

the
science chronicles

an unofficial monthly for the science conservationist

May 2010: volume 8 issue #5

A Special on Rethinking Planning



all ideas and opinions are those of the authors and not of the nature conservancy.

Contact nancy_kelley@tnc.org to manage your subscription status
 go to <http://conserveonline.org/workspaces/science.chronicles> for archives

On the cover: Photo by Marcel ter Bekke

Contents

Letter From Your Editor	2
Special Issue: Rethinking Planning	3
The Evolution of Conservation Planning as Reported by One Person Who Lived Through it All.....	4
The What, the Where, and the Bottom Dollar—Conservation Planning in the 21 st Century	6
First Planning Methods Team Meeting in Tucson, AZ	8
Essays	10
Avatar Firmly Keeps the Con in Conservation	10
Adaptation Overload!.....	11
New charismatic mega-fauna species discovered in Archbold: the TNC scientist.....	12
Science Shorts	13
A Must Read for All TNC scientists: Poverty and Conservation Analysis Done Right.....	13
Barnacle Specialist Needed to Prevent Korean War	13
Climate Science Funding in U.S. Government on the Rise: Lasting Momentum or Shooting Star? ...	14
Jane Lubchenco’s Vision for Saving the World’s Oceans: Social Change	14
Ponderosa pine regeneration following severe fire events in northern Arizona and New Mexico..	15
Orgspeak and News	16
Submit your Science Today: Science Peer Review Help Desk Up and Running	16
Fellowship Opportunity: Conservation Planning and Climate Change in Africa	16
Ecosystem Services Communication Workshop.....	17
About the Authors	18
TNC Publications (2010)	19

Letter From Your Editor

Readers,

It's that time of life again when we are moving on. After serving as your editor for nearly a year I am passing on the baton to Bob Lalasz, who will be your next guiding light in Science Chronicles. It's been an honor to do this work and I have very much enjoyed it. But as a semi-outsider (I can't stop myself talking about TNC as "we" rather than "they"), it's been hard to stay in touch with the science issues that are playing within the organization. Being based outside the U.S. also didn't help. Still, I hope you have enjoyed the last 10 issues of the Chronicles. There has been good discussion, sometimes heated, like when we touched on issues such as (over-)regulation in TNC. I think that is where publications like this are at their best—when it pushes us into areas where we are least comfortable, and where our thinking is challenged. Such situations lead to the biggest leaps in progress. Your frequent feedback suggests to me that the information from the last year has been largely constructive and insightful. If that's indeed the case, I leave you with a happy heart. I wish Bob all the best with the Chronicles, and hope he can keep it on its track of continuous improvement.

As to the present issue, this is a special on TNC's ambitions to move forward on their already advanced path towards better conservation planning. A recent review of various conservation indicators reveals that we are far from reaching global conservation goals. Why is that? Is the problem too big in relation to the solutions on offer? Or are the solutions not tailored to the scope of the problem, i.e., are the strategies wrong? I think that the conservation movement is still struggling to answer these basic questions. But whatever the obstacles are, we'd better find out soon what to do about it. Conservation planning and the related adaptive management cycle play a major role in working towards more effective conservation strategies. Specifically, we need to work out how to improve the links from planning to implementation and from implementation to conservation success. In this special issue on Rethinking Planning TNC's latest planning ambitions are explained by Craig Groves, Peter Kareiva, Eddie Game and myself. How can conservation planning come up with better insights in particular problems and identify more effective and efficient strategies to deal with them? And what is the framework in which conservation can succeed? Hopefully something fresh and inspiring will result from this process that will help deal better with mounting conservation problems.

With my sincerest thanks,

Erik

Special Issue: Rethinking Planning

Going Global With Policy and Leverage: What Does Planning Have to Do with It?

When The Conservancy was just a land trust, it was easy to see why we needed to plan—we had to identify those parcels of land worth protecting by purchase or easement. But now all the talk is about global strategies and leverage. Centrally the policy staff has grown while the science staff has shrank. No one gets excited by “completing ecoregional plans” anymore. Many recent hires to TNC do not know what CAP’s or ecoregional assessments are. So is planning on its way out as a science-driven activity that brands TNC and makes it more effective than other conservation NGOs?

I think not, but I am certain our approach to planning needs to be revitalized and better connected to the new conservation. Essays by Craig Groves (the father of ecoregional planning), and Erik Meijaard and Eddie Game in this CHRONICLES start us down the path.

So here are my three cents.

First, “planning” IS a global strategy—it means taking control of one’s future instead of just letting the future happen. Marine spatial planning, ecosystem based adaptation, and development by design are all among TNC’s priority strategies and are all at their core an application of planning.

Second, policy and leverage at TNC (and other NGOs) in 2010 is a little bit like the wild west of land acquisition in the old TNC. There are a lot of creative smart people seeing opportunities everywhere with great ambitions to save the world. But where is the science that says this or that threat is really that important? And where is the analysis that says if TNC did not do X, with all of the other players in the policy arena, anyone would notice TNC’s absence? And then there is measures—so how do we determine that a leverage or policy investment has succeeded or failed—because if we cannot do that, we are shooting in the dark.

And lastly, and most importantly, conservation still happens on the ground and in the water. REDD happens in real forests. National funds for conservation still have to be invested in real places to exact concrete outcomes. Development by design is a success or failure depending on what happens to conservation targets in Mongolia and Wyoming (where we have been applying it). Ideas are cheap. Results are not. Science driven—and I mean serious science—conservation that uses data, not just the persuasive words of a business plan, combined with on the ground staff and commitment, is the best hope for ideas that work in reality and not just in a webinar.

P Kareiva

The Evolution of Conservation Planning as Reported by One Person Who Lived Through it All

Natural Diversity Scorecards.... Not many Conservancy staff are likely to recall this term, but it represents one of the earliest forms of conservation planning in TNC. Developed by Natural Heritage Programs, these scorecards summarized locations of rare species and natural communities that were in need of protection. More importantly, they identified priority places on which TNC Field Offices could focus their land conservation efforts. My first days in the Conservancy were spent preparing one of these scorecards which I later came to recognize as a form of conservation planning – albeit a far cry from what the scientific community now refers to as systematic conservation planning.

Many conservationists and scientists in the Conservancy and elsewhere realized the shortcomings of these early scorecards. The most significant of these was that the size of many of the “sites” identified in the scorecards was insufficient to conserve biodiversity over the long term. And the scorecards tended to neglect the wet part of our planet—freshwater and marine ecosystems.

As the conservation biology community moved to embrace landscape conservation, so, too, did The Nature Conservancy. In the late 1980s, the Conservancy launched a Bioreserve initiative that identified scores of landscape-scale sites as Conservancy priorities—Tallgrass Prairie, Virginia Coast Reserve, Florida Keys, and San Pedro just to name a few. The Bioreserve era moved the Conservancy in a direction of planning and setting priorities based on landscapes that contained “functioning ecological processes” and in developing strategic conservation plans for these bioreserve projects.

