



2011

GEOS
INSTITUTE

Annual Report

From the Executive Director

From the Chief Scientist

“Is this as bad as it’s going to get?”

That was the question from a woman from North Dakota. As we talked, a good portion of her town was under water. Several weeks before, the Souris River had flooded so massively that it smashed a 130-year old record by nearly four feet.



Her community lay in ruins and she wanted to know what the future might look like.

I told her that climate scientists tell us to expect increasingly frequent and severe droughts, floods, and extreme storms as the climate changes. And, I told her that the only way to limit the extent of climate change was to get serious about reducing emissions.

It seemed that everyone who came to our booth that day was escaping extreme weather - floods, heat waves, droughts, tornadoes, and hurricanes. And they wanted to talk about the weather that was unlike anything they had ever seen.

For the past several years I have worried as polls continually told the same story. Americans have been moving in the wrong direction in their understanding of climate change.

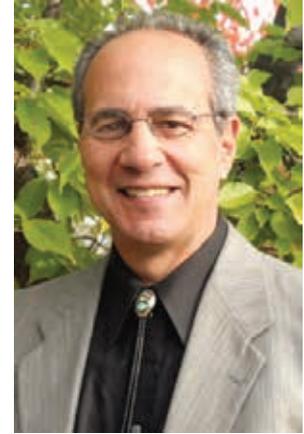
I don’t worry so much anymore. I see more and more people, like the woman from North Dakota, using their critical thinking skills, asking questions, and making their own decisions. It gives me hope.

It also reminds me that what we do together matters.

I hope you enjoy reading about our accomplishments in 2011 and appreciate the value of your contribution to this work. With your ongoing support, we will continue to catalyze real action on the most important global issue of our time.

Tonya Graham

As a presidential candidate in 2008, scientific integrity was one of Barack Obama’s campaign issues. I asked him about this at a campaign rally in Medford, Oregon, where he pledged to restore scientific integrity in federal agencies. It’s been four years since the President’s pledge, and his science reviews are mixed, especially on forests.



The administration’s new forest planning rule provides guidance to forest managers overseeing 200 million acres of the national forest system. Although the final rule was an improvement over the draft, it lacks strong protections for wildlife. And while the administration suspended a regressive Bush administration spotted owl recovery plan as scientifically indefensible in 2008, the revised plan and related critical habitat determination emphasize untested logging provisions inside critical owl habitat.

Fortunately, the administration is making progress on climate change, exemplified by its rejection of the Keystone XL pipeline that would deliver the dirtiest oil on Earth from Canadian tar sands to refineries in Texas. The administration also created the Climate Science Centers and Landscape Conservation Cooperatives (LCCs) where planning for climate change is a top priority.

With the help of our generous supporters, a nationally recognized Science Advisory Board, a dedicated staff of 9 professionals, and 10 board members, we continue to remind the administration about its unfulfilled commitment to scientific integrity and the importance of an exemplary conservation legacy.

Dominick DellaSala

Geos Institute Initiatives

At the heart of our work lies the commitment to integrating our society's response to climate change.

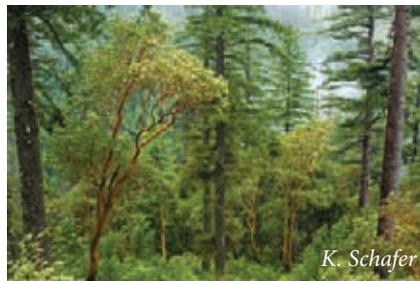
This we know: Without aggressive and effective efforts to reduce greenhouse gas pollution (mitigation), efforts to prepare for a changing climate (adaptation) will almost certainly fail. And yet, we are past the point of being able to prevent climate change. Climate change is here. People and wildlife around the globe are feeling the effects of a warming planet through increased frequency and severity of floods, droughts, and extreme weather events, as well as sea level rise and permafrost melt.

Climate scientists tell us to expect these conditions to worsen over the course of the next several decades, regardless of how effectively we reduce greenhouse gas pollution. This means we must both reduce greenhouse gases and meet the challenges of a changing climate at the same time.

It is because of this interrelated nature of climate change responses that the Geos Institute has developed the following three integrated organizational initiatives in our efforts to use science to help people predict, reduce, and prepare for climate change.

