



A Newsletter of Silliman University-Angelo King Center for Research and Environmental Management (SUAKCREM)

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2016-2017 Updates



RESEARCH ACHIEVEMENTS/OUTPUTS

Marine and Coastal Biodiversity Studies

Continuing research projects

Dr. Rene A. Abesamis

Significant progress has been made in coral reef research projects that started in 2016. Fieldwork for the project of Ms. Eva McClure (PhD candidate at James Cook University, Australia supervised by Prof. Garry Russ and Dr. Rene Abesamis) was completed in June 2017. Eva was assisted by another JCU PhD student (and former US Fulbright fellow at SUAKCREM), Ms. Katie Sievers. This project aims to assess the performance of NTMRs in the central Philippines (Negros, Siquijor and Bohol) across a gradient natural and anthropogenic impacts, which includes the effects of sedimentation, nutrient availability, fishing pressure, and typhoon damage. Eva hopes to elucidate the extent to which protective management by NTMRs can help reef recovery amidst declining water quality and increased typhoon frequency. Her research required extensive observations of fish feeding behaviour underwater, measuring algal growth and sediment load, and the collection of samples of fish muscle, algae, seagrass and plankton for stable isotope analysis. The results of this research are expected by the second quarter of 2018.

Media exposure

Dr. Angel Alcala and Dr. Rene Abesamis collaborated with GRID in May 2017 to produce a magazine article and 4-part video documentary that features the history of marine protected areas in the Philippines and its significance to the livelihoods of local communities through fisheries and tourism. GRID is a travel magazine that highlights unique places, experiences and people in the Philippines. This collaboration with GRID provided an opportunity

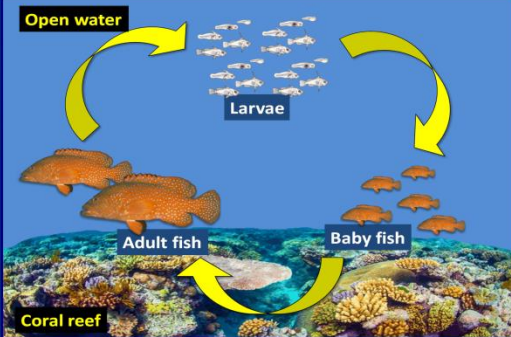
SUAKCREM to communicate its scientific research findings to a much broader audience using mainstream media. The article and video documentary is expected to be released by the 3rd quarter of 2017. For more information about this collaboration, visit: www.gridmagazine.ph/expedition2/ and www.youtube.com/watch?v=gdZ_oOLNxIA.



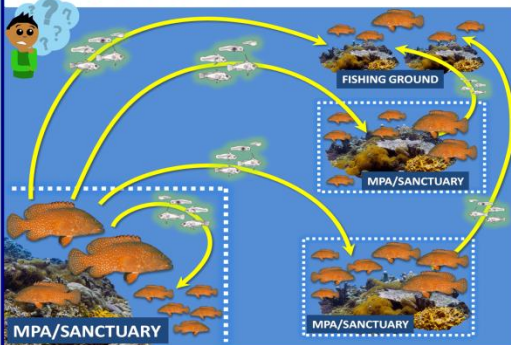
PhD student **Eva McClure** removing a tile from an underwater experimental site. Tiles were bagged and transported to Silliman University to remove any turf algae that grew during the 6 week experiment. The turf algae will be subjected to stable isotope analysis to compare with isotope signatures in fish muscle tissues

BABY FISH, WHERE DO YOU GO?

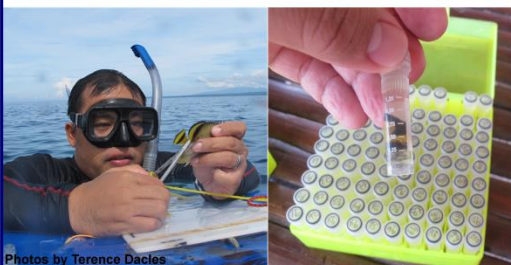
1 The **larvae** of various species of reef fish can live in open water from 7 to 70 days.



