

# Conservation Finance

Nature's brilliance attests to the magnificence of its Creator. Natural ecosystems are the irreplaceable infrastructure of our planet, supporting life on earth. These environmental assets provide essential services including air and water filtration, soil and watershed protection, flood mitigation, and carbon sequestration.

Population growth, industrialization, and pollution are putting increasing strain on ecosystems and the essential services they provide. Recognition of the external environmental costs of human activity is growing. This in turn has increased awareness of the value of intact ecosystems and their ability to protect us from pollution, drought, floods and the many effects of climate change.

Conservation has traditionally been funded with charitable contributions and government grants; however, the current trend has been a contraction of public funding and the development of new private sector sources of capital. Today it is possible to preserve our natural ecosystems through investments with managers who are adept at monetizing the emerging markets for ecosystem services described in this report. Owning environmental assets within a portfolio of companies with significant regulatory exposure (such as fossil-fuel companies) is prudent, and consistent with modern portfolio theory regarding managing asset allocation for diversification of risk. The expanding scope of environmental regulation is driving proper valuation of ecosystem services, which will catalyze the flow of private capital to finance conservation and restoration.

## Forest Ecosystems

Forests comprise a critical piece of the infrastructure of our planet. Forests function as a natural filter for air and water, and convert carbon-dioxide into oxygen through the process of photosynthesis. Over half the water supply in the United States flows through public and private forestlands.<sup>1</sup> Forests provide other infrastructure services including soil and watershed protection, flood mitigation, and sequestration of approximately 16% of all carbon emissions in the United States.<sup>2</sup> Forests also play an important role in the protection of the planet's biodiversity. In the United States, sixty percent of at-risk wildlife depends on private forests for habitat.<sup>3</sup>

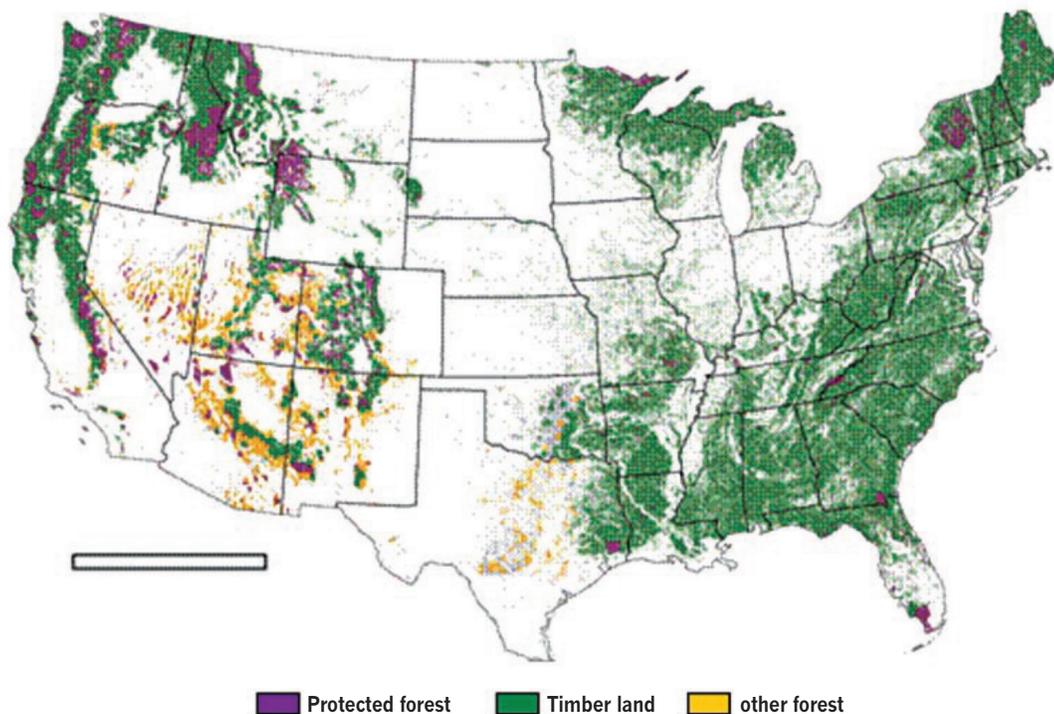
Research from The World Resources Institute shows 30% of global forest cover has been cleared, and another 20% has been degraded, while fragmentation has left only 15% of forest ecosystems intact.<sup>4</sup> Today in the United States, forests and open spaces are being threatened by urban sprawl at the rate of 6,000 acres per day.<sup>5</sup> Global climate change also threatens our forests by decreasing the success of seed germination, and has led to an increase in drought in many parts of the world, a primary cause of wildfires and major insect infestations.

