Director's Message

The birth of my dimpled, bright-eyed, copper-haired son in 2009 was a profound experience that redoubled my appreciation for life in all its forms. It also made me yet more determined to secure a future for our oceans, for my daughter and my son, and for all the other members of generations to come.

Project Seahorse works hard and effectively on behalf of marine conservation, making a material difference in myriad ways.

In 2009 we continued to generate knowledge, foster collaboration, and take action. As ever, we worked with seahorses, helping to identify new species and support familiar ones. We also developed ways to support our string of marine reserves with new field research and analytical tools that reduce the cost and technical savvy needed to assess and manage such places.

We took a hard look at income-earning opportunities and industry in 2009. In partnership with our sister organization in the Philippines, Project Seahorse Foundation for Marine Conservation, we assisted communities to evaluate the relationship between seaweed farms and marine conservation, finding that useful synergies are possible where farming is well-regulated: for example, guards at seaweed farms could also watch over the marine reserves. Our global review of seahorse aquaculture argued that farming is not likely to replace wild capture on any foreseeable time frame.

We also turned approaches to marine protection on its head. Our analyses of British Columbian fisheries in Canada revealed that small cuts in fishing - if they happened in the right places - could result in very large unfished areas. Our work represented a fresh perspective on protected areas, indicating that it may be better to designate areas where fishing is permitted rather than where it is banned. Our proposition has engendered passionate debate in scientific and policy arenas.

I give great thanks to all of our team members, collaborators, partners, supporters, and donors. We deeply appreciate all that you do and contribute. We continue in 2010 full of fervour for our work and our oceans.

Amanda C.J. Vincent
Project Seahorse cooperates with many stakeholders, collaborators and partners, focusing on seahorses to find marine conservation solutions. We have active projects in seven countries, but particularly in the Philippines, through our in-country colleagues at the Project Seahorse Foundation for Marine Conservation. We also work locally, documenting, for example, the extent of human impact on British Columbia’s marine environment.

Part of our success comes from our appreciation of the interdependencies between marine life and human communities. We begin with biological research and work outwards through concentric rings of pressure on marine populations, actively engaged with ecosystems, fishing and other human impacts, trade in marine products, policy development and public outreach.

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

Our vision is a world in which marine ecosystems are healthy and well-managed.
Project Seahorse is mapping the distribution of seahorses in the Danajon Bank, Philippines. *Hippocampus kuda*, the yellow seahorse, is one of nine seahorse species found in the area. Photo by Claudia Van Waart/Guylian Seahorses of the World 2005
Seahorses

The Red List

In our role as the World Conservation Union (IUCN) Red List Authority for all syngnathids, we wrote and reviewed assessments of the conservation status of three seahorses, four pipefishes, and four seamoths in 2009. The IUCN Red List is the most comprehensive inventory of the global conservation status of plant and animal species. The aim of the Red List is to communicate the scope and urgency of conservation problems to the public and policymakers, and to motivate the global community to prevent species extinctions. Currently, all 36 confirmed seahorse species are included on the Red List: one as Endangered, seven as Vulnerable, 28 as Data Deficient. Working with partner organizations, Project Seahorse collects biological information on these fishes throughout their global range to inform and support conservation action.

Size does matter

Working with colleagues from the Royal Holloway, University of London (UK) and the Instituto Nacional de Recursos Biológicos (Portugal) Project Seahorse researchers discovered behaviour in the long-snouted seahorse which suggests that mate choice, rather than within-sex competition, may drive sexual selection. Our research suggests that the long-snouted seahorse chooses mates that are similar in size (size-assortive mating). We also discovered that there is a shift during the breeding season in the ratio between sexually competing males and females that are ready to mate. The implications of this research will help us to develop guidelines for aquarium breeding programmes and to understand better the dynamics of wild populations.

