

BiodivProtect call text

The Funding Organisations in Biodiversa+ Partnership
have joined efforts to organise and fund an

International call for transnational research proposals on

“Supporting the protection of biodiversity and ecosystems across land and sea”

(1) Context

Increasing biodiversity¹ loss and climate change are two of the world's major crises, and they are interlinked. Both will have serious and lasting impacts on human health, welfare and well-being (World Economic Forum, 2021; UNEP, 2021), and are pushing the planetary boundaries of biosphere integrity (Rockstrom et al. 2009). Trends in natural resource extraction, pollution and invasive alien species have also led to considerable declines in biodiversity and ecosystem services (such as food security and healthy diets, FAO, 2019), and are likely to continue to pose considerable threats, particularly in combination with climate change. More than three quarters of the terrestrial and freshwater habitats are affected by anthropogenic activities, and similarly overfishing, urban sprawl, nutrient run-off and climate change affect more than 85 percent of the marine biomes (IPBES, 2019). The costs of land and seafloor conversion, habitat fragmentation and use of wild species/wildlife trade can be huge; and the discussion of land-use induced spill-over effects have recently received more attention in the context of the Covid-19 pandemic (Reaser et al., 2020). Protecting (as well as restoring) biodiversity and well-functioning ecosystems are key to boost resilience of the EU's economy and societies to future threats (IPBES, 2020). Nature is also a vital ally in the fight against climate change and other global challenges (UNEP, 2021).

Land and sea use changes are amongst the major direct driver of the loss of both biodiversity and ecosystem services across the world, including in Europe and Central Asia. The impact of climate change on biodiversity and ecosystem services in the region is also increasing rapidly and is likely to be one of the most important drivers in the future alongside natural resource extraction including overexploitation, pollution and invasive alien species (IPBES, 2018).

¹ The Convention on Biological Diversity (1992) defines **biodiversity** as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems

Despite ambitious targets, Europe's biodiversity continues to be eroded and many agreed policy targets had not been achieved by the end of 2020 (EEA, 2020; European Commission, 2020a; JRC, 2020; CBD 2020). Similarly, assessments of species and habitats protected under the [Habitats Directive](#) for the period 2006-2012 revealed that 60% of species and 77% of habitats remain in unfavourable status (EEA, 2019). The European Union's [Natura 2000 network](#) of protected areas² and protected areas designated under national legislation are expanding but inland waters and marine habitats in particular remain poorly represented and conservation outcomes are generally not sufficient to halt biodiversity loss (EEA, 2020). Land and sea use change and direct exploitation in particular, can be managed through effective area-based conservation, with connected systems of protected and conserved areas (the latter also referred to as 'other effective area-based conservation measures', OECMs³). Increased connectivity between environmentally friendly managed and protected and conserved areas is needed to facilitate immigration and counteract possible extinctions, and to conserve response diversity of species communities for ensuring resilience of ecosystem services in changing environments (Grass et al., 2019; Woodley et al., 2019). Biodiversity conservation also raises questions on distribution of land and sea use, including by a growing global demand for food. Aspects of competition for land, as well as on respective benefits are discussed in relation to the concepts of land sparing (i.e. segregating land for nature conservation from land for productive use within a region) and land sharing activities (i.e. integrating nature conservation approaches into agricultural production/forestry across a region). National and international bodies have called for a shift toward more comprehensive marine ecosystem-based management that balances human activities and environmental stewardship in a multiple-use context (McLeod and Leslie, 2009). In addition, for many species also other types of protection measures may be needed to ensure the long-term protection of populations in their wild habitats across land and sea.

