Managing Risks to Conservation Investments Through Climate Adaptation

A Practical Guide for Funders

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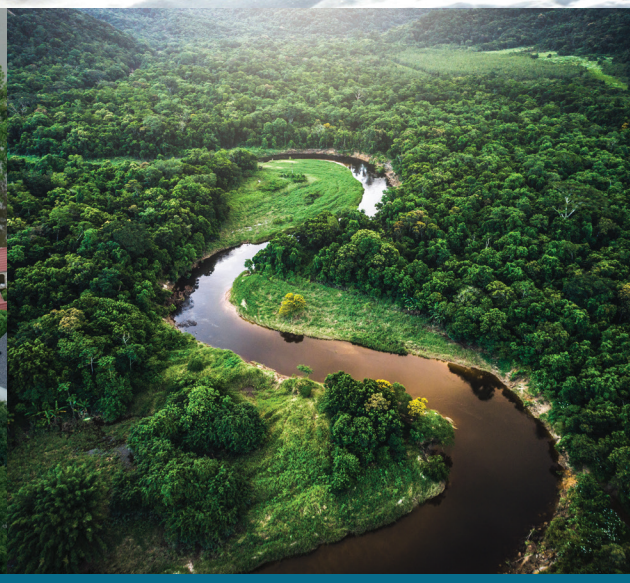

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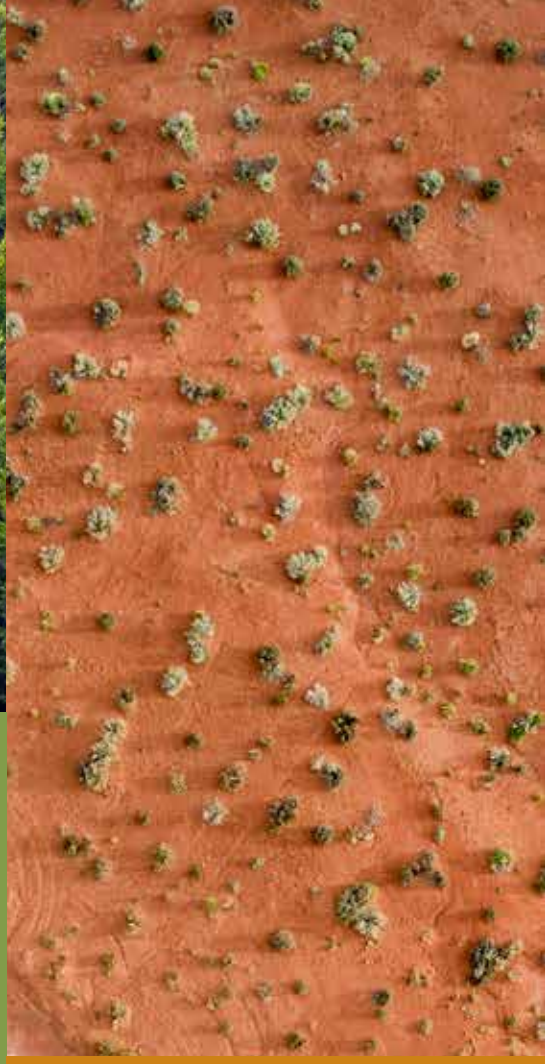
THE PROBLEM:

As climate change advances and its pace quickens, traditional conservation goals and strategies are increasingly at risk of failure.

THE SOLUTION:

An investment approach that accepts and incorporates the effects of climate change helps to secure and support conservation outcomes.



A CALL TO ACTION:

Conservation funders should assess the risks climate change poses to their strategies and goals, make climate-smart grants, and build the capacity of their grantees to consider climate change risks.