An early draft (1990) of the Conservancy’s Bioreserve handbook outlined some of the most important questions that a strategic bioreserve plan should address—“what biodiversity factors are we seeking to protect, what are the major threats to ecological objectives, what are the processes that make the ecosystem function.” If I didn’t know better, I’d think these bioreserve planning efforts were the predecessors of what we now call CAP or Conservation Action Planning!

By now you must be getting the idea that the Conservancy has been engaging in conservation planning throughout much of its history and that the methods that underpin this planning have always been evolving. No event has been more significant in this evolution than the emergence in the mid 1990s of *Conservation by Design*—a conceptual framework for how the Conservancy goes about its conservation work that remains the foundation of our conservation approach today. Borne out of a concern that despite our best efforts, we were not doing enough as an



CONSERVATION
by DESIGN

The Nature Conservancy 
SAVING THE LAST GREAT PLACES ON EARTH

organization to confront the increasing rates of biodiversity loss, the *Conservation by Design* framework (*CbD*) and its implementation firmly established the Conservancy as a leader in taking a systematic approach to conservation. The principal manifestation initially of *CbD* was the development of ecoregional plans for most areas in North America and many outside North America where the Conservancy works. The most important feature of these plans was the identification of a portfolio of conservation areas in each ecoregion that collectively could conserve that region's biodiversity.

In due time, ecoregional plans (or assessments as they are known today) led to greater collaboration of TNC staff across what had been balkanized operating unit boundaries, brought greater focus to the biodiversity mission by emphasizing the importance of conserving *all* ecosystem types (including freshwater and marine), helped fill important biodiversity data gaps, and in some parts of the Conservancy, led to a much greater engagement of TNC with the broader conservation community. On the science side, we helped fund the development of the most widely used decision support system in conservation planning—Marxan. We also assisted in mainstreaming carnivore connectivity in conservation planning, planted the seeds of today's marine and freshwater spatial planning, and along the way applied systematic conservation planning to a greater extent than any other organization or agency has. The lessons we learned and the methods we developed were detailed in *Drafting a Conservation Blueprint: A Practitioner's Guide to Planning for Biodiversity* (Island Press 2003), a widely used conservation planning book.

Concurrent with the advancement of ecoregional assessments, another equally important component of *Conservation by Design*—site conservation planning—was being championed by a group of field-based practitioners and scientists. Whilst ecoregional planning became synonymous with the “setting priorities” component of the *CbD* cycle, the 5S Framework (system, stress, source, strategy, success) filled the important niche in *CbD* of strategy development. This 5S Framework matured into what we know today as CAP or Conservation Action Planning. CAP, too, is a systematic approach to conservation planning at the strategy or project level, and it has had a profound impact on the conservation community. In no small way, the advancement of CAP methods led to the development and widespread use of two strategic planning software applications (CAP excel workbooks, Miradi), the establishment of a network of conservation coaches whose tentacles extend far beyond the Conservancy, and have enabled the Conservancy and its partners to have a common language (targets, key ecological attributes, stresses, sources, strategies) with which we can talk about, institutionalize, improve, and disseminate the best practices of our conservation work.

What evolutionary breakthroughs are next and what new challenges do we need to adapt to? As nearly every practitioner recognizes, the business of conservation has become increasingly complex. The “flat” world in which we live and work has added social, economic, and political dimensions (e.g., REDD, carbon markets, poverty alleviation) to our conservation work that few of us could have imagined 20 years ago. Our planning methods and tools must continue to advance as well to meet these ongoing challenges. In accompanying essays, Chief Scientist Peter Kareiva and conservation scientist Eddie Game outline the most important areas for advancement and some cool tools that will

help. Whatever these advances are, to be most effective, the continued evolution of conservation planning approaches in TNC needs to: 1) continue to strike a balance between scientific rigor and the practicality of application in the real world of conservation, 2) penetrate “markets” in which there are both significant opportunities and risks for huge conservation gains (e.g., large-scale infrastructure development), and 3) offer an integrated toolbox of different approaches and tools that is befitting of the diversity of conservation situations in which we all work.

C Groves

The What, the Where, and the Bottom Dollar—Conservation Planning in the 21st Century

There is no such thing as a priority conservation site without associated conservation actions. Likewise, all conservation actions happen somewhere. No matter which scale you look at, the ‘what’ and the ‘where’ of conservation are inseparable.

The realization that it is inefficient to make independent decisions about where and how to do conservation, is the drive behind one of the most important recent advances in conservation planning. As we move from a binary (in or out) vision of conservation activities in the landscape, new tools and approaches are emerging to help us make these more complicated, more real, and hopefully more effective conservation decisions. Chief among these new methods are multi-objective spatial planning tools. Marxan with Zones (www.uq.edu.au/marxan/), represents the evolution in this direction, of the world’s most widely used conservation planning software. This tool, which has been previously described in the Chronicles by Reinaldo Lourival [see September 2009 issue #9; <http://conserveonline.org/workspaces/science.chronicles>] explicitly acknowledges that the world is not polarized into black or white, but is rather a matrix of land, sea, and freshwater uses that all involve trade-offs and all dwell in shades of grey between living zoos and the complete loss of biodiversity. In finding good solutions, Marxan with Zones recognizes not only the contributions that different ‘zones’ can make to conservation and other sectors, but also the often important spatial relationships between these zones. The ability to accommodate the needs and interests of other sectors provides a strong platform to engage in genuinely collaborative spatial planning with diverse stakeholders. Wilson, Meijaard, et al. (2010) have recently provided an excellent example of how this tool can be used to support complicated land-use and conservation decisions. Encouragingly, many in the



Multi-objective spatial planning. What use fits best to what zone and at what cost? Photo: Marcel ter Bekke.

Conservancy are already heading in the same direction. The integration of spatial and strategic planning is the novel element of Marine Spatial Planning, a key approach for the Conservancy's Global Marine Team. It is also consistent with the way our Global Freshwater Team thinks about planning and prioritization of their strategies. Furthermore, the integration of strategic and spatial prioritization will be required if we are to effectively incorporate important emerging conservation approaches, such as Ecosystem Services, REDD, and Ecosystem Based Adaptation, into our conservation planning methods.

While we probably all have a little less faith in economic analyses in this global financial crisis world, the second set of tools which will have a big impact on the future of conservation planning come from the world of economic decision making. The economic decision tools being used in conservation planning generally fall into one of three categories: *marginal benefit*, *trade-off curves*, or *cost effectiveness*. Even basic economic decision making is surprisingly underutilized in conservation, but these simple tools have the potential to dramatically alter both our conservation decisions and the effectiveness of our work (e.g., Underwood *et al.* 2008).

