Red List Status
of Marine Mammals in the Philippines

Edited by:
Moonyeen Nida R. Alava
Ma. Louella L. Dolar
Edna R. Sabater
Ma. Theresa R. Aquino
Mudjekeewis D. Santos

A collaboration of the Bureau of Fisheries and Aquatic Resources-National Fisheries Research and Development Institute, the Sulu-Sulawesi Seascape Initiative of Conservation International-Philippines, the Marine Wildlife Watch of the Philippines, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, and the marine mammal researchers of the Philippines

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ACCCoast

Bureau of Fisheries and Aquatic Resources-National Fisheries Research and Development Institute Department of Agriculture (BFAR-NFRDI)

Marine Wildlife Watch of the Philippines
G/F, Spanish Bay Tower, Bonifacio Ridge, 1st Ave., Fort Bonifacio Global City, Taguig City 1634, Philippines.
Tel: +63 (2) 812-3196
+63 (2) 812-3198
+63 (2) 729-9127

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Foreword

It gives me much pleasure to write this Foreword to the book **Red List Status of Marine Mammals in the Philippines** edited by Moonyeen Nida R. Alava, Ma. Louella L. Dolar, Edna R. Sabater, Ma. Theresa R. Aquino, and Mudjekeewis D. Santos for two main reasons: firstly, the book is an excellent account of research work on the ecology, distribution, threats, and conservation status of Philippine marine mammals in which the editors and their colleagues have actively participated, two of them (MNR Alava and MLL Dolar) were my former students at Silliman University and all three (including ER Sabater) are presently research colleagues; and secondly, the book is well written, is comprehensive in scope, and deals with up-to-date information based on research, and is therefore very useful to both scientists and laymen interested in the scientific knowledge and conservation of marine mammals of the Philippines. The editors and the writers of this book should be congratulated for a work well done.

An outstanding feature of this book is that practically all research publications on Philippine marine mammals in the 1990s and the 2000s have been reviewed by the authors and listed in the 14-page bibliography. This thoroughness is also reflected in the substantial discussion on the state of conservation of each of the 28 species of marine mammals reported from Philippine marine waters. The book is liberally illustrated with pictures of several species, distributional maps, and other relevant illustrations. It also includes three useful appendices: a species list of marine mammals reported from the Philippines, a summary of IUCN criteria for determining conservation status, and a conceptual scheme for assigning an IUCN Red List Category.

The authors have been straightforward in their assessments of the status of the mammal groups. For example, for some species, they do not hesitate to say that they are data deficient, implying the need for more studies. Not many marine mammals have been studied with regard to their responses to the effects of climate change. This is an area for more studies in the future. Neither do

they hesitate to state that some species are killed in the course of fishing operations. Here lies the basic problem in marine mammal conservation – conflicts with fishing operations. A related problem is concerned with the depletion of their prey organisms as a result of overfishing. Still another is the harmful effects of pollution; instances of marine mammals dying as a result of ingestion of plastic materials are discussed and illustrated with pictures. Such examples highlight the need for the control of land-based pollution in the conservation of marine mammals.

Another good feature of the book is the section on policies on threatened marine mammals, which includes both international and national laws on protection of marine mammals. This section of the book includes the laws and other legal issuances on marine conservation, showing that the Philippine government has done its part in issuing policies for the conservation of marine mammals found in our marine waters.

The book should be a valuable source of information for recent workers on marine mammals. It should find its place in libraries of academic and research institutions and local government units. It is recommended that coastal municipalities should have this book for reference and for identification of sick or stranded species in their areas.

Marine mammal research in the Philippines has gone a long way since the 1980s when Dr. Dolar, then a junior biology faculty member at Silliman University, started her marine mammal studies. This initial effort has expanded, resulting in the substantial information included in this book. It is hoped that more young biologists will respond to the challenge of marine mammal research in the near future.

Angel C. Alcala
SUAKCREM, Silliman University
Dumaguete City, Philippines

LIST OF ACRONYMS

ACCCoast	Adaptation to Climate Change in Coastal Areas
AMNH	American Museum of Natural History
BFAR	Bureau of Fisheries and Aquatic Resources
CERD	Center for Empowerment and Resource Development, Inc.
CFI	Crocodile Farming Institute
CI	Conservation International
CITES	Convention on the Illegal Trade of Endangered Species of Flora and Fauna
CMS	Conservation of Migratory Species
CMMO	Coastal and Marine Management Office
CR	Critically Endangered
CV	Coefficient of Variance
DA	Department of Agriculture
DAO	Department Administrative Order
Db	Decibel
DD	Data Deficient
DENR	Department of Environment and Natural Resources
DGN	Drift gillnet
DOE	Department of Energy
DOT	Department of Tourism
EII	Earth Island Institute
EMI	Earthquakes and Megacities Initiative
EN	Endangered
ETP	Eastern Tropical Pacific
FAD	Fish Aggregating Device
FAO	Fisheries Administrative Order
GEF	Global Environmental Fund
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Society for International Cooperation)
GMSA-CT	Global Marine Species Assessment-Coral Triangle
IUCN	International Union for the Conservation of Nature
IUU	Illegal, Unregulated, Unreported
LC	Least Concern
LGU	Local Government Unit
MBCC	Marine Biodiversity Conservation Corridor
MOA	Memorandum of Agreement
mtDNA	Mitochondrial DNA