Summary

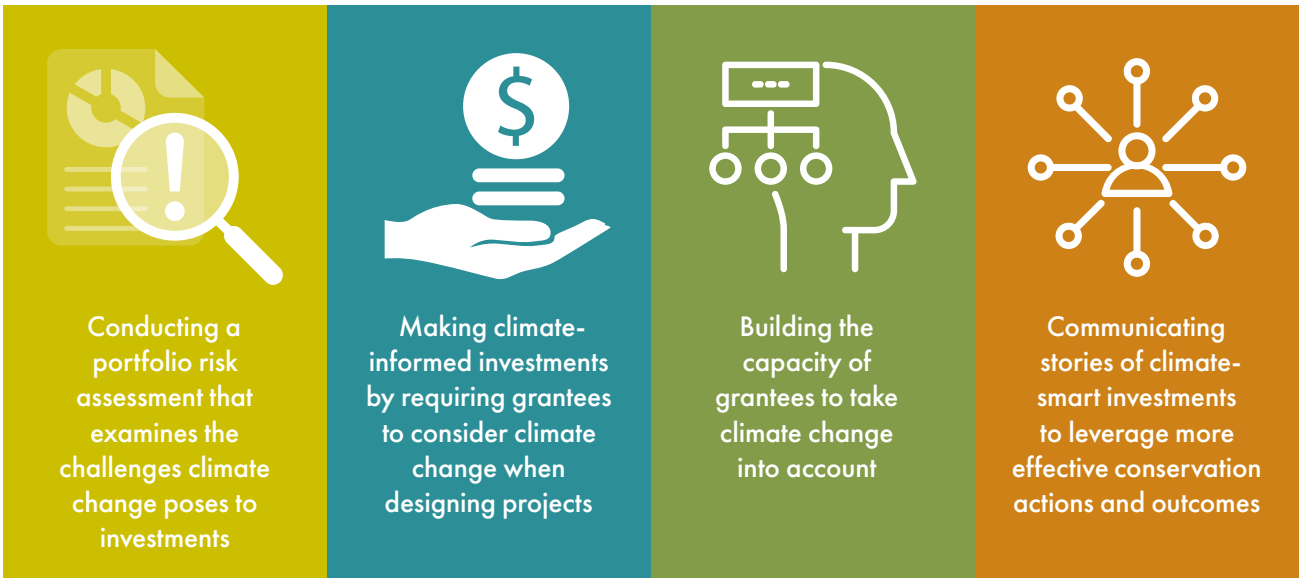
The Problem: As climate change advances and its pace quickens, traditional conservation goals and strategies are increasingly at risk of failure.

The scientific consensus is clear: climate change is happening and human activities, including fossil fuel emissions and land conversion, are the reason. Because climate governs the basis for life, changes in climate will affect natural systems and species around the globe. For conservation investors—philanthropic organizations, private donors, public agencies, and local governments—this presents a challenge. Without deliberate consideration of climate change risks, conservation investments could literally go up in smoke with more severe wildfires, be drowned by rising seas, or wilt during longer and hotter droughts.

The Solution: The good news is that there is an approach to conservation investing that can safeguard investments by assessing climate risks and advancing efforts to adapt to a changing world.

We offer practical guidance on how funders can advance conservation outcomes by being intentional about considering climate change in their funding strategies, and embracing rather than resisting changes that are underway or imminent. The experience of the Wildlife Conservation Society's Climate Adaptation Fund*, which has invested over $16 million in climate-informed conservation actions in the United States since 2011, offers a model for putting this forward-looking investment approach into practice.

A Call to Action: Conservation funders can take the lead on advancing a more adaptive, forward-looking approach to conservation by:



This new way of doing the business of conservation investing—by accounting for and reducing climate change risks—is necessary to secure more durable outcomes for wildlife and ecosystems, and the people who depend on them.

*https://www.wcsclimateadaptationfund.org/; "We" throughout the report indicates the authors, all of whom have been involved in creating, administering, or advising the WCS Climate Adaptation Fund since its inception.

The Case for Climate-Smart Conservation

In October 2018, the United Nations' Intergovernmental Panel on Climate Change (IPCC) issued a special report on the accelerated pace and magnitude of of human-caused climate change.[1] The report's findings are sobering: if greenhouse gas emissions continue at their current rate, the earth's atmosphere could warm by as much as 2.7 degrees Fahrenheit by 2040. This pace of change is faster than earlier forecasts by the IPCC, and likely to result in devastating impacts such as coastal flooding, drought, wildfires, food shortages, and myriad disruptions to populations and economies.

These changes are already underway in the United States and are projected to have a significant impact on biodiversity and ecosystem services. How do we know? The U.S. Global Change Research Program is legally mandated to produce a National Climate Assessment (NCA)—a state-of-the-science synthesis of recent changes in climate and projections for the future—every four years. The most recent NCA was completed in 2018,[2] and provides details on the risks facing water resources, forests, coastal areas, transportation, and cities.