With its EU Biodiversity Strategy 2030 (European Commission, 2020b), Europe is ready to show ambition to reverse biodiversity loss by 2030, and adopt a transformative post-2020 global biodiversity framework at the 15th Conference of the Parties to the Convention on Biological Diversity. The Strategy commits, amongst others, to protect at least 30% of land and 30% of sea; with 10% of EU land and 10% of EU sea under strict protection, and to establish a truly coherent Trans-European Nature Network. It also requests Member States to ensure no deterioration in conservation trends and status of all protected habitats and species by 2030, and that at least 30% of species and habitats not currently in favourable status are in that category or show a strong positive trend. The EU is also raising the level of ambition and commitment worldwide, recognizing its increasing impact on biodiversity beyond its borders. For example, in line with the International Ocean Governance Agenda,

² The term “**protected area**” is defined in Article 2 of the CBD as “a geographically defined area, which is designated or regulated and managed to achieve specific conservation objectives”

³ The [CBD Decision 14/8](#) (2018) defines an **OECM** as “a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values”

the EU takes effort that a legally binding agreement on marine biological diversity of areas beyond national jurisdiction (BBNJ) is concluded. Greening trade, international cooperation and resource mobilization should also help to step up action globally, but science-based support will be needed to guide prioritization efforts, help identify the most important areas and species-specific measures for biodiversity and ecosystem protection, and to truly deliver on the new global targets.

Transboundary cooperation is needed to establish and strengthen regional networks of protected and conserved areas, to upscale species-specific measures, and to deliver on regional as well as global biodiversity targets. Research at pan-European and international level can help to ensure the effective conservation of habitats and species in coexistence with human activities, meeting the socio-economic, political and cultural needs of current and future generations. Such research would provide major advances in our knowledge, providing input to the implementation of the new EU Biodiversity Strategy for 2030 (European Commission, 2020b), the [EU Habitats and Birds Directive](#), the [EU Forest Strategy](#), the [Farm to Fork Strategy](#), the [EU Water Framework Directive](#), [Marine Strategy Framework Directive](#), the new [EU Strategy on Adaptation to Climate Change](#), the [EU IAS Regulation on invasive alien species](#) and several others. It will also contribute to the integration of biodiversity and protected and conserved areas into sectoral policies such as the [Common Agricultural Policy](#) (CAP), the [Common Fisheries Policy](#) (CFP) and the development of post-Covid nature-based recovery programmes (Kopsieker et al., 2021). Furthermore, it will also enable European commitments to the Convention on Biological Diversity (CBD), the UN Convention on the Law of the Sea (UNCLOS), the UN Decade of Ocean Science for Sustainable Development, and the UN Sustainable Development Goals, as well as provide information relevant to the role of healthy and diverse ecosystems as nature-based solutions for climate change impacts under the UN Framework Convention on Climate Change (UNFCCC) and in mitigating the impacts of land degradation foreseen under the UN Convention to Combat Desertification (UNCCD). More generally, research can also evaluate new approaches that could lead to new policy options not explored so far.

In this context, substantial inputs are expected from the research and knowledge community to provide science-based guidance to actions and policies aiming at conserving biodiversity at all levels (genes, species, ecosystems) and retaining ecosystem integrity⁴ across land, freshwater and sea, suggest new approaches and policy options, and foster the rigorous assessments of the outcomes of conservation actions and policies. These include a focus on, amongst others, upscaling of protection efforts (including increased quality, quantify, integrity of sites), establishment of effective and resilient ecological

⁴ **Ecosystem integrity** refers to the completeness and functionality of an ecosystem; it is maintained by avoiding fragmentation, degradation, and loss of connectivity

networks⁵, improving management of protected and conserved areas, identifying trade-offs between biodiversity protection and productive use of freshwater, marine and land resources, better understanding of enabling conditions ensuring long-term conservation outcomes, broadening the range of governance strategies in protected and conserved areas, and implementing a range of complementary area- and species-based protection tools.