MWWP	Marine Wildlife Watch of the Philippines
NA	Not Applicable
NE	Not Evaluated
NFRDI	National Fisheries Research Development Institute
NOAA/SWFSC	National Oceanic and Atmospheric Administration/ South West Fisheries Science Center
PAO	Protected Area Office
PAWB	Protected Areas and Wildlife Bureau
PCP	Pawikan Conservation Project
PCSD	Palawan Council for Sustainable Development
PCSDS	Palawan Council for Sustainable Development Staff
PRLC	Philippine Red List Committee
PWRCC	Palawan Wildlife Rescue and Conservation Center (formerly CFI)
RA	Republic Act
RLA	Red List Assessment
RLT	Red List Training
SEAFDEC	Southeast Asian Fisheries Development Center
SEA-NWP	South East Asia-North West Pacific
SMARRDEC	Southern Mindanao Agriculture Resource Research and Development Consortium
SPAMAST	Southern Philippines Agri-Business and Marine and Aquatic School of Technology
SSG	Shark Specialist Group
SSS	Sulu Sulawesi Seascape
SU	Silliman University
SU-IEMS	Silliman University Institute of Environmental and Marine Sciences
SWFSC	Southwest Fisheries Science Center
TMO	Tubbataha Management Office
TMRC	Tropical Marine Research for Conservation
UNEP	United Nations Environmental Program
UPLB	University of the Philippines Los Baños
UP-MSI	University of the Philippines – Marine Science Institute
US EEZ	United States Exclusive Economic Zone
VU	Vulnerable
WCSP	Wildlife Conservation Society of the Philippines
WWF	World Wide Fund for Nature

CONTRIBUTORS/ASSESSORS

Aca, Elson, MSc, Balyena.org, Paseo del Mar, Brgy. Pangdan, Jagna, Bohol, Philippines. Email: eaca@yahoo.com.

Acebes, Jo Marie, DVM, MSc, PhD student, Murdoch University. Also: Balyena.org, Paseo del Mar, Brgy. Pangdan, Jagna, Bohol, Philippines. Email: jomacebes@yahoo.com.

Alava, Moonyeen Nida R., MSc, CI-Philippines, 6 Maalalahanin St., Teachers Village West, Diliman, Quezon City 1101, Philippines. Email: malava@conservation.org. (Former affiliation: IUCN-CI Global Marine Species Assessment).

Albasin, Sheila, MSc, MSI, Velasquez St., University of the Philippines, Diliman, Quezon City 1101, Philippines. Email: bsalbasin@yahoo.com.

Alesna, Edwyn, Fisheries Quarantine and Wildlife Regulations Section, Fisheries Regulatory and Quarantine Division, DA-BFAR, Elliptical Rd., Diliman, Quezon City 1101, Philippines. Email: edwyn_alesna@yahoo.com.

Aquino, Ma. Theresa, DVM, MWWP, G/F, Spanish Bay Tower, Bonifacio Ridge, 1st Ave., Fort Bonifacio Global City, Taguig City, Philippines. Email: dugongdoc@mwwphilippines.com.

Bagarinao, Doris, PhD, Worldfish Museum, SEAFDEC-AQD, Tigbauan, 5021 Iloilo, Philippines.

Barcelona, Andrea Leonor, DVM, GIZ-Philippines, 2/F Provincial Administration Center Building, Aguinaldo St., North Capitol Road, Bacolod City 6100, Negros Occidental, Philippines. Email: aribautista@yahoo.com.

Cruz, Renato D., Coastal and Marine Management Office, DENR-PAWB, Ninoy Aquino Parks and Wildlife Nature Center, Diliman, Quezon City 1100, Philippines. Email: renatodalmaciocruz@yahoo.com.ph.

Daclan, Jose Mari, EMI, 2/F Puno Bldg. Annex, 47 Kalayaan Avenue, Diliman, Quezon City 1101, Philippines. Email: jmdaclan@yahoo.com.

Dolar, Ma. Louella L., PhD, TMRC, 6363 Lakewood St., San Diego, California 92122 USA. Email: ldolar@san.rr.com.

Gaudiano, Joe Pres A., WWF-Philippines, 4/F JBD Plaza #65 Mindanao Avenue, Brgy. Bagong Pag-asa, Quezon City 1105, Philippines. Email: agaudiano@wwf.org.ph.

Lucero, Ruth, SPAMAST, Bautista Ave., Poblacion Malita, Davao del Sur 8012, Philippines. Email: rs_lucero@yahoo.com.

Manalo-Cadigal, Glenda, PCSDS, PCSD Building, Sports Complex Rd., Sta. Monica Heights, Puerto Princesa City, Palawan 5300, Philippines. Email: a9237705@yahoo.com.

Matillano, Ma. Victoria, WWF-Philippines, 4/F JBD Plaza #65 Mindanao Avenue, Brgy. Bagong Pag-asa, Quezon City 1105, Philippines. Email: mmatillano@wwf.org.ph.