## Forest Ownership

Publicly protected forests account for a scant 14% of forestland in the lower 50 states.<sup>6</sup> Timberland for industrial resource extraction comprises 84% of the total forest land in the U.S.; 91% of this industrial timberland is privately owned.<sup>7</sup> Since the 1980's, ownership of industrial forestlands has changed hands from integrated forest product companies to investment management firms. Institutional investment in timberland has grown from approximately \$20 billion in 2000 to \$80-\$90 billion today.<sup>8</sup>

## Timberland vs. Forests

It is important to recognize the difference between timberland and a forest ecosystem. Timberland owned by the majority of investors is intensely managed and harvested, with a sustainable ratio of growth to removals; however, timberland managed as an agricultural crop does not provide the same ecological services as a healthy forest ecosystem. Intensive timber management favors harvesting trees in larger areas and at a younger age. This impacts the surrounding habitat for animals, water quality, and amount of carbon dioxide a region is capable of sequestering.



Forest conservation and sustainable forest management are solutions for protecting these natural resources and the critical services they provide. Forest conservation takes place through the creation of public forests, parks and refuges; and through the purchase of conservation easements on private land, by government and non-governmental organizations such as land trusts. Sustainable forest management protects natural forest ecosystems by limiting the size of areas that are harvested, maintaining the mix of tree species and age classes, and by eliminating harvest in environmentally sensitive areas. Sustainable forest management maintains the density and diversity of species and mixed age of forests.

## Forest Ecosystem Markets

1. Conservation easements are voluntary agreements by private landowners to restrict the use of land. With transaction values in the billions of dollars per year, conservation easements have been the predominant source of funding for the protection of ecosystems. Funding for conservation easements comes from the federal government through programs administered by the U.S. Department of Agriculture (USDA) as well as state and local governments through the sale of general obligation bonds or property, sales, and income taxes. The philanthropic sector is another important source of funding, with over 1,700 land trusts in the United States providing conservation on 47 million acres of land.<sup>9</sup>
2. Carbon markets were born out of regulations to control carbon emissions, first introduced under The Kyoto Protocol in 2005. Efforts by a growing number of countries to limit carbon emissions have led to taxes on emissions, cap-and-trade compliance markets and the creation of a broad range of offset mechanisms to mitigate carbon emissions.
3. Green building materials are construction products which are sustainably sourced or contribute to a building's water or energy efficiency. Lumber sourced from sustainable forests can qualify for Leadership in Energy and Environmental Design (LEED) certification. LEED v4 certification program, launched in November 2013, recognizes the Forest Certification Council (FSC) as the only forest certification system for the sourcing of raw materials.<sup>10</sup>
4. Recreational easements convey the right of access or use of land and resources to private individuals or organizations. The type of recreational easement most frequently sought is for hunting or fishing rights. Hunting licenses are one of the first examples of pricing an ecosystem service in order to protect it.
5. Emerging markets for timber are developing from the creation of new biofuels and biomaterials, which represent a potentially large market for wood based commodities. Cellulosic ethanol plants and wood pellets are able to utilize byproducts of the timber harvesting process that were previously wasted. Biomaterials are another emerging source of revenues for the timber industry, with the potential to contribute sustainable renewable substitutes for fossil-fuel based plastics and chemicals.