New seahorse species discovered

In collaboration with colleagues from Redpath Museum (Canada) and Museum Victoria (Australia), we recently described an unusually tiny seahorse, *Hippocampus tyro*. Native to Seychelles, an African island chain, *H. tyro* grows to about 34 mm in adulthood. Its discovery brings the current number of known seahorse species to approximately 48. While the current number of recognised seahorse species is 36, there may be as many as 48 and we are working to resolve some of the controversy that remains in seahorse identification and determine the actual number. The ongoing discovery and description of new seahorse species highlights the fundamental work that needs to be done to understand our marine environment.
Project Seahorse works with local fishers to survey fish populations in marine protected areas. Photo by Amanda Vincent/Project Seahorse.
Ecosystems

Tracking seahorses

In 2009, Project Seahorse researchers and collaborators were surprised to discover a trans-Atlantic hitchhiker. A lined seahorse (*Hippocampus erectus*) was found off the shores of Portugal’s Azores islands, nearly 5000 km away from its home range on the western side of the Atlantic Ocean. The little seahorse is thought to have got there by hanging on to a raft of floating seagrasses using its prehensile tail. This may be how these normally sedentary fishes undertake longer-distance movements.

On a smaller geographic scale, recent tagging studies are shedding some light on how and why seahorses settle where they do. In Portugal’s Ria Formosa lagoon, we used acoustic tags on eleven long-snouted seahorses (*Hippocampus guttulatus*), releasing them in new sites and tracking them as they moved through their new environments from day to day. The information we collected from the tagged seahorses and their environment may also help us to understand why this particular species has declined by 85% in the lagoon in recent years. We are sharing our findings with Parque Natural da Ria Formosa to help them address the problem.

Frugal conservation

Project Seahorse has discovered a new, more efficient way to track coral-reef fish populations. Because reef habitats teem with hundreds of different fish species, many of which look almost identical, we spend many hours training our field teams, and many more on the surveys themselves making sure our work is accurate.

Our researchers discovered that instead of the usual approach of counting all fish on the reef, we could gather the same important information by surveying just those that are particularly easy to identify, or that are locally fished. So, in the Danajon Bank in the Philippines, for example, we discovered that by counting several different distinctive species — such as the blackfin barracuda, which has a signature shape and black fins — we can accurately track broad changes occurring in all fish species.

These practical discoveries will help Project Seahorse and other marine conservation organisations to streamline future surveys and more effectively involve local communities in fieldwork. Ultimately, we will be able to do conservation more quickly, cheaply and effectively.

Trawl-free zones in the ocean

Our unusual combination of research and management approaches have clearly identified the importance of establishing trawl-free areas to protect the coastal marine habitats and associated species that are negatively effected by trawling. For example, the incidental catches from tropical shrimp trawlers can be as much as 10 times the weight of the shrimp they target. Trawling damages important marine habitats that shrimp and other sea creatures call home. It also inflicts considerable damage on the populations of many small fish — including seahorses — by removing those that are not yet mature and so have not had a chance to reproduce and contribute to future populations. We are using our findings to develop policy briefing notes that target governments and intergovernmental bodies for the protection of marine habitats and species. In-country experts from Latin America have already expressed interest in our findings.
Villagers prepare seaweed lines for farms, Handumon, Philippines. Project Seahorse works closely with local communities and government. Photo by Amanda Vincent/Project Seahorse
Fishers & Communities

Making MPAs more effective

In 2009, Project Seahorse set out to develop more strategic criteria for marine protected areas (MPAs) in Danajon Bank, Philippines. Danajon Bank is a rare double barrier reef, two parallel 135 km-long stretches of coral that teem with marine life. For many years, parts of the reef have been overfished. Seahorse populations and their habitats have suffered as a result. To date, interest from local communities and government, rather than ecological information, has driven the creation of local MPAs. And while communities and government must continue to play a key role in local conservation, robust data are needed to ensure that new MPAs protect the areas under greatest threat, and those of greatest ecological value.

With support from the BBC Wildlife Fund, Project Seahorse undertook a rapid assessment of the Dananjon Bank. Through a combination of satellite imagery, seahorse surveys, and interviews with local fishers, our researchers gathered information that will help us to pinpoint the areas of the reef where seahorse populations and habitats might benefit most from the protection of future MPAs. With this information, we will help local communities and government to create a national MPA action plan to guide the development of future MPAs — preserving local seahorse species and habitats much more effectively.