Banking on Forests

The remaining temperate rainforests of the world take up more atmospheric carbon per acre than even the tropical rainforests, yet they are not currently valued for this crucial service they provide free of charge. Our Banking on Forests initiative promotes policies and management actions for these forests that recognize that they are far more valuable left intact. This effort is based on the concept that carbon currently stored in these forests should be "banked" for future generations



rather than released through the process of industrial logging. Maintaining existing temperate rainforests while restoring previously logged forests are important actions the U.S. can take to help limit the eventual extent of climate change.

ClimateWise®

By bringing together diverse local leaders and facilitating them through a process to understand and prepare for the impacts of climate change,



the ClimateWise® process helps communities address the challenge of a changing climate in an ecologically sound manner. The ClimateWise® suite of services includes development of Adaptation Blueprints for natural landscapes. These blueprints inform land management decisions by helping managers predict how plants and wildlife will respond to climate change.

Green Solutions

The Green Solutions Initiative is designed to encourage natural system restoration as an efficient and cost effective



means of reducing many climate change-related risks, such as flood and drought, to people and wildlife. Green solutions often cost less to maintain over time in relation to typical constructed solutions and provide additional benefits to fish and wildlife. Our on-the-ground restoration work in the Rogue Basin of southern Oregon serves as our laboratory for developing and analyzing floodplain restoration related solutions.

Banking on Forests Initiative



Intact rainforests, like this one near Washougal, Washington, store vast amounts of carbon and are threatened by logging proposals.

Along the Pacific Coast of North America are some of the largest and oldest conifers in the world. Here, redwood, spruce, fir, and hemlock are the sentinels of nature's "working rainforests," cleansing the air we breathe and purifying drinking water supplies. Aided by the process of photosynthesis, vast amounts of atmospheric carbon dioxide are absorbed (sequestered) by vegetation and stored as carbon in tree trunks, dense foliage, and productive soils over centuries. Acre for acre, these rainforests store more carbon than the world's tropical rainforests. They are essentially a bank of carbon at a time when, for the sake of the global climate, we must keep as much carbon stored as possible.

When temperate rainforests are logged, the majority of the carbon they store is released as carbon dioxide, a global warming pollutant. Piles of slash left behind by loggers rapidly decompose and release carbon dioxide. Manufacturing and shipping wood products burn more fossil fuels. This release of carbon is not offset by planting new trees, because second growth forests are often cut down again, well before they can store as much carbon as is stored in unlogged forests.

Globally, global warming pollution from deforestation exceeds that generated by the burning of fossil fuels for transportation.

Recognizing the importance of carbon and other values in old forests, the Geos Institute launched its "Banking on Forests Initiative," where we are documenting the importance of temperate rainforests as a global carbon sink and making a case to decision makers to protect older forests as climate change insurance.

Pacific Northwest

In the Pacific Northwest, logging proposals that will release vast amounts of carbon are being pushed as a means of increasing habitat for the northern spotted owl and reducing the loss of carbon due to fire. New computer mapping by the Geos Institute and our partners indicates that thinning to contain fires will reduce more habitat for spotted owls than wildfires. Other studies also show that more carbon is actually released from thinning over large landscapes than from wildfires themselves.

The Geos Institute is actively opposing logging proposals cloaked as restoration and protection against fire. In addition, we are addressing recent congressional legislation proposed for Bureau of Land Management lands in western Oregon that would promote widespread logging on roughly 1.5 million acres. If, as proposed, these lands are transferred into a "timber trust" whose sole purpose is to maximize revenues for Oregon counties, large amounts of carbon dioxide will be released.



Southeast Alaska

In southeast Alaska, the Tongass National Forest is the nation's natural forest treasure. It is one of only four regions on earth with relatively intact temperate rainforests. In 2008, the Obama administration announced plans to eventually transition out of logging old growth and into second growth logging on the Tongass. While a great first step, the Forest Service claims it needs to continue logging old forests for another 30-40 years, until enough second growth is available to meet industry demand.

The Geos Institute and our partners are exploring options for a rapid transition by providing accurate timber supply estimates of second growth and working with economists to assess the market potential of small trees.

