated species to flourish on their own. We are not the only species in the biosphere, so opting for a more compassionate, convivial conservationism implies that we have a duty to degrowth in order to allow other species to develop the ecological functions necessary for the maintenance of all life.

THE LIMITS OF CARING FOR OTHER SPECIES

May being compassionate in rewilding cause collateral damage?

Compassionate conservationism often places the moral emphasis on recognizing and protecting animals, given that they are capable of suffering [41]. Most animals have a central nervous system that allows them to perceive pain and suffering, reacting physically and psychologically to it [42]. On an ethical level, this may lead to the compassionate conservation of nonhuman animals; taking care of their transportation and adaptation to the new environment when translocations are carried out, for example.

It should also be noted that, beyond ethics, and on a legal level, compassionate conservationism may involve reporting situations where animal welfare regulations are violated. That being said, however, it should also be borne in mind that animal welfare regulations apply mainly to domestic or livestock animals, rather than wildlife. Thus, on a legal level, the degree of care afforded to the latter will depend on the legal status a country awards to the animals involved in a rewilding project, since not all countries attribute them the same status. Ethical rewilding therefore requires in-depth knowledge of the current legislation where the project is taking place.

Compliance with legality and legal recognition do not necessarily imply ethical practice, especially if existing legislation contradicts some moral intuitions, or if there are legal loopholes [43]. Those implementing a rewilding project involving semi-wild animals need to be aware of the legal status of semi-wild animals in their country and resulting management and care regulations in order to assess whether they are ethically in agreement with them and their potential effects, or whether there are possibilities for them to be modified, before analysing the scope for ethical action beyond what the law dictates.

A country's regulations may delimit – by prohibiting or mandating it – the type of care to be given to reintroduced animals in rewilding. Moreover, within the limits of legislation, there is sometimes scope for different actions to be taken in terms of more or less compassionate wildlife management. By way of example, although feeding some semi-wild or wild animals suffering from symptoms of starvation could be permitted, attention must still be paid to the consequences this may have on trophic dynamics, since the success of ecological regeneration may be compromised [44].

It is important to realize that choosing to support a compassionate rewilding process through attitudes and practices that safeguard the welfare of all animals involved does not mean prioritizing animal care based on economic or tourist interests, fetishizing large, charismatic or exotic species because their image may sell more than that of other species. Respect for the welfare of all animals should matter equally.

However, while it is essential for compassionate rewilding to value the interests of all sentient individuals, it is also essential that it takes a long-term, systemic and interdependent perspective, and any assistance in the wild must therefore be carried out prudently, respecting the sovereignty of other species and with a proper understanding of the ecological effects of such an intervention [45].





III

ETHICAL ENGAGEMENT OF HUMAN COMMUNITIES

ENGAGING COMMUNITIES

Are rewilding procedures properly informed, addressing local needs and concerns and enabling community participation?

Rewilding should not be solely a technical process embraced only by conservation experts unconcerned with the local community, but rather a democratic and participatory process involving different stakeholders. It is important to disseminate the initiative or project in such a way that it is understandable to the public at large, using a common language that facilitates the horizontal transmission of knowledge, without renouncing technical rigour. To this end, making use of an eco-literacy with audiovisual content or inspirational stories can prove an effective strategy.

Proper communication helps achieve two objectives: on the one hand, there is a greater chance of receiving truly honest and valid informed consent for the costs and benefits of rewilding. That being said, however, while consent through tacit trust in the expertise of professionals can speed up a decision, concentrating responsibilities on them can also disengage society from the nature to be restored and generate a feeling of demotivation that slows down the scope of the community's daily decisions and actions [46]. On the other hand, with proper communication it is more likely that decision-making will be bottom-up rather than top-down, reducing the risk of procedural colonialism [47,48]. Rewilding can also serve as a tool for environmental education, by providing scientific training on how to react and interact with wild animals, for example.



