



■ Sometimes you need to take a step back to see — really see — what you're doing and where you're headed. I spent the first half of 2012 on sabbatical as a visiting scholar at the University of Cambridge. A global mecca for conservation, Cambridge is where many of the discipline's best and brightest minds convene, and it's from here that some of the more innovative initiatives of the past few decades have emerged. On the other hand, Cambridge has a dearth of marine conservationists, so I had something to give as well.

One of the benefits of being away from the day-to-day of Project Seahorse is that it allowed me to see our work in a new light. During my sabbatical, I had the opportunity to share ideas and discuss our work with colleagues from all over the world. The question on everyone's lips was, How do you turn conservation science into long-term, real-world conservation gains? I left Cambridge with plans for great new collaborations, as well as the conviction that Project Seahorse is on the right track with our signature marriage of cutting-edge science and action-oriented programs.

During my time in the UK, our vital work continued apace. In 2012, the Project Seahorse team published new research on how seahorses can drive the creation of marine protected areas, on trawling and the problem of small-fish bycatch, on historic small-scale fisheries in the Philippines, on the impacts of seaweed farming, on seahorse mobility and tagging, and much more. As IUCN's newly minted global

authority on seahorses, pipefish, and sticklebacks, we assessed the conservation status of dozens of species. We uncovered the newest front in the global seahorse trade and released the first-ever footage of a little-known species. We advised CITES Authorities on regulating the trade in Southeast Asia and beyond. You can read about all of this and more in pages that follow.

My time at Cambridge was heartening for another reason. Among the people I met and taught at Cambridge was a cohort of inspiring younger conservationists. Their passion for science was equaled only by their desire to make a difference out there in the world. It reaffirmed my belief that Project Seahorse should continue to foster great new talent in conservation, supporting young colleagues in many countries to develop a capacity for pragmatic idealism and rigorous action.

As we reflect back on one ambitious year in conservation and dance forward into another, I want to thank our donors, collaborators, and team members for your engagement, dedication, and support. It is very much appreciated.

Yours, in conservation,



Cover photo: Jayakar's seahorse (Hippocampus jayakar). Dahab, Egypt. Filip Staes/Guylian Seahorses of the World.

Project Seahorse is an interdisciplinary and international organization committed to the conservation and sustainable use of the world's coastal ecosystems.

Our vision is a world in which marine ecosystems are healthy and well managed.

Our work

SAVING SEAHORSES

Did you know?

Of the 48 seahorse species on the IUCN Red List of Threatened Species, eleven are listed as threatened. Twenty-six species are listed as Data Deficient, which means that we do not have enough information to confirm their conservation status. Only one species is listed as Least Concern.

Many seahorse species appear to mate for life.

Where seahorses are monogamous, their pair-bonds are reinforced by daily greetings, during which the female and male change colour and promenade and pirouette together. The dance lasts several minutes, and then the pair separates for the rest of the day.

Project Seahorse researchers were the first to study seahorses in the wild and the first to identify the scope of the threats they face from overfishing and trade. As the IUCN Specialist Group for seahorses and their relatives, we have produced a large proportion of the world's research on these fishes, approved global conservation assessments, chaired a working group for an international trade accord, provided expert advice to the world's definitive fish database, and advised public aquarium and aquaculture ventures internationally.



West African seahorse discovery

Every year, as part of our pioneering work on seahorses, Project Seahorse seeks out new frontiers in the study of these important animals. This year, our team investigated a little-known seahorse species in West Africa and documented the burgeoning international trade there.

As part of this joint investigation with Imperial College London and the Zoological Society of London (ZSL), researcher Kate West spent several months visiting fishing ports in Senegal and Guinea-Conakry. She interviewed customs agents and traders, studied export logbooks, traveled with local fishers, and collected seahorse samples.

"The first thing that struck me when I visited places like Joal [one of West Africa's busiest ports] was the number of people buying and selling this species we know so little about," says West, who undertook the study as part of her graduate work. "There's a real sense of urgency to our work here."