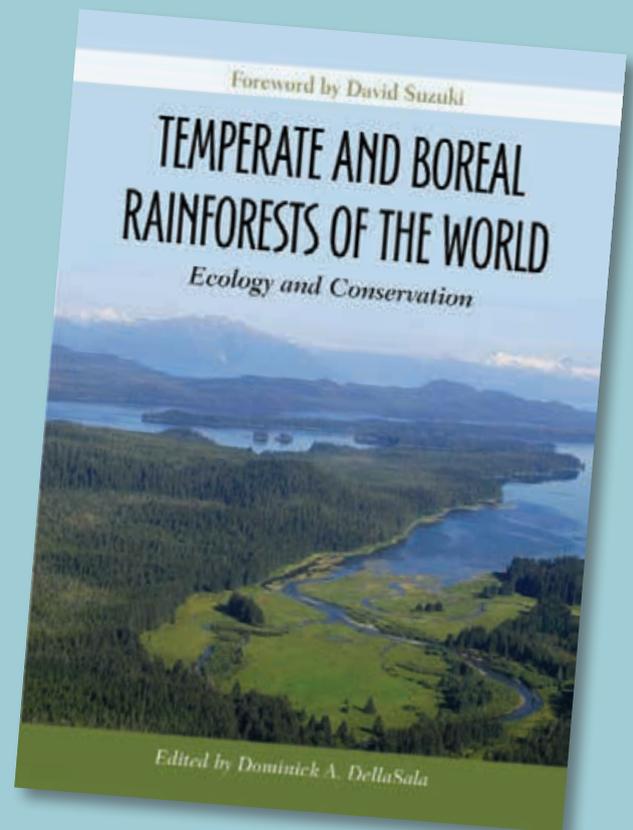
Forests Nationwide

Working with our partners, we were able to convince the Forest Service to include carbon as a "multiple use" value in its new forest planning rule. Managers must now account for carbon in forest planning, a small but important step toward protecting forests for long-term carbon stores.

Going Forward

Geos Institute and our partners will continue to use the best science to advocate for carbon dense rainforests in the Pacific Northwest, Alaska, and beyond as a means of addressing climate change. We will do this by assisting agencies in climate change adaptation planning, advancing satellite tracking of deforestation, and advocating for logging efforts focused on restoration goals. Finally, through a new partnership with the Conservation Biology Institute, we are launching a Global Forest Information Center to assemble the latest satellite imagery and thousands of studies on deforestation, as we seek to catalyze forest protections over a larger geography.

Rainforest Book Receives Prestigious Academic Award



Geos Institute's Chief Scientist, Dominick DellaSala, received a prestigious award for his book, "Temperate and Boreal Rainforests of the World: Ecology and Conservation," in the "outstanding academic title" list published by Choice magazine. The book was the only Island Press book receiving the academic prize in 2011. Since the book's release, Dominick has been giving keynote addresses from Alaska to New Zealand, raising awareness about the plight of these "forgotten rainforests" and the need to protect them.

To purchase a copy of the highly acclaimed book, visit geosinstitute.org/temperate-and-boreal-forests/.

ClimateWise® Initiative

Community-Based Planning

The ClimateWise® planning framework serves local leaders who understand the risk posed by climate change and are working to guide their communities to effective action. In this process, we work with a local convening organization to help community leaders:

- Understand the likely local impacts of climate change
- Determine the risk to the resources and traditions they value most, and
- Identify effective and collaborative strategies to reduce that risk

Central Oregon:

Working with the Central Oregon Intergovernmental Council, the Geos Institute facilitated a ClimateWise® process for Jefferson, Deschutes, and Crook counties in Central Oregon.



Climate projections indicate that by late century, these counties are likely to be experiencing temperature increases between 5.4 and 8.7 °F. The climate models agree that in the near future (by

2040) this area will have slightly wetter winters and that spring, summer, and fall will be similar to somewhat drier. Forest fires are likely to increase by 11-16%.

These changes are expected to cause significant disruption to the area's economy while straining the natural system that provides clean water for towns, agriculture, fish, and wildlife.

Over 80 local workshop participants with expertise in health and emergency services, infrastructure, natural systems, cultural resources, and the economy gathered at the Powell Butte Community Center to consider the likely impacts of climate change.

Their recommendations included:

- Increase water storage, decrease flood risks, increase groundwater storage, and improve surface water quality by restoring wetlands, complex and meandering stream channels, and floodplains.
- Conserve water by improving irrigation water delivery and application, and reducing water-intensive landscaping in municipal settings.
- Limit urban wildland and floodplain development by focusing future development near existing emergency service hubs and available water supplies.

