



# REEF CURRENTS

*General articles and overviews of reef science and management*

## Reefs: Catalyst for a Life of Learning, Tough Love and Fun Work

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Given my years young, most people assume I am well into a retirement phase of life. It is not that I don't contemplate 'retirement', but the reality is that I am much happier being fully engaged in activities with a sense of direction and contributing to the needs of marine conservation and all that entails. Presently I am 4 years into guiding a large 5-year U.S. Government supported marine conservation project in Indonesia. And while I would like to say that the job gets easier with experience, the USAID Sustainable Ecosystems Advanced (SEA) Project ([www.sea-indonesia.org](http://www.sea-indonesia.org)) is probably the most challenging of my career, and yet also tremendously rewarding. "Challenging" in the sense of scale of Indonesian marine conservation issues, and in the complexities of working in Indonesia and trying to comprehend what will make a real difference, and when our efforts are simply blowing in the wind. But, rewarding because of the amazing dedication and fortitude of a young generation of Indonesians who are working to figure out how to protect reefs, set up effective marine protected areas, improve policies, develop innovative law enforcement approaches, do useful marine science, and raise awareness across thousands of small communities in coastal areas of the country. So, while my wife Vangie and I have adapted to life in Indonesia, and like the country and the people, and are probably learning as much professionally and personally as at any time in our lives, we still miss our home in Hawaii where we will return in several years.

Being in Indonesia is a great way to culminate a career of working on coral reef conservation and coastal zone management issues. The Indonesian archipelago has it all, in terms of tropical marine resources and conservation issues; with 17% of all the coral reefs in the world mostly scattered around remote islands and along an 88,000 km coastline, it is often difficult to know where to start. The plus side is that many of the coral reefs and coastal habitats in Indonesia are still in relatively good condition due to their remoteness and to a seeming lack of impact from warming ocean temperatures. Most of the qualitative differences in reef, other habitat and water quality status, is proportional to the distance from human population centers. Thus, the marine life surrounding Java Island that supports about 140 million people is by no means pristine and barely surviving in many areas. In contrast, the areas in eastern Indonesian, where our USAID SEA project works, are still blessed with relatively healthy reefs boasting healthy old coral heads, large and abundant fish populations and a noticeable presence of charismatic marine life,

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<sup>1</sup> Alan White was the winner of the 2019 ISRS Coral Reef Conservation Award and was invited to write about his career, reflecting on the challenges of tropical marine conservation. The picture is of Alan and his wife Vangie in Cebu Island on a recent Saving Philippines Reefs expedition.

## REEF ENCOUNTER

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Reef Currents: Learning, Tough Love & Fun Work



such as Dugong, whale sharks, manta rays etc. that have great potential to attract an increasing number of marine enthusiasts—both Indonesian and foreign. But, in our connected world, the abundance of fish, valuable species for export, is quickly becoming too well known by seemingly remote fishing communities and these populations need urgent protection. Yet, the needed shift in environmental awareness is coming about through a revolution of education, rapidly evolving local government abilities, and a growing tourism industry. So, while optimism is needed to keep us motivated, it is not just a dream, since I see changes in Indonesia that should be long lasting and serve to protect its marine heritage, provided, that is, that increases in ocean temperature do not roll over all the healthy reefs!



*1972, Alan on boat dock of Charles Darwin Research Station, Academy Bay, Santa Cruz Island, Galapagos where afternoon breaks from writing the Galapagos Guide included a swim in the bay*

You might wonder how I got to this place, having a career that I sometimes feel has surpassed my youthful dreams of adventure and conquering the world. Not that our marine conservation world is conquered by any means; but to make a difference, I believe, we need, in some degree, to have that attitude, because the challenges are indeed great. At the end of my undergraduate years in U.C. Berkeley, which opened my eyes to global problems in the 1960s, I decided to join the U.S. Peace Corps and ended up working for the next 5 years in the Galapagos Islands, Ecuador. This wonderful experience was enabled by an open-minded Peace Corps Director, John Arango, who upon being asked his permission to travel to Galapagos to work with the Charles Darwin Station under the direction of Dr. Peter Kramer, responded, “when are you leaving”. I wasn’t sure I had heard him