What emerged from her fieldwork and the analysis done by our research team was the first-ever portrait of an unstudied endemic species, the West African seahorse (*Hippocampus algiricus*), and of the rapidly growing inter-continental trade in this and another species, the short-snouted seahorse (*H. hippocampus*).

Continued

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While on a dive with local fishers, West captured the first-ever video footage of a West African seahorse. It was broadcast by international media, including National Geographic, the Guardian, and Sky News. It became one of the Guardian's "10 Most-Watched Environmental Videos" of 2012. You can view it here.

"In recent years, the West African seahorse has become highly sought, along with many other seahorse species," says Dr. Amanda Vincent, director of Project Seahorse and one of West's advisers. "Our fieldwork — the first ever study of this species — is revealing the fishing and trade pressures they face."

The number of seahorses in trade in West Africa has risen dramatically over the past few years, to exports of about 600,000 animals every year. They are used primarily for traditional Chinese medicine.

West's fieldwork is the first phase of a multi-year project that will increase our knowledge of the West African seahorse and help to ensure that their populations survive and thrive.

"Our findings will be shared with the Senegalese and other governments so they can meet their CITES obligations to make their seahorse trade sustainable," explains Vincent.





Highlights

Dr. Amanda Vincent hailed a "Wildlife Hero"

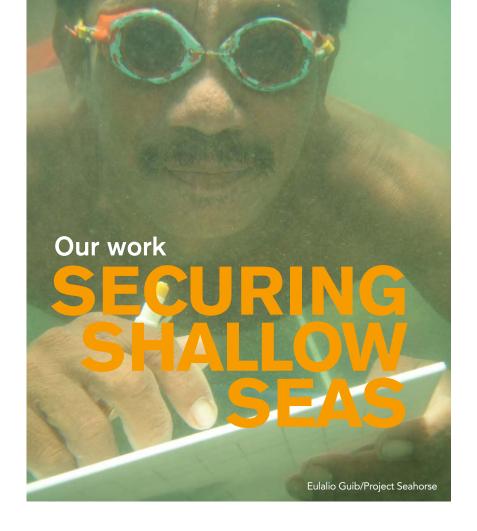
Project Seahorse director Dr. Amanda Vincent was featured in a new book on the world's leading conservationists. Part photography book, part educational tool, *Wildlife Heroes* profiled forty top scientists noted for their vision, determination, and success in protecting threatened animal species — in Dr. Vincent's case, her landmark work studying seahorses in the wild and regulating the international seahorse trade. Promoted by the likes of Dr. Jane Goodall, animal advocate Jack Hanna, and actors Ted Danson and Stefanie Powers, the book was part of a campaign to raise awareness about conservation, with some of the proceeds going to Project Seahorse.

Seahorses on the move

Seahorses are sedentary fishes, meaning that they spend most of their lives in one place. However, these slow-moving creatures do still get around. In 2012, Project Seahorse researcher Dr. Iain Caldwell published new research on the movements of the long-snouted seahorse (*H. guttulatus*), a species found in the Ria Formosa region of Portugal. He discovered that seahorses move as much as 150 metres in a single day. Dr. Caldwell's work on seahorse mobility will have implications for the management and conservation of seahorse populations. It also yielded new methods of radio-tagging the animals to track the movements of these notoriously shy and cryptic fishes.

Pioneering new techniques for the study of seahorse genetics

As part of her doctoral research into the genetics of European seahorse species, Dr. Lucy Woodall devised a new method of testing the DNA of individual animals with minimal harm to them. In a paper published in the *Journal of the Marine Biological Association*, Dr. Woodall outlines a method of fin-clipping that causes minimal disturbance, providing robust genetic samples while allowing the seahorses to quickly recover. These methods have been used to determine how seahorse populations interact and how inbreeding between them, or a lack thereof, affects their ability to adapt to human pressures such as pollution.



Did you know?

Globally, over half a billion people live near coral reefs and depend on them for food, livelihoods, and well-being.

Coral reefs provide an estimated US \$375 billion in coastline protection, tourism, and food around the world every year.

In collaboration with local communities, Project Seahorse has established 35 MPAs on Danajon Bank, a rare and threatened double barrier coral reef in central Philippines. Our research and marine conservation management tools have benefitted many more such habitats around the world.