Quicho, Rodolfo Ferdinand N., LLB, MWWP, G/F, Spanish Bay Tower, Bonifacio Ridge, 1st Ave., Fort Bonifacio Global City, Taguig City 1634, Philippines. Email: rquicho@mwwphilippines.org.

Sabater, Edna R., MSc, SU-IEMS, Bantayan, Dumaguete City 6200, Philippines. Email: ersabater@gmail.com.

Salting, Alvin, DENR-Research XI, Km. 7 Lanang, Davao City, Philippines. Email: alvin_salting@yahoo.com.

Santos, Mudjekeewis, PhD, DA-NFRDI, 101 Corporate Building, Mother Ignacia Avenue, Quezon City, Philippines. Email: mudjiesantos@yahoo.com.

Solis, Ellen Flor L., SEAFDEC-AQD, Tigbauan, Iloilo 5021, Philippines. Email: hayahay_laya@yahoo.com.

Sorongon-Yap, Patricia, SeaLifeBase Project, Fishbase Information and Research Group, Inc., Khush Hall, IRRI College, Los Baños, Laguna 4031, Philippines. Email: p.sorongon@fin.ph.

Tagarino, Alden, Department of Marine & Wildlife Resources, American Samoa Government, Territory of American Samoa, Pago Pago, American Samoa. Email: atagarino@gmail.com.

Yaptinchay, Arnel Andrew SP., DVM, MSc, MWWP, G/F, Spanish Bay Tower, Bonifacio Ridge, 1st Ave., Fort Bonifacio Global City, Taguig City 1634, Philippines. Email: director@mwwphilippines.org.

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STATUS OF INFORMATION ON MARINE MAMMALS OF THE PHILIPPINES

MLL Dolar and ER Sabater

The term "Marine Mammals" represents three different mammalian groups: those belonging to the Order Carnivora (polar bears, sea otters, seals, sea lions, and walruses), Order Cetartiodactyla (cetaceans), and Order Sirenia (manatees and dugongs). Although lacking in phylogenetic links, these mammals are often considered as a group because they all rely on the aquatic (though not necessarily marine) environment, in all or part of their existence, and have evolved similar anatomical and physiological adaptations. Members of the Cetacea and Sirenia are fully adapted to live in the aquatic environment their entire life. The Carnivora, on the other hand, has members that, although well adapted to living at sea, need to return to land at some stages of their life history to mate, breed, or molt.

Two of the three orders (Cetartiodactyla and Sirenia) are represented in the Philippines. The cetaceans are represented by the mysticetes (baleen whales) and the odontocetes (toothed whales). Annex A provides a checklist of marine mammals of the Philippines. Only one family of sirenians, the Dugongidae, is present in Philippine waters. The highly diverse marine habitats in the country, i.e., very deep oceanic water, shallow continental shelves, narrow straits, sounds, bays, and extensive estuarine areas, provide home to at least 26 species of cetaceans (or about 30% of cetacean species worldwide) and the dugong. Although none of these species are endemic to the Philippines, species with very limited distributions (e.g., Irrawaddy dolphin, *Orcaella brevirostris*; Indo-Pacific bottlenose dolphin, *Tursiops aduncus*) are found here. Further, one subspecies of spinner dolphin, the dwarf spinner dolphin (*Stenella longirostris roseiventris*), has recently been documented to occur in the Philippines. Dugongs are now only found in a few coastal areas. Their distribution was greatly

reduced in the 1970s when use of gillnets and blast fishing became rampant and seagrass habitats were denuded by indiscriminate trawling and use of the Danish seine or "hulbot-hulbot". Today the greatest strongholds for dugongs are in Palawan and southern Mindanao although new research show pockets of populations in other parts of the country (i.e., Panay, Guimaras, Negros Islands).

Researchers conducting a marine mammal survey in the waters of Balabac, Palawan. (PHOTO CREDIT: MTR AQUINO)

Marine mammal studies in the Philippines have come a long way since 1989. Surveys have extended to include numerous areas such as the Sulu Sea, Bohol Sea, Tañon Strait, Bohol Strait, Camotes Sea, South China Sea (or what is now referred to as the West Philippine Sea), Sulawesi/ Celebes Sea, Babuyan Island group, Philippine Sea, Verde Island Passage, Balabac Strait, Iloilo Strait, Guimaras Strait, Panay Gulf, and Davao Gulf. Population estimates have been made for a few cetacean populations in the eastern and southern Sulu Sea, Malampaya Sound, eastern Bohol Sea, Balabac, and Tañon Straits.

Population characteristics of spinner and Fraser's dolphins in the Philippines were compared with those of other populations in the world. Although identities of the species in the Bryde's whale complex are still unresolved, the species formerly thought of as a dwarf form of Bryde's whale has been verified as Omura's whale. Population size and stock identity of humpback whales in the Babuyan Islands are under study.

Ecological modeling has been done for a few species in the eastern Sulu Sea and Tañon Strait, and feeding ecology has been investigated for spinner and Fraser's dolphins. Historical whaling has also been studied. Other studies such as marine mammal interaction with various fishing activities (i.e., by-catch or incidental takes) and stranding events

have been documented. Effects of tourism on dolphins have also been studied for Bohol Sea. Likewise, the DNA barcode profiles of cetaceans found in the Philippines are being generated. Information and references used in the Red List assessment of Philippine marine mammals is shown in the reference list of each species assessment and/or the bibliographic list at the end of this book.