correctly, but within several weeks I was on a bi-weekly flight to Galapagos with my friend, Bruce Epler. We had no idea what we were getting into, except that the adventure attracted us. Two years later we had completed the first tourist guidebook to the Galapagos Islands (Epler and White 1972) and our minds were firmly focused on the need for biodiversity and marine conservation as a lifelong path. The Galapagos at that time was just beginning to be exploited by foreign fishing boats, and during our years there the Galapagos Marine Reserve was designed and legalized based on the early surveys of Jerry Wellington and colleagues. In those years the Galapagos National Park was looking to the potential of high-end tourism to generate the financial incentives needed to gain the support of both the island communities and the national government for adequate protection. Many of us know the events that have emerged since in Galapagos, but at least protection has prevailed.

One thing I learned while in the Galapagos was that marine conservation was not all about being a marine biologist or ecologist. The issues threatening the marine environment there had little to do with marine life biology, and all to do with people and their lack of understanding of the limits of marine resources, with the ability of government and non-government organizations to have an influence on the fate of our environment, and with politics and human greed. Thus, my next step back to the real world was to work on a master’s degree in international administration, which complemented my undergrad work in economics and business. The master’s program required an internship that sent me to the Philippines under the auspices of the Smithsonian Environmental Peace Corps Program to work with the then National Environmental Protection Council under Dr. Celso Roque, a nuclear physicist turned environmentalist. With good fortune, I ended up working with the National Marine Parks Task Force for the Philippines, and with a group of young Filipinos, all newly trained scuba divers (we learned to dive together). With

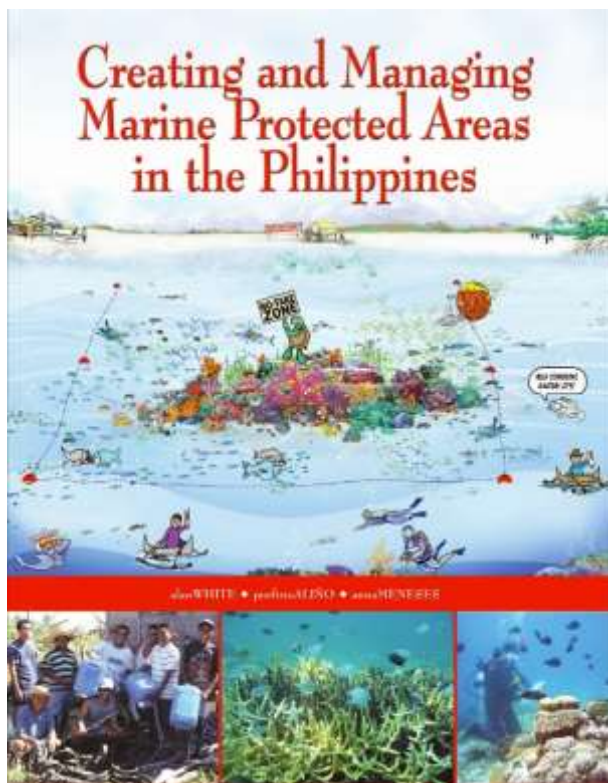
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Reef Currents: Learning, Tough Love & Fun Work



their task leader, Dr. Gavino Trono of the University of the Philippines, we travelled to many of the rumored good sites for marine parks scattered around the 7000 island archipelago. We did rapid surveys to determine the status and feasibility of the sites for protection under national law, but were mostly oblivious to forces that might actually protect some of the wonderful sites that we explored and recommended. These trips were great adventures, with some misadventures, but quickly alerted me to the reality that Philippine coral reefs were not long for the world under conditions we observed of rampant destructive fishing, overfishing, uncontrolled coastal development and an almost total lack of appreciation of the benefits to be derived by most stakeholders from coral reefs in their natural and healthy state. This realization in 1978 was a turning point in my career, leading me to focus on saving the reefs by doing whatever that required. In my early foray in the Philippines I was lucky to have great peer support through the kindred spirits of Prof. Edgardo Gomez, John and Liana McManus, Kent Carpenter, Dr. Angel Alcala and others.

