

Primer

Nature's contributions to people: Weaving plural perspectives

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SUMMARY

“Nature’s contributions to people” (NCP) is designed to provide space for the recognition of diverse and evolving culturally mediated ideas about what people derive from, and co-produce with, nature. Its origins, along with the IPBES conceptual framework in which it is embedded, is transdisciplinary, action-oriented, and inclusive and also embraces pluralism. NCP provides both generalizing and context-specific perspectives and analytical tools that can be interwoven and enables diverse actors to represent nature-people interactions for different scales, audiences, and decision-makers. NCP therefore can be used to understand and communicate the ways in which ongoing biodiversity decline may affect the complex relationships between people and nature. This Primer presents NCP in accessible language, highlights its unique contribution as a tool for plural valuation of nature in conservation assessments, clarifies common misconceptions, and provides examples of the innovative ways NCP has already been applied around the world.

INTRODUCTION

Nature contributes to people’s quality of life in multiple ways. The ongoing rapid global decline of the non-human living world is driving an urgent need to assess and communicate the status and trends of species, populations, ecosystems, and ecological processes, and to show how these trends link with changes to people’s quality of life, while at the same time being inclusive of the diversity of perspectives about human-nature relations. Although there have been increases in some of the ways that nature contributes to people, such as more food and energy, this is often at the expense of many other contributions, due to the widespread alteration of the biosphere upon which humanity relies. For example, most of the facets of biodiversity—ecosystems, species, and populations—have declined globally in the past 50 years, according to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Moreover, nature’s contributions have been unevenly distributed, with those people with more wealth gaining while marginalized people have their environments degraded.

IPBES, established to drive assessments at the global and regional (supra-national) scale, has adopted a conceptual framework (CF) to organize its reports and communication tasks. The

CF depicts the relationships between humans and the rest of the living world as six interlinked components: nature (including, e.g., biodiversity and many aspects of biocultural diversity); anthropogenic assets (including, e.g., education, health, technology, and finance); institutions, governance, and other indirect drivers of change (e.g., the system of social rules and norms, and socioeconomic, cultural, and demographic factors); direct drivers of change in nature (both non-human and anthropogenic); nature’s contributions to people (NCP, defined as all the benefits and detriments that people get from their relationships with the rest of the living world); and a good quality of life (acknowledging its multidimensionality across cultures and societies).

Here we explain the evolution of NCP as both a concept and a term, highlight its distinctive characteristics, clarify key questions, and give examples of its application at multiple scales in diverse social-ecological contexts.

TRANSDISCIPLINARY, ACTION-ORIENTED, AND INCLUSIVE

NCP, as an analytical tool, is above all a transdisciplinary, action-oriented, inclusive, and pluralistic way of understanding

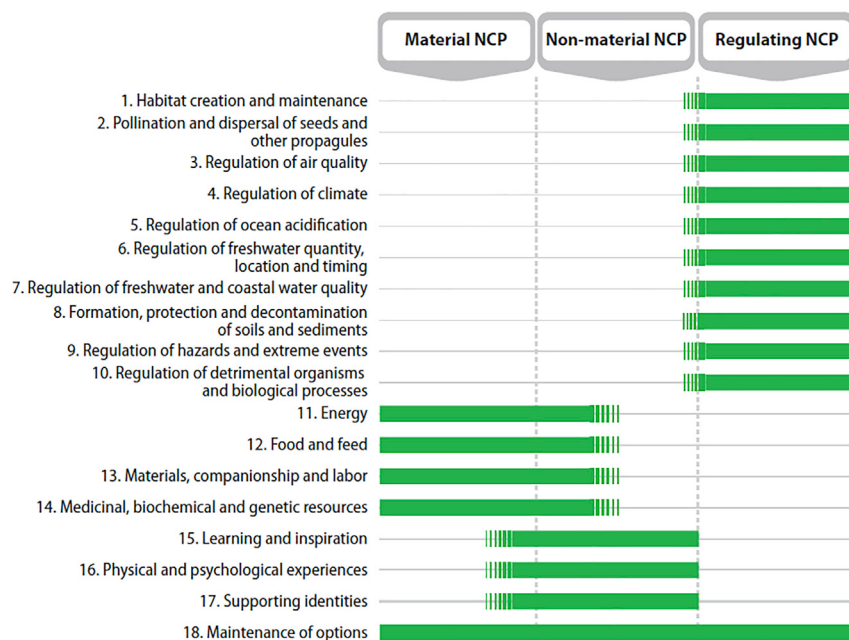


Figure 1. The generalizing perspective of nature's contributions to people (NCP)