THREATS TO MARINE MAMMAL POPULATIONS IN THE PHILIPPINES

DIRECT TAKES

Like in many places in the world, marine mammals were exploited in the Philippines for many years. Whales in the Bohol Sea were hunted by Yankee whalers in the late 1800s and then by the local fishermen from around the turn of the 20th century until the early 1990s. Baleen whales (Omura's whale and/or Bryde's whale) were taken by fishermen in Lila and Pamilacan, Bohol and in Camiguin. Dolphins were also hunted in many places in the Philippines, including Bohol, Camiguin Island, Negros, Selinog Island, Palawan, Panay, Leyte, Ilocos Norte, Cagayan, and many places in Mindanao (Gaudiano and Alava 2002; and Alava 2002 in Perrin et al. 2005; Dolar 1999b; Dolar 1999c; Dolar et al. 1997; Dolar et al. 1994; Alava 1995; Alava and Dolar 1995; Dolar and Wood 1993). The meat was used as bait for sharks, chambered nautilus, *Nautilus pompilius*, or for local consumption. Hunting gears used include harpoons, gaff hook, lasso, and spear or speargun. In some instances, dolphins were also taken using purse seines, for the live-aquarium trade. In decreasingly rare events, dynamites were used to catch dolphins (i.e., Masbate). The passing of the Fishery Administrative

Dolphin meat was used as bait in catching chambered nautilus. (PHOTO CREDIT: MTR AQUINO)

Order (FAO) 185 in 1992 and its amendment in 1997 (FAO 185-1) protecting all cetaceans has substantially decreased the scale of directed fisheries and stopped open sale in markets. Nevertheless, there are still some directed takes in remote areas of the country.

Directed catches of dugongs have been documented throughout the Philippines, to include places such as Zambales, the Bicol region, Isabela, Quezon, Palawan, southern Mindanao, and the Sulu Archipelago (Perrin et al. 1996). Being coastal animals, dugongs are easy to hunt and, despite their protected status, still opportunistically taken in some areas.

INCIDENTAL TAKES

Incidental takes or "by-catch" refer to non-target animals that are caught in fisheries which are discarded as they have no commercial value. In the Philippines, it has been argued that there is no "by-catch" because everything that is caught is being utilized as food. Another term for such takes is "non-targeted catch". For marine mammals, entanglement in fishing nets remains the predominant threat. Drift gillnets (pamo, palaran), appear to be the primary threat, followed by ring nets and other types of gillnets. Other gears known to accidentally catch marine mammals include beach seines, drive nets, purse seines, fish corral, castnet, lift nets, shark nets, bottom-set longlines, trawl lines, and lines that join bottom–set crab traps (Dolar et al. 1994).

By-catch is currently the major threat that marine mammals face globally. Despite its prevalence, the by-catch problem is still largely unquantified for Southeast Asia. This is mainly because of the relative absence of standardized documentation and accurate data collection on the dynamics of fishing fleets. Complicating the problem is the dispersed nature of many commercial and municipal fisheries. Isolated initial and rough assessments made of by-catch in the eastern Sulu Sea indicate that it is unsustainable. Whereas the "sustainable by-catch" estimated by the International Whaling Commission (IWC) is between 1-2% of the population size, that in the eastern Sulu Sea in the late 1990s was 1.5-10 times higher (Dolar unpubl data).

OTHER THREATS

SOLID WASTE POLLUTION

In the middle of the Pacific Ocean, the North Pacific Subtropical Gyre has helped create two large and ever-growing garbage masses, known as the Eastern and Western Pacific Garbage Patches. The majority of the trash that makes up these Garbage Patches comes from land (80%) and the rest from ships, fishing equipment, oil platforms, and spilled shipping containers. The Western Garbage Patch is located east of Japan (Silverman 2007) and should be of major concern considering its proximity to island nations such as the Philippines. At least two cases of cetacean mortalities in the country have already been attributed to ingestion of plastics (Aquino unpubl data; Doyola unpubl data). In one of these two cases, necropsy showed that the digestive tract of the cetacean was severely impacted with plastic from the last third of the esophagus all the way down to the first third of the small intestines. These plastics varied from product wrappers to plastic bags and bubble wraps. Blood vessels of the entire digestive tract were engorged especially near the stomach. Further examination also showed ruptured capillaries on the aortic wall (tunica intima) suggesting a relatively protracted and very painful death (Aquino unpubl data).

A bottlenose dolphin with a plastic sheet attached to its dorsal fin. (PHOTO CREDIT: MTR AQUINO)

CHEMICAL POLLUTION

Recent studies have also shown that plastics actually break down in cooler temperatures (as low as 30˚C) than previously believed and within a year of its entry into the ocean. Degrading plastics leach potentially toxic substances such as bisphenol A, which can disrupt reproductive cycles in animals and polystyrene by-products like styrene monomer,

which is suspected to trigger off cancer (Barry 2009). Other compounds such as butylin and its derivatives – commonly used as plastic additive, antifouling agents in paint used in maritime structures as well as aquaculture activities – have also been known to accumulate in marine mammals (Parsons and Chan 2001; Minh et al. 1999; Mössner and Ballschmiter 1997). Traces of butylin and its derivatives have been identified from liver tissues of several Fraser's and spinner dolphins from eastern Visayas (Prudente 2008) despite the minimal use of the compound in the country. It was not determined, however, whether the deaths of these animals were directly related to these compounds. Nevertheless, with the increase of plastic, silicone, and foam debris in oceans, the threat of chemical poisoning from the breakdown of these materials has become a growing concern.