Starting from a respectful and intellectually humble attitude towards ecological dynamics and human knowledge can facilitate greater openness to citizen collaboration in managing the potential uncertainties of rewilding in the Anthropocene. Engaging publicly with the local community where a rewilding strategy is developed entails looking not only at the end results but at the whole process that accompanies rewilding. Rewilding can represent an alternative way of revitalizing increasingly abandoned and depopulated areas, offering new employment and social opportunities, while gradually recovering wildlife.

A GENDER PERSPECTIVE

Is there gender parity in the rewilding initiative and its practice?

There is a gender bias in the discipline of conservation in the modern Western world, the majority of conservation biologists being men [49]. By default, there is a socio-cultural inertia for this also to be the case in rewilding projects and initiatives.

Regardless of whether the aforementioned bias is due to a socio-cultural issue affecting the involvement of more women in the relevant academic training and subsequent professional development or to other issues, opportunities should be provided to rebalance such gender disparity outcomes.

It is not necessary for all rewilding teams to have the same number of women, but it would be desirable to attempt to offer the same career opportunities to women as men.

In order to rebalance opportunities, it may not be enough to open job offers for both genders and provide strictly equal conditions. If there is a structural injustice or a starting imbalance within the conservationist niche, a strict equalling of opportunities could indirectly perpetuate power asymmetries. Therefore, in such circumstances, it may sometimes be necessary to consider positive discrimination towards women.

What is more, rewilding projects that take place in rural environments could be a valuable opportunity for women to return to such locations. The prevailing male chauvinism in rural areas, the lack of employment opportunities and the management and use of predominantly hunting territory, which mainly benefits male hunters, are all factors that indirectly exclude women.

INTERDISCIPLINARITY

Does the rewilding initiative or project involve an interdisciplinary team or collaborators from disciplines other than the biological sciences?

Rewilding is a process that permeates many dimensions. In addition to affecting the ecological and trophic relationships of natural systems, it affects human communities at different levels [10]. For all these reasons, it is necessary to include greater interdisciplinarity in any conservation biology strategy [50].

Anthropological, sociological, geographical, historical and psychological research could contribute to ethnographic and psychosocial research on communities affected by a territory where a rewilding process is to be deployed, taking into account the cultural, identity, ontological and aesthetic meanings these communities have in relation to their environment [51]. Moreover, if these studies were combined with a multi-species perspective [47], it would be possible to assess the meaningful relationships that non-humans also maintain with their environment, paving the way for a non-anthropocentric approach. To this end, contributions from ethological studies would add a detailed exploration of animal behaviour to rewilding [52,53].

Incorporating philosophical and ethical studies into the proceedings of a rewilding initiative could also help critically deconstruct the concepts and values such an initiative seeks to uphold, and make visible those prejudices, biases or fallacious arguments that are used to either support or reject conservationism. Epistemological and moral enquiries into the decisions made in rewilding may help in deciding which of them are more reasonable and less controversial [6,54].

Political and legal analyses would also help us understand the legislative reality of a territory, the rules that regulate different human activities, the degree of environmental protection and the political obstacles that different phases or strategies of rewilding (such as the reintroduction of an ecological corridor or its restoration) might encounter. Knowledge of existing political conditions and land-use planning would make it easier to design new rewilding proposals that have sufficient legal support and are therefore feasible [55].

Finally, including economic studies would complement the multidimensional approach required by any rewilding initiative, given that it will entail different expenditures for the development of its regenerative activities and could limit other lucrative human practices that hinder rewilding [5,10]. Therefore, knowledge of a social economy based on solidarity could help a rewilding approach that critically addresses the dynamics of the global free market and capitalism in order to foster a local economy committed to sustainability.

Also, addressing the economic needs and costs of rewilding would help identify which employment and profit opportunities a new rewilded environment would generate compared to its previous state.

Although rewilding projects may not initially be able to rely on large teams and diverse collaborations, maintaining the aspiration to do so could open up opportunities to better address various types of challenge in the future.