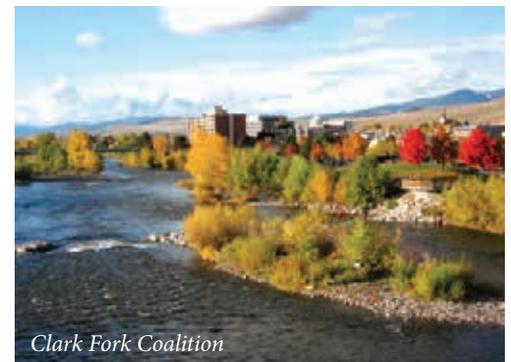
Missoula, Montana:

We partnered with the Clark Fork Coalition and Headwaters Economics to bring the ClimateWise® process to Missoula County, Montana.

Climate change projections for the county indicate that it can expect a 5-10° F increase in temperature over the coming century, coupled with changes in precipitation patterns.

Over 90 local experts and leaders convened for a two-day workshop during which they identified five major risks associated with climate change for their area. Through the workshop process, they developed 27 strategies to address those five concerns, including 84 distinct actions they can take within those larger strategies. They then identified which government agency or community sector had responsibility for the success of each activity.

Full reports are available on our website.



Adaptation Blueprints

Where will wildlife go as the climate shifts? How can we plan now for climate change while costs are relatively low? These are some of the questions we are addressing through our Adaptation Blueprints.

Klamath-Siskiyou

The Klamath-Siskiyou region of northwest California and southwest Oregon is home to one of the most biologically diverse coniferous forests on earth. In this region we mapped areas most likely to hang on to their current climatic conditions and provide wildlife a refuge from rising temperatures. Our findings, published in the *Natural Areas Journal*, are informing the debate around proposals to increase logging in the region.

Pacific Coastal Rainforests

The Pacific Coastal rainforests from Prince William Sound, Alaska to the coastal redwoods of California represent 35% of the world's temperate rainforests. Here the Geos Institute is teaming with the Fish & Wildlife Service, the Forest Service, and the University of Leuphana, Germany on an ambitious project that uses sophisticated computer modeling to project climate impacts to the region. The project will inform climate change planning throughout the region and is testing an adaptation framework developed by the Yale School of Forestry.

Colorado Plateau

The Colorado Plateau was chosen as one of 10 priority ecoregions for the Sierra Club's Resilient Habitats



campaign, based on its unique topography, wildlife and large expanses of undeveloped wild lands. In support of the campaign, the Geos Institute created an adaptation blueprint that identified where vegetation is likely to change as the climate changes, as well as potential linkages that would allow wildlife and plants to migrate with the shifting climate.

Going Forward

The Geos Institute will continue to develop ClimateWise® community planning and adaptation blueprint projects across the country. To better serve local leaders in communities that are not yet ready for a full

ClimateWise® process, the Geos Institute is working with Resource Media to pilot a climate change science and communications training workshop to provide those leaders with the skills they need to initiate public discussions in their communities.

The science behind climate change is very real and we are beginning to incorporate that element into our decision making.... We're beginning to understand more fully that if you want to get something done—instead of expecting it to come from the top down, say, with federal funding or legislation— it needs to come from the bottom up—and this means local protection of resources for the future. Hopefully others will follow that example.



-Michele Landquist, Missoula Montana County Supervisor and ClimateWise® workshop participant

Green Solutions Initiative

During the past 150 years, communities have met their water management goals almost solely by “gray” infrastructure – dams, levees, river channelization, and chemical treatment – all of which require maintenance and eventually replacement. While these “gray” strategies often succeed in meeting immediate objectives, they often cause major disruptions of ecosystem functions.

Intact ecosystems, stream channels, wetlands, and marshes serve the same water management objectives – ground water recharge, steady seasonal flows, and flood control. These natural features provide these services at little or no cost, while protecting the biodiversity and recreational functions associated with healthy watersheds.

Given the dual pressures of population growth and a changing climate, hundreds of billions of dollars will be invested in water management infrastructure in the coming decades. Achieving sustainability requires shifting from investments that damage ecosystems to investments that restore and sustain them.

In 2011, the Geos Institute began advocating the benefits of investing in “green” infrastructure to help communities address the growing concern around water issues driven by climate change.

Our Green Solutions Initiative will demonstrate the benefits and return on investment of using adaptive watershed and forest restoration and management practices to increase water supply, lower stream temperatures, and minimize erosion, sedimentation, and flood damage.

Freeways For Fish

In 2011, the Freeways for Fish program embarked on a new path. Instead of focusing solely on making habitat accessible for migratory fish, we worked with Oregon Department of Fish and Wildlife (ODFW) on a project designed to improve fish habitat and help the area adapt to climate change. This project rerouted a channelized section of Little Butte Creek, an important tributary to the Rogue River, to its historic channel.