Cost effectiveness analysis is a cost benefit assessment where the benefit is some non-monetized value, for instance biodiversity. Of the three types of economic analyses, this is the most commonly used in conservation (often without us knowing it). Ecoregional Assessments that use good underlying data on the cost of conservation are essentially doing cost effectiveness analysis. A common extension is to multiply the expected benefit of an action by the probability of success (e.g., Joseph *et al.* 2009).

Marginal benefit is the theory that underpins what is commonly referred to as Return-on-Investment analyses. In general, marginal benefit analysis is based on the principal of diminishing returns, where for example increasing overall protection of a habitat from 5–10%, would be of greater benefit for biodiversity than if the same percentage increase took the habitat from 50–55% protected. The reason this seems to work for conservation is due to one of the very few (and possibly only) true 'laws' in ecology—the species area curve. Marginal benefit has the potential to help sensibly plan conservation actions and allocate resources through time (e.g., Wilson *et al.* 2007).

Trade-off curves aim to support decision making by illustrating the consequences of decisions on a set of things we might care about. For instance, when allocating a landscape to different activities there is likely to be a trade-off between food production, employment, and conservation. Trade-off curves explicitly demonstrate what the price of improving one of these, is in terms of loss for the others. This is where emerging ecosystem service valuation and mapping tools like InVEST (www.naturalcapitalproject.org) really come into their own.

Conservation planners are typically ecologists, not economists. Cost data is not our strong suit, so we need to do this better. Ironically, however, the biggest obstacle to using these economic decision tools in conservation has been ecology not economics—we can rarely agree upon the benefit! In economic settings, the reward structure for these analyses is pretty straight forward (e.g., money, jobs, lives, etc.). Most good examples of these tools in conservation have focused on the number of

species protected; our challenge is to use them with the broader ecological and social objectives typical of modern conservation.

These represent just a couple of the issues and tools that the Planning Methods Team will be considering as we try to keep the Conservancy at the front of the conservation planning game.

Joseph L.N., et al. (2009). Optimal allocation of resources among threatened species: a project prioritization protocol. *Conservation Biology*, 23, 328-338.

Underwood E.C., et al. (2008). Protecting Biodiversity when Money Matters: Maximizing Return on Investment. *PLoS One*, 3.

Wilson K.A, et al. (2010). Conserving biodiversity in production landscapes. *Ecological Applications*.

Wilson K.A., et al. (2007). Conserving biodiversity efficiently: What to do, where, and when. *Plos Biology*, 5, 1850-1861.

E Game

First Planning Methods Team Meeting in Tucson, AZ

The complexity and scale of both the conservation challenges and strategies we deploy to meet these challenges has increased beyond what many of us could have imagined when we started our conservation careers. To meet these challenges, we have convened a Planning Methods Team to undertake a year-long effort to improve and advance our planning methods. This effort is being co-sponsored by Conservation Science (Karen Poiani) and the Strategic and Business Planning Office (Jeff Hardesty). The team includes field practitioners, managers, scientists, and planners from inside and outside TNC:

Silvia Benitez – TNC Northern Andes Southern Central America OU (NASCA)	Anita Diederichsen – TNC Atlantic Forest & Central Savannas OU
Robin Cox – TNC California (science)	Craig Groves – Methods & Learning, Central Science
Gwynn Crichton – TNC Virginia (science)	Rob McDonald – TNC Conservation Lands Team
Andrew Soles – Strategic & Business Planning Office	Erik Meijaard – formerly TNC Indonesia Program, now with PNCI
David Wilkie – Wildlife Conservation Society	Heather Tallis - Natural Capital Project (Stanford, WWF, TNC)
Zach Ferdana – Global Marine Team	Randy Hagenstein – TNC Alaska (OU director)
Eddie Game – Methods & Learning, Central Science	Kirsten Evans – Methods & Learning, Central Science

The methods team held its first meeting from 18-20 May in TNC's Arizona Field Office. We reviewed a wide range of issues largely focused on our two key planning approaches – Ecoregional Assessments (ERA) and Conservation Action Planning (CAP). A few of the ideas that were explored during the meeting included:

- Integrating spatial (ERA) and strategic (CAP) planning approaches in TNC as the scale of our strategies and projects has increased.
- Incorporating and improving the guidance on climate adaptation into our day-day planning methods and tools.
- Merging the developing framework on business planning for priority projects that has emerged from Bill Ginn's Conservation Leadership Team with our more traditional conservation planning methods of ERA and CAP.
- Building some sort of return on investment framework into our planning.
- The need to develop multi-objective planning approaches that can account for biodiversity conservation objectives but additional ones as well such as those related to social and human dimensions (e.g., ecosystem services).

In addition to exploring these detailed topics, the discussion revolved around more holistic issues. What are the key questions that conservation planning methods must address at different levels of the organization? Why do conservation plans of various sorts fall short on implementation? What does that tell us about the planning methods that different groups or different geographies may need? What is the appropriate investment of time in the various components of planning from establishing targets and threats to developing strategies, implementing, and evaluating results? Which aspects of our current planning methods are working well and do we want to make sure we retain?

The team plans on extensive outreach to TNC and partner staff over the next year. That outreach will include inquiries as to where and why our planning methods and approaches have fallen short and how they can be improved. Look to future issues of the Science Chronicles for more information on the team's progress over the next year. In the near future, we will send a more detailed summary of our first meeting to TNC field programs and other interested parties.

C Groves and E Meijaard

Essays

Avatar Firmly Keeps the Con in Conservation



On a recent trans-oceanic flight I wiled away time with the film "Avatar". Despite the pokey screen and poor sound—not quite the 3 or 4D experience it was designed for—I enjoyed it. But the film left a bitter after taste.

The story line is as follows. Humans have ruined earth and travel to the far-off planet Pandora to continue their pillage. There they encounter the Na'vi, tall, long-tailed, pointy-eared, flat-nosed humanoids with a smurf-like skin tone. Na'vi live 'in harmony with Nature', kill and harvest only what they need, ask for forgiveness for that, and apparently do not affect the world around them. Humans want to destroy Pandora's environment for mining, but brave American soldier helps the Na'vi to beat humans and sends them back to Planet Earth.

There is an environmental moral in the film. In the words of James Cameron, the film's director: "the Na'vi represent something that is our higher selves, or our aspirational selves, what we would like to think we are". There are good humans in the film, but the humans "represent what we know to be the parts of ourselves that are trashing our world and maybe condemning ourselves to a grim future".

This is an unhelpful picture. I don't like the polarization between beautiful, untouched nature, inhabited by creatures that choose not to impact their environment, versus evil capitalist, industrialist, greedy people who only know how to destroy it. All people, urban, rural, and forest-dwelling impact their environment—just ask the extinct megafaunas of Australia, Asia, and the Americas. In fact, all creatures impact their environment and will do their utter best to enlarge their ecological niche, and exploit it as much as they can. That is how nature (and we) function.