(2) Priorities of the Call

This call is an opportunity to advance knowledge and inform more effective and integrative biodiversity management by enhancing the scientific underpinnings of biodiversity and ecosystem protection. It aims to support transnational research projects (3-years duration) focusing on measures regarding protected areas (including nationally designated protected areas), integrated area-based conservation measures reconciling conservation and sustainable use of biodiversity and ecosystem services (including in landscapes and seascapes used to produce food and fiber), as well as measures contributing to effectively protecting species in the wild. The call covers all environments, i.e. terrestrial, freshwater and marine. It also covers research on biodiversity conservation in the Outermost Regions (ORs) and Overseas Countries and Territories (OCTs) of the EU.

Applicants are invited to submit proposals addressing one or more of the three themes outlined below. Projects combining aspects from several themes are encouraged. This call is focused on the protection of biodiversity in the wild. This does not, for example, include efforts for restoration of habitats and species, or *ex-situ* conservation.

THEME 1 – Knowledge for identifying priority conservation areas, establishing effective and resilient ecological networks, enhancing species-based protection and preserving genetic diversity

Biodiversity is unevenly distributed over Europe and many protected areas have been established in areas where there is the least conflict with human needs, with a bias to areas that are less productive and at higher elevations (Venter et al., 2018). Directing conservation efforts to, and creation of new protected sites in **areas important for biodiversity**, including Key Biodiversity Areas (IUCN, 2016), and policy designations such as World Heritage Sites, Ramsar Sites, Ecologically or Biologically Significant Marine Areas (EBSA) seems effective in delivering conservation outcomes. Protected and conserved areas also need to be big enough to sustain large scale and long-term ecological and evolutionary processes, provide everything organisms need, and be resilient to future changes (including climate change, land use and other processes that fragment

⁵ An **ecological network for conservation** is a system of core habitats (protected areas, OECMs and other intact natural areas), connected by ecological corridors, which is established, restored as needed and maintained to conserve biological diversity in systems that have been fragmented (Hilty et al., 2020)

ecosystems, and other drivers such as pollution). **Ecological connectivity**⁶, through ecological corridors and stepping stones, and nature-inclusive management practices in the wider landscape and seascape (including land sharing, wildlife-friendly practices, human-wildlife coexistence practices and nature-inclusive design), can increase the effective size of protected and conserved areas by linking smaller units into **ecological networks**. Measures ensuring **ecological representation**⁷ of these networks will further help to ensure the long-term persistence of all species and ecosystems in a changing landscape and climate. Furthermore, **broadening the range of area-based conservation tools** (i.e. now also including OECMs, offering opportunities for recognition and support for other management approaches that effectively conserve nature; IUCN/WCPA, 2019) as well as enlarging the toolbox for species-based protection can help to achieve efficient outcomes.

In this context, major knowledge needs under this theme include (**non-exclusive list**):

- Research to support systematic planning for identifying/designating/implementing additional protected areas and integrated area-based conservation measures, to protect terrestrial, freshwater and marine systems taking into account trade-offs in multifunctional land- and seascape use as well as local conditions. This could include, amongst other topics, research to better quantify ecosystem services and determine their contribution in support to designing ecological networks that deliver biodiversity outcomes;
- Research to maximize the biodiversity potential of terrestrial, freshwater and marine habitats outside protected areas, and support a nature inclusive transition, to ensure an effective ecological network delivering on conservation outcomes;
- Better understanding of how the use of land, water and seafloor resources can change terrestrial, freshwater and marine ecosystems, and the implications for protected areas and species;
- Research to make ecological networks viable in a changing climate, and future proof land- and seascapes in different ecological, social and economic contexts;
- Research to understand and promote the complementary role of Key Biodiversity Areas and their safeguard through other mechanisms (e.g., UNESCO Biosphere Reserves, Ramsar sites, private Protected Areas, OECMs, Indigenous and Community Conserved Areas; blue corridors; urban green spaces) in conservation planning and management, and their link to existing protection schemes such as Natura 2000 network (for EU countries)/Emerald Network (for non-EU countries);