Concentrations of organochlorine (OC) pesticides were also determined in cetaceans from the Philippines using blubber samples. One study showed that estimated levels in some of these cetaceans exceeded the level associated with immunosuppression in harbor seals (Minh et al. 2000). Given the unrelenting use of these compounds in agriculture, the threat of chlorinated endocrine disruptors should be considered an immediate threat to cetaceans in the country. With the looming impacts of global climate change aggravating the volume of runoffs, the concentration of these toxic substances would likely increase the number of cases of affected marine mammals.

Similar to cetaceans, there is limited knowledge on contaminant levels in sirenians. Belanger and Wittnich (2008) reported a six-fold increase in arsenic maximum concentrations (mg/kg wet weight) in dugong livers between 1982 to 2000. Studies that looked at concentrations of heavy metals and organochlorines in Australia revealed no significant difference for organochlorines but an increase in concentrations of some metals (Haynes et al. 2005).

NOISE POLLUTION

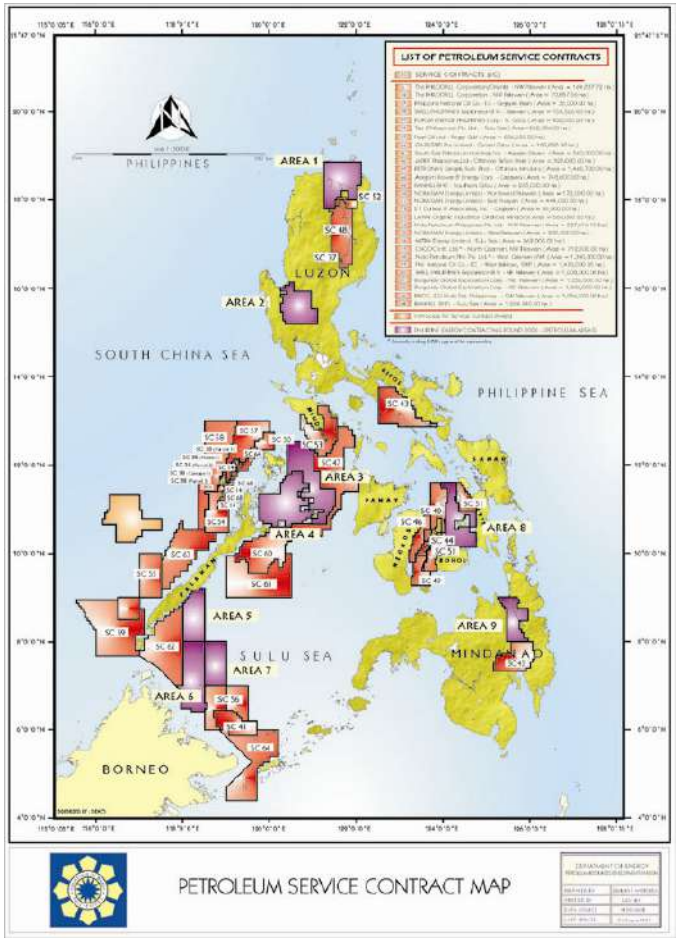
Seismic activities in the marine environment are known to have an adverse effect on the migratory patterns of cetaceans. Acoustic emissions

The large melon of the sperm whale makes it highly susceptible to noise pollution. (PHOTO CREDIT: MTR AQUINO)

during oil explorations are known to carry both high and low frequency waves, which can be audible to mysticetes and odontocetes, respectively, over a great distance (Würsig and Richardson 2002). Cetaceans predictably react by avoiding the source of the sound and this can result in change/deviation from the normal migratory pattern and even hamper its ability to find prey. Richardson et al. as cited by Stone (1997) observed that whales could also exhibit other subtle signs of stress during airgun acoustic emissions, e.g., changes in blow intervals or dive times. In her own study, Stone (1997), noted a general reluctance of some species to interact with the boat during shooting. Prolonged exposure to noise at critical levels can be detrimental if it disrupts communication between individuals or causes abandonment of biologically significant areas (i.e., breeding, feeding areas). Behavioral responses of dolphins and whales vary from reduction to cessation of vocalization, swimming avoidance (i.e., movement away from source of noise), alteration of foraging area to short-term startle response in a few cases (Gordon et al. 2004).

In the Philippines, a total of 28 service contracts and one geo-physical survey and exploration contract had been awarded by July of 2007 (http://www.doe.gov.ph). Considering their close proximity to

islands and the extent of the area, noise pollution impacts in these areas can easily result in strandings especially in the narrow waters between islands and is considered a potential threat to cetacean populations.



DOE contract service map downloaded from their official website (www.doe.gov.ph) showing the location of awarded contracts all over the country by 2007.