After a year with the national survey team, followed by a year based in Dumaguete, Negros Oriental, at Silliman University, working with Angel Alcala and gaining insights into the difficulty of protecting several small island reefs in the Visayan Sea (e.g. Sumilon and Apo Islands), I planned my dissertation research. I wanted to determine what would be the necessary ingredients to effectively conserve Philippine coral reefs within marine protected areas, marine reserves or local government declared marine “sanctuaries” from an ecological, governance and socio-economic perspective. With this direction I landed at the University of Hawaii and the East West Center for a Ph.D. in geography and marine resource management and conservation (White 1986). At the same time, the hundreds of underwater surveys conducted on Philippine reefs in those years had turned me into an amateur coral reef ecologist which led to my compiling “Philippine Coral Reefs, A Natural History Guide” (White, 1984, 2001).



2004, Cover to *Creating and Managing MPAs in the Philippines* was a popular guide for managers, planners and local officials to support their MPA work that was disseminated to all 800 plus coastal municipalities/cities in the Philippines

The timing of my research on marine conservation fitted well with the aims of the East West Center Environment and Policy Institute which in 1982 provided me with a 2-year study grant for field work in the Philippines, Malaysia and Indonesia to analyze the status of MPAs (12 in all) from an ecological, institutional and social perspective. The study highlighted that the engagement of local coastal communities was essential for any effective management to occur, regardless of the best intentions of national governments. This was certainly true in the 1980s in any case, and only started to change in the 1990s and beyond, when the Philippine government enabled several well-managed National Marine Protected Areas. But, until the present time, most of the effectively protected sites in the Philippines are under local government control and managed in collaboration with stakeholder communities. This realization has tailored my focus on conservation with a “bottom-up” approach (White et al. 1994). At the same time my intern job in the East West Center led to the development of a section in a marine policy atlas for Southeast Asia (White 1983). This experience ingrained me with the urgent need to “scale-up” marine conservation work, but little did I know how difficult that was to do in reality!

## REEF ENCOUNTER

The News Magazine of the International Coral Reef Society  
Reef Currents: Learning, Tough Love & Fun Work



As I traveled in Southeast Asian countries with an eye for the need to move beyond community-based approaches, I realized that marine conservation in the region could only work given a more holistic approach than simply establishing small, or even large, “marine protected areas”. This insight came from the reality that the coastal areas are multiple use, support relatively large populations of the resource dependent people, and that the governments (local and national) had many issues to deal with and were thus more attracted to integrated solutions. Thus “ICM” or integrated coastal management was born in the region and evolved in the Philippines to be supported by national policies. ICM fitted well with a local government mandate to manage coastal and marine resources including fisheries to 15 km offshore. Thus, while MPAs and reef conservation were often a center piece of an ICM program, ICM allowed government bodies to formulate more comprehensive plans for the management and protection of their resources and to implement such plans with a budget allocation quite separate from that of the national agencies. It is interesting to note that ICM evolved to be the “ecosystem-based management” (EBM) approach of later years, one that has many similarities.

The 1990s gave me a chance to test these ideas through my first “real” job as a technical advisor for the ASEAN-US Coastal Resource Management Project through which, from 1986 to 1992, we initiated coastal resource management in each of the six (at that time) ASEAN countries. This project, led by Dr. Chua Thia-Eng at ICLARM (International Center for Living and Aquatic Resources Management - now the World Fish Center) in Manila, was a monumental deep dive into the governmental mechanisms and cultures of the six countries concerned, attempting to understand why so little gets accomplished despite national government commitments. Nevertheless, in each of the six countries we initiated viable coastal zone management and reef protection pilot sites, and, due to the insistence of our project implementation policy, the governments were obligated to contribute substantial counterparts to the process. Viable long-term management efforts were initiated in Lingayen Gulf, Philippines; Johor State, Malaysia; Segara Anakan Lagoon, Indonesia; Ban Don and Phangnga Bays, Thailand, and in Singapore and Brunei, though come project completion I was weary of the constant travel and spending so much time in training and planning workshops!