Conservation is about finding a balance. We should acknowledge that all humans affect their environment. The choice we have is to limit the impact. Conservation originally started by locking away natural areas, and removing humans and their activities from them. With 6 billion people on the planet and counting that is now rarely possible. If we accept that people are part of conservation, we also need to accept those people's aspirations. And most people want better lives, including those that live in far away forests. They want to live to over 50 years, have children that survive beyond the age of 2, go to school, not have constant diarrhea, own a television, and not be hungry.

There are no Na'vi. It's only us, an intelligent, technically skilled species, very adapt at using the resources of this planet. And there are all the other species. The most relevant conservation question

is whether we are smart and care enough individually to live our lives so that it leaves behind a pleasant place for our descendents. A secondary issue is what that means for the other species around us. The biggest conservation mistake is to assume that our conservation problems will somehow be solved by Na'vi-like people who care more about their environment than about themselves. Nature does not do creatures like that.

E Meijaard

Adaptation Overload!

Worried about the impacts of climate change on your conservation program or project? The Central (Conservation) Science group of the Conservancy has recently produced three documents that provide guidance on climate adaptation that may help you.

The first of these was an outgrowth of the Climate Adaptation Clinic held in September 2009. This guidance was developed to assist 20 Conservancy projects adapt their conservation strategies to climate change within the framework of the CAP methodology. Based on feedback from the Clinic this was revised resulting in *Conservation Action Planning Guidelines for Developing Strategies in the Face of Climate Change* October 2009, which is available for download from <http://conserveonline.org/workspaces/climateadaptation> (click on “Tools and Methods”).

The second guidance document—*Incorporating Climate Change Adaptation into Regional Conservation Assessments* (April 2010)—is geared towards consideration of adaptation in regional planning and assessments although it should prove useful to conservation practitioners in many landscape and seascape projects. The heart of this guidance focuses on five approaches to adaptation that the Conservancy and partners can start implementing today and that do not rely on complicated analyses. There is an appendix that provides more detailed information on methods and techniques. This document and the adaptation primer described below are also available for download at: <http://conserveonline.org/workspaces/climateadaptation>.

The third piece of guidance is a primer or introduction to assessing climate impacts and adaptation. One of the most significant challenges for any conservation practitioner or scientist is to keep up with the burgeoning literature and seemingly endless conferences and workshops on adaptation. *Climate Change and Conservation: A Primer for Assessing Impacts and Advancing Ecosystem-based Adaptation in The Nature Conservancy March 2010* aims to provide Conservancy staff, partners, and other interested parties with a wide array of introductory information, methods, tools, broad strategies, and case studies from inside and outside the Conservancy to assist in evaluating climate impacts to our conservation work and advancing Ecosystem-based adaptation strategies.

None of these pieces of guidance is a cookbook for how to adapt a conservation project, program, or strategy to climate change. Yet, taken collectively, the methods, tools, and best practices outlined within them should help jump-start conservation practitioners, scientists, and planners in their

efforts to adapt their work in the face of climate change. Although actual experience in advancing adaptation strategies in the conservation community remains limited, it is growing almost weekly as are the resources to help us. You can expect to see updates and improvements to this guidance in the months ahead. If you know about some important case studies or resources on adaptation that the whole organization could benefit from, don't hesitate to email adaptation@tnc.org.

C Groves

New charismatic mega-fauna species discovered in Archbold: the TNC scientist.

Recently a group of TNC scientists gathered at Archbold Biological Station in Florida. The goal of the three day workshop was to help scientists become more effective communicators. Because, let's face it, we scientists can be rather dull with our tables and statistics and we could all use some coaching on how to talk about conservation science without being *SUCH* scientists. As organizer Steffan Reiffe put it, "you can still be a football player without wearing your cleats inside."

For the grand finale of the workshop, we were each given 5 minutes to pitch our projects to a real live donor. No powerpoint, no graphs. Every single one of the 21 talks was passionate and compelling. Bronson managed to talk for 5 minutes without *once* saying "REDD". Thomas from West Virginia, and Tomás from Colombia, both your stereotypical scientists with *way* too much information to convey, managed to compress their messages into only 5 minutes. Marten from Indonesia had everyone wide-eyed with wonder as an imaginary *mola mola* fish swam around the room. Even Dan Salzer made conservation measures an interesting topic—just imagine a measures talk with no slides! And then there was Enkhtuya, who had all of us, even the cheapest of us scientist tightwads, reaching into our pockets to support conservation of Mongolian grasslands—this, without a single photo thrown in for dramatic effect!

The second evening the conversation turned to the old TNC All Science Retreats. This workshop was a good reminder for the "old timers" of the synergies, the cross-pollination, the energy that scientists get when they get out of their projects, their states, their countries, and they just talk science. In the hectic, organized chaos, of our daily jobs, it is often difficult to learn about and capitalize on synergies that TNC projects may have. Could forests projects in Washington be learning something about carbon offsets and sustainable forestry in Indonesia (or vice versa)? Could lessons from controlled burning at Martha's Vineyard be transferred to other fire-dependent systems? What are we losing by not having the opportunity to make these connections? Even in tough budget times, we shouldn't underestimate the value of those connections. This essay is our plea to Central Science – *PLEASE* bring back the TNC All Science Retreats.

J Morse, S Hamman, L Davis, E Gray, R Fuller, E Simek, and B Griscom, on behalf of workshop participants

Science Shorts

A Must Read for All TNC scientists: Poverty and Conservation Analysis Done Right

Andam, A., Ferraro, P., Sims, K, Healy, A., and M. Holland. 2010. Protected areas reduce poverty in Costa Rica and Thailand. PNAS. Online edition.

Conservationists and policy experts in the conservation camp love to make claims about protected areas and conservation being good for poor people. There are lots of reports on this topic by NGOs, international institutions, and governments. Almost without exception the science and analysis in these reports is weak—sometimes really weak—people mustering data in support of their views as opposed to testing a hypothesis. Two reasons this is so tricky are 1) there are temporal trends in poverty levels irrespective of conservation action, and 2) conservation actions are not randomly placed with respect to poverty hotspots. Kwaw Andam and colleagues have produced the gold standard for conservation and poverty studies, using matching methods that pair communities affected by protected areas (treatment) with communities removed from any protected area impacts (controls) in a way that eliminates as best as possible confounding influences. They find that in Costa Rica poverty has been declining across the country, but 10% of the decline in “treatment” communities can be attributed to the establishment of a protected area. In Thailand the figure is 30% of the decline in poverty for “treated” communities is attributable to protected areas. If Andam and colleagues had not done a proper matching, they would have found (wrongly) that protected areas increased poverty (because in both Thailand and Costa Rica poor communities are spatially associated with protected areas). The reason I encourage all TNC scientists to read this paper is because we so often shun rigor as not necessary for we practical conservation warriors fighting the good fight on behalf of nature. And yes the findings of the paper are also important: protected areas contribute to poverty alleviation—but it is the methods I want to shine a light on.

