

## PyGeoprocessing

On March 4, 2015 we released PyGeoprocessing as a standalone Python extension for GIS processing under a free and open source license. InVEST uses

Geoprocessing to work with spatial data as part of its ecosystem service modeling package. Long time users may recall earlier versions of InVEST required a copy of ArcGIS to run models; NatCap developed PyGeoprocessing to build our stand-alone models. Technical users can "pip install pygeoprocessing" or [visit the repository](#).

Rich Sharp will be presenting NatCap's transformative work in this area at the [FOSS4G North America](#) conference on Mar 10th in San Francisco.

## Software Tools



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

## Registration Deadline Approaching for the Natural Capital Symposium

We are excited about the diverse array of guest speakers, technical workshops, and learning exchanges planned for this year's Symposium, with participants gathering from around the globe.

[Click here](#) for information about this year's event, including the schedule, guest speaker roster and session abstracts.

The next Natural Capital Symposium won't be until 2017, so we hope to see you there, later this month. [REGISTER NOW](#)

## The Natural Capital Approach in Myanmar

How Myanmar develops will determine whether their natural wealth is liquidated for short term gains, or protected and managed to sustain long-term benefit

By Jon Hoekstra

The sun rises above the horizon as a crimson ball, veiled by a haze of humidity that blankets the early morning landscape. Men in plaid longyi and women in wide-brimmed hats, their faces painted with creamy thanaka, make their way from thatched houses to tend rice paddies before the heat becomes oppressive. It's a timeless scene that has played out more or less this way for centuries in the fertile lowland plains of Myanmar.



*Myanmar officials are considering the benefits of using a natural capital approach to guide the development of a high-speed rail line linking Bangkok to coastal Dawei.*

**The pastoral tranquility of the Bago countryside I was driving through stands in stark contrast to Naypyidaw**, Myanmar's capital city, which was meticulously designed and constructed from scratch less than 10 years ago. There, with rice paddies still being tended on the outskirts of the city, the national government of Myanmar is embracing modernity with an emphasis on order and efficiency. Workers drive from designated residential zones to ministry offices along wide, manicured boulevards spanning eight, ten, and - in front of the Parliament Building - 22 lanes, which are mostly empty now, but point to a bustling vision for the future. Visitors like me are put up in sprawling hotels and meet in a spacious brick and glass conference center in the hotel zone.

The stark juxtaposition of old and new, tradition and modernity, reflects transformations



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



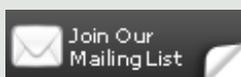
[RIOS](#) is a software tool that helps design cost-effective investments in watershed services. You can download the latest version of RIOS [here](#).

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

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happening throughout Myanmar as the country emerges from military rule and starts to establish a nominally civilian democracy following general elections in 2010.

After a half-century of isolation, Myanmar still has what everyone around them used to have more of - abundant natural capital. [\[Click here to read the full article\]](#)

## New Natural Capital Coalition Exec Director, on the Challenges of Shifting Corporate Behavior

Mark Gough is a keynote speaker at the Natural Capital Symposium

### When did you first start thinking and hearing about natural capital?

In the late 1990s and early 2000s I was working for a publisher, and was looking at the impacts of paper sourcing and forestry. One of the things we as an industry pulled together was a system called The Publishers' database for Responsible Environmental Paper sourcing - an approach that allowed us to go beyond certification to the broader issues of sourcing. We were starting to think about the social and other values associated with paper products.



*Mark Gough, Executive Director, [Natural Capital Coalition](#)*

### During your tenure as Head of Sustainability at The Crown Estate [an independent UK property company, with holdings of £9.9 billion] did you have any "aha" moments?

[The Crown Estate](#) has been actively involved in piloting a methodology for corporate natural capital accounting, attempting to integrate it into its decision making. We looked at one of our estates that in standard reporting terms was showing as having negative value, but when you visit it or work there it does not feel like a negative experience. It was only when we started to incorporate the natural capital that we were able to demonstrate the estates' total contribution.

I personally bought a house ... [\[Click here to read the full interview\]](#)

## Recent Press and Publications

A recent paper co-authored by Kate Brauman and collaborators at the University of Minnesota highlights the complex relationship between the global food trade and food security and resource sustainability.

"Global food commodities trade is worth more than US\$520 billion per year, could feed approximately two billion people, uses about 13% of worldwide cropland and pasture, and has geographically concentrated irrigation water



*More than one-fifth of the calories grown in farm fields are ultimately traded*

demands," the authors said.

"Trade is usually described in terms of the value or weight of the goods being exchanged," lead author Graham MacDonald said in an interview with [PHYS.ORG](#). "But these don't necessarily capture other important aspects of food production and distribution. Accounting for food's nutritional value and the land and water resources needed to produce exports offers a more holistic view of how [trade](#) affects global food security and the environment. Our study uniquely juxtaposes these perspectives."

#### [Rethinking Agricultural Trade Relationships in an Era of Globalization](#)

MacDonald, Graham, Kate A. Brauman, Shipeng Sun, Kimberly M. Carlson, Emily S. Cassidy, James S. Gerber, Paul West.

*BioScience*. February 11, 2015. doi: 10.1007/s00267-014-0426-4

#### [Unraveling the complex web of global food trade](#)

*PHYS.ORG*, February 11, 2015

### **Other Press and Publications:**

#### [Livelihood outcomes of payment for ecosystem services in Ecuadorian highland Andean grasslands](#)

by Leah Bremer & Kathleen A. Farley, *Landscapes for People, Food and Nature*, February 16th, 2015

#### [Opportunities and Strategies to Incorporate Ecosystem Services Knowledge and Decision Support Tools into Planning and Decision Making in Hawai'i](#)

Bremer, Leah L.; Jade M. S. Delevaux; James J. K. Leary; Linda J. Cox; Kirsten L. L. Oleson.

*Environmental Management*. February 5, 2015. doi:10.1007/s00267-014-0426-4

#### [Ecosystem service trade-offs across global contexts and scales](#)

Cavender-Bares, J.; P. Balvanera; E. King; S. Polasky.

*Ecology and Society*. 2015, Vol. 20(1): 22. doi:10.5751/ES-07137-200122

#### [The Allure of Clean Lakes](#)

*Conservation Magazine*, February 5, 2015

#### [Cleaner Lakes Are Social Media Stars](#)

by Elizabeth Preston, *Discover Magazine*, February 6, 2015

#### [Online photos provide evidence for the value of clean water](#)

*University of Minnesota Discover*, February 3, 2015

#### [Recreational demand for clean water: evidence from geotagged photographs by visitors to lakes](#)

Keeler, Bonnie L.; Spencer A. Wood; Stephan Polasky; Catherine Kling; Christopher T. Filstrup; John A. Downing.

*Frontiers in Ecology and the Environment*. 2015. doi:10.1890/140124

#### [Network structure beyond food webs: mapping non-trophic interactions on a Chilean rocky shores](#)

Kéfi, Sonia; Eric L. Berlow; Evie A. Wieters; Lucas N. Joppa; Spencer A. Wood; Ulrich Brose; Sergio A. Navarrete.

*Ecology*. January 2015, Vol. 96(1), pp 291-303. doi:10.1890/13-1424.1

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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).