2 If larvae settle in **MPAs**, more baby fish can survive to adulthood, which can lead to fish population growth and fisheries enhancement. **BUT HOW CAN WE KNOW WHERE THE LARVAE OF FISH GO?**

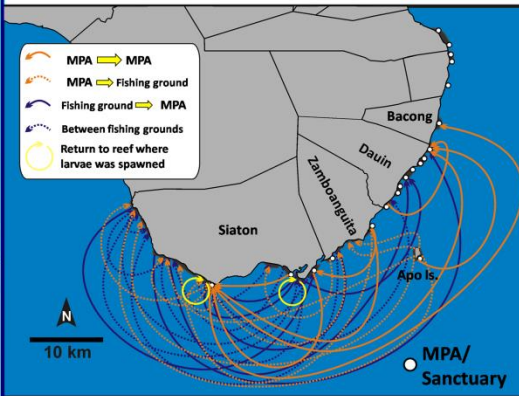


3 **DNA** parental analysis can answer this. If the **DNA** of an adult fish in one site matched the **DNA** of a baby fish in another site, then this suggests that the adult fish can provide larvae to the site where the baby fish lives.



Photos by Terence Dacles

4 Using **DNA** parental analysis, it had been shown that **MPAs** in **Negros Oriental** **can provide fish larvae** to each other and to fishing grounds. This suggests that the **MPAs** can enhance fish populations and fisheries through larval export.



How can we help?

Protect **MPAs** permanently and establish more **MPAs** to further promote fish population recovery and improvement of fish catch.

Support the establishment of **"MPA networks"** in your province.

Support the coastal resource management and coastal law enforcement programs of your **LGU**.

The information presented here is a product of research done by the Silliman University-Angelo King Center for Research and Environmental Management (SUAKCREM), James Cook University, Australia and other partner institutions. This research was supported by the Environmental and Natural Resources Division (ENRD), Province of Negros Oriental and the LGUs and fisherfolk associations of Siaton, Zamboangita, Dauin, Bacong, Dumaguete, Sibulan, San Jose, Amlan and the AIPLS Protected Area Management Board.



Concept, artwork, words: Rene Abesamis, Abner Bucol

Reference: Abesamis RA, Saenz-Agudelo P, Berumen ML, Bode M, Jadic CRL, Solera LA, Villanoy CL, Bernardo LPC, Alcala AC, Russ GR (2017) Coral Reefs DOI 10.1007/978-94-007-1870-0

SUAKCREM researchers led by Dr. Rene Abesamis recently distributed posters in English and Visayan to 8 municipalities in Negros Oriental, as part of SUAKCREM conservation advocacy. The posters conveyed the results of the study "Measuring the Extent of Larval Dispersal in Coral Reef Fishes in Negros Oriental" which suggest that creating a

network of closely spaced (less than few tens of kilometers apart) marine reserves in the LGUs in collaboration with neighboring LGUs can enhance reef fisheries.

The 8 municipalities which received the posters were: Amlan, San Jose, Sibulan, Bacong, Dauin, Zamboangita, Siaton and the city of Dumaguete.

(L) The poster distributed to the 8 municipalities in southern Negros Oriental conveying the results of the study "Measuring the Extent of Larval Dispersal in the Coral Reef Fishes in Negros Oriental."



Ph.D. student (and former US Fulbright Fellow at SUAKCREM) **Katie Sievers** removing muscle and otolith (ear bone) samples from a Bluespine unicornfish (*Naso unicornis*) for stable isotope analysis



Dr. Rene Abesamis (R) discussing research objectives with Mr. Candido (L), a master fisherman, and Mrs. Regalado (Center), a Marine biologist and Public school teacher) at Apo Island. Mr. Candido and Mrs. Regalado were instrumental to the success of sampling activities for Eva McClure's project.

