PAGTÁOB

The Official Newsletter of the McKeough Marine Center of Xavier University | Volume 3 Issue 2 | September 2015 - May 2016

PAGTÁOB is the Visayan term for the rising of the tide. Every flood of the tide brings with it new nutrients and important components that sustain the numerous denizens in the intertidal zone. Just like the nutrients that are being brought in, information is also vital for marine scientists.

This newsletter aims to update the XU community and our partners on the different programs and activities of the McKeough Marine Center

INSIDE:

CLAM SEEDING EFFORT IN MACAJALAR BAY: ENSURING THE SURVIVAL OF GIANT CLAMS

Text and photos by Nadine Arabelle L Vivares

Giant clams are the largest species of bivalve mollusks, and they have an important role to play as "ecosystem engineers" of the coral reefs. Out of the nine species of giant clams that exist in the world, seven are found in the Philippines. Unfortunately, majority of the species are listed as endangered by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

In an effort to reintroduce and propagate the clams in Macajalar Bay, the McKeough Marine Center of Xavier University (XU-MMC), in partnership with Cantaan Centennial Multi-Purpose Cooperative (CCMPC) and Macajalar Bay Development Alliance (MBDA), organized the "Clam Seeding and Culture in Macajalar Bay," a seeding effort to establish a breeding stock of giant clams in the bay.

