

## Software Tools

### InVEST

integrated valuation of  
ecosystem services  
and tradeoffs

[InVEST](#) is a free and open-source software suite developed by the Natural Capital Project. You can download the latest version of InVEST [here](#).



[OPAL](#) is NatCap's latest free and open-source software for mitigating development impacts. You can download the latest version of OPAL [here](#).



[RIOS](#) is a software tool that helps design cost-effective investments in watershed services. You can download the latest version of RIOS [here](#).

## Lessons From The Holiday Season

This time of year is one of my favorites, even though days are short and the sun is low in the sky in northern climes. The holiday season is a time to remind ourselves to **give thanks, find joy, and seek peace** in our communities and the world.



**Giving thanks for our partnership.** This year we are celebrating NatCap's 10th year as a partnership and charting out our next phase as we reflect on what we've accomplished and where urgent needs remain. We have pioneered an approach to co-developing new [ecosystem service science and tools](#) through close consultation with people all over the world, who are now using that information in decisions. Use-driven science and freely shared open source tools are changing the way people see nature. Leaders in the public and private sector and in civil society increasingly view ecosystems as providing many vital benefits, which can now be explicitly factored into decisions.

The four founding partners of NatCap: Stanford University, The Nature Conservancy, the University of Minnesota, and World Wildlife Fund, are committed to continuing our work and growing our networks of collaborators. We are especially excited to redouble our efforts towards five shared outcomes at the nexus of human development and conservation: (1) Spatial development planning with lasting impact; (2) Durable financing and incentives to secure freshwater; (3) Integrated solutions for climate and hazard resilience; (4) Sustainable, livable cities, and (5) Natural capital standards for the private sector. We look forward to working with partners to realize these goals.

I am personally grateful for the amazing people who are NatCap. They are a special breed of natural and social scientists, software engineers, finance, operations, and communications experts who take pride in doing things differently to find new ways to solve problems and seize opportunities. I know the staff are thankful for the interest, enthusiasm, and commitment of partners like you, reader, who teach and inspire us.

**Finding joy in interdisciplinarity.** A special issue of [Nature](#) earlier this fall concluded that if we want to solve the world's biggest challenges, we had better find joy in interdisciplinary work. One study found through analysis of 35 million peer-reviewed publications in 14 diverse science fields that research involving multiple disciplines was much more influential than studies from a single specialty (measured by the number of times a paper is cited in subsequent work—a good gauge of how well science is penetrating a field.) NatCap's approach is profoundly interdisciplinary. From discussions with diverse stakeholder groups in our use cases, to hammering out white board and software solutions among ecologists, hydrologists, economists, and software engineers, our results depend on harmonizing diverse viewpoints.



[PyGeoprocessing](#) was developed at the Natural Capital Project to create a programmable, open source, and free GIS processing library to support the ecosystem service software InVEST. The latest version 0.2.1 fixes several bugs.

Users can pip install pygeoprocessing, upgrade or download the package [here](#).

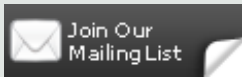
### NatCap Forums

For help using InVEST, OPAL and RIOS, visit the [NatCap Forums](#), our online user community.

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That same study in *Nature* also found that the impact of interdisciplinary work takes longer to emerge in the research community. It takes on average 13 years from publication of an interdisciplinary science paper before its citations in the broader literature overtake those of single-discipline studies. Time to impact is likely even longer if one counts the time commitments required to build relationships and shared understanding with fellow researchers to produce the novel science in the first place. Add transaction costs associated with building trust and results with our partners and stakeholders in different use cases, and the math gets scary on time lags to our work's influence.

Happily, NatCap and our partners see first hand the great rewards of working with people from diverse backgrounds and disciplines. Developing the meaningful relationships we need for success is an investment of precious time, intellect and emotional energy by all involved. By shaping science through listening to what decision makers need, we are shortening the time lags between production of novel science and its use in transforming decisions. And we now have close relationships with inspiring people around the world who share our goals and spirit of transparency and problem solving. In short, through engaging with people to do our work, we find joy.