Terrestrial Research and Conservation

CPPI releases 2nd batch of Philippine Crocodiles into Paghungawan Marsh, Siargao

Richard Ebner

On June 17, 2017, the *Crocodylus Porosus* Philippines, Inc. (CPPI), the Crocodile Specialist Group (CSG), the DENR and with the active involvement of the local residents of Brgy. Jaboy, municipality of Pilar, on Siargao Island, Surigao del Norte, released the second batch of juvenile Philippine Crocodiles (*Crocodylus mindorensis*) into its **Paghungawan Marsh**. The eight (8) yearling and twenty-one (21) juvenile *C. mindorensis* provided by the CPPI were bred at the Pagasa Farm in Kapalong, Davao del Norte. The second release was part of the CPPI's program to reintroduce the Philippine Crocodile to the marsh.

Earlier, in March 22, 2013, the first batch of juvenile *C. mindorensis* consisting of 36 individuals, was released at the Paghungawan Marsh by the CPPI and collaborating institutions (National Museum of the Philippines, DENR, SUAKCREM). The Paghungawan Marsh has been declared a Strict Protection Zone by the Protected Area Management Board (PAMB) of the Siargao Island Protected Landscape and Seascape (SIPLAS).

The crocodile release event had to have prior clearance from the DENR Secretary, and was very well received by the local residents of Pilar, with the enthusiastic support of its Mayor, Ma. Liza G. Resurreccion. Community members, participants and even the children were given the opportunity to hold the crocodiles and release them into the waters of the marsh, thereby giving them an experience that they will remember for the rest of their lives.

The Philippine Crocodile (*Crocodylus mindorensis*) is one of two species of crocodiles found in the Philippines, the other being the larger Saltwater Crocodile (*Crocodylus porosus*). The Philippine Crocodile is endemic to the Philippines and was deemed Critically Endangered in 2008 by the IUCN. It is one of the most severely threatened of all the crocodilian species. There are probably less than 250 adult individuals left in the wild and only through conservation and public awareness of its status can the Philippine Crocodile be saved.

The reintroduction program at Paghungawan Marsh has been done to save the Philippine crocodile from extinction and eventually replenish its population in the wild. The program also seeks to help the local people of Pilar as they have now integrated crocodile

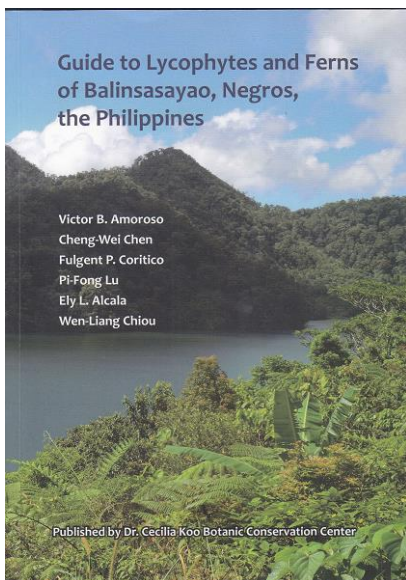
watching into their eco-tourism activities. At present, tourists and visitors come to Siargao Island for surfing and its big game fishing events, but with the Philippine Crocodile release program, they can view the crocodiles as well, thus provide added income for the local folks.

SUAKCREM Chairman Angel C. Alcala concurrently serves as Chairman of the CPPI Board and he provides scientific advice to the group.

A related research project conducted by Abner Bucol is in the role of crocodiles in improving fisheries. A field work on one Palawan island is being conducted to compare fish yields of fishers off the mangrove forest with parts of the island without mangroves. It is hypothesized that the crocodiles produce plankton from crocodile waste as basis for a food chain resulting in increased fish biomass.

Papers/Guidebook Published in 2016-2017

Guidebook to the Lycophytes & Ferns of Balinsasayao, Negros, the Philippines



Abesamis RA, Saenz-Agudelo P, Berumen ML, Bode M, Jadloc CRL, Solera LA, Villanoy CL, Bernardo LPC, Alcala AC, Russ GR (2017) Reef-fish larval dispersal patterns validate no-take marine reserve network connectivity that links human communities. *Coral Reefs*. DOI: 10.1007/s00338-017-1570-0.

Poster on Balinsasayao judged NAST Best Poster

A poster describing a long-range research project by Dr. Victor Amoroso and other researchers, (including Abner Bucol and Dr. Ely Alcala of SUAKCREM) at Balinsasayao Twin Lakes Natural Park (BTLNP) in Sibulan, Negros Oriental was judged one of the best posters by the National Academy of Science and Technology during its Annual Scientific Meeting held at the Manila Hotel on July 12-13, 2017.