Seaweed farming reduces pressure on fisheries

In Danajon Bank, Philippines, Project Seahorse set out to determine the effectiveness of seaweed farming as a marine conservation strategy. Promoted by the government as an alternative livelihood, seaweed farming is thought to reduce fishing pressures on coastal marine areas. Our researchers determined that its impact varies from community to community depending on socio-economic context. Some seaweed-farming communities chose to continue to fish heavily, while others did not. We concluded that this and other alternative livelihoods can be effective in specific contexts, such as when they are used to compensate communities for fishing opportunities lost due to the presence of MPAs.

Calling on the expertise of top marine scientists in the Philippines, the Project Seahorse team mobilised a position statement and guidelines in response to plans for a government proposal to convert the Danajon Bank into a ‘seaweed garden’. Proposals to convert at least 24,000 hectares of the Danajon Bank coral reef into seaweed farms raised considerable concerns. The statement and guidelines established a sustainable approach to reduce the impact of seaweed farming on sensitive marine habitats while ensuring its compatibility with other coastal uses. They were presented to the provincial government and have generated much interest. Project Seahorse Foundation staff are now actively implementing these recommendations in the region.

Three Project Seahorse team members from the Philippines complete their PhDs

We are pleased to announce that three Project Seahorse team members from the Philippines completed their doctoral studies in 2009. Marivic Pajaro, Jonathan Anticamara, and Eulalio Guieb have been studying the efficacy and organization of MPAs established by Project Seahorse and local communities in the Philippines. Pajaro's thesis looked at how local communities value MPAs, while Guieb's work focused on the 'political ecologies' that impact MPAs — how social, economic and political variables influence conservation and community empowerment. Anticamara examined how six previously overfished ecosystems have rebounded thanks to the protection afforded by MPA designations. Their valuable research will improve the ways in which MPAs are established, maintained and assessed.
Dried seahorse specimens used in traditional medicine. Project Seahorse works to prevent the unsustainable trade in seahorse species. Photo by Mai Yasue/Project Seahorse
Trade and Policy

Modest fisheries reduction could protect vast coastal ecosystems

Project Seahorse researchers undertook a thought experiment: What if governments and international regulatory bodies flipped the concept of no-fishing zones on its head, instead designating fishing-permitted zones in the world’s oceans and seas? Current thinking in fisheries management focuses on the establishment of reserves for the protection of overfished habitats and species. The problem with this approach is that it frames marine conservation in negative terms even as it prioritizes the extraction of animals over their conservation. As a result, no-fishing zones, or marine protected areas, are regarded by fishers as a constraint on their freedom and livelihood, even as many recognize that overfishing is a problem. The advantage of fishing-permitted zones is that they frame this problem in positive, rather than negative terms, allowing governments and regulatory bodies to maintain or slightly reduce current catch levels while taking a more flexible and proactive approach to conservation. Using catch statistics for 13 commercial fisheries on Canada’s west coast, we determined that a reduction of even five per cent in catches, if strategically allocated, could result in large unfished areas — protecting as much as 30 per cent of British Columbia’s coastal ecosystems.

Global review of seahorse aquaculture

Seahorses are a flagship animal for many marine conservation issues, such as overfishing, incidental by-catch, and habitat loss. Farming seahorses has been proposed as one solution to the unsustainable trade in wild animals for traditional Chinese medicine (TCM), aquaria, and as curios. Project Seahorse reviewed historical and current information on global seahorse aquaculture, including the characteristics of aquaculture operations, their contribution to international trade, and technical issues associated with raising seahorses in captivity. We found that in the late 1990s and early 2000s there was considerable expansion in the scope of aquaculture operations and the number of species involved. There are currently at least 13 seahorse species used in, or being considered for, commercial aquaculture.

Currently, the majority of seahorse aquaculture involves small-scale operations in developed countries, employing relatively few personnel and selling live animals for the home aquarium market. The high costs associated with small-scale aquaculture mean that these operations cannot compete with the trade of wild-caught animals. Large-scale aquaculture, meanwhile, has not yet developed to the point that it can meet the demands of the TCM market. Project Seahorse has developed a briefing note based on these findings that will act as a resource for would-be aquaculture entrepreneurs, the TCM industry, and trade management authorities.