P Kareiva

Barnacle Specialist Needed to Prevent Korean War

I was reading some of the interesting commentaries about the piece of evidence that has triggered the present North-South Korean hostilities. There is much to do about the barnacle growth on parts of the torpedo—but not on others—and the development of rust, and how this apparently weakens the South Korean case. Obviously there is a clear need to get some solid marine scientists involved.

Read further on <http://answers.yahoo.com/question/index?qid=20100521053435AAtWPcY>.



E Meijaard

Climate Science Funding in U.S. Government Agencies on the Rise: Lasting Momentum or Shooting Star?

In the early spring of this year, we developed what we believe to be the first ever comprehensive analysis of the President's budget request (FY 2011) specific to climate change funding (see conserveonline.org/./analysis-of-climate-specific-programs-across). Pouring through hundreds of pages of dense and often near incomprehensible budget-ese across nine agency budget justifications, we discovered that climate funding in the Administration's proposed spending plan was very well positioned, particularly juxtaposed amid otherwise flat or declining budgets. Climate change funding was pegged to receive a boost of some \$205 million over last year's levels with the lion's share, over \$160 million, going to developing climate science, assessments, and information products.

But the analysis turned up interesting tidbits beyond the numbers. Finding and synthesizing climate-specific budget line items was only giving us a partial picture of the scope of climate change activities across the government. Not included in our totals were many programs that are climate-relevant even if the words "climate change" never appears in the program justification. EPA water programs are a good example. They are not framed in the context of climate change, but we can be confident that these programs have significant potential to deliver adaptation practice on the ground, even if the agency isn't thinking in those terms... yet. It was also apparent that in many cases a chasm exists between an agency's rhetoric on climate change and its programs to deliver conservation on the ground. In some cases, we found laudable climate goals and objectives but no clear link to programs or funding. These findings, among others, reinforce for us the merit of our overarching policy goal—to hardwire climate generally, and adaptation in particular, into agency decision-making.

But just as the Administration giveth, Congress can taketh away. Current bets this year are on a continuing resolution where the Congress basically punts on passing a new budget and funds government functions at last year's levels. Climate change science and practice are well positioned right now but it will take a concerted effort, in DC and in the field, to demonstrate both needs and successes to help ensure that FY11 isn't a high-water mark but solidifies a trend.

T Fry

Jane Lubchenco's Vision for Saving the World's Oceans: Social Change

Jane Lubchenco and Laura Petes. 2010. The interconnected biosphere: science at the ocean's tipping point. *Oceanography* 23: 115-129.

Jane Lubchenco's scientific career has been remarkable—going from a PhD thesis in which she experimentally manipulated snail densities in intertidal tide pools off the coast of Maine, to transformative leadership of the Ecological Society of America, to now being the head of NOAA. The arc of this career has given her scientific and policy experiences that yield insights worth heeding. In this essay with Laura Petes, Jane compellingly argues that attention to ecosystem services and

ecosystem management holds the key to saving our oceans. The reason is simple: ecosystem services are the frame in which all of society's sectors with an interest in the oceans can be engaged, and can be made to consider tradeoffs and tipping points. The tools championed are familiar to TNC: marine protected areas, ecosystem based management, and marine spatial planning. All three of these tools are based on planning efforts of the sorts Craig Groves and Eddie Game discuss above. But to this scientific menu, Jane adds a special ingredient—the need for rapid social change. Jane and Laura point out that communication and education will be key to building momentum for the magnitude and pace of social change needed to save our oceans. It is my personal belief that “social change” needs to be elevated on the agenda of all conservation organizations and conservation supporters. Once again Jane is out in front of the rest of us.

P Kareiva

TNC-sponsored Research: Ponderosa pine regeneration following severe fire events in northern Arizona and New Mexico

Large fires are now defining a new fire regime in southwestern forests. Those concerned with conservation want to know: What are the consequences of spatial patterns of fire severity for regeneration of ponderosa pine under this new regime? A paper recently published in *Landscape Ecology* (Haire and McGarigal 2010) addresses this question using data from two southwestern study sites: the Saddle Mountain fire of 1960 (AZ) and La Mesa fire of 1977 (NM). A community analysis was previously conducted for the same sites; ponderosa pine and other off-site seeders were found to be more abundant closer to less-severely-burned edges (Haire and McGarigal 2008). The research was funded by an RJKOSE grant. Consultants on the project were Dr. William Romme and Dr. Melissa Savage, along with TNC sponsor Patrick McCarthy.

Spatial patterns of severity at the study sites varied widely in size and shape, resulting in configurations of openings and seed sources that were probably similar to those of historical fires in some places, as well as situations that were unlikely historically. The study employed three spatial burn pattern metrics, all of which proved to be useful in modeling regeneration of ponderosa pine: (1) distance to nearest edge of lower severity; (2) neighborhood severity, measured at varying spatial scales, and (3) scaled seed dispersal kernel surfaces. The process of regeneration was found to be linked to severity at particular scales of measurement. Moreover, spatial patterns of burning remained important to understanding regeneration even after consideration of subsequent disturbance and other environmental variables. The researchers also examined the age structure of young forests across space and time. Populations spread in a moving front, as well as by remotely dispersed individuals, resulting in a diverse age structure.

The authors concluded that recent large fires cannot be summarily dismissed as catastrophic. Given the strong and persistent role of spatial patterning on ponderosa pine regeneration at the study sites, understanding landscape heterogeneity will be critical to setting realistic and ecologically appropriate long-term restoration goals under this new regime.

Haire, S.L. and K. McGarigal. 2008. Inhabitants of landscape scars: succession of woody plants after large, severe forest fires in Arizona and New Mexico. *The Southwestern Naturalist* 53(2): 146-161.

Haire, S.L., and K. McGarigal. 2010. Effects of landscape patterns of fire severity on regenerating ponderosa pine forests (*Pinus ponderosa*) in New Mexico and Arizona, USA. *Landscape Ecology*, On-line early: DOI 10.1007/s10980-010-9480-3. Springer Netherlands.

S L Haire and D J Ganz

Orgspeak and News

Submit your Science Today: Science Peer Review Help Desk Up and Running

The Science Peer Review Help Desk launched last month and is still open and ready for business. Please continue to help us pilot this service. We have received some great submissions of ALL types, not just peer-review type manuscripts which is *great*. The submissions so far include:

- A script for an online training,
- A methodology for classification of an ecosystem,
- A book chapter, and
- A restoration plan.

Submit any science you want feedback on; this services is NOT just for peer-review type publications. Thanks to everyone who has submitted things thus far!

A huge thank you to all reviewers for voluntarily giving time to this effort!!

- Of those reviewers asked, 94% responded to the request,
- And 81% of those who responded agreed to be a reviewer!!

We have had reviewers from both science and policy. This service would not be possible without such generosity.