2

CLIMATE CHANGE AND MARINE MAMMALS IN THE PHILIPPINES

MD Santos and MTR Aquino

Climate Change (CC), as defined by the United Nations Convention on Climate Change, is the rapid change of climate of which can be attributed directly to anthropogenic causes. It is the alteration of global atmospheric components in addition to natural changes observed through time. CC is believed to bring about changes in ocean circulation, salinity, turbidity, and/or depth that can largely affect the distribution of cetacean populations, their habitat range and usage and, ultimately, their survivability. These changes in our oceans will open the possibility of tropical cetacean species moving over to what used to be temperate habitats, affecting population dynamics and species interaction there.

Highly migratory species of cetaceans may need to travel farther than they used to in order to find suitable breeding and feeding environments. Ocean acidification is anticipated to enhance sound transmission in the marine environment (Hoffman et al. 2009), thus making cetaceans more vulnerable to noise pollution. Species like the sperm whale and short-finned pilot whales with their large melons will likely be affected. Furthermore, coral reefs and shell-forming organisms (e.g., shrimps, crabs) will be severely damaged by acidification (Nellemann et al. 2008), further serving to decrease the food supply of cetaceans in general. In a workshop conducted in Costa Rica in 2009, experts determined that climate-related changes would largely impact the food supply and reproduction of cetaceans and, to a lesser extent, their habitat range and use and survivability. While it was generally acknowledged that there would be significant effects on populations, data was not adequate at the time to predict declines with sufficient confidence (Hoffman et al. 2009). In like manner, expected changes in the coastal habitats will inevitably

affect distribution and survival of the dugong. An increase in siltation and soil erosion combined with the rise in sea level can worsen the condition of existing seagrass habitats, further affecting the distribution of dugongs.

In Southeast Asia, the potential impact of CC on marine mammals has been reviewed by Dolar and Sabater (In press). They reported that the projected impact on said organisms in the region was to be via habitat loss, availability of prey, change in distribution and migration patterns and decreasing reproductive success. They predicted that the most vulnerable cetacean populations would be those that have limited habitat range like the Irrawaddy dolphin, finless porpoise, and Indo-Pacific humpback dolphin.

The Philippines has been consistently predicted as among the most vulnerable countries to climate change. This is largely because majority of its population live in the coastal areas, are heavily dependent of fisheries, and have low capacities for adaptation. This is compounded by the poor state of the country's resources and habitats as well as increasing threats such as overpopulation, overfishing, and destructive practices, among others. Actual impacts of a changed climate to coastal and marine ecosystems can already be drawn from the country's experiences with major El Niño events of 1997 and 2010, where there were recorded changes in tuna migration, increased incidence of "ice-ice" in seaweeds, bleaching in corals, and fish kills in culture pens (Santos et al. 2011a and 2011b).

Marine mammal species in the Philippines that would likely be most at risk to CC, similar to what have been predicted in the region, include the Irrawaddy dolphins, dugongs, and, to some extent, the humpback whales given their limited habitat ranges. Two populations of Irrawaddy dolphins have been, so far, identified in the country - the Malampaya Sound and the Visayan Sea populations (Dolar et al. 2009). Both populations have already been deemed to be highly threatened as it is because of declining population amidst increasing anthropogenic threats, which would be exacerbated by CC impacts. The situation is the same with the dugong population,

which has already lost 30-50% of its seagrass habitat in the Philippines in the recent years (Pernetta 2009). Further loss of its habitat due to climate change could likely push the Irrawaddy dolphin and dugong populations onto the brink of extinction in the country. The distribution of the humpback whale population in the Babuyan Channel in Northern Philippines, the only known breeding ground of the species in the country, can also change. The population of this temperate marine mammal could be pushed northwards by warmer waters, resulting in the disappearance of said species in Philippine territory.

In general, however, predicting the potential impact of CC on the different marine mammal populations in the Philippines can be difficult since there are no available data on the direct impacts of CC on the species and because of the unique and complex biogeography of the country. Prediction requires location-specific studies to fully understand such impacts. In fisheries for example, the effects of climate factors to fishing have been shown to be very localized and unique from one place to another (Songcuan et al. in press). Furthermore, trends were observed on the relationship of climate factors on both small and large pelagic fishes such as increase in rainfall and decrease in temperature, favoring the production and seasonal variations of some small pelagic fishes. Hence, localized marine mammal conservation and CC adaptation are seen as strategic means to combat the possible adverse effects of CC.

In terms of CC-related policy and action programs, the Philippines has already passed Republic Act 9729, otherwise known as the Climate Change Act of 2009, which recognizes the potential dangerous consequences of CC such as rising seas, changing landscapes, increasing frequency and severity of floods and storm, damage to ecosystems, and biodiversity loss, that will affect the country's environment and economy. With this law, the Climate Change Commission was created and the National Framework Strategy on Climate Change 2010 to 2022 (NFSCC) was formulated (CCC 2009). In 2010, the Philippine Strategy on Climate Change Adaptation (PSCCA) was drafted as an input to NFSCC. These national

policies provided for the guidelines that pertain to climate change adaptation of biodiversity and threatened species in the country (Santos et al. 2011a and 2011b). Although not specific to marine mammals, it states that one of the Key Result Areas for Adaptation is to mainstream biodiversity adaptation strategies to CC policies as well as plans and programs of the national and local governments. It calls for, among others, protection of vulnerable ecosystems and highly-threatened species from CC impacts and establishing scientific basis for measuring the impacts of CC scenarios on ecosystem and species diversity. Hence, a legal framework and an impetus have already been put in place to study the potential impacts of CC on marine mammals in the country and advance efforts for adaptation. This Red List Status of Marine Mammals in the Philippines is one very good step towards building such efforts.