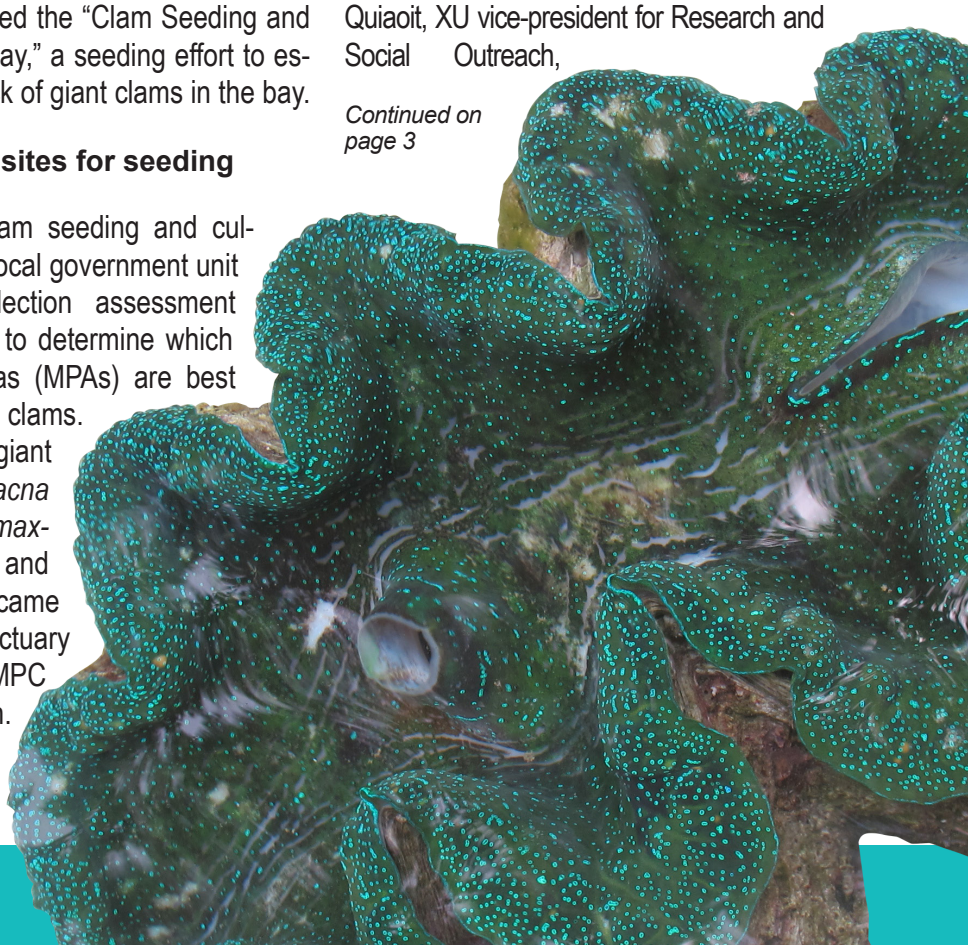
Choosing the best sites for seeding

Prior to the actual clam seeding and culture, members of the local government unit conducted a site-selection assessment using a set of criteria to determine which marine protected areas (MPAs) are best suited to receive the clams. The four species of giant clams, namely *Tridacna squamosa*, *Tridacna maxima, Tridacna crocea*, and *Hippopus hippopus* came from a giant clam sanctuary managed by the CCMPC in Cantaan, Camiguin.

The areas selected should be conducive enough for the stock to survive, thrive, and hopefully spawn. Criteria include, among others, the presence of native species, corals, clear waters and the presence of Bantay Dagat. MPAs in the municipalities of Laguindingan, El Salvador, Opol, Villanueva, and Balingasag were eventually chosen as the best sites.

An orientation seminar on "Giant Clam Seeding and Culture" was also held at the XU AVR-2 on August 20 as a primer for the Macajalar Bay LGUs, especially the steward municipalities. The list of speakers included Johnny Cabreira, who shared his experience with clam seedings, and a self-made documentary titled "The Treasures of Agutayan" while Dr Hilly-Ann Roa Quiaoit, XU vice-president for Research and Social Outreach,

Continued on page 3



MMC, MBDA Celebrate International Coastal Cleanup Day 2015

By Sue Andrey Ong | Photos by MMC

On September 19, 2015, Macajalar Bay Development Alliance (MBDA) and Xavier University – McKeough Marine Center (XU-MMC) initiated a synchronized coastal cleanup in Macajalar Bay as part of the year's International Coastal Cleanup Day. The activity was participated by 34 coastal barangays from 5 municipalities (Balingasag, Kinoguitan, Laguindingan, Salay, Tagoloan) and 1 city (Cagayan de Oro) along Macajalar Bay, with a total of 2,516 volunteers that participated in the cleanup.

The volunteers from government agencies and the academe who took part in this activity include the Department of Public Works and Highways (DPWH) - Region X, Cagayan de Oro City Engineering Office-1st and 2nd Districts, Cagayan de Oro Water District, PNP Maritime Group (PNP-MG), XU Marine Science Society, XU Biophilic Society, Nature Crusaders, Xavier International Students' Association, AFS - Xavier University Intercultural Learning, Xavier University Red Cross Youth. There was a decrease in the nu,ber of barangay participations compared to the last coastal clean-up activity in 2014, where a total of 55 out of 88 barangays participated.

Based on the data that we collected from the participants using the data cards we distributed before the activity, plastic trash comprised 63.26% of the wastes collected in Macajalar Bay. Other types of wastes found were mixed waste materials (12.35%), metal materials (7.32%), cloth materials (5.66%), wood materials (4.17%), glass and ceramic materials (3.55%), paper/cardboard materials (2.11%), and rubber materials (1.58%). At present, a total of 18,289 waste materials were collected from the participating coastal barangay areas. Analyses of the data obtained from the recent clean-up showed a decrease in the amount of collected trash in some municipalities.

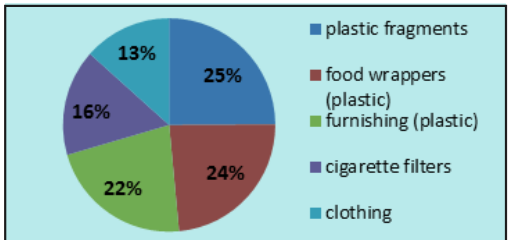


Figure 1. Top 5 collected debris (%) in the coastal areas of Macajalar Bay

Overall, plastic materials were the most abundant type of trash collected in all coastal areas of Macajalar Bay ranging from 87.33% (Laguindingan) to 85.89% (Kinoguitan). This includes plastic grocery/retail bags, baskets and crates, bottles, cigarette filters, fast food containers, cups, foam insulations, packaging, food wrappers and other plastic waste materials.