Curving meander under construction (top) replaced a “straightened” reach (at top of top photo), restoring an historic stream channel (bottom).

Little Butte Creek was “straightened” many decades ago, a practice common around the West in municipal and agricultural settings. This process took the stream out of its natural meandering pattern and made it follow a straight line. In the process, the people straightening the stream built 10-foot high berms to keep the creek from flooding.

Due to the effectiveness of these berms, during high water events, instead of spilling onto its floodplain, Little Butte Creek scoured itself clean to bedrock. This scouring destroyed fish habitat, leaving a gravel poor and uniform stream channel with no side-channels for

fish to escape high water. We now know that habitat variety, abundant gravels, and ample side-channel and off-channel features are required to sustain native fish in the Rogue.

Re-construction began on a 2,700 foot long stream channel – the historic route for this stretch of Little Butte Creek – in late July. This channel winds along a historic stream course, replacing the 1,500 foot long, “straightened” reach (see photos).

This “Meander Restoration” project lengthened Little Butte Creek by 1/4 mile and built 3.5 acres of off-channel and side-channel habitat, installed 13 wood jams, and placed 4,000 cubic yards of gravel. With construction complete, the restored creek looks like it has always been in its current location, a testament to the outstanding design and construction work by our team of contractors.

In terms of protecting downstream communities from more frequent and severe flooding due to climate change, the creek’s ability to spill onto its floodplain will decrease the severity of high flow events, slow down flooding flows, promote groundwater recharge, and improve water quality.

Going Forward

In order to catalyze a large-scale shift to investment in watershed restoration, as exemplified by the Little Butte Creek project, we are developing the case for green infrastructure. This case requires an economic analysis that places a value on the free benefits provided by intact ecosystems. It also requires that we compare investments in green infrastructure to traditional gray infrastructure in terms of cost and effectiveness.

We will incorporate what we have learned in our Freeways for Fish work as well as other case studies of similar work. With this information in hand, water managers will be able to make decisions in the long-term best interest of both people and wildlife in their communities.

Specific to the Freeways for Fish effort, we will move forward with several fish passage improvement projects along Rogue River tributary streams near Medford. These projects will help native fish persist as climate change creates a number of risks, including higher water temperatures and more severe droughts. We also hope to begin planning a second Little Butte Creek meander re-construction process just upstream of the completed project.

Brian Barr (right), Aquatic Habitat Restoration Project Manager, points out restoration features of Little Butte Creek in Southern Oregon.