## Wetlands Ecosystems



*Blackfish Creek – Wellfleet, MA*

Wetlands are a major source of high-quality drinking water, and perform important services such as filtering nutrients, recharging groundwater, flood mitigation, and carbon sequestration. Globally, wetlands are one of the most threatened ecosystems. In Europe alone, two thirds of wetlands have been lost since the beginning of the 20th century as a result of industrialization, farming, contamination and the exploitation of groundwater.<sup>11</sup> In other areas, as much as 50% of wetland has been lost since 1990.<sup>12</sup> Direct rainfall is a source of only a small

percentage of the water stored in wetlands; their resilience relies primarily on rivers and aquifers, which are at risk from human activity.

The Clean Water Act (CWA) (1972) is the chief legislative mechanism for U.S. wetland protection. Overseen by the Environmental Protection Agency and administered by the U.S. Army Corps of Engineers, the objective of the Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The CWA stipulates that negative impacts must first be avoided, but when unavoidable, impacts must be minimized, and finally compensation or mitigation of negative impacts is mandatory.

## Wetlands Ecosystems Markets

- Wetland mitigation banks provide compensatory mitigation to offset negative impacts by promoting the health of other wetlands. Typically this occurs within the same watershed, through restoration and rehabilitation projects, or by establishing new wetlands areas or enhancement of additional wetlands. New standards announced by the EPA in 2008 calling for “no-net-loss” of wetlands encouraged the expansion of mitigation banking.<sup>13</sup> Today, more than 800 wetland mitigation banks across the country create credits for their own use or to sell to developers, to offset the negative impacts of their activities. The value of mitigation credits varies widely depending on the value of affected wetlands which the credits are designed to mitigate.
- Water quality markets born out of compliance with federal Clean Water Act regulations, outside of wetlands, deal with the water quality itself. Increasingly local stakeholders including municipalities, landowners, and conservation agencies are uniting to develop innovative solutions to address sources of pollution with natural ecosystems (green infrastructure) as opposed to man-made technology (grey infrastructure), through creation and trading of water quality credits.
- Water flow and temperature markets are locally created initiatives to address the diversion of water for agricultural or other purposes which can lead to dangerously low water levels in rivers and streams.

This has the effect of raising the water temperature, which impacts oxygen levels, imperiling aquatic life. Water banks provide a transparent market for in-stream water use, and riparian restoration through streamside plantings can reduce the temperature of a stream, creating temperature benefit credits.

## Endangered Species Habitats

The U.S. Fish and Wildlife Service (FWS) lists 1,397 threatened or endangered wildlife species globally, including 646 in the United States.<sup>14</sup> Many are familiar with the endangered status of the Bengal Tiger or the Giant Panda, but not necessarily with less exotic species such as the California Condor or Grey Wolf.

The concept for species habitat banks was derived from that of wetlands mitigation banks, and the term ‘conservation bank’ was adopted to distinguish this concept from wetlands. Conservation banking first established itself at the state level in California in 1995 through state policy. Although the concept for conservation banks is not supported by federal law, the Endangered Species Act authorizes the U.S. Fish and Wildlife Service to grant permits for activities that result in an ‘incidental take of a listed species’ provided the permittee ‘minimize the impacts of such taking’.<sup>15</sup>

The purpose of conservation banks is to mitigate unavoidable effects on endangered or threatened species habitat by preserving or creating “like-species” habitat in



Source: U.S. Fish and Wildlife Service

another location, and ensuring it is maintained in perpetuity. Conservation banks create credits that are quantified in 'acres of suitable habitat' or numbers of individuals or breeding pairs' of the species supported by the bank.<sup>16</sup>

Demand for conservation banks comes from private and public developers impacting native habitats through development of residential housing as well as public works projects such as highways, sewer and electrical lines.