*2006, Alan in Colombo Sri Lanka with Coast Conservation Department Officials planning modifications to the CZM Plan after the 2004 tsunami*

Shortly after this project, I moved with Vangie, from 1992 to 1996, to Sri Lanka where our son Ian was born. Work there focused on a narrowly defined coastal zone and the implementation of a CZM Plan that controlled building setbacks and maintained the integrity of the physical coastal zone of beaches and fringing reefs in the face of ongoing coral mining and coastal erosion (Rajasuriya and White 1995). These goals were being achieved quite well until the 2004 tsunami surged across these coastal habitats on the southeast facing side of the country. Working with the Sri Lankan Coast Conservation Department and the National Aquatic Resources Agency gave me more insights into how bureaucracy and personalities can make or break a well-designed system. The stories from 4 years in Sri Lanka could

## REEF ENCOUNTER

The News Magazine of the International Coral Reef Society  
Reef Currents: Learning, Tough Love & Fun Work



fill a tome on CZM planning processes, the impact of people’s varying character and political turmoil—but that’s for another time!

A key finding from these programs was that in order to convince governments to act, they needed to understand the reality of “shifting baselines” as described by Jeremy Jackson and others. The tremendous losses of reefs and fisheries that had occurred by the 1990s were barely appreciated by policy makers, a fact which highlighted the need for good baseline data on both environmental status (e.g. of coral reefs and other habitats) and economic value. In 1998 Abbie Trinidad and I compiled a booklet entitled “The Values of Philippine Coastal Resources: Why Protection and Management are Critical” (White and Trinidad 1998), which helped set the stage for government budget allocations to better manage coastal resources. This prompted local governments to allocate budgets for conservation, because the municipal mayors often understood the economics involved better than ecological considerations. Fisheries, being the primary economically valuable resource of concern at the time, got the attention of both local and national leaders. This little booklet encouraged some mayors to launch their own coastal programs that proved just the beginning of a national movement to establish small MPAs in each of the 800 plus coastal jurisdictions.



After Sri Lanka, my choice of assignment was to join the USAID Philippine Coastal Resource Management Project (CRMP), given my earlier work there and my familiarity with the country. The CRMP moved the needle on marine conservation and systematic planning in the country from 1996 to 2004. It set the stage for two follow-on projects that focused on reefs, fish and viable governance mechanisms. These projects largely succeeded due to a 1991 law that shifted many coastal management responsibilities to local governments and fostered increased local participation in the management of coastal areas. For countries with long and dispersed coastlines and limited resources, the devolution of authority to local governments is an essential catalyst in addressing coastal conservation issues. The unique feature of the CRMP was the

*2007 Saving Philippine Reefs (SPR) survey team in Bohol, Philippines. The SPR surveys started in 1992 and have been conducted every year since then, covering more than 50 large and small MPAs and accumulating a dataset on the status and trends of reefs in all survey sites for which analysis and publication continues*

involvement of municipal and city governments in the planning and implementation of ICM plans that included a range of interventions designed to address management of marine resources and areas to 15 km offshore. This heralded ICM as a “basic service of local governments” and required that each local government participate in baseline assessments to establish the extent and status of resources, and their patterns of use, as well related management issues. One criterion of a complete CRM/ICM plan was that it should include one or more MPAs that contained no-take zones for fisheries improvement, provided protection of critical habitats, and could provide other benefits such as sustainable tourism.

## REEF ENCOUNTER

The News Magazine of the International Coral Reef Society  
Reef Currents: Learning, Tough Love & Fun Work



The lessons learned from the CRMP served to assist subsequent projects and are now proving of value in Indonesia, where one of the key issues of effective coral reef conservation is the relative authority and capacity of local government units to do their jobs. Challenges identified through the CRMP were issues of financial sustainability, inadequate capacities, weak law enforcement, and lack of integrated government oversight. A development for addressing these weaknesses was a “CRM certification system” that provided an incentive for local government. The