Creating a conservation laboratory for the world

■ Twice a year, marine biologists from Project Seahorse and PSF, a key partner, lead an international team of volunteer divers on an exhaustive, and exhausting, underwater survey of Danajon Bank, Philippines. Equipped with cameras, quadrants, and transects, the divers undertake the challenge of measuring fish populations, coral cover, and other indicators of habitat health across this rare and threatened double-barrier reef system.

Their goal? To build on one of the most comprehensive data-portraits of any ecosystem in the world — a portrait of decline, thanks to overfishing and other harmful fishing practices, and of recovery, thanks in part to the 35 marine reserves Project Seahorse has helped local communities to establish on the reef.

"For nearly two decades, we've been faithfully recording changes in the reef. The result is an incredibly rich dataset that tells us, among other things, how coastal marine conservation often succeeds and sometimes fails," says Dr. Heather Koldewey, Project Seahorse's co-founder and Manager of Field Conservation.

The reef, which is thought to be an evolutionary point of origin for many fish species now found across the Pacific Ocean, is home to over half a million people. The diversity of marine life, coupled with incredible fishing pressures, make Danajon Bank an excellent laboratory for Project Seahorse's conservation work.

The findings have been collected year over year for the past fifteen years. Our team of researchers uses this constantly evolving dataset to develop important marine resource management tools that are used by governments, conservation groups, and other scientists all over the world. Indeed the database is so rich that we plan to make it open-access, sharing it freely with colleagues around the world.

Our analyses, management briefings and other tools based on this data and other research have in recent years covered everything from the impact of seaweed farming to 'frugal conservation' (i.e. finding more efficient ways to measure fish populations) to the integrated management of marine reserves at the local and national levels. Continued from previous page

"These analytical tools represent one of our team's most important and longest-standing contributions to conservation. The lessons we're learning from Danajon Bank can be applied to coral conservation around the world," says Dr. Koldewey.

"We are very proud of this work."

The long-term monitoring project runs every March/April and August/September. Project Seahorse's entire global archive of research papers, management briefings, and analytical tools is <u>available here</u>.



Highlights

Expanding marine protected areas

Since Project Seahorse began working in the central Philippines nearly 20 years ago, we've collaborated with local communities to establish dozens of marine protected areas (MPAs) across Danajon Bank, one of the country's most ecologically important, and threatened, ecosystems. Strong community leadership is essential to the success of any conservation initiative, so in 2012, our partner organization PSF focused on expanding two of our most successful MPAs.

These marine reserves now encompass an increasing diversity of habitats, including mangroves. Lipata, one of the smallest sanctuaries, grew from 10 to 104 hectares, while Sinandigan grew from 52 to 245 hectares. The relative success of these expanded MPAs could provide a model for how other reserves can be established and scaled up over time.

Measuring the benefits of marine reserves on seahorses

Project Seahorse researcher Dr. Mai Yasué published an important study that looks at how seahorses, as a flagship species, can drive the creation of MPAs, and how the animals benefit — or don't — from such protections. The research, published in *Environmental Conservation*, showed that small-scale MPAs, for example, may eliminate fishing pressure on seahorse populations, but they have little impact on the density of these populations or the size of the individual seahorses. In other words, while the reserves addressed one threat to seahorse populations, they did not address others, such as destructive fishing practices or habitat damage that happen outside the reserves.

The study ultimately suggests that, while seahorses can and should be used to rally local communities to protect their 'ocean neighbourhoods,' a holistic approach is needed to protect seahorse populations — an approach that includes other recovery tools such as ecosystem-based management, habitat restoration, and limits on destructive fishing outside of MPAs.

Our work

CLEANING UP TRADE & MAKING FISHERIES SUSTAINABLE



Did you know?

Approximately 13 million seahorses are traded globally, live and dead, every year around the world.

The three-spot seahorse (Hippocampus trimaculatus) is the most traded seahorse species; traditional Chinese medicine and aquarium display are the most common uses for seahorses traded globally.