REFERENCES

- [1] Hawkins, S., Convery, I., Carver, S., et al. (2023). *Routledge Handbook of Rewilding*. Routledge.
- [2] Hart, E.E., Haigh, A. & Ciuti, S. (2023). A scoping review of the scientific evidence base for rewilding in Europe. *Biological Conservation*, 285. <https://doi.org/10.1016/j.biocon.2023.110243>.
- [3] Schmitz, O.,J., Sylvén, M., Atwood, T.B., et al. (2023). Trophic rewilding can expand natural climate solutions. *Nature Climate Change*, 13: 324–333. <https://doi.org/10.1038/s41558-023-01631-6>.
- [4] Pettorelli, N. & Bullock, J. (2023). Restore or rewild? Implementing complementary approaches to bend the curve on biodiversity loss. *Ecological Solutions and Evidence*, 4(2): e12244. <https://doi.org/10.1002/2688-8319.12244>.
- [5] Perino, A., Pereira, H.M., Navarro, L.M., et al. (2019). Rewilding complex ecosystems. *Science*, 364(6438). <https://doi.org/10.1126/science.aav5570>.
- [6] Moyano, C. (2022). *Ética del rewilding*. Plaza y Valdés.
- [7] Tafalla, M. (2022). *Filosofía ante la crisis ecológica. Una propuesta de convivencia con las demás especies: decrecimiento, veganismo y rewilding*. Plaza y Valdés.
- [8] Soulé, M. & Noss, R. (1998). Rewilding and biodiversity: complementary goals for continental conservation. *Wild Earth*, 8 (3): 18-28.
- [9] Pettorelli, N., Durant, S.M. & du Toit, J.T. (2019). *Rewilding*. Cambridge University Press.
- [10] Palau, J. (2020). *Rewilding Iberia. Explorando el potencial de la renaturalización en España*. Lynx.
- [11] Büscher, B. & Fletcher, R. (2020). *The Conservation Revolution: Radical Ideas for Saving Nature Beyond the Anthropocene*. Verso Books.
- [12] Kirby, K.R. (2014). "New conservation" as a moral imperative. *Conservation Biology*, 28(3): 639-640. <https://doi.org/10.1111/cobi.12294>.
- [13] Prior, J. & Ward, K.J. (2016). Rethinking rewilding: A response to Jørgensen. *Geoforum*, 69: 132-135. <https://doi.org/10.1016/j.geoforum.2015.12.003>.
- [14] Schurig, S. & Turan, K. (2022). The concept of a 'regenerative city': How to turn cities into regenerative systems. *Journal of Urban Regeneration & Renewal*, 15(2): 161-175.
- [15] Bateman, P.W. & Fleming, P.A. (2012). Big city life: carnivores in urban environments. *Journal of Zoology*, 287(1): 1-23. <https://doi.org/10.1111/j.1469-7998.2011.00887.x>.