*2013 Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security Regional Exchange for MPAs; the six-country body formulated and approved the Coral Triangle MPA System Framework and Action Plan launched in 2014 across the region*

benchmarks for a local government to achieve initial certification were: budget allocated, CRM related organizations formed and active, CRM plan developed and adopted, shoreline management initiated and best practices (e.g. reef and mangrove conservation, MPAs, etc.) implemented. Unfortunately, so-called “certification” systems require adequate institutional understanding and support which are not readily found, and thus the system withered. But a simpler and easier to implement MPA management effectiveness system was adopted in the Philippines and Indonesia, where they were informed by research supported by a Pew Fellowship grant in 2001 and by “How is your MPA Doing” (Pomeroy et al. 2002); the result was an MPA “management effectiveness” system that was adopted in 2010 in the Philippines and now operates along with a similar system in Indonesia. The experience of the MPA evaluation system indicates the need for baselines that can be measured and against which progress can be measured in a practical and transparent manner. Without measurable progress, the institutions and people involved give up or move on to another focus. One initiative that sustained attention was the giving of awards for best managed MPAs following criteria set out in the Philippine national MPA evaluation system. Such awards are now given each year and publicized through television and social media.



*2014 Reef gleaning is a common practice on many reefs in Southeast Asia and is often a symptom of the relative dependence of coastal residents on food from the reef and in many areas contributes to overfishing of reef organisms*

During our years in the Philippines, living in Cebu City and employed through the CRM Project, Vangie and our colleagues realized that short term “aid” projects were not on their own sufficient for building the necessary local capacity for conservation; thus we launched the “Coastal Conservation and Education Foundation (CCEF) in 1998 ([www.coast.ph/oneocean.org](http://www.coast.ph/oneocean.org)). It was launched with motivated persons who came initially from donor projects and wanted to continue their work. Now CCEF, with 22 years of operation, has been able, in the southern Philippines, to support numerous and diverse activities promoting reef conservation and rehabilitation and institutional development

## REEF ENCOUNTER

The News Magazine of the International Coral Reef Society  
Reef Currents: Learning, Tough Love & Fun Work



*Large sweetlips is indicative of the many mature fish in the Tubbataha Reefs where fishing has not been allowed for 15 years and now provides fish larvae for the Sulu Sea fisheries and beyond*

to achieve those ends. A benefit of long-lived focused organizations such as CCEF is that with a consistent vision it can monitor change over time. Thus CCEF's "Saving Philippine Reefs" annual coral reef survey expedition has gathered data on numerous reefs in MPAs over 20 plus years, the data documenting the status of reefs in relation to management interventions and the impacts of coral bleaching among other influences. The legacy of collecting, managing and analyzing data within the Coral Triangle countries is not great, but there are bright spots, and our 20 plus year data-set tells a story of successes and failures and helps illuminate major cause-effect relationships between management and conservation, as well as promoting awareness of the shifting baseline syndrome.

In the intervening years between work in the Philippines and Indonesia, I was fortunate to work with The Nature Conservancy (TNC) and support the development of the Coral Triangle Initiative for Coral Reefs, Fisheries and Food Security through the Coral Triangle Support Partnership consortium of the World Wildlife Fund, Conservation



*2018 Massive schools of Jackfish roam parts of the Tubbataha Reefs and are great attractions for divers and photographers; the Park collects user fees that now cover a large portion of the management costs and compensate traditional fishers for not fishing in the area*

## REEF ENCOUNTER

The News Magazine of the International Coral Reef Society  
Reef Currents: Learning, Tough Love & Fun Work



International and TNC (supported by USAID). In addition to assisting with the institutional development of the CTI-CFF and its Regional Plan of Action, my focus was mostly on the MPA Technical Working Group and the formulation of the Coral Triangle MPA System Framework and Action Plan comprised of almost 2000 MPAs across the six countries (White et al. 2014; Green et al. 2014). A key aspect of the MPA system was the development of a monitoring and evaluation system for tracking progress in MPA health and across the other goals for seascapes, fisheries, climate change and threatened species. The indicators for monitoring progress in the CTI-CFF now feature prominently in the newly revised Regional Plan of Action for 2020-2025 and serve the critical need to be able to show measurable change in terms that senior regional policy makers can understand. Again, the indicators are not only biophysical and governance related, but they also designed to illustrate the economic benefits of marine conservation ([www.coraltriangleinitiative.org](http://www.coraltriangleinitiative.org)).