The chapter on ecosystems, ecosystem services, and biodiversity is particularly relevant to conservation investors, and includes these findings (p. 269[2]):

"Climate change continues to impact species and populations in significant and observable ways... by altering individual characteristics, the timing of biological events, and their geographic ranges... extinctions may occur when climate change outpaces the capacity of species to adapt."

"Climate change is altering ecosystem productivity, exacerbating the spread of invasive species, and changing how species interact with each other and with their environment."

"The resources and services that people depend on for their livelihoods, sustenance, protection, and well-being are jeopardized by the impacts of climate change on ecosystems... [Including] changes in agricultural and fisheries production, the supply of clean water, protection from extreme events, and culturally valuable resources..."

These findings pose serious risks for conservation investments, for example:

Conservation projects designed to improve habitat for forest-dependent species are increasingly at risk from larger and hotter wildfires that could trigger transformative changes to those ecosystems.

Coastal conservation easements could become inundated by rising seas, effectively drowning investments designed to protect valuable coastal habitats that also buffer human communities from storm surges.

Some protected areas may currently be too small or isolated to enable species to successfully adapt to climate change by moving and tracking favorable conditions.

Warmer surface waters may harbor more bacteria and pathogens, creating new challenges for the provision of clean drinking water.

What can conservation funders do?

As the impacts from climate change intensify, the urgency for conservation approaches to evolve to address these new and complex challenges grows. The practice of anticipating and proactively preparing for future changes in climate is the essence of "climate adaptation."[3] Applying climate adaptation to conservation activities is also referred to as "climate-smart conservation."[4] **Climate adaptation and climate-smart conservation do not embody a new category of actions, but rather the inclusion of information about changing climate risks in the design of goals and actions.**

Investors who want to protect a valued species or ecosystem, sustainably manage natural resources, improve air and water quality, or achieve environmental justice outcomes, must address the risks climate change poses to those goals to increase the long-term performance of their investments. Some conservation investments will remain robust in the face of a changing climate, such as the protection of large, relatively intact ecosystems.[5] But arguably all conservation strategies, including the designation and management of large reserves, should be examined to ensure that they are designed to be effective under rapidly changing conditions.

We encourage conservation funders to take steps to address climate change risks in their investments as an essential component of goal-setting, strategy development, and grantmaking due diligence. That is to say that the principles and practices outlined in this report should be applied to decision-making processes much in the same way as an investor considers the financial health, leadership, and technical expertise of prospective grantee organizations. Doing so will result in greater payoffs from conservation investments, and better outcomes for both nature and people.

This report outlines principles and practices to help conservation investors reduce the risks that climate change poses to their goals and strategies. It is also a call to action to conservation investors, who can lead the way in catalyzing the adoption of a more holistic, adaptive approach to conservation. To illustrate these principles and practices, we reference the experience of the Wildlife Conservation Society's Climate Adaptation Fund, a program that has invested more than $16 million in over 90 climate-smart conservation projects across the United States between 2011 and 2018.

CLIMATE ADAPTATION-

Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.[3]

CLIMATE-SMART CONSERVATION-

The intentional and deliberate consideration of climate change in conservation, realized through adopting forward-looking goals and explicitly linking strategies to key climate impacts and vulnerabilities.[4]

Photo: Alicia Beattie, Chagrin River Watershed Partners, Inc.

WCS Climate Adaptation Fund

As new climate science has emerged, the Wildlife Conservation Society (WCS) has made targeted adjustments to its conservation work, including philanthropic investments made through the Climate Adaptation Fund ("the Fund"). Driven by concerns that **conservation investments could literally go up in smoke with more severe wildfires, be drowned by rising seas, or wilt during longer and hotter droughts projected with climate change,** WCS and the Doris Duke Charitable Foundation worked with an Advisory Council of experts on climate change and conservation to create this new grantmaking program in 2011.

The Fund is unique among conservation funding programs in that it was developed and capitalized specifically to advance conservation success by testing actions designed to help wildlife and ecosystems adapt to the impacts of climate change. Although the Climate Adaptation Fund targets on-the-ground conservation activities, the principles and practices presented in this report are equally applicable to programs that support conservation advocacy, public lands management, sustainable land use and development, sustainable resource management, and the prioritization of conservation targets more broadly. The Fund's grantmaking criteria are designed to maximize and secure conservation impact by ensuring that grantees accept the reality of climate change as a central assumption when devising their strategies and tactics.