- [16] Bontempi, A., Venturi, P., Del Bene, D., et al. (2023). Conflict and conservation: On the role of protected areas for environmental justice. *Global Environmental Change*, 82 (6597). <https://doi.org/10.1016/j.gloenvcha.2023.102740>
- [17] Mathevet, R., Bousquet, F. & Larrère, C. (2018). Environmental Stewardship and Ecological Solidarity: Rethinking Social-Ecological Interdependency and Responsibility. *Journal of Agricultural and Environmental Ethics*, 31: 605–623. <https://doi.org/10.1007/s10806-018-9749-0>.
- [18] Pettorelli, N., Schulte to Bühne, H., Cunningham, A.A., et al. (2022). *Rewilding our cities*. ZSL report, London.
- [19] Soga, M. & Gaston, K.J. (2018). Shifting baseline syndrome: causes, consequences, and implications. *Frontiers in Ecology and the Environment*, 16(4): 222-230. <https://doi.org/10.1002/fee.1794>.
- [20] Svenning, J-C. & Faurby, S. (2017). Prehistoric and historic baselines for trophic rewilding in the Neotropics. *Perspectives in Ecology and Conservation*, 15(4): 282-291. <https://doi.org/10.1016/j.pecon.2017.09.006>.
- [21] Donlan, C.S., Berger, J. & Bock, C.E. (2006). Pleistocene Rewilding: An Optimistic Agenda for Twenty-First Century Conservation. *The American Naturalist*, 168(5). <https://doi.org/10.1086/508027>.
- [22] Lemoine, R.T., Buitenwerf, R. & Svenning, J-C. (2023). Megafauna extinctions in the late-Quaternary are linked to human range expansion, not climate change. *Anthropocene*, 44. <https://doi.org/10.1016/j.ancene.2023.100403>.
- [23] Keyßer, L.T. & Lenzen, M. (2021). 1.5°C degrowth scenarios suggest the need for new mitigation pathways. *Nature Communications*, 12(2676). <https://doi.org/10.1038/s41467-021-22884-9>.
- [24] Adams, W.M. (2016). Geographies of conservation I: De-extinction and precision conservation. *Progress in Human Geography*, 41(4). <https://doi.org/10.1177/0309132516646641>.
- [25] Hennessy, E. & Gibbs, J.P. (2022). When De-extinction Really Happens: The Revival of the Floreana Giant Tortoises in the Galápagos Archipelago. *Environmental History*, 27(2). <https://doi.org/10.1086/719615>.
- [26] Massenberg, J.R., Schiller, J. & Schröter-Schlaack, C. (2022). Towards a holistic approach to rewilding in cultural landscapes. *People and Nature*, 5(1): 45-56. <https://doi.org/10.1002/pan3.10426>.
- [27] Corlett, R.T. (2016). Restoration, reintroduction, and rewilding in a changing world. *Trends in Ecology & Evolution*, 31(6): 453-462. <https://doi.org/10.1016/j.tree.2016.02.017>.
- [28] Carver, S., Convery, I., Hawkins, S., et al. (2021). Guiding principles for rewilding. *Conservation Biology*, 35(6): 1882-1893. <https://doi.org/10.1111/cobi.13730>.

- [29] Svenning, J.-C., Pedersen, P.B.M., Donlan, C.J., et al. (2016). Science for a wilder Anthropocene: synthesis and future directions for trophic rewilding research. *PNAS*, 113(4): 898–906. <https://doi.org/10.1073/pnas.1502556112>.
- [30] Stepkovitch, B., Kingsford, R. T. & Moseby, K. E. (2022). A comprehensive review of mammalian carnivore translocations. *Mammal Review*, 52(4): 554–572. <https://doi.org/10.1111/mam.12304>.
- [31] Arponen, A. (2012). Prioritizing species for conservation planning. *Biodiversity Conservation*, 21: 875–893. <https://doi.org/10.1007/s10531-012-0242-1>.
- [32] Seddon, P. J., Soorae, P. S. & Launay, F. (2005). Taxonomic bias in reintroduction projects. *Animal Conservation*, 8: 51–58. <https://doi.org/10.1017/S1367943004001799>.
- [33] Simberloff, D. (1998). Flagships, umbrellas, and keystones: Is single-species management passé in the landscape era? *Biological Conservation*, 83: 247–257. [https://doi.org/10.1016/S0006-3207\(97\)00081-5](https://doi.org/10.1016/S0006-3207(97)00081-5).
- [34] Kopnina, H., Gray, J., Lynn, W., et al. (2022). Uniting Ecocentric and Animal Ethics: Combining Non-Anthropocentric Approaches in Conservation and the Care of Domestic Animals. *Ethics, Policy & Environment*. <https://doi.org/10.1080/21550085.2022.2127295>.
- [35] Kopnina, H., Washington, H., Gray, J., et al. (2018). The “future of conservation” debate: Defending ecocentrism and the Nature Needs Half movement. *Biological Conservation*, 217: 140–148. <https://doi.org/10.1016/j.biocon.2017.10.016>.
- [36] Wallach, A.D., Bekoff, M., Batavia, C., et al. (2018). Compassionate conservation: Summoning the greatest of human virtues to the greatest of human challenges. *Conservation Biology*, 32(6): 1255–1265. <https://doi.org/10.1111/cobi.13126>.
- [37] Garibaldi, A. & Turner, N. (2004). Cultural Keystone Species: Implications for Ecological Conservation and Restoration. *Ecology and Society*, 9(3). <http://doi.org/10.5751/ES-00669-090301>.
- [38] Lemoine, R.T. & Svenning, J.-C. (2022). Nativeness is not binary—a graduated terminology for native and non-native species in the Anthropocene. *Restoration Ecology*, 30(8): e13636. <https://doi.org/10.1111/rec.13636>.
- [39] Kuemmerle, T., Hickler, T., Olofsson, J., et al. (2012). Refugee species: which historic baseline should inform conservation planning? *Diversity and Distributions*, 18(12): 1258–1261. <https://doi.org/10.1111/ddi.12013>.
- [40] Bar-On, Y.M., Phillips, R. & Milo, R. (2018). The biomass distribution on Earth. *PNAS*, 115(25): 6506–6511. <https://doi.org/10.1073/pnas.1711842115>.
- [41] Ramp, D. & Bekoff, M. (2015). Compassion as a Practical and Evolved Ethic for Conservation. *BioScience*, 65(3): 323–327. <https://doi.org/10.1093/biosci/biu223>.
- [42] Browning, H. & Birch, J. (2022). Animal Sentience. *Philosophy Compass*, 17(5): e12822. <https://doi.org/10.1111/phc3.12822>.