Live seahorse trade dynamics in Sri Lanka

Sri Lanka is one of the world’s major exporters of live seahorses, including both wild-caught and cultured animals. Most wild-caught seahorses are sourced from the by-catch of small scale fisheries in the northwestern part of the country, where Project Seahorse is undertaking the first-ever detailed study of seahorses in Sri Lanka. We are interviewing fishers to gauge historical changes in the live seahorse fishery, conducting surveys on seahorse distribution and ecology, and documenting the supply of animals. Scheduled for completion in 2012, the study is expected to improve our understanding of the biological and social dynamics behind the trade in live seahorses. The better we understand how wild-caught seahorses are sourced, and how the fishers, collectors, and international regulatory bodies such as CITES interact, the better able we will be to help curb the illegal trade in these animals.
Publications

Peer-reviewed journal articles


Other key publications


Project Seahorse team members in bold
Our Team

Project Seahorse is based at the University of British Columbia (UBC), Canada, in partnership with the Zoological Society of London (ZSL), UK. The Project Seahorse Foundation for Marine Conservation (PSF), Philippines, is an integral part of Project Seahorse. This Filipino non-governmental organization focuses its work on the central island province of Bohol, specifically on a 135-kilometre-long double barrier reef known as the Danajon Bank. We have team members based at the Imperial College London and the Institute of Zoology ZSL (UK), McGill University (Canada), Royal Holloway University of London (UK), and the University of Kalmar (Sweden).

Dr. Amanda Vincent, Director
Dr. Heather Koldewey, Associate Director
Amado Blanco*, National Director (Philippines)
Dr. Janna Rist, Programme Manager
Jonathan Anticamara*, PhD. Student
Regina Bestbier, Research Assistant
Iain Caldwell, PhD. Student
Dr. Janelle Curtis, Research Associate
Dr. Melissa Evanson*, Sr. Research Assistant
Sarah Foster*, PhD. Student
Eulalio Guieb III*, PhD. Student
James Hhehre*, PhD. Student
Nicholas Hill, PhD. Student
Danika Kleiber*, PhD Student
Dr. Sara Lourie, Research Associate
Dr. Jean Marcus*, Research Associate
Christie Michailopoulous*, Administrative Officer
Dr. Phil Molloy*, Research Associate
Kerrie O’Donnell, PhD. Student
Marivic Pajaro*, PhD. Student
Nishan Perera, PhD. Student
Jennifer Selgrath, PhD. Student
Marjorie Sorensen*, Research Assistant
Lucy Woodall*, PhD. Student
Dr. Mai Yasue, Research Associate
Irina Zhygalko, Administrative Officer

Philippines Professional Staff
Alfredo Abayan*, Community Organizer
Rosemarie Apurado, Community Organizer
Perfecto Auxilio, Community Organizer
Jesus Rey Dongallo*, Field Biologist
Lourdes Labrada*, Administrative & Finance Officer
Angeline Nellas, Field Biologist
Hazel Panes, Field Biologist
Franco Villaruel, Senior Social Development Officer
Jeff Bogart Abrogueña*, Field Biologist
Reaan Gerard Osmond Catitig*, Community Organizer
Ron Kirby B. Manit*, Field Biologist
Virginia Masendo*, Community Organizer
Daniel Suarez*, Senior Biologist

Philippines Local Staff
Edward Alivo, MPA Survey Assistant
Alfie Bartolo, Utility-Messenger
Pedro Bohol, MPA Survey Assistant
Hermes Cosicol, Research Assistant
Don Don Daan, MPA Survey Assistant
Delia Flores, Local Assistant
Diosdada Mejasco, Local Assistant
Lucilo Minguito, Research Assistant
Rogelio Pechoco, MPA Survey Assistant
Geralde Sucano, Research Assistant

* Team member joined in 2009
+ Team member left in 2009
& Student graduated in 2009

Members of the international Project Seahorse (left) and PSF (right) teams.
Thank you for your support

Guylian Belgian Chocolate is a major sustaining sponsor of our research and marine conservation projects around the world. Its commitment to marine conservation is matched only by the excellence of its chocolates. www.guylian.be

The Ocean Charitable Trust is a committed sponsor and partner in our research and marine conservation projects. Its unrestricted funding has significantly enhanced our core strength and effectiveness.