3

MARINE MAMMAL SPECIES ACCOUNTS

MNR Alava, MLL Dolar, ER Sabater,
MTR Aquino, and MD Santos

The marine mammal species accounts are based on the outputs of the August 2009 Red List Assessment (RLA) workshop for marine mammals in the Philippines conducted by the Bureau of Fisheries and Aquatic Resources (BFAR) and Conservation International – Philippines (CIP). The RLA workshop was attended by most Philippine marine mammalogists who had been or were then involved in marine mammal research and/or conservation. The workshop carried out the assessment of the extinction risks of species against existing threats to marine mammal populations and their habitats based on best available information (published and unpublished) using the International Union for the Conservation of Nature (IUCN) RLA process.

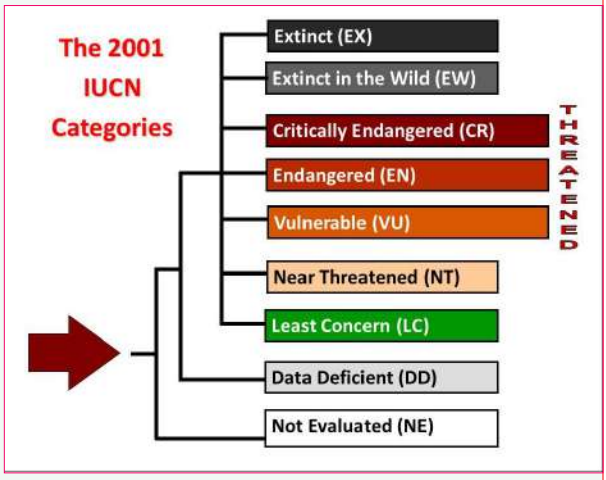
GLOBAL RED LIST ASSESSMENT

The global conservation status of 5,487 known marine and land mammal species, including 412 subspecies and 21 subpopulations, was assessed in a five-year Global Mammal Assessment (GMA) initiative (2003-2008). The species level assessments were the culmination of a systematic collection and documentation process conducted over a period of nearly five years involving a partnership of numerous institutions, universities, and museums, and the participation of more than 1,700 experts. The IUCN-GMA resulted in an up-to-date assessment of the conservation status of mammals and the type of threats which put mammals at risk of extinction (Schipper et al. 2008). Prior to this assessment, the last time all mammals were assessed globally was in 1996, and the majority of those assessments are now out-of-date (assessments are only current for 10 years, after which time they are considered out-of-date).

As part of this initiative, a group of marine mammalogists updated the global status of all cetacean species in a Red List Assessment workshop held in La Jolla, California, USA in January 2007. Species experts contributed to the pool of knowledge on each species and evaluated each against a variety of thresholds for geographic range size, population size, and rates of population reduction to make an assessment of extinction risk based on the 2001 IUCN Red List Categories and Criteria.

The IUCN Red List Categories

The extinction risks of marine mammals have been assessed using the 2001 IUCN Red List Categories and Criteria, Version 3.1 (www.iucnredlist.org). These widely used criteria rely primarily on population size reduction and geographic range information to classify, in an objective framework, the extinction risk of a broad range of species.



The threatened categories (Critically Endangered, CR; Endangered, EN; and Vulnerable, VU); are intended to serve as a means of setting priority measures for biodiversity conservation. Taxa that cannot be evaluated because of insufficient information are listed as Data Deficient (DD). Those that are either close to meeting the threatened thresholds or would be threatened were it not for an ongoing taxon-specific conservation programme are listed as Near Threatened (NT). Taxa that have been evaluated and which have a low risk of extinction are classified as Least Concern (LC). Those that have not been assessed due to lack of information are classified as Not Assessed (NA). Summary on the IUCN Red List Categories and Criteria is shown in Appendix B.

The IUCN Species Programme maintains the information behind the IUCN Red List in a centralized database as part of the Species Information Service (SIS). An extract of that information is publicly available via a searchable database at the IUCN Red List website (www.iucnredlist.org).

Results of the global marine mammal assessments listed at least five of the 26 marine mammal species found in Philippine waters under the "Threatened" category, namely: the sperm whale (*Physeter macrocephalus*) (VU); Irrawaddy dolphin (*Orcaella brevirostris*) (VU); dugong (*Dugong dugon*) (VU); blue whale (*Balaenoptera musculus*) (EN); and fin whale (*B. physalus*) (EN).

The Irrawaddy dolphin population in Malampaya Sound was also reviewed on a regional basis and (by virtue of its isolation from other populations, small population size, and presence of threats) was classified as "Critically Endangered" (CR). Thirteen other species were considered as "Data Deficient" (DD) while eight species fell under the "Least Concern" (LC) category.