This perspective provides 18 generally applicable categories across three broad, fuzzy groups, namely material, non-material, and regulating NCP. Material NCP comprise physical substances, objects, or materials from nature which people use and consume. Non-material NCP are nature's effects on subjective or psychological aspects which underpin people's quality of life. Regulating NCP are the ways in which nature modifies or sustains the environmental conditions experienced by people. Most NCP categories can be classified across more than one group to a greater or lesser degree, indicated by the category extending across columns. Maintenance of options (#18) relates to the potential opportunities that nature offers, and is therefore relevant to all three groups. Source: [Diaz et al. \(2018\)](#), reprinted with permission from AAAS.

the benefits and detriments that people derive from their relationships with the rest of nature. NCP is transdisciplinary because it originated through a global process of bridging multiple global perspectives, from governments, civil society, academic disciplines, and indigenous peoples and local communities (IPLCs). The term itself, "nature's contributions to people," is an imperfect translation of ideas debated and agreed across multiple languages. NCP is not necessarily envisaged as unidirectional flows from nature to people; rather, NCP is derived from the relationships between people and the rest of the living world. These relationships are conceived in a vast range of ways, from unidirectional flows from a stock (nature) to an agent of demand (people), to intricately reciprocal and intertwined, where nature may be viewed as having agency.

NCP is action-oriented. It is at the core of IPBES, a science-policy interface, where the assessment of status and trends is directly linked to the delivery of policies by governments, to respond to the trends detected. NCP also supports action in other arenas including plural valuations of nature, evaluation of future scenarios, the design and delivery of conservation instruments, and subnational assessments by civil society organizations.

The NCP concept is inclusive because it is specifically designed to encompass different viewpoints (both individual and collective) and social-ecological systems (from the local scale to the global scale), albeit with sufficient universalism to allow comparative analysis of status and trends across places and time periods. The NCP framing includes approaches such as those that connect to the idea of ecosystem services where nature may be viewed as essentially separate from people, while also allowing for viewpoints of people and nature as inseparable, connected through spiritual and cosmological processes, with animals at times taking human forms and vice versa. NCP recog-

nizes that the culturally diverse ideas about these relationships need a safe intellectual meeting place.

NCP provides a space for these multiple worldviews and knowledge systems by offering two "lenses," termed the general-

izing and the context-specific perspectives. The generalizing perspective provides a classification of 18 categories of NCP that should be applicable in a broad range of circumstances, but particularly when the intention is to draw conclusions that are as general across scales and as "universal" as possible ([Figure 1](#)). Here each generic NCP is a category of unidirectional flows from nature to people. Distinction between nature and people tends to be sharp, following the traditions of culture/nature dichotomy, and agency tends to be attributed to people only.

These categories are often organized in three broad, fuzzy groups: "material NCP," "non-material NCP," and "regulating NCP." Material NCP are physical substances, objects, or materials from nature which people use and consume to live, such as energy, food, and medicines. Non-material NCP are living nature's effects on subjective or psychological aspects underpinning people's quality of life, both individually and collectively, such as meadows or coral reefs providing aesthetic inspiration, or particular trees or animals being the basis of a human group's cultural identity. Finally, regulating NCP are the ways in which living nature modifies the environmental conditions experienced by people, and sustains or regulates the generation of material and non-material contributions, for example bees transferring pollen between flowers and thus allowing a plant to produce edible fruit.