Climate-Smart Investment Principles

Since 2011, WCS and its Advisory Council have wrestled with the challenge of designing a funding program that advances the sound stewardship of philanthropic resources in a time of rapid climate change. The Fund offers a practical model for this new approach to conservation investing that is driven by the principles of climate adaptation to support climate-smart conservation:

> ***When setting conservation investment goals and strategies, investors must* be intentional *about considering climate change and* embrace changes *in climate to reconcile the effects on species, ecosystems, and natural resources.***

The next two sections detail the principles of being intentional and embracing change in the service of enabling climate-smart conservation using examples drawn from the WCS Climate Adaptation Fund.

Origin of the WCS Climate Adaptation Fund

In the summer of 2010, after a morning hike across a rapidly melting glacier above the town of Girdwood, Alaska, staff of the Wildlife Conservation Society and partners at the Doris Duke Charitable Fund (DDCF) met to discuss future strategy for the Wildlife Action Opportunities Fund. That regranting program supported the implementation of state wildlife action plans throughout the United States from 2006-2010. WCS and DDCF were concerned that the roughly $1.5 million they were investing each year could be undermined by the effects of a changing climate.

WCS had dipped its toes into climate adaptation investing by making a few grants aimed at responding to the growing threat that climate change posed to species and ecosystems. However, that level of investment had begun to feel inadequate in light of the increased recognition of the climate crisis by the scientific community. Despite progress in research on climate change impacts and a growing number of local and regional climate adaptation planning efforts, there was an urgent need for increased efforts to ground truth climate adaptation principles and practices in the field.

WCS and DDCF created the Climate Adaptation Fund to fill this gap by accelerating learning and adoption of adaptation practices and inspiring the conservation community to pivot their work towards climate-smart conservation. The Fund targets early adopters of new climate science, ideas, and innovative practices—at times experimental or counter to the tenets of traditional conservation approaches. These investments enable practitioners to test innovative, climate-informed approaches to conservation that are more likely to lead to durable conservation outcomes in a changing climate.

Be Intentional

Many entities are now calculating climate risks into their operations and investments, including many cities and smaller communities, the agricultural sector, U.S. Department of Defense, corporations, insurers, and hedge fund managers.[6] Foundations and other philanthropic entities would be wise to take similar steps. Indeed, some foundations are already doing so and there is evidence within the sector of interest in doing more, but until now there has been a dearth of guidance available to support this shift. Methods for being more intentional about the consideration of climate risks in conservation investments can be considered as stages along a continuum, from Empower to Require and then Equip, which denotes greater degrees of intentionality the further along an investor goes:

Continuum of Intentionality for Conservation Investors

Empower

- **Assess grantmaking goals and strategies to determine climate risk factors and, if necessary, modify to take climate change into account.**
- **Ask grantees how their proposed programs or projects take climate into consideration and how.**

Every investor should assess their grantmaking goals, strategies, and existing portfolio by asking "the climate question": 'What risks does climate change pose to our goals and strategies, and how are we addressing those risks?'[7] Funders must also ask their applicants and grantees to answer the climate question. While not every investment will be vulnerable to climate change, there are likely to be important risk factors, some of which can be mediated. Simply posing the climate question does two things: 1) It signals to boards, peers, and other stakeholders that climate change is an important consideration for a strategic investor; and 2) It forces current and future grantees to identify blind spots, challenge assumptions, and think more deeply about how their goals and strategies are affected by changes in climate.

Require

- **Actively and iteratively incorporate climate change considerations into investment goals and strategies.**
- **Include the consideration of climate change and adaptation as part of grantmaking criteria and eligibility requirements for funding.**

Ideally, the examination of conservation goals and strategies relative to the expected impacts of climate is not an exploratory or rhetorical exercise, but one that is required of applicants by the funder as a condition for receiving support. Requiring the incorporation of climate change considerations involves asking specific, detailed questions about the climate science that grantees have considered and how that science has influenced the design of the project's goals and actions. Grantmakers can then make funding decisions based on the quality or thoroughness of applicants' responses.

Equip

- **Engage climate adaptation experts and resources when setting investment goals and developing strategies.**
- **Build the capacity of grantees by supporting the addition or development of expertise within grantee organizations.**

Requiring climate considerations will take some applicants or grantees beyond familiar territory, requiring new skills, capacities, or at the very least access to new information and technical resources. Conservation funders should consider investing in grantees' capacity to evaluate and incorporate climate risks. Examples for doing so include providing financial resources for hiring new staff, supporting efforts to partner with outside climate experts, and supporting grantees to attend climate adaptation trainings and conferences such as the National Adaptation Forum. Funders can also invest in climate service resources, research, and analysis of climate vulnerabilities, sensitivities, and impacts.