In 2002, Project Seahorse helped create landmark trade protections for seahorses under the Convention on International Trade in Endangered Species (CITES). These protections were the first for marine fish species since the Convention began in 1976, and have inspired similar measures for other species such as sharks and rays.er species such as sharks and rays.

Trade detectives, sustainable fisheries

■ As the global experts on seahorses and their relatives, Project Seahorse not only generates cutting edge biological and ecological research, we also work closely with international regulatory bodies such as CITES to ensure that the global seahorse trade is sustainable.

Our trade work takes many forms. Often, we start at the front-lines of the sales of endangered species. Our researchers investigate the trade at all levels, from fishing communities to ports small and large to markets all over the world. Sometimes this detective work uncovers hidden trade networks and new fronts in the seahorse trade, as with Dr. Amanda Vincent's pioneering work in Asia in the 1990s — which led to landmark protections

for seahorses under CITES — and with our investigation this past year into the burgeoning West African trade (see page three of this report).

Other times, our work directly supports trade enforcement. In 2012, Project Seahorse played an essential role in the CITES Review of Significant Trade. The Review of Significant Trade is a country-by-country audit of the global trade in threatened species. In the case of seahorses, countries with actively traded populations must demonstrate, through this process, that their exports are legally obtained and are not damaging wild populations.

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Unfortunately, official trade data doesn't always tell the whole story. Another Project Seahorse role is to analyze the reports submitted by countries under review for gaps and other red flags that would suggest that the actual level of trade differs from the official numbers — and might therefore be unsustainable.

"Sifting through mountains of trade data is not very glamorous, but it's one of the most important things we can do for the future of seahorses," says Dr. Amanda Vincent.

"Thanks to our collective expertise on the biology, life history, ecology, geographical range, and management of seahorses, we're able to deduce trends and irregularities in the official data that others might not. It's an essential part of the review process."

Based on input from Project Seahorse, the most recent Reviews of Significant Trade have focused on seven at-risk seahorse species, six of them from Asia and one from West Africa. After gathering all the evidence, CITES noted considerable concern about exports from two countries, Vietnam and Thailand, and (with support from Project Seahorse) provided them with recommendations that must be followed. These include tightening enforcement of domestic legislation, assessing seahorse population responses to fishing, and implementing monitoring programmes where the seahorses are landed.

But compliance isn't as straightforward as it might sound. Many countries lack the expertise needed to make their fisheries sustainable, which represents both a challenge and an opportunity. To this end, Project Seahorse is now consulting for the Thai and Vietnamese governments, sharing our expertise in seahorse conservation and management to ensure that they are able to improve their work with CITES.

"The sheer number of seahorses being traded in southeast Asia is a problem, that much is certain. But thanks to the Significant Trade Review and our collaborative, constructive approach to conservation, we're working closely with governments that want to clean up their fisheries and become examples for the rest of the world," says Dr. Vincent. "As we make progress on this, then we'll be achieving something big not just for seahorses but for all marine fishes."

With special thanks to Guylian for its support of Project Seahorse's pioneering trade work.

Highlights

Project Seahorse recognized as global authority on seahorses and their relatives

In 2012, the IUCN's Species Survival Commission, the major international body responsible for biodiversity conservation, designated Project Seahorse as the global authority on seahorses, pipefish, and sticklebacks. The designation is a great honour and also a tremendous responsibility. As the global authority for these animals, our team has been tasked with assembling a specialist group comprised of top scientists and conservationists from around the world to monitor syngnathid and stickleback populations and ensure that they survive and thrive. Watch out for major announcements in 2013.

Reconstructing historical fisheries

One of the obstacles to making small-scale fisheries more sustainable is the absence of long-term catch records. Without information about how the size and composition of a fishery yields have changed over time, it can be difficult to map fish population and habitat trends and thereby formulate effective management policies. Researcher Dr. Kerrie O'Donnell published a new study in *Coastal Management* demonstrating how historical fisheries can, in effect, be reconstructed by collecting this information via nontraditional methods such as interviews with fishers, analyses of fisher logbooks and individual catch landings. Her work will help conservationists and policymakers to devise effective conservation protocols for small-scale fisheries around the world.