The context-specific perspective provides for the distinctive or unique experiences or relationships that are perceived by different groups of people and cannot be easily or appropriately divided into generalizing categories. This perspective does not always contribute to, and may be difficult to align with, the goal of attaining a universally applicable schema. It recognizes that people have the right to interpret and make sense of their relationships with nature in their own ways. The European Landscape Convention, for example, encourages public authorities

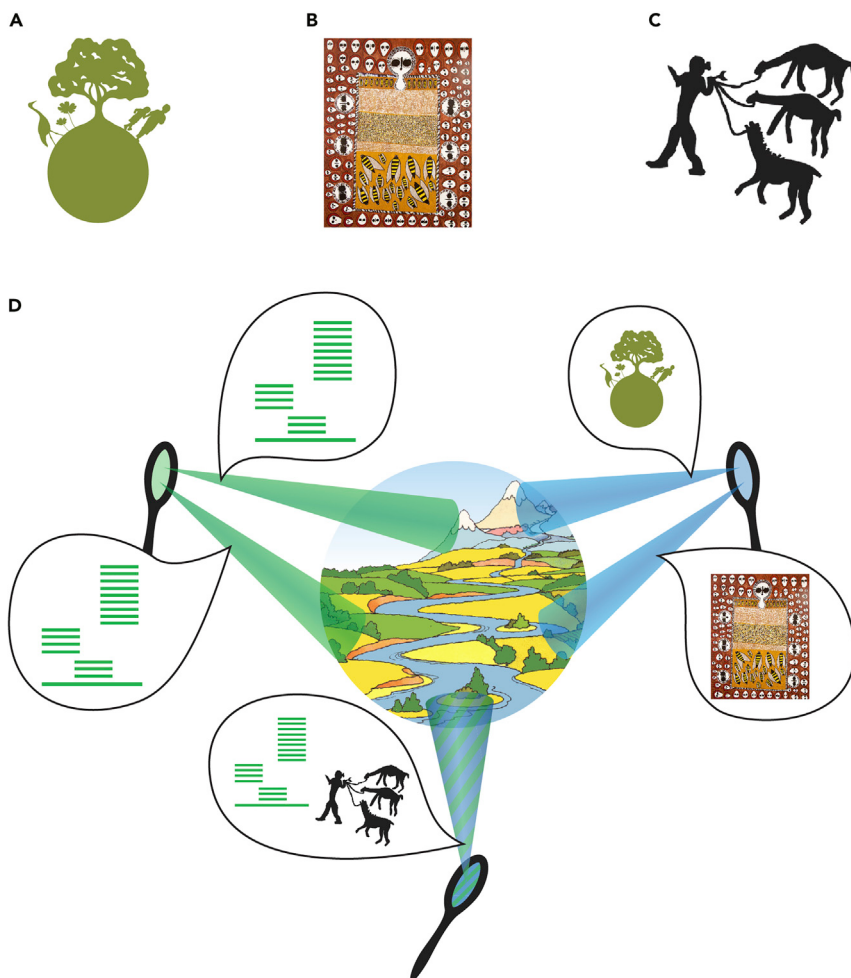


Figure 2. Examples of context-specific and interwoven perspectives on NCP, and an illustration of plural perspectives

(A) Satoyama Initiative (logo), international cooperative efforts, particularly across Asia, to support the contributions to people of social-ecological production landscapes and seascapes that depend on context-specific practices, e.g., rice paddies providing crane habitat (satoyama-initiative.org).

(B) Wandjina, ancestral beings present in the landscape today, keep the countryside clean for the native bees and flowering of a certain tree (IPBES, 2016); © Sandra Mungulu/Copyright Agency, 2021.

(C) The NCP from camelids in South America (guanaco, vicuña, llama, and alpaca) has been identified through weaving the generalizing and context-specific perspectives (Vilá et al., 2020; image reprinted from Gallardo et al., 2012).

(D) The generalizing perspective (the green lens) allows us to perceive different situations in time and space through a common analytical framework, facilitating comparisons. The context-specific perspective (the blue lens) allows us to include the ways in which different human communities perceive different situations, depicted as examples (A) and (B). These perspectives can be woven together in different mixtures and combinations (mixed blue-green lens), as occurred in (C).