To end, I must recognize the incredibly important role of my wife Vangie in our travel and work given her energy and enthusiasm for reef conservation endeavours. Vangie has guided the Coastal Conservation and Education Foundation through her financial and organizational skills without which CCEF would never have been able to generate the positive impact it has on Philippine capacity for reef conservation. Of course, CCEF, like any small NGO, requires constant mentoring and funding to continue its mission. But the strength of small NGOs in the business of marine conservation is that



*2018 Alan counting fish over the large expanses of branching Acropora coral in Tubbataha south reef that has fully recovered from blast fishing in the 1980s and the severe bleaching in 1998*

they can connect directly with those very stakeholders who directly affect the plight of reefs and thus can benefit coastal habitats through positive behaviour change.

The lessons for aspiring reef scientists, managers and enthusiasts that I can convey mostly pertain to the need for multidisciplinary collaboration. The longer I live and work in the countries where tropical marine resources lie, the more I realize that all the best science in the world will not save coral reefs without effective communication, capacity building, education, social-economic development and probably most important, the buy-in and understanding of stakeholders at all levels of the conservation puzzle. Good science is always needed to add valuable guidance to the planning and design of reef conservation programs, but we as researchers must try to see the larger picture of how it will be used, and we must fully understand the barriers to changing behaviour and putting successful action programs into effect. Integrated, well-planned and long-term programs are essential. Despite the many barriers, I can say that



## REEF ENCOUNTER

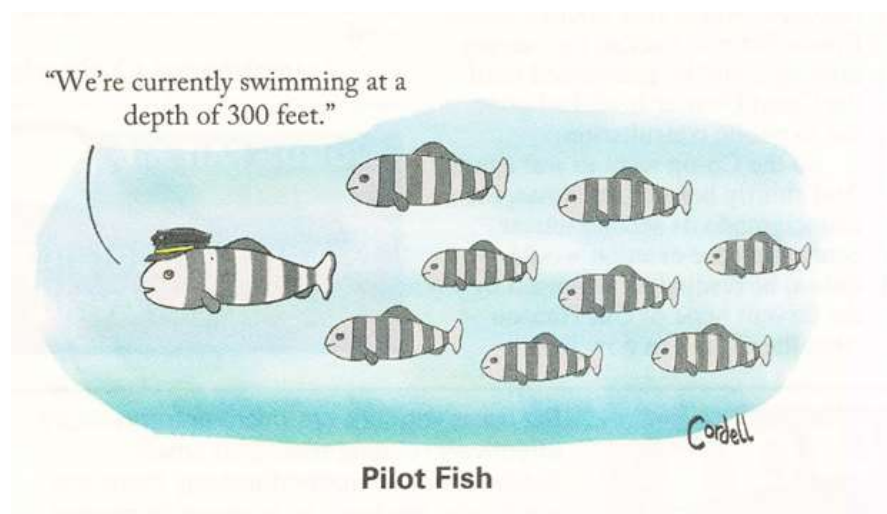
The News Magazine of the International Coral Reef Society  
Reef Currents: Learning, Tough Love & Fun Work



the needle has moved dramatically towards a much higher level of public awareness of the key issues and what needs to be done to address them, since I worked in the Galapagos or started diving on Philippine coral reefs. Moving that awareness and knowledge yet further, to secure meaningful action, is our collective challenge. The more creative young (and older) minds we can apply to the problem as well as leadership in and out of government, the better, because in the end it is mostly risk-taking individuals that catalyse progress in our world. We must all support young interns and students from a variety of disciplines in developing careers in coastal and reef conservation and continue to provide guidance and encouragement to all aspiring researchers and practitioners. And, in our ever-evolving careers and lives, we must take every opportunity to build the relationships among people and institutions that will build their capacity to secure effective conservation. It is not easy, but the learning, tough love and fun that results is well worth the effort!

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