Globally, cigarette butts (2,248,065 pcs), plastic food wrappers (1,376,133 pcs), plastic beverage bottles (988,965 pcs) and plastic bottle caps (811,871 pcs) were respectively found to be the top 5 most collected trash basin on the international coastal cleanup 2014 report of Ocean Conservancy.

Clam Seeding...

continued from page 1

also known as the "mother of clams," presented and discussed basic clam biology, as well as clam seeding procedures, maintenance, and monitoring.

Representatives from the Philippine National Police - Maritime Group, the Philippine Coast Guard and Marine biology students of XU also actively participated as volunteers.

A pledge to restore the giant clams

On September 3, the XU team travelled to CCMPC in Cantaan, Camiguin to retrieve the clams for the seeding, which were already set aside beforehand by the staff of the CCMPC. The clams were carefully packed in containers and kept cool by layers of wet canvas cloths. A total of 200 clams (50 individuals per species) and several hundred juveniles set on cement slabs were packed for transport.

The journey of the clams from Camiguin to the XU-Marine Station in Jasaan lasted 30 minutes via a speedboat, and at least an hour more of land travel via truck. Upon arrival at the station, the clams were quickly unpacked and transferred to tanks of aerated seawater. Prior to the clam deployment to the different MPAs the next day, a short program was held at the XU-Marine Station. CCMPC chairperson Alona Cordero spoke about their clam culture in Cantaan, Camiguin. Moreover, Silliman University - Angelo King Center for Research and Environmental Management (SUAKCREM) director and National Scientist Dr Angel Alcala (also former Department of Environment and Natural Resources Secretary) spoke about the importance of clam seeding. The program was culminated by a ceremonial Stewardship Agreement signing between MMC, CCMPC, MBDA, and the steward LGUs, after which the clams were swiftly transported to their respective municipalities and successfully deployed in their MPAs.

The Stewardship Agreement aims to strengthen the collaboration between the parties involved in the clam seeding activity , and to formalize their commitment to work together, cooperate, and share resources for the protection and sustainable management of the giant clams seeded in Macajalar Bay.

The clams will be regularly monitored by the steward LGUs in the hopes that they will soon spawn, propagate and ultimately increase in number, saving the clam species from possible extinction.

Gaint Clams in Agutayan Island Status Report to LGU Jasaan

Text and photo by Sue Andrey C Ong

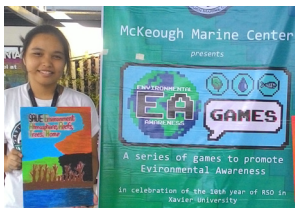
On March 2, McKeough Marine Center presented an update of the current status of giant clams in Agutayan Island at the Municipality of Jasaan, Misamis Oriental. In 2001, 544 *Tridacna gigas* and 30 *Hippoppus hippoppus* were reseeded in Agutayan Island. However, the number of clams reduced to 411 in 2003, a possible cause is acclimatization in the new environment. At present, a total of 104 clams are recorded in the area, included here was the data collected of the recent clam relocations conducted last January 24 and 31, 2016. Overall, the report concludes there has been a steady and consistent decline of giant clams every year since the reseeding in 2001. It is critical to strengthen the management of MPA Agutayan Island, as well as, their bantay dagat system. The meeting was participated by fellow bantay dagat of LGU Jasaan, local government officers, Scuba de Oro, MBDA and McKeough Marine Center.

MMC staff with Geek Wars crew, the co-organizers of the trivia day.