The experiment utilizes a 2-ha. plot which is regularly monitored for plant growth rates and presence of vertebrate species. The project is expected to yield significant data on growth of plants and vertebrate animal dynamics.

Amoroso VB, Chen C-W, Coritico FP, Lu P-F, Alcala EL and Chiou W-L (2016). Guide to Lycophytes and Ferns of Balinsasayao, Negros, the Philippines. KBCC Press, Pingtung, Taiwan. 150 pp.

Bucol AA. And Alcala AC. (2015) (Paper came off Press 2016). Additions to the marine fish fauna of the Philippines. *Philippine Scientist* 52:27-39.

Sanguila MB, Cobb KA, Siler CD, Diesmos AC, Alcala AC and Brown RM (2016) The amphibians and reptiles of Mindanao Island, southern Philippines, II: The herpetofauna of northeast Mindanao and adjacent islands. *ZooKeys* 624:1-132. DOI: 10.3897/zookeys.624.9814.

Zamborain-Mason J, Russ GR, Abesamis RA, Bucol AA and Connolly SR (2017). Network theory and metapopulation persistence: Incorporating node self-connections. *Ecology Letters*, (2017)1-17. DOI:10.1111/ele.12784.

Acting Director Ely L. Alcala now in the USA

SUAKCREM Acting Director Dr. Ely L. Alcala is now in the USA with his wife Dr. May B. Alcala, M.D. During his stay at Silliman University from 1993 to 2016, he conducted research in the biological sciences as staff of SUAKCREM (and later as Acting Director) in addition to his teaching and museum staff work at the Biology Department at Silliman.

For this noteworthy academic accomplishment, National Scientist Dr. A.C. Alcala would like to express his appreciation and gratitude for his contribution to knowledge on Philippine fauna and flora, with the hope that he will continue his research even though he is out of the country.

His research publications are included here, as follows:

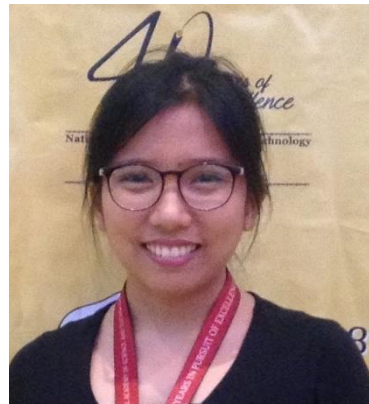
1. Cadeliña AM, Utzurum RC, **Alcala EL**, Dolar ML and Dioso V.(1985). Economic value of Lakes Balinsasayao and Danao to the local lake user population. Silliman Journal 32 (1-4): 115-142.
2. Alcala AC, Ross CA and **Alcala EL** (1987). Observations on reproduction and behavior of captive Philippine crocodiles (*Crocodylus mindorensis* Schmidt). Silliman Journal 34 (1-4):18-28.
3. Oliver WLR, Dolar MLL and **Alcala EL** (1992). The Philippine spotted deer, *C. alfredi* Sclater, Conservation Program. Silliman Journal 36(1):47-54.
4. **Alcala EL** (1993). Blood values of the endangered Philippine spotted deer (*Cervus alfredi* Sclater). Asia Life Sciences 2 (2):235-240.
5. **Alcala EL** (1994). Aspects of veterinary care and management of the Philippine spotted deer (*Cervus alfredi* Sclater) in captivity. Silliman Journal 37 (2) :1-17.
6. **Alcala EL** (1995). (Off the press March 1997). Silliman University Captive Breeding Program: Aninstitutional report on the status of the Captive Breeding Project (as of March 1994). Sylvatrop 5(1&2):91-96
7. Brown WC and **Alcala EL** (1995). A new species of *Brachymeles* (Reptilia: Scincidae) from Catanduanes Island, Philippines. Proceedings of the Biological Society of Washington USA 108 (3):392-394.
8. Brown WC, Alcala AC, Diesmos AC and **Alcala EL** (1997). Species of the Guentheri group of *Platymantis* (Amphibia: Ranidae) from the Philippines, with description of four new species. Proceedings of the California Academy of Sciences 50(1):1-20.
9. Alcala A C and **Alcala E L** (2000). The Negros cave frog is critically endangered. Froglog. June 2000. 39. IUCN-SSC.
10. Brown RM, Dolino CN, **Alcala E.**, Diesmos AC. and Alcala AC (2002). The advertisement calls of two endangered species of endemic Philippine frogs: *Platymantis spelaeus* and *P. insulatus* (Anura; Ranidae). Silliman Journal 43(1): 91-109.
11. Dolino CN, **Alcala EL** and Alcala AC 2003. Population of two species of forest frogs, genus *Platymantis* are diminishing on Negros Island, the Philippines. Froglog, December 2003. No. 60, IUCN-SSC.
12. Paalan RB, **Alcala EL** and Averia LT (2004). Responses of the mammalian fauna of Negros Island, Philippines to fragmentation of the tropical rainforest. Sylvatrop 14 (1 and 2). 12.
13. **Alcala EL**, Alcala AC and Dolino CN (2004). Amphibians and reptiles in tropical rainforest fragments on Negros Island, the Philippines. 2004. Environmental Conservation 31 (3):254-261.
14. **Alcala EL**, Paalan RB, Averia LT and Alcala AC (2004). Rediscovery of the Philippine bare-backed fruit bat (*Dobsonia chapmani* Rabor) on southwestern Negros Island, the Philippines. Silliman Journal 45(2): 123-136.
15. **Alcala EL** and Alcala AC (2005). Aspects of ecology and threats to the habitats of three endemic herpetofaunal species on Negros and the Gigante Islands, Philippines. Silliman Journal 46(2): 169-194.