Grantmaking Criteria for Assessing Intentionality

To evaluate the intentionality of projects submitted to the Fund, WCS staff and Advisory Council members look for projects that **are grounded in the best available climate science, and clearly connect the dots between climate science and project planning, actions, and conservation goals.**

Grounded in the best available science

The primary impacts of climate change include changing precipitation patterns, rising temperatures, and increased flood or fire risks. Climate change impacts also include indirect stresses caused by climate-driven shifts in land and resource use by people (e.g., expanding croplands or increased irrigation demands). The Fund requires applicants to describe the specific challenges that climate change poses to a project's targets and to cite the climate science that they relied on when designing their strategy. Best-available climate science can include modeling, field or lab experiments, observational studies, and the recommendations of knowledgeable climate change experts. Applications that rely on more local, down-scaled analyses and expert opinions specific to the region where the project is taking place receive higher scores.

Photo: Justin Bowers, The Natural Areas Conservancy

Example: Using future climate suitability models to design climate-smart tree planting palettes - The Natural Areas Conservancy and the New York City Parks Department are incorporating models of how climate change may alter future distributions of tree species into its efforts to restore and improve forested habitat within the City's public parks. Rather than restoring forests with species currently residing there, they consulted projections from the Climate Change Tree Atlas[8] and the Conservancy's citywide ecological assessment data to select and plant tree species that are expected to thrive under future climate conditions.

Connects the dots between climate science and project planning, actions, and goals

The Fund requires applicants to describe how climate science has shaped the design of their proposed project goals and actions. This includes asking about their adaptation planning process and how that process influenced their selection of proposed conservation actions. Applicants must complete an Outcomes Table that lays out their assumptions about how proposed actions should lead to conservation outcomes in the near term (3-10 years) and longer-term (10-50 years) (see the Fund's Applicant Guidance Document for an example).

Photo: The Nature Conservancy

Example: Participatory adaptation planning to identify and prioritize actions - The Nature Conservancy in Colorado (TNC) convened scientists and managers to develop strategies for improving conservation outcomes for sage steppe habitats in the face of a changing climate.[9] Using the Adaptation for Conservation Targets (ACT) Framework[10] to guide their planning, participants linked climate change impacts of concern to adaptation strategies. As a result, diverse local partners are now taking actions that are better designed for reducing the negative effects of hotter droughts and more frequent heavy rain events, and targeting areas that are projected to be suitable for sage steppe ecosystems as the climate changes.

Embrace Change

Ecological responses to climate change are already underway.[2] Given that human activities have committed the planet to decades—if not centuries—of additional warming, these changes will only continue and are likely to accelerate.[11] This new reality presents challenges to traditional conservation approaches. For example, approaches that focus on protecting plants, animals, and ecosystems in the places where they are found today (or where they used to be found in the past) may be difficult to achieve if suitable climate and habitat conditions are no longer found there in the future. Similarly, the restoration of degraded ecosystems to an historic benchmark may be incompatible with future climate conditions. In many cases, restorative approaches will need to be altered or abandoned in favor of more forward-looking strategies, including those that go so far as to actively facilitate ecological transformations that are driven by a changing climate.

Conservation funders and practitioners must begin to understand, incorporate, and accept climate changes, or risk that their investments will be undermined at the very least or fail outright.

Taking steps to account for climate risks within a grantmaking program does not necessarily require the abandonment of existing goals, strategies, or investments. Many traditional conservation strategies will continue to be important to help nature adapt in a rapidly changing climate—for example, the protection of large and relatively intact ecosystems, efforts to connect existing reserves, and actions to reduce or reverse human stressors such as habitat degradation, overharvest, or the spread of invasive species.

However, climate change will introduce uncertainty and more variable conditions to even the most remote and intact ecosystems. It is therefore important to ask critical questions about whether a program or portfolio is positioned to achieve desired outcomes as the climate changes. In some cases, taking climate change impacts into account may reinforce the appropriateness of current goals and actions. But in many situations, conservation strategies may need to shift in order to be effective as the climate changes. An investor may decide to redefine goals or make tactical adjustments in the design, placement, or timing of actions in ways that give species and natural systems the best chances of adapting to the rapid changes that are underway.