MMC ORGANIZES "EA GAMES"

By Marianne Mira Katrina E Macapelit and Nadine Arabelle L Vivares | Photos by MMC

As part of McKeough Marine Center's Information, Education Campaign (IEC), the center organized a series of fun and informative games and competitions entitled "EA Games" or (Environmental Awareness Games) on February 3-5 2016. Throughout the duration of the EA games, we set-up an exhibit of all our IEC materials such as posters, brochures, books, and pictures at the Magis Walkway, Students and staff alike learned about the Center, its projects and Programs, and interesting information about the oceans and its ecosystems.



On February 3, 2016, we held a Trivia Day Competition along the themes of Marine Biology, Ocean Conservation, Ridge-to-Reef, Global Warming, El Niño, and about MMC as well. We invited Geek Wars, a local trivia night events organizer, to host our trivia Day. In their usual flair and professional hosting, it was a fun and educational event. A total of 8 teams with at most three members each registered for the game; in the end, the team Negligence (Jayve Ritardo and Arsenio Meneses) come out on top, winning Php 2000.00; the second placers were from team Moledita (Jade Alfie Sale, Merlein John Viado, Shiella Mae Balbutin), winning Php 1500.00; the third placers were from team Martian (Jayson Jay Dalman, Nina Bea Cadorna, Lailanie Cabatuan) who received Php 1000.00. All winning teams received goodies from Coca-Cola FEMSA Philippines, one of our generous sponsors.

The on-the-spot Poster making Contest was held on February 5, 2016 at the Peace Park. The theme for the contest was "Environmental Awareness", and 14 participants showcased their artistic talents in line with the theme. The judges during the contest, Mr. Pennessencio "Nonoy" Estarte, Mr. Errol P. Balcos, and the current assistant curator of the Museo de Oro, Mr. Oscar Floirendo, selected the flowing winners: Ms. Roselle Buray won 1st place and received P1, 000.00 and an Aquamundo Mask from our sponsor, Buddy Dive Center; 2nd place went to Bran Meg Walag who received Php 800.00; 3rd place went to Ms. Sarah Sofia Salcedo, who received Php 500.00

All our contestants from both events received goodies as consolation prizes from Coca-Cola. The event was a success with the help of all our other sponsors and partners: Angelica Fishing, Arsicus Multimedia, gpagoopio.com, Azir Auto Parts, the Pomsel and Rosenfeld Family, and Xavier University- Marine Science Society.

PREPARING FOR EL NIÑO: GIANT CLAM RELOCATION IN AGUTAYAN ISLAND

By Maria Gonzales and Nadine Arabelle L Vivares | Photos by MMC

The Mckeough Marine Center conducted a clam monitoring and relocation activity last January 24, 2016. With the help of our marine biology students and the passionate volunteer divers from Buddy Dive Center and Scuba de Oro, we were able to relocate 36 giant clams (*Tridacna gigas*) from the shallow sites to the deeper sites of Agutayan Island, Jasaan.

Upon arrival in Agutayan the volunteers arranged themselves into their respective groups. There was the dive team and the shallow team. The shallow team set out to begin locating the giant clams and documenting their numbers and sizes.

Afterwards, the clams were moved into smaller boats which were to transport them to the deep water sites where the divers were ready to bring them to their new homes, the deeper ocean floor.

We are relocating the clams in response to the looming El Niño heat which will peak early this year; the unseasonable and prolonged extreme heat, which will cause droughts and warming sea waters, poses a danger for the giant clams. The warming of sea waters, especially the shallow waters will be a great risk to the Giant Clams because it may cause the clams to expel their zooxanthellae, "a yellowish-brown symbiotic dinoflagellate present in large numbers in the cytoplasm of many marine invertebrates", in an event called "bleaching", where their tissue turn a stark white. If their zooxanthellae are expelled, photosynthesis will not be able to occur, hindering the clams' ability to feed, and exposing them to higher risks of death.