⁶ The UN Convention for Migratory Species (CMS, 2020 – resolution 12.26) defines **ecological connectivity** as “the unimpeded movement of species and the flow of natural processes that sustain life on Earth”

⁷ The goal of **ecological representation** is to have a representative sample of the full variety of biodiversity, at all levels of organization, to ensure the long-term persistence of all species and ecosystems within a protected areas network (CDB, 2010)

- Better understanding of aspects related to ecological connectivity – including amongst other: quantifying the importance of effective habitat connectivity (allowing for species movements and preventing genetic erosion); better understanding of the relation between structural and functional connectivity, and of temporal dimensions; how to implement connectivity in a multi-jurisdictional context; and assessment of feasibility of implementation of ecological corridors (continuous and stepping stones), as well as their effectiveness;
- Research on the level of protection, management effectiveness and connectivity needed to deliver positive biodiversity outcomes;
- Research to support the legal identification, registration and protection of ecological corridors in the European context;
- Identification of most effective models (including appropriate financial and administrative instruments) of establishing and implementing protected areas in a European context;
- Research to support prioritization approaches that would not only preserve species numbers and ecosystem services (including potential for carbon sequestration, pollination potential, groundwater recharge etc.), but also evolutionary and functional components of biodiversity;
- Better knowledge to safeguard species, genetic and ecosystem diversity, considering the different causes, challenges, and consequences of different protection strategies and ethics and recognizing that some taxa and ecological/functional groups, environments (e.g. freshwater and marine) and dimensions of biodiversity (e.g., genetic and functional diversity, along with evolutionary processes) still need to be better accounted for in conservation approaches

THEME 2 – Multiple benefits and costs of biodiversity and ecosystem protection: synergies and trade-offs

Biodiversity and ecosystem protection can have **positive and negative impacts** on multiple components of human well-being by changing the availability of and access to ecosystem services, transforming institutional arrangements and power relationships, and through developing activities such as tourism (Woodhouse et al., 2018). For example - effectively managed protected areas are a critical tool for safeguarding biodiversity, maintaining ecosystem integrity, preserving important habitats for species, building resilience to climate change, providing food security, maintaining water quality, curbing spread of diseases and pests, and providing several other **benefits** to wildlife and human health. Protected areas can, however, also come with a societal **cost** such as displacement of local communities, crop damage by wildlife, and restricted access to resources and/or changes in land tenure (UNEP-WCMC, 2008). Similarly, ecological connectivity can be associated with costs (such as those related to spread of zoonotic diseases, invasive

species and other threats operating through contagion) as well as benefits (UNEP-WCMC/IUCN, 2021). The nature of costs and benefits (not only economic, but also socio-ecological aspects) can vary depending on the protected area's status and governance, as well as its history of use. Optimizing conservation and other land and sea uses to reach biodiversity targets while minimizing costs is key to ensure sustainable land management, and to maintain values critical to sustainable development (Di Marco et al., 2016).

Major knowledge needs under this theme include (**non-exclusive list**):

- Analyse the contribution that existing protected areas and ecological networks can make as nature-based solutions to global challenges, food and water security and human health and well-being; assess their long-term socio-ecological benefits;
- Better understanding of carbon storage and sequestration potential of remaining primary and old-growth forests, as well as other carbon-rich ecosystems such as grasslands, wetlands, saltmarshes and seagrass meadows, and the dependence on different management practices (including animal husbandry);
- Developing models and scenarios to assess future conservation needs and adaptive management in the face of global change including assessment of climate refugia (also Theme 1);
- Knowledge and experiences from integrated protected area management to support better implementation of landscape and seascape approaches, such as the biosphere reserve concept, for reconciling conservation needs with agriculture, forestry, urbanisation, fishing, infrastructure building, tourism and other competing land and sea uses (also Theme 1);
- Assessment of benefits and costs from different conservation strategies like assisted colonization, land sharing versus land sparing, and rewilding or not-rewilding, and also in the context of other strategies (spatial plans, economic development plans, etc.); research on where, and how such approaches contribute conservation outcomes in a global change context (including scenario studies)
- Research on possible negative impacts of corridors (e.g. increased predator activities, movement of invasive alien species and diseases, micro-habitat changes,...), and on human-wildlife conflicts;
- Economic valuation studies to assess the contribution of protected and conserved areas to local and regional economies and to indigenous people;
- Research to support tools and approaches mitigating trade-offs, and moving to win-win situations; how to ensure equal distribution of costs and benefits (distributive equity);
- Assessing trade-offs within and between different social and ecological outcomes, across spatial and temporal scales, and social groups;
- Analysis of synergies and trade-offs in achieving global biodiversity targets, including but not restricted to expanding protected areas;
- Developing and testing a broader set of economic and social-economic metrics to create further incentives for biodiversity and ecosystem protection.