Ultimately, we encourage greater investment in projects that are designed to accommodate or even facilitate ecological transformations. Doing so is essential to supporting conservation values in places projected to undergo significant climate-driven changes—for example by ensuring that protected or restored areas will continue to protect wildlife and ecosystems even if the species and systems are different from what was there in the past.

Grantmaking Criteria for Embracing Change

To assess how a proposed project embraces change, Climate Adaptation Fund staff and the Advisory Council examine whether it is **designed for long-term conservation impact in the face of anticipated climate changes, and is doing something different or particularly strategic to help wildlife and ecosystems adapt to a changing climate.**

Designing projects for long-term conservation impact

The Climate Adaptation Fund favors projects that enable or even facilitate the transition of climate-impacted habitats to new, functional ecological states, rather than projects that are geared to maintain historic conditions that are unrealistic in the face of a changing climate. The Fund also prioritizes projects that focus on the structure and functionality of ecosystems, rather than conserving individual species. This criterion embraces the perspective that conserving ecological functions may be more feasible and cost-effective than maintaining every individual species in the places where they are currently found.

Photo: Scenic Hudson

Example: Enabling the inland migration of coastal ecosystems - In the Hudson River estuary in New York, the Scenic Hudson Land Trust has been protecting land based on modeled projections of sea level rise and tidal wetland responses. They have used these projections to prioritize the conservation of lands immediately upslope from wetlands that have the potential to migrate inland. By proactively securing such areas from development, and managing them to facilitate the wetland migration, the project is helping to ensure the long-term persistence of brackish and freshwater wetland habitat for wildlife and other ecosystem services.

Doing something different to help wildlife and ecosystems adapt

Successful grantees are able to describe either how their consideration of climate change has reinforced the need for actions they are currently taking, or discuss what they are doing differently. The Fund promotes innovative projects that are making strategic adjustments to the kinds of actions that are being implemented (WHAT), where actions are located (WHERE), when actions are needed (WHEN), and what goals those actions are designed to achieve (WHY). The WCS report "Embracing Change" highlights 12 examples of how practitioners are altering the what, where, when and why of their conservation projects.[12]

Photo: Chuck Haney

Example: Changing the WHERE: Prioritizing stream restoration in basins that are more likely to sustain late season flows - Traditionally, restoration funding in southwest Montana has been directed towards streams that are occupied by native fish. With mountain snowpacks melting out earlier, reducing natural water storage for the dry period in late summer, The Nature Conservancy and its partners are now taking a different approach to selecting areas for restoration. Rather than relying solely on maps of native fish distributions, they are prioritizing stream basins whose physical characteristics—elevation, slope, and aspect—make them more likely to hold water into hotter and drier summers. Even as the climate warms, these basins are expected to provide more reliable flows in the summer months when water is needed most by fish, wildlife, ranchers, and anglers.

Adapting the Practice of Conservation Funding

During the Climate Adaptation Fund's first two years of operation, only a few applicants were able to demonstrate clear application of climate adaptation principles to qualify for grant funding. It was apparent that WCS needed to direct more energy to building the conservation community's knowledge of adaptation practice and capacity for incorporating it effectively. WCS responded by developing an Applicant Guidance Document to describe the desired characteristics of a strong proposal to the Fund and revising the guidelines to ask more pointed questions about the climate science that applicants consulted when developing projects. WCS adaptation specialists also partnered with local experts to offer trainings on climate-informed conservation planning to practitioners in several regions of the United States. Finally, the Fund began to invest in strategic communications efforts designed to raise awareness of the importance of climate adaptation and amplify the impact of funded projects.