So, after being able to successfully relocate 36 clams on the first trip, the MMC will be launching another trip in the near future to relocate the rest of the remaining clams in the shallow area in hopes to be able to assure safety and to grant proper living conditions for the threatened marine species know as giant clams.

MARINE CORNER

The Dedicated Father

Text and photos by
Fra-and Timothy Quimpo

The movie "Finding Nemo" is actually correct in portraying Marlin as a dedicated father. In the clownfish world, it is the male, the smaller of the pair, that cleans up an area for the female to nest. Females can lay up to a thousand eggs and always during full moon. After laying the eggs, the male tends to the eggs, and ensures the survival of the hatchlings by cleaning up algae that may possible grow on them, and by fanning the eggs to ensure flow of water that brings dissolved oxygen to the eggs resulting in faster and better development. The clownfish dads do this continually for 6-10 days straight, taking only short breaks in between to feed. But this dedication pays off as clownfish eggs have one of the highest hatching success rate in the fish kingdom. All thanks to Dad's dedication.

RSO Vice President Dr Hilly Ann Roa-Quiaoit receives XU's certificate of membership as an inaugural member of the PEMSEA Network of Learning Centers. Supplied photo.

XU joins EAS Congress in Vietnam

By Nadine Arabelle L Vivares

The East Asian Seas Congress (EAS), started by Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) in 2003, is an intellectual marketplace and ocean-based forum for knowledge sharing, collaborative action and partnership building to advance commitment and cooperation in achieving a sustainable East Asia Seas.

XU Vice President for Research and Social Outreach and distinguished marine biologist Dr Hilly Ann Roa-Quiaoit served as one of the panelists for the session on "Plenary: Application of Ecosystem Services Assessment, Valuation and Coastal Use Zoning: Scaling up Tools and Methodologies."

In 2008, Xavier University signed an agreement with PEMSEA establishing XU as a PEMSEA Integrated Coastal Management (ICM) Learning Center for Mindanao. ICM Learning Centers are platforms for collaboration on ICM program development and implementation at the local level. ICM Learning Centers across the region provide technical assistance to various stakeholders and support capacity-building activities and other local ICM initiatives. The partnership aims to broaden and increase the number of local practitioners of ICM.

At the PEMSEA Partnership Night, Xavier University, along with four other institutions, was recognized as an inaugural member of the PEMSEA Network of Learning Centers (PNLC), a network of well recognized professionals, scientific experts, and institutions who collaborate and share their experiences in ICM.

The 2015 EAS Congress carried the theme "Global Targets - Local Benefits: Setting the Sustainable Development Agenda for the Seas of East Asia beyond 2015."It featured the Fifth Ministerial Forum, the International Conference on Sustainable Ocean and Coastal Development, the Fourth EAS Youth Forum, the PEMSEA Network of Local Governments for Sustainable Coastal Development (PNLG), an environmental exhibition and many other special events.

MMC joins BFAR National Summit in Manila

Text and photo Nadine Arabelle L Vivares

Xavier University through McKeough Marine Center was invited to the Bureau of Fisheries and Aquatic Resources (BFAR) National Summit on Participatory Governance Towards Sustainable Fisheries entitled "*Isang Bangka*". Held on October 28, 2015 at the Philippine International Convention Center (PICC) in Pasay City, Manila, the Summit gathered various fisheries stakeholders in an effort to unify against Illegal, Undocumented, and Unregulated (IUU) fishing. The successful event was attended by at least 300 representatives from the fishing industry, civil society organizations (CSOs), local government officials, the private sector, and the academe, who were treated to various performances and the showcasing of the short film with the same title "Isang Bangka" about the status of our oceans as well as the efforts and successes of BFAR, especially following the passing of the Fisheries Code (RA 8550) amendment, or the Republic Act 10654.