THEME 3 – Effective management and equitable governance to deliver bold conservation outcomes

Area targets alone are insufficient to halt biodiversity loss, and must be accompanied by a focus on quality and connectivity, including both **sound governance and effective/adaptive management** (Haddan et al., 2015; Geldmann et al., 2018). A large proportion of protected areas globally as well as in Europe are not well protected or effectively managed (Edgar et al., 2014; Gill et al. 2017), with many designated areas still threatened by loss of habitat, fragmentation and exploitation activities that are incompatible with conservation objectives. Transnational research to improve management approaches (including comparative analysis of the effectiveness of existing protected areas) is needed to deliver conservation outcomes and reach global benchmarks, while supporting a participatory approach. Moreover, while the majority of the world's protected and conserved areas are managed by governments, governance by indigenous and community groups, privately protected areas and mixed models are becoming increasingly recognised (IPBES, 2019). For example, while the EU's Natura 2000 Network includes strictly protected nature reserves, most of the land remains privately owned. Research can help to further develop **inclusive and adaptive governance strategies**, accounting for specific roles and needs of vulnerable/marginalised groups; and to better understand conservation implications for protected area downgrading, downsizing and degazettement (PADDD⁸) as currently ongoing in several countries around the world. Finally, development of robust but practical counterfactuals for assessing protected area impacts would be hugely beneficial.

Major knowledge needs under this theme include (**non-exclusive list**):

- Comparative analysis of current protected area governance and management approaches to determine what delivers effective conservation on land and at sea (e.g., levels of protection, governance, institutional, cultural and socioeconomic contexts); how to overcome implementation challenges;
- Research on different motives for protection (including for different sectors) and influence of power constellations upon these; role of incentive and sanctioning mechanisms; what are the enabling conditions that can ensure long-term conservation outcomes;
- Strengthened knowledge base for rights-based approaches in biodiversity and ecosystem protection, also reflecting plurality of world views, knowledge systems, different needs and values views and ensuring equity in all its dimensions (including

⁸ **Protected area downgrading, downsizing and degazettement (PADDD)** refers to legal changes that ease restrictions on the use of a protected area, shrink a protected area's boundaries or eliminate legal protections entirely (<https://www.conservation.org/projects/paddd-protected-area-downgrading-downsizing-and-degazettement>)