The John G. Shedd Aquarium has worked in partnership with Project Seahorse since 1998, supporting a variety of programs including core operations. www.shedd.org

Our marine conservation achievements would not be possible without the support of the following organizations:

- Aquarium du Quebec, Canada
- Betty and Gordon Moore Foundation, USA
- BBC Wildlife Fund, UK
- British Airways Communities and Conservation, UK
- Canada Foundation for Innovation, Canada
- Chevron Philippines Inc., Philippines
- Columbus Zoo Conservation Fund, USA
- Conservation Food and Health Foundation, USA
- Conservation International
- Dallas Zoological Society, USA
- Dr. Scholl Foundation, USA
- EcoCanada, Canada
- Economic and Social Research Council (ESRC), UK
- European Union of Aquarium Curators (EUAC), EU
- Geraldine Harmsworth/Grosvenor Trust, UK
- Hidroespaço, Portugal
- International Development and Research Centre (IDRC), Canada
- IODE, Canada
- John D. and Catherine T. MacArthur Foundation, USA
- Langar Foundation, Canada
- Ocean Park Conservation Foundation, Hong Kong SAR, China
- Ocenário de Lisboa, Portugal
- People’s Trust for Endangered Species (PTES), UK
- Pew Fellows Program in Marine Conservation, USA
- PFK Family Foundation, USA
- Philippines Tropical Forest Conservation Foundation
- Point Defiance Zoo & Aquarium, USA
- Project AWARE Foundation, Asia Pacific
- Rufford Foundation, UK
- SeaWorld & Busch Gardens Conservation Fund, USA
- Social Sciences and Humanities Research Council, Canada
- Taiwan Council of Agriculture, Forestry Bureau, Taiwan
- Threshold Foundation, USA
- Toronto Zoo, Canada
- University of British Columbia Graduate Fellowship, Canada
- University of Kalmar Scholarship, Sweden
- Wallace Global Fund, USA
- Whitley Fund for Nature, UK

We appreciate and welcome all donations and we thank the following individuals for their interest and support:

- Robert J Alexander
- Julia Mae Baylis
- Bromley High School, UK
- Deborah Cottrell
- Patrick Gilhuly
- Mark J Gold
- Marisol Henriquez
- Julie Colleen Jackson
- David Kaliner
- Mark Alex Kurschner
- L Lefebvre
- Raynald Harvey Lemelin
- Tim M Mather
- Arcady R Mushegian
- C Niederberger
- S Norman-Barnes
- Nora D Presutti
- Jamie Quinn
- Peter J Schweinsberg
- Michael Gerard Stack
- Stevan Julius Walkley
- Kathleen M Yamasaki
- Anna Elizabeth Yankee

Thank you to the following volunteers for the donation of their time and talents:

- Philip Doherty, Britain
- Neil Gunn, Britain
- Lenka Neal, Britain
- Aaron Mikelson, USA
- Claudia Macin, Mexico
- Roxanne Paul, Canada
- Tracy Lau, Canada
- Andrea Byre, Canada
- Elisa Hsieh, Canada
- Anne Rutherford, Canada
- John Symons, USA
- Jamie Sziklay, USA
Partners & Home Institutions

Partners

The University of British Columbia’s Fisheries Centre hosts most of Project Seahorse’s international team. Project Seahorse Director Amanda Vincent is a member of the UBC faculty and holds the Canada Research Chair in Marine Conservation. www.fisheries.ubc.ca

The Zoological Society of London hosts Project Seahorse’s UK team. Project Seahorse Associate Director Heather Koldewey is the Programme Manager for ZSL’s International Marine and Freshwater Conservation Programme. As a co-founding partner, ZSL also hosts conservation, research, aquaculture, and aquarium initiatives. www.zsl.org

Host Collaborators

We also have formal collaborations with the Centro Interdisciplinario de Ciencias Marinas del IPN (CICIMAR), Mexico; Coastal Conservation and Education Foundation Inc. (CCEF), Philippines; Fisheries for Improved Sustainable Harvest (FISH), USAID, Philippines; Ocean Park Conservation Foundation, Hong Kong; University of Hong Kong; Institute for Nature and Biodiversity Conservation/Ria Formosa Natural Park, Portugal.

Pygmy seahorse, *Hippocampus denise*. Photo by Nick Hill/Project Seahorse
Edited by Regina Bestbier, Heather Koldewey, Tyler Stiem and Amanda Vincent, with contributions from the Project Seahorse Team

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