### Seeking peace through harmonized human development and biodiversity

**goals.** This season is a time for optimism....if we can remember to give thanks for our colleagues and find joy in our work, we will continue to see progress for nature and people in small and large ways. Working through differences of opinion by finding shared values and goals is what NatCap's work is all about. Bringing that kind of peace to some corners of our world can showcase what is possible in terms of how we create change, in addition to improved outcomes for people and ecosystems upon which all life depends.

Happy Holidays from NatCap!

## 2016 Natural Capital Symposium

MARCH 21-24

We are excited to announce that Mark Tercek, President and CEO of The Nature Conservancy, will be giving a keynote address at our Natural Capital Symposium at Stanford University. Mark is a champion of the idea of natural capital, author of *Nature's Fortune: How Business and Society Thrive by Investing in Nature*, and a great supporter of NatCap. He will be speaking on the afternoon of Tuesday, March 22nd.



The Symposium offers three tracks: 1) "Pathways to Impact" highlights how natural capital understanding is informing real world decisions (e.g., sustainable development planning), 2) the "Learning Exchange" focuses on exciting new ideas and research frontiers (e.g., mental health benefits of nature), and 3) the "Training" track offers a chance for participants to learn about and to learn to use NatCap's approach and software tools. Many of the themes for both the Pathways to Impact and the Learning Exchange tracks are now set, so we encourage you to [visit the information site](#) to see some early details about the sessions. To allow more time for contributors to submit their abstracts, we have extended the submission deadline to January 8th, 2016. [Click here to submit your abstract](#).

Last year's symposium attracted some of the world's best natural capital thought leaders with over 200 participants representing non-governmental organizations, academia, government, and the private sector. This year we expect an even greater turn-out, an inspiring line-up of presenters, and ample opportunity for exchanging ideas. We hope you'll be able to join us! And don't forget, the substantial discount offered through our early bird registration ends January 15th, so register today and please help us get the word out so that we can continue to build our community of practice.

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## Recent Press and Publications

[Private incentives for the emergence of co-production of offshore wind energy and mussel aquaculture](#)

Griffin, Robert; Bela Buck; Gesche Krause.  
*Aquaculture*. January 20, 2015, Vol. 436, pp 80-89.

[Incorporating the visibility of coastal energy infrastructure into multi-criteria siting decisions](#)

Griffin, Robert; Nicolas Chaumont; Douglas Denu; Anne Guerry; Choon-Ki Kim; Mary Ruckelshaus.  
*Marine Policy*. December 2015, Vol. 62, pp 218-223. doi:10.1016/j.marpol.2015.09.024

[Getting water right: A case study in water yield modelling based on precipitation data](#)

Pessacg, N.; S. Flaherty; L. Brandizi; S. Solman; M.A. Pascual.  
*Science of the Total Environment*. December 15, 2015, Vol. 537, pp 225-234.

[National indicators for observing ecosystem service change](#)

Karp, Daniel S.; Heather Tallis; Rene Sachse; Ben Halpern; Kristen Thonicke; Wolfgang Cramer; Harold Mooney; Stephen Polasky; Britta Tietjen; Katharina Waha; Ariane Walz; Stacie Wolny.  
*Global Environment Change*. November 2015, Vol. 35, pp 12-21.  
doi:10.1016/j.gloenvcha.2015.07.014

[Making ecosystem services count](#)

by Marie Donahue, UMN Institute on the Environment, November 9, 2015

[Watershed Moment for IonE's NatCap](#)

by Marie Donahue, UMN Institute on the Environment, October 16, 2015

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Thank you for your continued interest in the Natural Capital Project. If you have any questions, please feel free to contact us at [invest@naturalcapitalproject.org](mailto:invest@naturalcapitalproject.org).