Staff, Board & Foundation Supporters

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Brian Barr – *Aquatic Habitat Restoration Project Manager*
Dominick DellaSala, Ph.D. – *President & Chief Scientist*
Tonya Graham – *Executive Director*
Keith Henty – *ClimateWise Project Developer*
Marni Koopman, Ph.D. – *Climate Change Scientist*
Jessica Leonard – *Geospatial Analyst*
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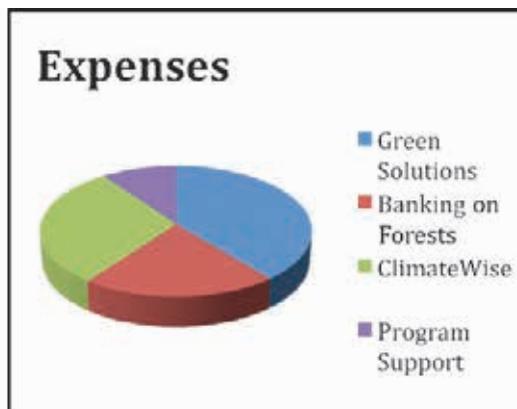
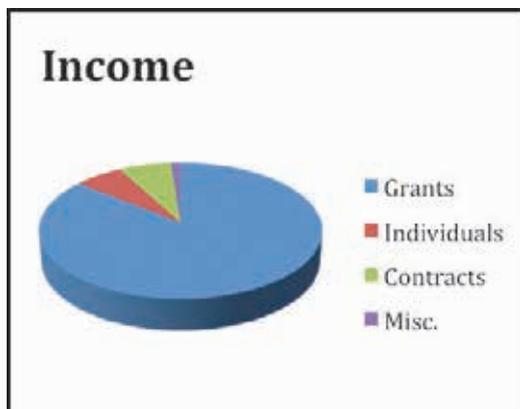
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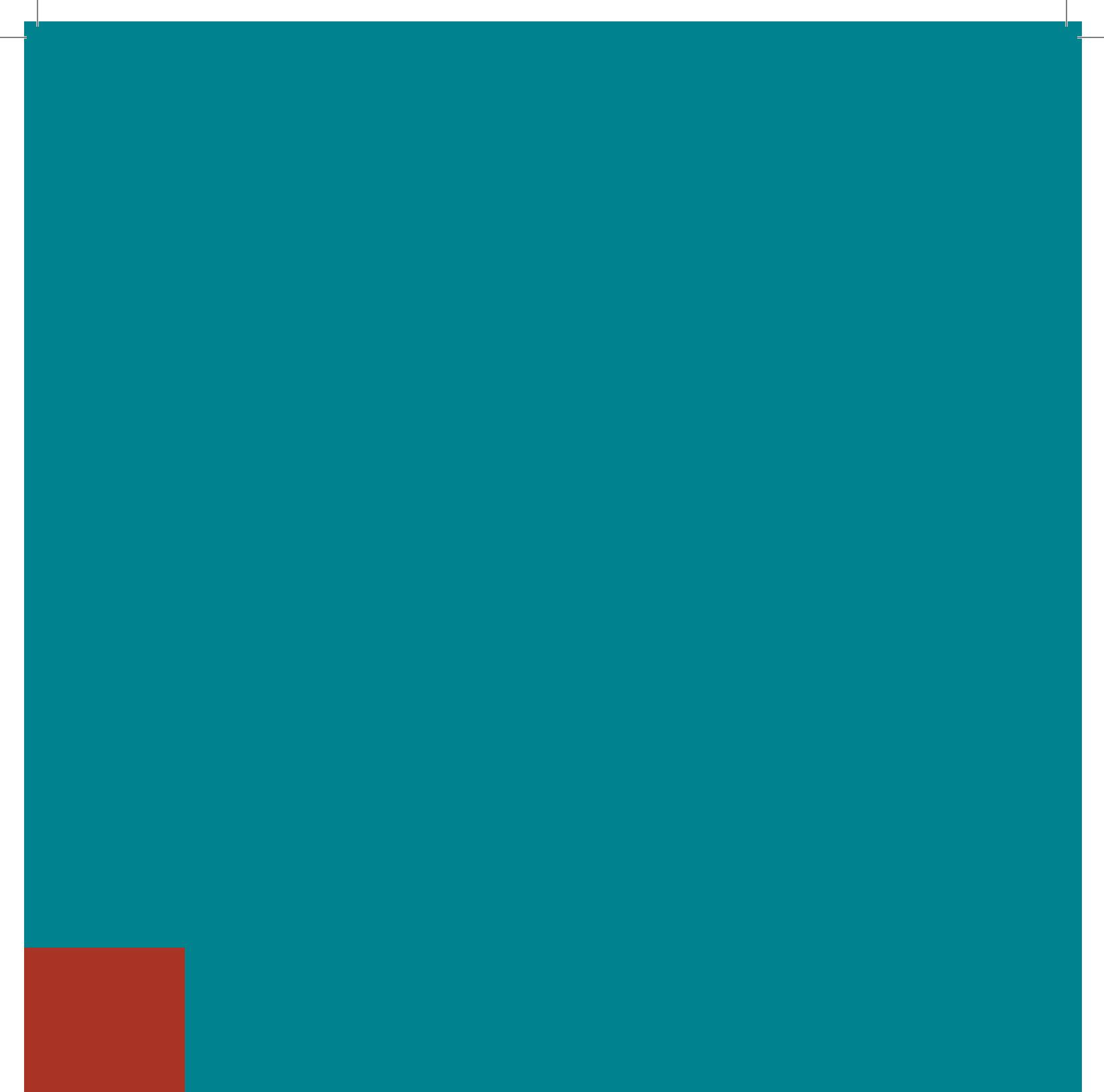
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Statement of Activity for year ended December 31, 2011

These financial figures are derived from audited financial statements. All figures are prepared using the accrual basis of accounting.

Support & Revenue	
Grants & Donations	
Grants	\$1,449,706
Donations	\$105,847
Revenue	
Contracts	\$112,992
Center Rental & Subleases	\$11,086
Miscellaneous Revenue	\$10,213
Total Support & Revenue	\$1,689,844
Expenditures	
Direct Program Services	\$1,474,949
Programmatic Support Services	\$69,894
Organization Resource Development	\$84,563
Total Expenditures	\$1,629,406
Net Assets, Beginning of Year	\$680,377
Net Assets, End of Year	\$740,817





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