16. **Alcala EL** (2006). Community-based management of rainforest biodiversity in southwestern Negros Island, the Philippines. pp. 362-363. *In*: Catibog-Sinha, C. and L. Heaney. Philippine Biodiversity: Principles and Practice. Quezon City : Haribon Foundation for the Conservation of Natural Resources, Inc.
17. **Alcala EL**, Averia LT and Paalan RB (2006). Nursery chamber of sheath-tailed micro-bat discovered. Haring Ibon. No. 27. pp. 6-12.
18. **Alcala EL**, Averia LT, Tababa L, Dagunan MA, Tababa R, Dasian J., Libo-on EV and Ocampo M.(2007) Assessment of the biophysical conditions of caves promoted for ecotourism in Mabinay, Negros Oriental, Philippines. Silliman Journal 48(1): 19- 31.
19. **Alcala EL**, Hisona J., Dulla J. and Velasco JB (2007). Collaboration among an academic institution, local communities and local government units in protecting wildlife and forest habitats in southwestern Negros Island, Philippines. Silliman Journal 48(2):71-80.
20. **Alcala EL** (Compiler and Ed.). (2009). Land Vertebrate Field Collection and Techniques (Mock Training Version). Dumaguete City: Silliman University Angelo King Center for Research and Environmental Management and Haribon Foundation. 56 pp.
21. Bucol AA , **Alcala EL**, Averia LT and Cordova L. (2010). The vertebrate biodiversity of the Gigantes Sicogon Islands, Iloilo Province, Philippines. Silliman Journal 51(2):105-131.
22. **Alcala EL**, Bucol AA, Averia LT. and Linaugo JD (2010). Notes on the isolated population of *Brachymeles boulengeri taylori* Brown (Family Scincidae) on an Islet in Bago River, Negros Occidental, Philippines. Silliman Journal 51(1):78-88.
23. Linaugo JD, **Alcala EL**, Bucol AA, Menes CC, Pacalioga JO, Turbanos FM and Patiluna MLE. (2010). An annotated checklist on the introduced aquatic fauna of two river systems on Negros and Panay, Philippines. Silliman Journal 51(1): 137-158
24. **Alcala EL**, Bucol AA, Averia LT and Dusaran RN. (2010). A study on the invertebrate and vertebrate biodiversity of the Jalaur River system of Iloilo, Panay, Philippines. Silliman Journal 51(1):190-223.
25. Alcala AC, **Alcala EL** and Cordero AC (2011). Restocked Giant Clams (Family Tridacnidae) enhance community structure of a Philippine coral reef. Silliman Journal 52(1):265-267.
26. Bucol AA, Alcala AC, Averia LT, **Alcala EL** and Alcala MLR. (2011). Checklist of the herpetofauna of Siquijor Island, Philippines. The Philippine Scientist 48:100-122.
27. Bucol AA, **Alcala EL** and Alcala AC (2012). The goby *Trypauchenopsis intermedia* Volz 1903 (Gobiidae) from the Philippines. The Philippine Scientist 48:97-101.
28. **Alcala EL**, Alcala ML, Basa JE, Inocencio A and Futralan V. (2012). Observations on the Visayan Warty Pigs (*Sus cebifrons*: Heude, 1888) and hybrids of the Silliman University Wild Pig Breeding Facility, Dumaguete, Philippines. LCC Development Education Journal of Multidisciplinary Research 1(1):100-110.
29. Tababa R., Dagunan MA, Dejanos B, de la Cruz S, Guitierrez B, **Alcala E** and Averia L. (2012). Preliminary results of the cave bat assessment conducted at Central Negros, Philippines. LCC Development Education Journal of Multidisciplinary Research 1(1): 85-99.
30. Amoroso VB, **Alcala, EL**, Coritico F and Mier R. (2016). *Pako* Fern Raising. Fern Raising Guide Series No.1. Foundation for the Philippine Environment and SUAKCREM.
31. Amoroso VB, Chen C-W, Coritico FP, Lu P-F, **Alcala EL** and Chiou W-L (2016). Guide to Lycophytes and Ferns of Balinsasayao, Negros, the Philippines. KBCC Press, Pingtung, Taiwan. 150 pp.