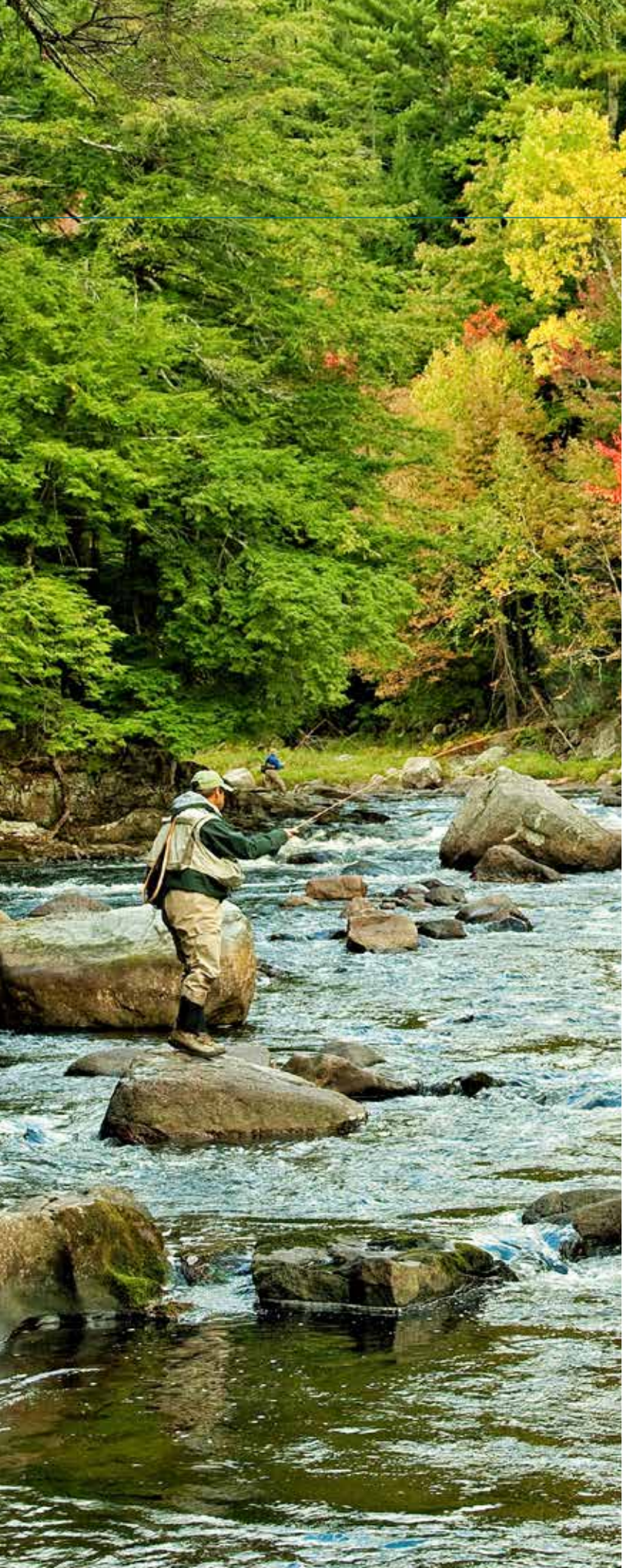
These communications investments included efforts led by WCS—such as a website, video shorts, and a series of reports[12, 13]—to share stories of how grantees were accounting for climate change in their work and to inspire others to do the same. It also involved incentivizing grantees to conduct strategic outreach by allowing up to $25,000 of grant requests to go towards activities aimed at encouraging the broader adoption of adaptation practices, leveraging greater investment in adaptation actions, or catalyzing supportive regulatory or policy changes.

Photo: The Nature Conservancy

The field of climate adaptation has changed significantly since the early years of the Climate Adaptation Fund. This is evidenced in part by a demonstrable increase in the number of strong proposals submitted to the Fund over time, but this is not the only indicator of changing practice. For example, U.S. federal and state government agencies are more routinely developing and implementing climate adaptation strategies as part of their operations, and a number of conservation organizations—large and small—have increased their internal adaptation capacity or know where to find it. There is a multitude of technical resources available to support adaptation, and expertise for hire, for decision-makers looking to gain a better understanding of how climate change will impact their interests.[14]

Despite this progress, adaptation is not employed as widely or uniformly as it must be given the pace of climate change. Much conservation is still geared towards preserving and protecting species or places with little consideration for the ways in which climate and other conditions are changing and will change in the future.

Adaptation is a practical approach for dealing with the uncertainty and variability that climate change will bring. Incorporating its principles and practices is the best means a conservation investor has for anticipating and reducing climate-related risks to the values and goals that drive investment strategies. The principles and practices outlined here and exemplified by the experience of the WCS Climate Adaptation Fund offer a comprehensive strategy that any conservation funder can use to better steward the financial resources directed to conserving nature in a changing climate.