The short film was introduced by DA Undersecretary for Fisheries and BFAR National Director Atty. Asis G. Perez. After the film, a keynote message was heard from Agriculture Secretary Mr. Proceso J. Alcala, who stated that "Unfortunately, most of us have forgotten our role in protecting our oceans. Through the amended Fisheries Code, we strengthen this protection. We are now in a better position to promote sustainable fisheries because the new law is more responsive." An open forum followed soon after where questions about the Amendment were addressed.

BFAR holds Orientation on Republic Act No. 10654

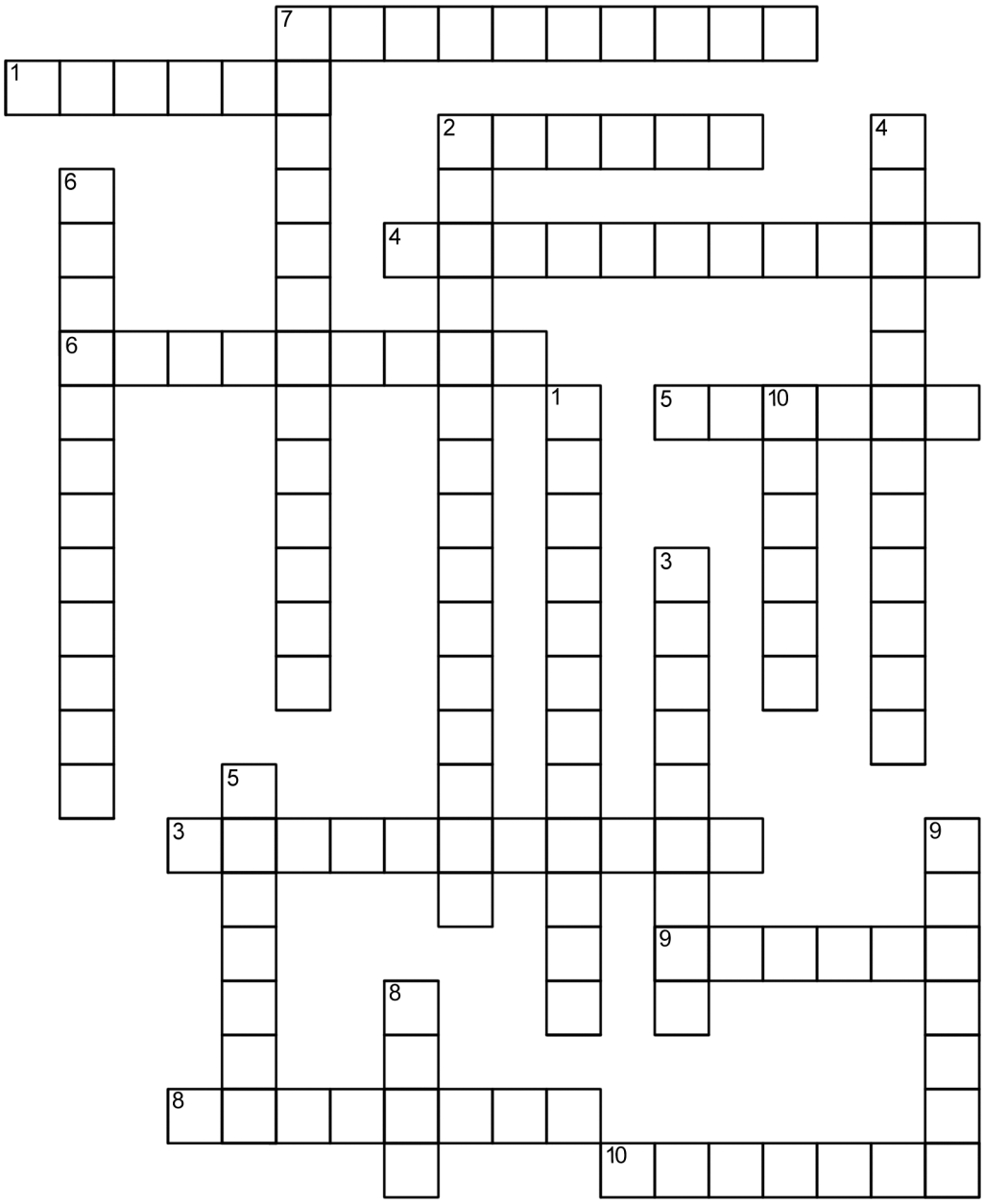
By Kristine A Galarrita | Pictures by MBDA