Collaborators and Visiting Researchers

1. **Eva McClure** PhD candidate. College of Marine and Environmental Sciences, James Cook University, Townsville, Australia
2. **Katie Sievers** Ph.D. candidate, College of Marine and Environmental Sciences, James Cook University, Townsville, Australia
3. **Dr. Paul Sikkel** world expert on reef fish parasite ecology. Arkansas State University, USA

New SUAKCREM scholar Eunice Aaron



Eunice M. Aaron from Antipolo City, Rizal, a B.S. Biology graduate from the University of Sto. Tomas in Manila has been granted a scholarship for the school year 2017-2018 at Silliman University through the Rolando del Carmen fund at

SUAKCREM. She is currently taking her M.S. in Marine Biology at Silliman, with a desire to study the Molluscs.

GOVERNANCE

Acting Director

Ely L. Alcala, D.V.M., Veterinary Medicine

Administrative Staff

Emily A. Layos – Administrative Assistant

Geraldine O. Lopez – Finance Officer (University staff)

Jasper Leif P. Maypa – Computer Specialist
(University staff)

Researchers, Research Assistants and Research Associates

Rene A. Abesamis, Ph.D. – Reef Fish Ecology, Marine Conservation

Abner A. Bucol, M.S. Cand. – Terrestrial & Marine Biology

Arvin C. Diesmos, Ph.D. – Herpetology

Claro Renato L. Jadloc, M.S. – Mangrove Ecology, Marine Conservation

Frederick Vande Vusse, Ph.D. – Marine Parasitology

Contributing Scientists

Ernani G. Meñez, Ph.D. – Smithsonian Institution, Washington D.C.

Roberto N. Padua, Ph.D. – Liceo de Cagayan University

Garry R. Russ, Ph.D. – James Cook University

Consultants

Hilconida P. Calumpong, Ph.D. – Phycology, Marine Conservation

Ma. Louella Dolar-Perrin, Ph.D. – Mammalogy, Marine Biology

Mikhail Lee L. Maxino, LL.M. – Environmental Law

Antonio A. Oposa, Jr., LL.M. – Environmental Law

Advisory Board

Dr. Angel C. Alcala, Emeritus Professor of Biology (Chairman)