The generalizing and context-specific perspectives can be interwoven to support pluralistic understandings of NCP, the mixed blue-green lens in Figure 2D.

The pluralism of the NCP concept includes recognition that the term nature has many different meanings across different knowledge systems—for example, dualistic human-nature, nature as living organisms, or nature with more-than-human agency where animals, plants, and features

to recognize how dual actions of people and nature produces landscape characteristics that are unique in different social-ecological settings across the continent, resulting in context-specific NCP. Across Asia, the Satoyama Initiative is identifying how the contributions to people of social-ecological production landscapes and seascapes depend on context-specific practices, such as rice paddies providing crane habitat, often accompanied by activities of spiritual leaders, e.g., the Shinto rituals in Japan. The Ngariniyin people in north-west Australia perceive nature's contributions through linkages between categories that include native bees, Wandjinas (ancestral beings present in the landscape today), and flowers of a certain tree. In South America, NCP from camelids have been identified through both the generalizing and context-specific perspectives (Figures 2A–2C).

The NCP generalizing categories allow us to examine patterns and processes in different parts of nature (represented by the mountains and the river plain in Figure 2D) and identify the status and trends in their contributions to people, through a common standard reporting system represented by the green lens in Figure 2D. The context-specific perspective allows us to examine these same places through other worldviews and knowledge systems, represented by the blue lens in Figure 2D.

of the landscape take self-generated and creative roles. This facilitates an open-minded engagement with diverse understandings among large and culturally diverse constituencies about the benefits and detriments humans obtain from the rest of the living world. Pluralism is essential when confronting urgent global-local concerns about ongoing declines in biodiversity, requiring basic agreements among stakeholders on what the problems are about, even if they disagree on what the best solutions should be.

AN EVOLVING AND FLEXIBLE BOUNDARY OBJECT

The capacity to connect with different actors while remaining sufficiently structured to keep its identity and basic conceptual integrity makes NCP a “boundary concept.” A boundary concept allows people who belong to different places, disciplines, sectors, cultures, and traditions to come together to discuss an idea. The NCP concept is in turn influenced by these factors and will continue to be adapted and evolve through application. It provides space for dialog—for example, between those who frame nature and its benefits to people as ecosystem services and natural capital, and those who frame them in terms of nature's gifts and Mother Earth—while avoiding claims of hegemony from either.

Box 1. Questions and answers about NCP

IS NCP UNIDIRECTIONAL FROM NATURE TO PEOPLE?

Not necessarily. NCP provides for both unidirectional and bidirectional relationships that include reciprocity. People and nature may be viewed as inseparable, connected through spiritual and cosmological processes—or people and nature may be viewed as essentially separate, with people having dominion over all life on earth—and everything in between.

IS NCP JUST ANOTHER NAME FOR ECOSYSTEM SERVICES?

No. NCP includes and embraces ecosystem services (ES), which can continue to be applied as one culturally relevant concept of people-nature interactions, alongside others. NCP uses broad groups (material, non-material, and regulating) that are different in some respects from those commonly used in ES studies. Three major differences are: (1) In the NCP approach fuzziness among broad NCP groups is the norm rather than the exception; (2) it recognizes that culture permeates all our relationships with nature and therefore does not encapsulate cultural aspects in one particular group (there is no “cultural NCP”); (3) the entities of nature providing the contributions are not confined to the ecosystem level. However, most ES categories fit well within the generalizing 18-NCP classification and reporting system.

ARE THE IDEAS OF RELATIONAL VALUES AND THE CONTEXT-SPECIFIC PERSPECTIVE OF NCP ASSOCIATED WITH EACH OTHER?

Partly. Context-specific NCP can be highly instrumental. Nevertheless, the context-specific perspective, which accommodates well the irreplaceability and incommensurability given to different NCP by different people, is possibly richer for demonstrating relational values than the generalizing perspective is.