## Ecosystem Investments

Ecosystem investments are a fundamental holding within a broader environmental asset class, which includes renewable energy and clean technology across a range of industries.

Forest ecosystem investments are made possible through a small fraction of timber investment management companies (TIMOs) which employ an ecological forest management approach to managing their timberland. These managers harvest their land less intensely, but are capable of earning competitive returns by monetizing the ecosystem services described in this report. These additional sources can provide as much as 30% of income, and can reduce risk by bringing forward economic returns from the sale of land.

Wetlands and endangered species investments fund projects which create or preserve the ecosystems themselves, through creation of a wetland mitigation or species conservation bank. An emerging specialty within private equity is facilitating the need for upfront capital to develop these projects. Ecosystem investment companies offer a unique hybrid of financial experience in private equity with the expertise of environmental science and regulation.

Carbon Markets, born out of regulation of carbon emissions, provide an important source of private funding for conservation through the carbon offset markets. Cap-and-trade compliance markets emerging globally exist at the national and sub-national levels of regulation. The classic model sets declining annual emissions limits based on the program's reductions goals and creates annual allocations which are auctioned or assigned by historical usage. A number of cap-and trade models include price

stabilization mechanisms, while others are purely market driven. Other optional features include the ability to bank unused credits, and the recognition of offsets.

Offsets are a system of carbon mitigation credits that can be applied (offset) against a company's annual emissions allowance. Offsets can include a wide range of mitigation methodologies, such as emissions reductions, renewable energy, or carbon sinks (such as trees). Certification programs required to qualify mitigation programs for offsets vary among jurisdictions.

Secondary market trading in carbon emissions allowances takes place on numerous electronic exchanges globally and over-the-counter. Trading in carbon allowances is speculative and requires constant attention to the changing regulatory environment for carbon.

New products such as conservation notes and environmental impact bonds are emerging as models to fund ecosystem preservation with private capital. As the markets for ecosystem services expand we can expect a growing number of this new breed of investments to develop. Potential investors in conservation need a qualitative understanding of the emerging markets for ecosystem services underpinning these investments.

## Disclaimer:

The information and opinions presented in this report have been obtained from and based upon sources believed by the author to be reliable, but makes no representations as their accuracy, authority, usefulness, timeliness, or completeness. Information and opinions contained in this report represent the judgement of the author at its original date of publication and are subject to change without notice.

## End Notes:

- 1) *USDA FY2014 – Budget Summary and Annual Performance Plan*
- 2) *Climate Change Impacts in the United States – U.S. National Climate Assessment 2014*
- 3) *Threats to At-Risk Species in America’s Private Forests – USDA Forest Service*
- 4) *World Resources Institute <http://www.wri.org/our-work/topics/forests>*
- 5) *The Rise and Fall of the Timber Investment Management Organizations: Ownership Changes in U.S. Forestlands – Pinchot Institute for Conservation, Clark S. Brinkley, 2007*
- 6) *National Report on Sustainable Forests 2010 – USDA*
- 7) *Ibid*
- 8) *Timberland Investment Outlook 2013-2017 – New Forests*
- 9) *2010 National Land Trust Census Report – Land Trust Alliance*
- 10) *LEED v4 & FSC: Leadership Standards – Forest Stewardship Council <https://us.fsc.org/>*
- 11) *European Commission – Environment Life Program*
- 12) *Ramsar Technical Report No. 3: Valuing Wetlands- De Groot, Stuip, Finlayson, and Davidson*
- 13) *Wetlands Compensatory Mitigation Rule – EPA & U.S. Army Corps of Engineers*
- 14) *U.S. Fish and Wildlife Service (USFWS) – 50 CFR 17.11 a/o Dec. 23, 2015*
- 15) *“Legal Considerations” by Royal C. Gardner – Conservation and Biodiversity Banking : Edited by Nathaniel Carroll, Jessica Fox, and Ricardo Bayan, 2008*
- 16) *Ibid*

## Cover photo:

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