The pilot continues until the end of June so please send any science you want reviewed to Rebecca Goldman: rgoldman@tnc.org

Fellowship Opportunity: Conservation Planning and Climate Change in Africa

On behalf of TNC Africa, the Coda Global Fellows Program is seeking a Fellow for a two-year assignment providing climate change technical support to collect, map and analyze climate change predictions and impact on ecosystems and design adaptation strategies for two projects in Tanzania. Candidate needs CAP experience and ideally has been through a Climate Clinic to update and modify

CAPs with climate change information. Experience in Africa desired and conversational Swahili a plus. Location is flexible and funding is available for all travel expenses plus salary to be negotiated.

We are also seeking a Fellow with strong CAP experience and experience in floodplain systems and hydrology to lead a process to revise TNC Iowa's Lower Cedar River project CAP, engaging multiple agencies, integrating freshwater and terrestrial communities and addressing altered hydrology as a result of flooding. The Fellow should be familiar with hydrological modeling techniques and be comfortable managing multi-disciplinary/multi-agency teams. Fellow will be based in his or her own office and will work part time for approximately 6 months. Funding is available for the 3-5 trips to Iowa.

If you would like more information or are interested in either of these Fellowship opportunities, please contact Coda Global Fellows Director Jolie Sibert at jsibert@tnc.org or (520) 547-3422.

Ecosystem Services Communication Workshop

Do eyes glaze over when you talk about the work that you do for The Nature Conservancy? Do you get blank stares when you describe the benefits nature provides for people? Looking for ways to motivate donors, partners, media and others key audiences to your work?

This hands-on, interactive, research-driven training is for you! Save the Date! – July 20 at WWO.

Join us for a day of hands-on training with national communications experts Steve Alexander and Martin Hamburger. Learn how to translate important scientific topics, like ecosystem services, into language others can actually understand. Steve and Martin, experts in strategic, media and crisis communications, have trained top-notch media spokespersons, CEOs, political candidates, elected officials and community leaders, and hundreds of TNC staff and now they are ready to train you!

You'll learn how to: 1) build public support for conservation and the work that you do every day, 2) talk about conservation and "ecosystem services" in a way that others can understand, and 3) work with the media, donors, partners, elected officials and opinion leaders to deliver your message. The training includes live, on-camera opportunities, and topics like:

- The latest national public opinion research on the public's perceptions and attitudes towards "ecosystem services;"
- Key messages that resonate with the public to build support for "ecosystem services;"
- How to develop, deliver, and effectively communicate key messages that motivate audiences;
- How to prepare for interviews with the media, and avoid common interview pitfalls.

Registration will be limited. Email Eleanor Morris at emorris@tnc.org for more information and registration.

About the Authors

Craig Groves
 Director, Conservation Methods and Learning
 Team
 The Nature Conservancy
 Worldwide Office, Bozeman, MT
 Email: craig_groves@tnc.org

Peter Kareiva
 Chief Scientist
 The Nature Conservancy
 Seattle, WA
 Email: pkareiva@tnc.org

Eddie Game
 Conservation Planning Specialist
 The Nature Conservancy
 West End, Australia
 Email: egame@tnc.org

Tom Fry
 Senior Policy Advisor, Climate Adaptation
 The Nature Conservancy
 Email: tfry@tnc.org

Eleanor Morris
 Western Coordinator, Conservation Campaigns
 Team
 The Nature Conservancy
 Missoula MT, 59802
 Email: emorris@tnc.org

Rebecca Goldman
 Senior Scientist - Board Relations
 The Nature Conservancy
 Arlington, VA
 Email: rgoldman@tnc.org

Julie Morse
 Project Ecologist
 The Nature Conservancy of Washington
 410 N. 4th Street
 Mount Vernon, WA 98273
 Email: jmorse@tnc.org

Jolie Sibert
 Director, Coda Global Fellows Program
 The Nature Conservancy
 Conservation Methods and Learning
 Tucson, AZ 85719
 Email: jsibert@tnc.org

Sandra L. Haire
 Depart. of Nat. Res. Conservation
 University of Massachusetts
 Amherst, MA
 Email: shaire@nrc.umass.edu

David J. Ganz
 Director, Global Fire Initiative
 The Nature Conservancy
 Email: d ganz@tnc.org

[Contact the Editor](#)

Dr. Erik Meijaard
 Editor Science Chronicles
 People and Nature Consulting International
<http://www.people-nature-consulting.com/>
 E-Mail: emeijaard@pnc-int.com

TNC Publications (2010)

Please send new citations and the PDF (when possible) to: pkareiva@tnc.org and emeijaard@pnc-int.com

NOTE: New additions in red; TNC affiliated authors highlighted in bold.

- Benítez, S., A. Blanco, J. Cole, M. Ibáñez, J. J. Rodríguez, and S. Halloy.** 2010. Using water funds to finance watershed conservation in the Andes and Costa Rica. Mountain Forum **10**:71-73.
- Biggs, R., M. W. Diebel, D. Gilroy, A. M. Kamarainen, M. S. Kornis, N. D. Preston, J. E. Schmitz, C. K. Uejio, M. C. Van De Botert, B. C. Weindel, **P. C. West**, D. P. M. Zaks, and S. R. Carpenter. In press. Preparing for the future: teaching scenario planning at the graduate level. Frontiers in Ecology and the Environment doi: 10.1890/080075.
- Brown, J., L. Bach, A. Aldous, A. Wyers, and J. DeGagne.** In press. Groundwater-dependent ecosystems in Oregon: an assessment of their distribution and associated threats. Frontiers in Ecology and Environment doi:10.1890/090108.
- Butchart, S.H.M., et al. (incl. 44 co-authors, and TNC's **C. Revenga**). (2010). Global Biodiversity: Indicators of Recent Declines. ScienceExpress 29 April 2010. 10.1126/science.1187512.
- Cardillo, M., and **E. Meijaard**. In press. Phylogeny and the co-occurrence of mammal species on southeast Asian islands. Global Ecology & Biogeography.
- Clarke, P., S. Jupiter (and with contributions from **J. Wilson, C. Rotinsulu** and others). 2010. Principles and Practice of Ecosystem-Based Management: A Guide for Conservation Practitioners in the Tropical Western Pacific. Wildlife Conservation Society, Suva, Fiji.
- Cohen, J. B., S. M. Karpany, J. D. Fraser, and **B. R. Truitt**. 2010. The effect of benthic prey abundance and size on red knot (*Calidris canutus*) distribution at an alternative migratory stopover site on the US Atlantic Coast. Journal of Ornithology **151**:355-364.
- Copeland, H. E., S. A. Tessman, E. H. Girvetz, L. Roberts, C. Enquist, A. Orabona, S. Patla, and J. M. Kiesecker.** 2010. A geospatial assessment on the distribution, condition, and vulnerability of Wyoming's wetlands. Ecological Indicators **10**:869-879.
- Denning, C. A., J. Christensen, and **R. I. McDonald**. In press. Did land protection in Silicon Valley reduce the housing stock? Landscape and Urban Planning doi:10.1016/j.biocon.2010.01.025.
- Doherty, K. E., D. E. Naugle, **H. Copeland, A. Pocewicz, and J. Kiesecker**. in press. Energy development and conservation tradeoffs: systematic planning for sage-grouse in their eastern range. Studies in Avian Biology: <http://sagemap.wr.usgs.gov/monograph.aspx>.
- Drever, C.R., Snider, J., Drever, M.C.,** 2010. Rare forest types in northeastern Ontario: a classification and analysis of representation in protected areas. Canadian Journal Forest Research **40**, 423-435.