Removing small fishes from the trawling equation

One of Project Seahorse's guiding principles is that we don't wait for perfect information to take conservation action. Our team specializes in finding ways to detect threats to fish populations quickly and effectively, even where comprehensive data are not available. We formulate management recommendations under such difficult circumstances. The reasoning behind this approach is that classic fisheries research takes more time than we often have to save fish populations and habitats from irreversible decline. In 2012, researcher Dr. Sarah Foster applied our philosophy to shrimp trawling and its impacts on small fishes. In "Advice in Spite of Great Uncertainty," a study published in the journal Aquatic Conservation, she demonstrated that precautionary conservation measures should be taken to ensure that trawl nets do not disrupt the life cycles of small fish species, such as the silver stardrum (Stellifer illecebrosus), a little-studied animal that is nevertheless an important part of the food web in Mexico's Gulf of California.

Our work

TRAINING CONSERVATIONISTS

Did you know?

Project Seahorse has trained over 170 professional conservationists since its founding in 1996.

Project Seahorse puts a strong emphasis on learning.

Our staff, students, and volunteers do cutting-edge conservation work and build impressive, difference-making careers as scientists, policymakers, and activists.

We are growing! Over the past year Project Seahorse has added new researchers and students from all over the world to ensure that we have a truly global



Alumni Profile: **Dr. Nick Hill**

An expert on seaweed farming and its conservation impacts, Dr. Nick Hill completed his PhD with Project Seahorse in 2011. After graduation he joined the Zoological Society of London (ZSL), where he is the project lead on Net-Works, a partnership with Interface to turn discarded fishing nets into sustainable carpet tiles, resulting in new income-generating opportunities for small-scale fishers.

You did your PhD on seaweed farming. How did you get into that, and why is it so important?

Before I started my PhD, I'd been doing some work on livelihoods in Mozambique. I was interested in exploring how people in developing countries make, or don't make, a living by fishing — especially with declining fish populations. Seaweed farming in particular was becoming a popular extra source of income for fishing communities in places like Danajon Bank, Philippines, where I based my work. I wanted to find out whether seaweed farming presented any conservation opportunities — does it, for example, reduce people's need to fish?

The short answer is, not often! But it does present opportunities. What I realized, ultimately, was that to be effective, human development and conservation must go hand-in-hand. Too many livelihoods projects do not take conservation issues into account, and when they don't, they can work at cross-purposes with conservation initiatives. Likewise, conservation initiatives rarely have a full understanding of the livelihood context.

After graduation, you returned to Danajon Bank. You joined ZSL's conservation team to lead a pioneering livelihoods project. Talk about the project and about this region of the Philippines.

Danajon Bank is such a vibrant, interesting place. It's one of only six double-barrier reefs in the entire world, and thought to be the point of origin for many species found all over the Pacific Ocean today. But the reef and the half-million people who depend on it face more than their fair share of problems. This includes poverty and food security issues due in part to overfishing and harmful fishing practices like blasting. Another problem is pollution caused in part by discarded fishing nets. Net-Works, the project I'm working on right now, is a partnership between ZSL, the global carpet tile manufacturer Interface, and local communities. Basically, we're all working together to turn discarded fishing nets — nets that would otherwise pollute the beaches and harm sea life — into sustainable carpet tiles and a valuable extra source of income for these communities. It's a pretty cool project and I'm proud of it.

Why do we need to protect coral reefs?

For all the talk in the media about how coral reefs are being destroyed all over the world, what's sometimes lost is just how incredibly valuable they are. They're not just beautiful — globally, coral reefs provide US \$375 billion every year in coastline protection, food, tourism and other livelihoods. Hundreds of millions of people depend on reefs and other coastal marine ecosystems for their survival! Unfortunately, and not surprisingly, at least 30% of reefs and 40% of other vital coastal habitats have been degraded or destroyed worldwide. We need to turn this decline around.

How has Project Seahorse impacted your career? How does it make a difference to marine conservation?