On December 7-8, 2015 and February 19, 2016, the Bureau of Fisheries and Aquatic Resources (BFAR)-X conducted an orientation to the Macajalar Bay Development Alliance (MBDA) on Republic Act No. 10654, otherwise known as "an act to prevent, deter and eliminate illegal, unreported and unregulated fishing, amending Republic Act No. 8550, also known as "the Philippine Fisheries Code of 1998," and for other purposes". The 2-day orientation was conducted at the BFAR Fish Farm and Training Center in Lala, Lanano del Norte.

One of the salient features of the amended act is increased fines and duration of imprisonment and other administrative penalties for violators.

This activity was aimed to capacitate the created Coastal Law Enforcement Teams (CLET) of the alliance and its partners in terms of implementing rules and regulations (IRR) for the protection and conservation of the bay and its resources. The teams that joined the orientation composed of local government unit (LGU) personnel, deputized fishery wardens, local Philippine National Police (PNP) and others. Currently, the LGU members of the MBDA are conducting their own CLE activities with the support of BFAR, Department of Environment & Natural Resources (DENR), PNP-Maritime Group, Philippine Coast Guard & Maritime Industry Authority. This current coordination assures positive and effective law enforcement in the whole Macajalar Bay in the near future. Furthermore, this joint operation would allow all the units to pool its resources, which would in turn address concerns such as insufficiency of equipment, budget & manpower. The IRR of the amended Philippine Fishery Code is effective as of October 10, 2015.

Crossword Puzzle



Contest rules, mechanisms, and prizes here.

Across

1. A climate cycle; means "the little boy" in Spanish

2. A type of marine debris; unwanted material that have been thrown overboard from a ship, especially to lighten the vessel.

3. Also known as "Her Deepness", American marine researcher, oceanographer, explorer, author, and lecturer; founder of Mission Blue which aims to establish marine protected areas (dubbed "Hope Spots") around the globe.

4. The scientific study of fishes, also known as "Fish Science"

5. Marine _____ is litter that ends up in oceans, seas, and other large bodies of water.

6. What does the A stand for in SCUBA?

7. A fish species long considered a "living fossil".

8. A deep-water cartilaginous fish; a distant relative of sharks; informally known as ghost sharks or ratfish.

9. _____ eel, a deep sea creature whose mouth is much larger than its entire body.

10. Name of the famous humpback whale regularly sighted off the coast of Australia; when he was first sighted he was the only known all white whale in the world.

Down

1. The Great Pacific _____ _____, also known as the Pacific trash vortex, is a collection of marine debris in the North Pacific Ocean and spans waters from the West Coast of North America to Japan.

2. The father of scuba diving; French naval officer, explorer, conservationist, filmmaker, innovator, scientist, photographer, author and researcher.

3. The scientific study of algae.

4. Also known as "The Shark Lady", she was an American ichthyologist known for her research on the behavior of sharks.

5. A term in the fishing industry which means the incidental capture and mortality of non-target species during fishing; it is one of the principal threats to marine biodiversity.

6. The branch of Earth science that studies the ocean.

7. Geographical term; the global center of biodiversity with 76% of the world's coral species. Within this marine area include the waters of Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Timor-Leste.

8. Fish species recently discovered to be the first known fully warm-blooded fish; also known as moonfish.

9. A genus of rays that are capable of generating electricity; a naval weapon is named after this genus.

10. An Arctic and sub-Arctic cetacean; also known as the white whale.

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