- recognition of different actors and their values, distribution of costs and benefits, and procedural rights);
- How to integrate development issues including human rights and social safeguards issues in biodiversity protection schemes;
 - Identification of the role and effectiveness of existing types of protected areas, OECMs and other targeted conservation measures (e.g., for genetic diversity, individual species, or ecological function) in achieving bold conservation targets;
 - How to ensure sustainable management of landscapes and seascapes, and therefore long-term conservation outcomes in areas outside designated protected areas. This includes, amongst others, comparison of nature inclusive management methods in forests, grasslands and croplands and assessment of their effectiveness in view of biodiversity and ecosystem protection;
 - Assessing, enhancing and monitoring the effectiveness of protected areas against identified standard metrics;
 - Optimizing spatial planning in marine ecosystems to establish no-take MPAs for biodiversity conservation and enhanced fisheries production;
 - How to increase the participation of all relevant stakeholders (including indigenous peoples, vulnerable and minority groups) in the elaboration and implementation of effective conservation management plans; how to maximize acceptance and overcome societal opposition;
 - How to decrease the pressure on protected and conserved areas from infrastructure, industrial and agricultural activities;
 - Conceptual frameworks to address socio-ecological conflicts arising within protected areas (including human-wildlife conflicts);
 - How to ensure a broad scale spectrum approach to biodiversity protections (e.g., through species-based approaches; protected areas, ecosystem-based management, OECMs and non-traditional conservation tools);
 - Investigating current and potential modalities for sustainable financing and other incentives for effective protected areas and OECMs; what works well, and under which conditions;
 - How to ensure ecological integrity of the last-remaining highly intact ecosystems, in Europe and globally;
 - Conservation implications of protected area downgrading, downsizing and degazettement (PADDD);
 - Legislative analyses to guide recognition of privately protected areas and OECMs on private land.

(3) Expected impacts and transnational added value

The unique diversity and characteristics of various places and regions mean that it is necessary to understand the details of local biodiversity, ecosystems and socio-cultural conditions in order to support effective actions for biodiversity protection across land and sea. However, research to be funded through this Joint Call co-funded by national/regional funders and the European Commission will have to go beyond single study cases. The

physical, biological and social processes associated with biodiversity protection take place at a range of spatial scales, from the local to regional and global. Therefore, a sufficient understanding of the spread and connection of these processes cannot be revealed by research at a single local site, but rather relies on studies at multiple sites and scales. These in turn need to take explicit account of the ways in which processes at one scale might drive or constrain processes at one or more other scales, and how results obtained at one or a few sites are specific to these locations but also include generalities that apply across many places. A robust understanding of biodiversity protection is thus most efficiently and effectively developed through transnational collaboration. In addition, the contemporary situation of vast regional interactions/teleconnections often requires to take into account the global context. Research projects can therefore include study sites in non-European countries, as long as the transnational added value can be illustrated.

In term of methods, transnational collaboration in model development and the inter-comparison of different models is one of the approaches to be supported to advance research on biodiversity protection. Learning and information sharing is also key to social adaptation. Therefore, project participants will benefit from a collaborative approach to the problem.

Projects may cover a broad range of methodological approaches (experimentation, data analysis from observations and monitoring, modelling, scenario development, quantitative and qualitative social science methods, participatory processes, etc., or a combination of these). This call aims at funding transdisciplinary research projects demonstrating academic excellence, as well as potential societal impact and policy impact (see: [BiodivERsA Guide on Policy Relevance](#)). Research projects should thus provide relevant information for policy makers, authorities, institutions and practitioners concerned with decision making, planning, designing and managing a broad range of environments and outreach to society. More generally, applicants should consider how the knowledge can be co-produced with stakeholders, and disseminated in outreach actions in order to maximize societal impact (see: [BiodivERsA Guide on Stakeholder Engagement](#)). Participation of stakeholders (including private stakeholders) in research proposals is welcome.

This call will support research projects in which the approaches and skills of natural sciences, social sciences and humanities are integrated as needed to address the specific objectives of each research proposal.

As usual, it is expected that applicants will explicitly make clear the novelty of their research and how it adds to the existing knowledge base, including previously funded, ongoing projects. Large overlap with on-going international, European and national projects on this theme must be avoided. Complementary on-going research is, however, possible but must be clearly explained.

Applicants are encouraged to use existing resources and infrastructures for their project, including the data and information from Earth Observation Programmes such as Copernicus, and the existing biodiversity research infrastructures (see: [BiodivERsA Mapping of Biodiversity Research Infrastructures](#)). Link with projects funded under the LIFE Programme is also encouraged.

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