Working with Project Seahorse made me a rigorous scientist and a practical-minded conservationist. Too much research is conducted in isolation, far removed from the everyday reality of places like Danajon Bank and coastal areas all around the world. Project Seahorse is all about bridging that gap, generating top-notch research and turning it into practical, real-world conservation solutions. I'm grateful for the experience.

Read "<u>Underwater investment banks,</u>" Dr. Hill's blog on seaweed farming.

New faces

Dr. Tse-Lynn Loh (Postdoctoral research associate)

Dr. Tse-Lynn Loh is a Postdoctoral Research Associate at the Shedd Aquarium in Chicago, working closely in collaboration with Project Seahorse on the conservation of seahorse populations in Southeast Asia. Originally from Singapore, she recently completed her PhD at the University of North Carolina Wilmington, studying the cascading effects of overfishing on coral reef communities within the Caribbean region. With Project Seahorse, Tse-Lynn plans to conduct a series of rapid assessments in Southeast Asia to identify the distributions of seahorse species there and estimate their population levels. She will also be training and setting up local monitoring networks with in-country partners to provide long-term data for seahorse population trends.

Ting-Chun Kuo (Ph.D student)

Ting-Chun Kuo joined Project Seahorse to investigate the trade of seahorses (and other traditional Chinese medicine species) and its ecological impact. She received her BSc and MSc from National Taiwan University, where she studied how fishing and climate change influence on fishes' spatial distribution shift.

Lectures and educational talks by Project Seahorse

Baillie, J. & A.C.J. Vincent. 2012. Alternative Livelihoods and Conservation. Zoological Society of London, UK. 28 May 2012.

Kleiber, D.L and Vincent, A.C.J. Gender and Conservation Workshop. Presented to Fauna and Flora International. Cambridge, UK. 6 April 2012.

Kleiber, D.L. and Vincent, A.C.J. Gender and Conservation Workshop. Presented to International Baccalaureate World Student Conference. The University of British Columbia. 26 July 2012.

Vincent, A.C.J. & J. Baillie. 2012. Alternative Livelihoods and Conservation. IUCN SSC Chairs meeting. Abu Dhabi. Feb 2012.

Vincent, A.C.J. 2012. Making a difference to wild populations and places: experiences in success and futility. Student Conference on Conservation Science, Cambridge (UK) March 2012.

Vincent, A.C.J. 2012. Shallow seas, Cambridge Conservation Forum (UK) March 2012.



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Publications

Caldwell, IR, Vincent ACJ. 2012. <u>Revisiting two sympatric European seahorse species: apparent decline in the absence of exploitation. Aquatic Conservation: Marine and Freshwater Ecosystems.</u> 22:427–435.

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<u>Fisher Interviews, Logbooks, and Catch Landings Estimates of</u>
<u>Extraction Rates in a Small-Scale Fishery.</u> Coastal Management. 40(6):594-611.

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Yasué, M, Nellas A, Vincent ACJ. 2012. <u>Seahorses helped</u> drive creation of marine protected areas, so what did these protected areas do for the seahorses? Environmental Conservation. 39(02):183-193.



Select social media coverage



"Shedd Aquarium & Project Seahorse Collaborate in Southeast Asia." National Geographic (Newswatch blog). 8 November 2012.



"Project Seahorse evolves into major marine protector." IDRC/CRDI News. 31 Oct 2012.



"<u>First Video of Rare Brightly Colored Seahorse.</u>" National Geographic (Newswatch blog). 10 October 2012



"How a tiny seahorse is riding to the rescue of natural wonders wrecked by dynamite." Times of London. 28 April 2012.

THANK YOU FOR YOUR SUPPORT

Our partners and home institutions



The University of British Columbia's Fisheries Centre hosts most of Project Seahorse's international team. Project Seahorse Director and co-founder Dr. Amanda Vincent is a member of the UBC faculty. www.fisheries.ubc.ca



The Zoological Society of London hosts Project Seahorse's UK team. Project Seahorse co-Founder and Field Conservation Manager Dr. Heather Koldewey is also Head of Global Conservation Programmes at ZSL. www.zsl.org

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