- Drummond, S. P., K. Wilson, **E. Meijaard**, M. Watts, R. Dennis, **L. Christy**, and H. P. Possingham. 2010. Influence of a Threatened-Species Focus on Conservation Planning. Conservation Biology **24**: 441-449.
- Enderson, E. F., A. Quijada-Mascareñas, **D. S. Turner**, R. L. Bezy, and P. C. Rosen. 2010. Una sinopsis de la herpetofauna con comentarios sobre las prioridades en investigación y conservación. Pages 357-383 in F. Molina and T. Van Devender, editors. Diversidad Biológica de Sonora. Universidad Nacional Autónoma de México.
- Fletcher, R.J.J., Robertson, B.A., Evans, J.S., **Doran, P.J.**, Alavalapati, J.R.R., Schemske, D.W., 2010. Biodiversity conservation in the era of biofuels: risks and opportunities. Frontiers in Ecology and the Environment doi: 10.1890/090091.
- Fuller, D., **E. Meijaard**, **L. Christy**, and T. C. Jessup. In press. Spatial assessment of threats to biodiversity within East Kalimantan, Indonesia. Applied Geography.
- Game, E. T.**, H. Grantham, A. J. Hobday, R. L. Pressey, A. T. Lombard, L. E. Beckley, K. Gjerde, R. Bustamante, H. P. Possingham, and A. J. Richardson. 2010. Pelagic MPAs: The devil you know. Trends in Ecology & Evolution **25**:63-64.
- Gleason, M.**, S. McCreary, M. Miller-Henson, J. Ugoretz, E. Fox, M. Merrifield, W. McClintock, P. Serpa, and K. Hoffman. 2010. Science-based and stakeholder-driven marine protected area network planning: A successful case study from north central California. Ocean & Coastal Management **53**:52-68.
- Golet, G. H.**, T. Gardali, J. Hunt, D. Koenig, and N. Williams. In press. Temporal and taxonomic variability in response of fauna to riparian restoration. Restoration Ecology.
- Graham, N. A. J., **M. D. Spalding**, and C. R. C. Sheppard. 2010. Reef shark declines in remote atolls highlight the need for multi-faceted conservation action. Aquatic Conservation: Marine & Freshwater Ecosystems. DOI: 10.1002/aqc.1116.
- Griscom, B.**, H. Griscom, and S. Deacon. In press. Species-specific barriers to tree regeneration in high elevation habitats of West Virginia. Restoration Ecology.
- Herbert, M.E.**, McIntyre, P.B., **Doran, P.J.**, Allan, J.D., Abell, R., In press. Terrestrial reserve networks do not adequately represent aquatic ecosystems. Conservation Biology. DOI: 10.1111/j.1523-1739.2010.01460.x.
- Hoekstra, J. M., J. L. Molnar, M. Jennings, C. Revenga, M. D. Spalding, T. M. Boucher, J. C. Robertson, T. J. Heibel, and K. Ellison** 2010. The Atlas of Global Conservation: Changes, Challenges, and Opportunities to Make a Difference. University of California Press, Berkeley, USA.
- Imbach, P., L. Molina, B. Locatelli, O. Roupsard, P. Ciais, **L. Corrales**, and G. Mahe. 2010. Regional modeling of vegetation and long term runoff for Mesoamerica. Hydrology and Earth System Sciences **7**:801-846.

- Kareiva, P.** 2010. Am I Making Myself Clear? A Scientist's Guide to Talking to the Public. Science **327**:34-35.
- Kareiva, P.** 2010. Don't Be Such a Scientist Talking Substance in an Age of Style. Science **327**:34-35.
- Lawler, J. J., **T. H. Tear**, C. Pyke, M. R. Shaw, P. Gonzalez, **P. Kareiva**, L. Hansen, L. Hannah, K. Klausmeyer, A. Aldous, C. Bienz, and S. Pearsall. 2010. Resource management in a changing and uncertain climate. Frontiers in Ecology & the Environment **8**:35-43.
- Louys, J., and **E. Meijaard**. in press. Palaeoecology of Southeast Asian megafauna-bearing sites from the Pleistocene and a review of environmental changes in the region. Journal of Biogeography.
- Low, G., L. Provencher**, and **S. L. Abele**. 2010. Enhanced conservation action planning: assessing landscape condition and predicting benefits of conservation strategies. Journal of Conservation Planning **6**. Available online at: <http://www.journalconsplanning.org/2010/index.html>.
- Kiesecker, J. M., H. Copeland, A. Pocewicz**, and **B. McKenney**. in press. Development by design: blending landscape-level planning with the mitigation hierarchy. Frontiers in Ecology & the Environment doi:10.1890/090005.
- Margles, S. W., R. B. Peterson, J. Ervin**, and **B. A. Kaplin**. 2010. Conservation without borders: Building communication and action across disciplinary boundaries for effective conservation. Environmental Management **45**:1-4.
- McDonald, R. I., R. T. T. Forman**, and **P. Kareiva**. 2010. Open space loss and land inequality in United States' cities, 1990-2000. PLoS One **5**:e9509. doi:9510.1371/journal.pone.0009509.
- McKenney, B.**, and **J. M. Kiesecker**. 2010. Policy development for biodiversity offsets: A review of offset frameworks. Environmental Management:165-176.
- Mcleod, E., J. Hinkel, A. T. Vafeidis, R. J. Nicholls, N. Harvey**, and **R. Salm**. In press. Sea-level rise vulnerability in the countries of the Coral Triangle. Sustainability Science.
- Menges, E. S., R. W. Dolan, R. Pickert, R. Yahr, and **D. R. Gordon**. 2010. Genetic variation in past and current landscapes: Conservation implications based on six endemic Florida scrub plants. International Journal of Ecology Article ID 503759, 12 pp. doi:10.1155/2010/503759.
- Mengersen, K., **E. Meijaard, J. Wells, L. Christy**, and **D. Buchori**. In press. The sounds of silence: Listening to the villagers to learn about orangutans. Significance.
- Menges, E. S., and **D. R. Gordon**. 2010. Should mechanical treatments and herbicides be used to manage Florida's natural areas? A review of their use as fire surrogates or pre-treatments in upland ecosystems across the state. Florida Scientist **73**:147-174.
- Meijaard, E.**, Umilaela, and G. de Silva Wijeyeratne. In press. Aquatic flight behaviour in mouse-deer provides insight into tragulid evolution. Mammalian Biology.
- Murphy, M., **J. S. Evans**, and A. Storfer. In press. Quantify *Bufo boreas* connectivity in Yellowstone National Park with landscape genetics. Ecology