DOES NCP, AND PARTICULARLY THE CONTEXT-SPECIFIC LENS, WORK ONLY FOR INDIGENOUS PEOPLES AND LOCAL COMMUNITIES?

No. The generalizing and context-specific perspectives of NCP are relevant in many different social-ecological situations and across local, regional, and global scales. Many people applying NCP are using a mixture of these two lenses (Figures 2 and 3).

The 18 generalizing categories of NCP overlap and to a degree have evolved from the categories of ecosystem services. However, a vital difference is that NCP, and indeed the whole of the IPBES CF, view culture as a pervasive influence across all aspects of the relationships between and nature and people (Box 1).

NCP has also evolved alongside valuation frameworks. NCP is, by definition, an anthropocentric (human-centered) concept; NCP refers to entities necessary, useful, or otherwise relevant to people. However, within the realm of anthropocentric values, just as NCP provides for multiple perspectives on nature-people relationships, it also recognizes the plurality of values to which it connects. NCP can connect with instrumental values (means to an end, e.g., food, materials) and relational values (nature and its contributions as conduits for meaningful lives and as principles linked to “doing the right thing” and hence including values such as care, stewardship, and sense of place, often not substitutable). Diverse valuation methods and approaches can unpack the importance of these values in different ways, for example through economic, sociocultural, or holistic approaches.

CO-PRODUCTION OF NCP

The IPBES CF explicitly recognizes that NCP depends both on nature and on people’s activities and knowledge (anthropogenic assets, further mediated by institutions and governance sys-

tems). Different NCPs require different human-nature mixes and different cultures hold different perspectives on the extent of influence of people in such co-production. For example, from the generalizing perspective, food as material NCP requires a mix of non-human elements (e.g., soil functions, water, seeds) and anthropogenic assets (e.g., knowledge about how to farm, machinery, labor in weeding and keeping irrigation channels). From a more context-specific perspective, food may also be seen as a gift from nature which requires certain reciprocal obligations toward nature so that the functions are maintained through time (e.g., soil fertility, pollination, water cycles, availability of game). Furthermore, in many cultures, farmers blend such generalizing perspectives on NCP with their own much more context-specific relationships and values toward nature. Such mixtures require flexible analytical tools to understand how people’s values, knowledge, and social norms interact in the co-production of NCP (Box 1).

WEAVING GENERALIZING AND CONTEXT-SPECIFIC LENSES

Applications of NCP are demonstrating the utility of the two lenses at multiple scales (Box 1). The IPBES global assessment used the generalizing categories as a powerful tool for communicating, in a distilled way and at the scale of the whole planet, the magnitude of the challenge to human society from ongoing biodiversity declines. The IPBES assessment of pollinators,