Dr. Ben S. Malayang III, President of Silliman University

Mr. Ricardo A. Balbido, Jr., Chairman of Silliman University Board of Trustees & President, Silliman University Foundation Incorporation (SUFI)

Dr. Hilconida P. Calumpong, Director of SU-Institute of Environmental & Marine Sciences

Mr. Teddy Kingsu, President of Angelo King Foundation, Incorporated

Mrs. Shirley Yap-See, Friend of Silliman University

Dr. Rolando V. del Carmen, SU Alumnus and Distinguished Professor of Criminal Justice, Sam Houston State University

Volunteer Consultant/Adviser

Mr. Richard Ebner

LINKAGES

A. Academe/Research Institutions

1. **Australian Research Council (ARC)** Centre of Excellence for Coral Reef Studies-College of Science and Engineering, James Cook University, Townsville, Queensland, Australia, with Dr. Garry R. Russ.
2. **University of the Philippines Marine Science Institute (UP-MSI)** through the Marine Environment and Resources Foundation, Inc. (MERF) in collaboration with SUAKCREM in the larval connectivity projects of the Center of Excellence in Coral Reef Studies at James Cook University, Townsville, Australia
3. **The McGuire Center for Lepidoptera and Biodiversity**, Florida Museum of Natural History, University of Florida, Gainesville, Florida, USA, with Director Dr. Thomas C. Emmel
4. **California Academy of Sciences**, Herpetology Section in San Francisco, California, USA with Curator Dr. Robert C. Drewes
5. **Natural History Museum & Biodiversity Research Center**, University of Kansas in Lawrence, Kansas, USA with Curator and Asst. Prof. Dr. Rafe M. Brown
6. **The Field Museum of Natural History in Chicago**, Illinois, USA with Dr. Lawrence Heaney
7. **The National Museum of the Philippines**, Herpetology Section with Dr. Arvin C. Diesmos
8. **Central Philippines State University (CPSU)**, Camingawan, Kabankalan City
9. **Central Mindanao University**, Musuan, Bukidnon, with Dr. Victor B. Amoroso

B. Non-Government Organizations

1. **Foundation for the Philippine Environment (FPE)**
2. **Crocodylus Porosus Philippines, Inc. (CPPI)**
3. **Marine Conservation Philippines (MCP)**

C. People's Organizations

1. **Cantaan Centennial Multi-Purpose Cooperative (CCMPC)** of Cantaan, Guinsiliban, Camiguin Province
2. **Camalandaan Agroforestry Farmers Association (CAFA)**, Camalandaan, Cauayan, Negros Occidental

D. Government Units and Local Communities

1. **Department of Environment and Natural Resource**-Central Office and Parks and Biodiversity Management Bureau (BMB), esp. Director Dr. Theresa Mundita Lim
2. **Department of Agriculture and the Bureau of Fisheries & Aquatic Resources (BFAR)** through **Sec. Emmanuel F. Piñol** and Director **Ret. Comm. Eduardo B. Gongona**
3. **DENR NIR Region**, headed by former Regional Director **Dr. Al O. Orolfo**, and newly appointed Regional Director, **Mr. Livino Duran**
4. **Provincial Environment and Natural Resources Office (PENRO)** and **CENRO Negros Oriental**, headed by Mr. Viernov Grefalde, CENRO Efren Rumbaoa and Asst. Protected Area Superintendents (PASu) Eleuterio Calijan for the Apo Island Protected Landscape & Seascape (AIPLS) and Celerino Baja, Jr. for the Balinsasayao Twin Lakes Natural Park (BTLNP)
5. **Negros Oriental Environment and Natural Resources Division (ENRD)** of the Office of the Governor, Negros Oriental – partner to many of SUAKCREM's Coastal Resources Management (CRM) projects, led by ENRD Head Mr. Joaquin De La Peña and CRM Specialist Mr. Manric Barillo
6. **Dumaguete City Government**, through **Mayor Felipe Antonio B. Remollo**
7. **Provincial Government of Negros Occidental**, through Gov. Alfredo G. Maraño, Jr.
8. **Apo Island Barangay Capt. Liberty Pascobello-Rhodes** and former **Brgy. Capt. Mario Pascobello**