- Nielsen-Pincus, M., C. Goldberg, **A. Pocewicz**, J. E. Force, L. P. Waits, P. Morgan, and L. Vierling. 2010. Predicted effects of residential development on a northern Idaho landscape under alternative growth management and land protection policies. Landscape and Urban Planning **94**:255-263.
- Opperman, J. J., R. Luster, B. A. McKenney, M. Roberts, and A. W. Meadows.** 2010. Ecologically functional floodplains: Connectivity, flow regime, and scale. Journal of the American Water Resources Association **46**:211-226.
- Panzer, R., **K. Gnaedinger**, and G. Derkovitz. 2010. The Prevalence and status of conservative prairie and sand savanna insects in the Chicago Wilderness Region. Natural Areas Journal **30**:73-81.
- Poff, N. L., and **J. K. H. Zimmerman.** 2010. Ecological responses to altered flow regimes: a literature review to inform environmental flows science and management. Freshwater Biology **55**:194-205.
- Ravenscroft, C., R. M. Scheller, D. J. Mladenoff, and M. A. White.** 2010. Forest restoration in a mixed ownership landscape under climate change. Ecological Applications **20**:327-346.
- Richter, B. D., S. Postel, C. Revenga, T. Scudder, B. Lehner, A. Churchill, and M. Chow.** In press. Lost in development's shadow: the downstream human consequences of dams. Water Alternatives.
- Rothlisberger, J.D., **Chadderton, W.L.,** McNulty, J., Lodge, D.M., 2010. Aquatic invasive species transport via trailered boats: what is being moved, who is moving it, and what can be done. Fisheries Bulletin **35**, 121-132.
- Sheil, D., and E. Meijaard.** In press. Purity and prejudice: deluding ourselves about biodiversity conservation. Biotropica.
- Shinneman, D. J., **M. W. Cornett**, and B. Palik. In press. Simulating restoration strategies for a southern boreal forest landscape with complex land ownership patterns. Forest Ecology and Management.
- Slapcinsky, J. L., D. R. Gordon,** and E. S. Menges. 2010. Responses of rare plant species to fire across Florida's fire-adapted communities. Natural Areas Journal **30**:4-19.
- Spalding, M. D.,** M. Kainuma, and L. Collins. In press. World Atlas of Mangroves. Earthscan, with International Society for Mangrove Ecosystems. Food and Agriculture Organization of the United Nations, UNEP World Conservation Monitoring Centre, United Nations Scientific and Cultural Organisation, United Nations University, London, UK.
- Spehar, S. N., P. D. Mathewson, Nuzuar, S. Wich, A. J. Marshall, H. Köhl, **Nardiyono,** and **E. Meijaard.** In press. Estimating orangutan densities using the standing crop and marked nest count methods: Lessons learned for conservation. Biotropica.
- Stricklin, A. G., M. S. Peterson, J. D. Lopez, **C. A. May,** C. F. Mohrman, and M. S. Woodrey. 2010. Do small, patchy, constructed intertidal oyster reefs reduce salt marsh erosion as well as natural reefs? Gulf and Caribbean Research **22**:21-27.

- Struebig, M. J., **L. Christy**, D. Pio, and **E. Meijaard**. 2010. Bats of Borneo: diversity, distributions and representation in protected areas. *Biodiversity & Conservation* **19**:449-469.
- Struebig, M. J., G. Paoli, and **E. Meijaard**. 2010. A reality check for designer biofuel landscapes. *Trends in Ecology & Evolution* **25**:7-8.
- Sutherland, W. J., M. Clout, I. M. Côté, P. Daszak, M. H. Depledge, L. Fellman, E. Fleishman, R. Garthwaite, D. W. Gibbons, J. De Lurio, A. J. Impey, F. Lickorish, D. B. Lindenmayer, J. Madgwick, C. Margerison, T. Maynard, L. S. Peck, J. Pretty, S. Prior, K. H. Redford, J. P. W. Scharlemann, **M. Spalding**, and A. R. Watkinson. 2010. A horizon scan of global conservation issues for 2010. *Trends in Ecology and Evolution* **25**:1-7.
- Venter, O., J. Watson, **E. Meijaard**, W. F. Laurance, and H. P. Possingham. 2010. Avoiding unintended outcomes from REDD. *Conservation Biology* **24**:5-6.
- Weeks, R., G. R. Russ, A. C. Alcala, and **A. T. White**. 2010. Effectiveness of marine protected areas in the Philippines for biodiversity conservation. *Conservation Biology* **24**:531-540.
- Wells, J. F., B. Robertson, K. V. Rosenberg, and **D. W. Mehlman**. 2010. Global versus local conservation focus of U.S. state agency endangered bird species lists. *PLoS ONE* **5**:e8608. doi:8610.1371/journal.pone.0008608.
- West, P. C.**, G. T. Narisma, C. C. Barford, C. J. Kucharik, and J. A. Foley. In press. An alternative approach for quantifying climate regulation by ecosystems. *Frontiers in Ecology and the Environment* doi:10.1890/090015.
- Wilson, K., **E. Meijaard**, S. Drummond, H. Grantham, L. Boitani, G. Catullo, **L. Christie**, R. Dennis, I. Dutton, A. Falcucci, L. Maiorano, H. Possingham, C. Rondinini, W. Turner, O. Venter, and M. Watts. in press. Conserving biodiversity in production landscapes. *Ecological Applications*.
- Wunderle, J. M., D. Currie, E. Helmer, **D. Ewert**, J. White, T. Ruzycki, B. Parresol, and C. Kwit. 2010. Kirtland's warblers in anthropogenically disturbed early successional habitats on Eleuthera, The Bahamas. *The Condor* **112**:123-137.
- Zanger, C., Waltz, A.**, 2010. Prioritizing Restoration in Fire-Adapted Forest Ecosystems. In Mapping Forestry, ed. P. Eredics. ESRI Press.
- Zheng, C., J. Liu, G. Cao, **E. Kendy**, H. Wang, and Y. Jia. 2010. Can China cope with its water crisis? Perspectives from the North China Plain. *Ground Water* **48**:350-354.
- Zimmerman, J. K. H.**, B. H. Letcher, K. H. Nislow, K. A. Lutz, and F. J. Magilligan. In press. Determining the effects of dams on subdaily variation in river flows at a whole-basin scale. *River Research and Applications* DOI: 10.1002/rra.1324.