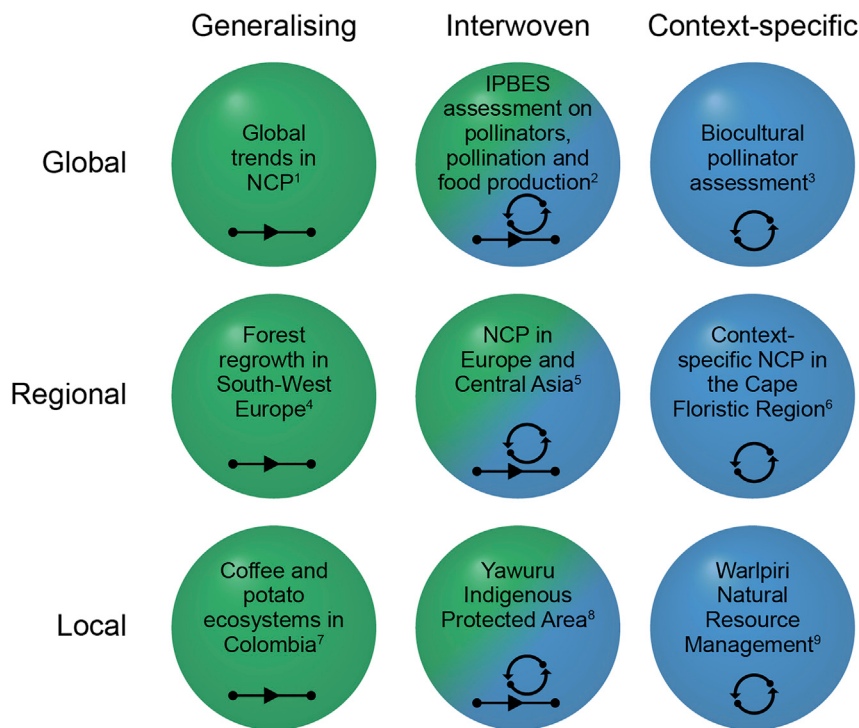


Figure 3. Examples of studies using the NCP framework

These studies were conducted at different scales (from local to global), from different perspectives (generalizing, context-specific, and interwoven), and with different understandings of the relationships between people and non-human nature as unidirectional or bidirectional reciprocal. One-way arrows indicate that the examples depict nature-people relationships as unidirectional, while circles of arrows indicate that the examples depict bidirectional reciprocal relationships between people and nature. The presence of both arrows indicates that both relationships were identified. The colors indicate the blue and green lenses (Figure 2D), or an interwoven mix. Superscript numbers indicate further reading as follows: ¹Brauman et al. (2020), ²IPBES (2016), ³Hill et al. (2019), ⁴Martín-Forés et al. (2020), ⁵Schröter et al., (2020), ⁶Topp et al. (2021), ⁷Bravo-Munro et al. (2021), ⁸Newman et al. (2019), ⁹Holmes and Jampijinpa (2013).

The degree of bidirectionality perceived to exist in the people-nature interface also varies across applications. The generalizing perspective provides only for unidirectional relations with nature to be assessed, while the context-specific and interwoven provide for both

unidirectional and bidirectional reciprocal relations to be assessed (Figure 3).

pollination, and food production used both lenses, while the associated assessment of biocultural approaches to pollinator conservation used only the context specific (Figures 3, top row). In the biocultural assessment, three bundles of NCP were identified from multiple cases from across the globe: (1) the practice of valuing diversity and fostering biocultural diversity; (2) landscape management practices; and (3) diversified farming systems.

At the regional scale, a recent assessment of the contribution of NCP related to forest regrowth in south-west Europe used only the generalizing lens, while the IPBES European and Central Asia Regional Assessment used both. In an assessment of NCP in the Cape Floristic Region of southern Africa, particular context-specific perspectives were identified that could not be fitted into the generalizing perspectives that were also used (Figure 3, middle row). In local-scale applications, an assessment of coffee and potato agroecosystems in Colombia used the generalizing perspective only; in the Yawuru Indigenous Protected Area in north-west Australia, both generalizing and context-specific lenses were used. Warlpiri natural resource management shows a rich example of a context-specific only perspective (Figure 3, bottom row). Both perspectives clearly can be applied at multiple scales.

The usefulness of weaving the generalizing and context-specific perspectives is not confined to assessments by indigenous peoples and local communities. Such weaving occurs in many other social-ecological contexts. For example, a study in Spain showed that the perceptions of benefits and detriments provided by scavenging vertebrates differed according to the context of farmers—those practicing transhumance had different local ecological knowledge of the benefits provided by scavengers than did sedentary farmers.

THE FUTURE EVOLUTION OF NCP

The NCP concept, as a transdisciplinary, action-oriented, inclusive approach that embraces pluralism, can provide a platform for efforts to understand how rapid changes in nature affect the quality of life across societies, ecoregions, and social-ecological systems. The advantages of NCP arise from the urgent need for cultural differences to be taken seriously in humanity's efforts to conserve and restore nature. The pluralistic approach provided by NCP, and the adoption of flexible mixes, can facilitate respectful collaboration between different knowledge systems and world-views, and ongoing evolution through application. It can also significantly enrich the empirical, methodological, and epistemological bases for action to stem the decline of nature for more just and sustainable futures.

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DECLARATION OF INTERESTS

The authors declare no competing interests.

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