Using Strategic Communications to Leverage and Scale Adaptation Outcomes

While the need for climate-smart conservation is urgent, the practice of applied adaptation within the conservation sector is still maturing. A primary driver for the Climate Adaptation Fund grantmaking priorities has therefore been to seek out projects that serve as tangible demonstrations of adaptation action and promote them as models for others to replicate. The Fund therefore selects projects that not only are designed for long-term conservation outcomes, but that include strategic communications activities to attract the attention of other potential implementers and policy makers. This also has the effect of catalyzing additional funding for climate adaptation from both the public and private sector. A few examples include:

In the Great Plains, **a $147,000 grant** to the Playa Lakes Joint Venture to restore 20 seasonal playas that both feed the Ogallala aquifer and provide habitat to migratory waterfowl **will lead to over $1 million** in additional investments from the State of Texas and Ducks Unlimited to restore more than 200 additional playas in the coming decade.

On the eastern shore of Maryland, **a demonstration grant of $130,000** to The Conservation Fund to test adaptation techniques **led to over $4 million** in funding from the Department of Interior to greatly expand climate-adapted marsh restoration activities at the Blackwater National Wildlife Refuge.

In the mountains of West Virginia, **$210,000** granted to Trout Unlimited for riparian habitat restoration in streams expected to remain sufficiently cold for native fish **led to more than $8 million** in additional investment from the US Forest Service and Natural Resources Conservation Service to take restorations to scale across the larger watershed.

Photo: Kevin Prickett, The Nature Conservancy

A Call to Action

We recommend that conservation investors lead the way in making more durable investments in the face of a changing climate and help their grantees employ climate adaptation principles in their work through the following actions:

Conduct a Portfolio Risk Assessment

Enlist the help of climate adaptation experts to evaluate your current portfolio of investments to determine which ones may be most at risk from the impacts of climate change.*

Make Climate-Smart Grants

At a minimum, ask your grantees how their proposed programs or projects take climate change into consideration or, ideally, require that grantees incorporate climate change into their programmatic goals and strategies.

Build Capacity

Fund grantees to attend adaptation trainings and conferences, to do climate-informed planning, and to hire climate expertise on staff or partner with outside experts.

Communicate and Leverage

Share the stories of your investments as models to leverage policy change and greater investment in climate change adaptation and mitigation, and to accelerate the pace of learning about successful adaptation.

Conservation investors that take these steps will be applying the principles of being intentional about climate change and embracing the reality of climate and ecological changes, and in doing so will be better positioned to achieve positive conservation outcomes.

*See the WCS report "Embracing Change"[12] for a list of selected climate adaptation planning resources.

Conclusion

The effects of climate change are expected to grow and accelerate. As they do, there will be an ongoing need for conservation investors to learn what the future might hold and apply that knowledge to their grantmaking. This amounts to an active integration of climate considerations into all grantmaking activities, including goal setting, strategy development and implementation, and grantsmanship. This is not to suggest that conservation investors fund a brand-new category of activity, rather that they incorporate emerging climate science into existing activities on an ongoing basis, which is the essence of climate adaptation. Responsible stewardship of relatively scarce financial resources relative to the need for conservation demands no less. Conservation investors who employ the principles of climate adaptation and climate-smart conservation by being intentional and embracing change will better position their investments and grantees to navigate the effects of a rapidly changing climate.

By making a paradigm shift to fully considering how climate change impacts investments, the conservation funding community can lead the way to more durable outcomes for wildlife and ecosystems, and for the people who depend on them.

Endnotes

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Conservation investors who employ the principles of climate adaptation will better position their investments and grantees to navigate the effects of a rapidly changing climate.

Over 97% of the global population of Black-footed Albatrosses, Bonin Petrels, and Tristam's Storm Petrels nest on low-lying atolls in the Northwestern Hawaiian Islands. Pacific Rim Conservation, a WCS Climate Adaptation Fund grantee, is supporting the translocation of these birds to habitats at higher elevations, as their current habitat is threatened by climate change-driven sea level rise.
Photo: L. Young, Pacific Rim Conservation

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Suggested Citation: Cross, M., J. Nordgren and D. Long. 2019. Managing Risks to Conservation Investments Through Climate Adaptation: A Practical Guide for Funders. Wildlife Conservation Society and Climate Resilience Fund.

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Acknowledgments: The authors thank L. Oakes, S. Spector, D. Levoit, D. Joines, C. Mormorunni, M. Ocaña, C. McClennen, E. Tully, K. Jung, J. Watson, and H. Grantham for comments and suggestions that helped to strengthen the report, and past and present Climate Adaptation Fund Advisory Council members for the ideas and expertise they have contributed to the Fund.