- [43] Kopnina, H., Leadbeater, S.R.B. & Cryer, P. (2019). Learning to Rewild: Examining the Failed Case of the Dutch “New Wilderness” Oostvaardersplassen. *International Journal of Wilderness*, 25(3).
- [44] Abraham, A.J., Duvall, E.S. & le Rouz, E. (2023). Anthropogenic supply of nutrients in a wildlife reserve may compromise conservation success. *Biological Conservation*, 284. <https://doi.org/10.1016/j.biocon.2023.110149>.
- [45] Donaldson, S. & Kymlicka, W. (2013). *Zoopolis. A Political Theory of Animal Rights*. Oxford University Press.
- [46] Schicktanz, S., Schweda, M. & Wynne, B. (2012). The ethics of ‘public understanding of ethics’— why and how bioethics expertise should include public and patients’ voices. *Med Health Care and Philos*, 15: 129–139. <https://doi.org/10.1007/s11019-011-9321-4>.
- [47] Celermajer, D. (2020). Rethinking rewilding through multispecies justice. *Animal Sentience*, 28(12).
- [48] Lorimer, J., Sandom, C., Jepson, P., et al. (2015). Rewilding Science, Practice, and Politics. *Annual Review of Environment and Resources*, 40: 39-62. <https://doi.org/10.1146/annurev-environ-102014-021406>.
- [49] Tallis, T. & Lubchenco, J. (2014). Working together A call for inclusive conservation. *Nature*, 515(7525): 27-28. <https://doi.org/10.1038/515027a>.
- [50] Newing, H. (2010). Bridging the Gap: Interdisciplinarity, Biocultural Diversity and Conservation. En: Pilgrim, S. y Pretty, J.N. (eds). *Nature and Culture Rebuilding Lost Connections*. Routledge. <https://doi.org/10.4324/9781849776455>.
- [51] Bekoff, M. (2014). *Rewilding Our Hearts: Building Pathways of Compassion and Coexistence*. New World Library.
- [52] Thulin, C-G. & Röcklinsberg, H. (2020). Ethical Considerations for Wildlife Reintroductions and Rewilding. *Frontiers in Veterinary Science*, 7. <https://doi.org/10.3389/fvets.2020.00163>.
- [53] Bekoff, M. (2017). The importance of Earth jurisprudence, compassionate conservation and personal rewilding. *The Ecological Citizen*, 1(Suppl A): 10–12.
- [54] Palmer, C., Fishcer, B., Gamborg, C., et al. (2023). *Wildlife Ethics: The Ethics of Wildlife Management and Conservation*. Wiley-Blackwell.
- [55] Pettorelli, N., Barlow, J., Stephens, P.A., et al. (2018). Making rewilding fit for policy. *Journal of Applied Ecology*, 55(3): 1114-1125. <https://doi.org/10.1111/1365-2664.13082>.