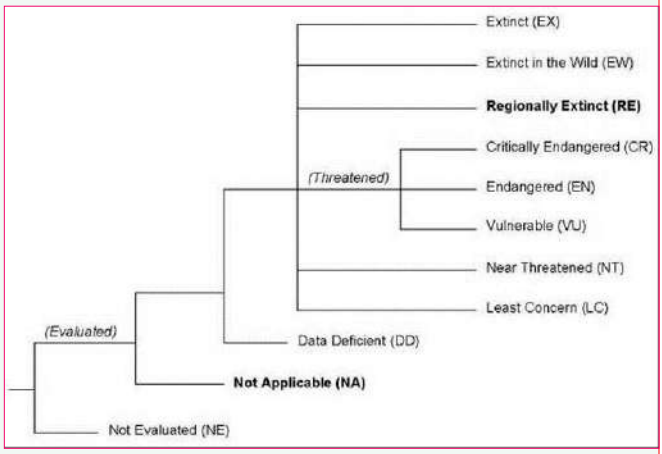
NATIONAL RED LIST STATUS

The global marine mammal assessments were used as the take-off point for discussion and evaluation of species that are found to occur in Philippines waters (i.e., 25 cetaceans and one dugong) during the August 2009 RLA workshop in the country. Prior to this, the first attempt to highlight the conservation status of Philippine marine mammals was done in 1997 through the production of the Philippine Red Data Book (PRDB), which was produced by DENR-PAWB in collaboration with the Wildlife Conservation Society of the Philippines (WCSP) and Bookmark. The PRDB collated available information on the biology, ecology, and conservation status of threatened terrestrial and marine fauna of the Philippines (which included 19 marine mammal species), following the global Red List status of each species, i.e., against the 1994 IUCN Red List Categories and Criteria.

Most of the 19 marine mammal species in the PRDB were listed as Insufficiently Known (K) (i.e., 89%), attesting to the limited information available on each species at that time. Only two species were listed as Threatened under the Vulnerable category, namely: the humpback whale (*Megaptera novaeangliae*) and the dugong (*Dugong dugon*).

More than 10 years have passed since the PRDB publication and, in the wake of the IUCN-GMA, marine mammal researchers in the country convened to pool data on each of the species (spanning almost two decades for some) and evaluated the extinction rates of species at the national level using the IUCN Red List Categories at the "Regional" level.

The IUCN Red List Categories used at the "Regional" Level



The IUCN Red List Categories and Criteria were designed for global taxon assessments. For thenational-level assessment, the IUCN Red List Categories at the Regional level is applied, to address subsets of global data such as country-wide or sub-country geographies. Assessment is based on the guidelines prepared by the IUCN/SSC Regional Applications Working Group (e.g., Gärdenfors et al. 2001).

There are 11 regional categories, which include the nine global categories plus:

- Not Applicable (NA): At global level, taxa that have not been assessed are assigned the Not Evaluated (NE) category. At regional level, a taxon not eligible for assessment within the region is assigned a Not Applicable (NA) category. NA may be used to indicate that the taxon was considered but deemed unsuitable for inclusion in the regional assessment.
- Regionally Extinct (RE): Taxa that are extinct within the region but still extant in other parts of the world are to be classified as RE category. A taxon is RE when there is no reasonable doubt that the last individual has died or disappeared from the region, or, in the case of migratory taxa, individuals no longer visit the region.

The two-step procedure for using IUCN Red List criteria at regional levels is shown in Appendix C.

The current list of marine mammal species has been streamlined to include newly recorded species based on confirmed sightings and/or molecular analysis. These newer species include two baleen whales (i.e., blue whale *Balaenoptera musculus* and Omura's whale *B. omurai*) and seven toothed whales Indo-Pacific beaked whale (*Indopacetus pacificus*); Cuvier's beaked whale (*Ziphius cavirostris*); Irrawaddy dolphin (*Orcaella brevirostris*); false killer whale (*Pseudorca crassidens*); striped dolphin (*Stenella coeruleoalba*); rough-toothed dolphin (*Steno bredanensis*); and the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*).

The subpopulation of the Irrawaddy dolphin in the Malampaya Sound and a subspecies of the Grey's spinner dolphin, the dwarf spinner dolphin (*Stenella longirostris roseiventris*) – first reported in Balabac Strait – were also included in this assessment.

Although recorded to occur in the Philippines, two other species - the Indo-Pacific humpback dolphin (*Sousa chinensis*) and fin whale (*Balaenoptera physalus*) - were found ineligible for assessment within the region and fell under the "Not Applicable" (NA) category. The Indo-Pacific humpback dolphin was recorded only from a single stranding incident in Turtle Islands, Tawi-tawi (Baltazar, PCP unpublished report). The fin whale, on the other hand, was recorded only from one sighting off Dumaran Island, Palawan, in western Sulu Sea (Dolar 1999a). Its taxonomy still needs further verification.

At least two species previously listed in the 1997 PRDB were taken off based on lack of valid confirmation of its presence or on misidentification, namely: the common minke whale (*Balaenoptera acutorostrata*) and the Indo-Pacific finless porpoise (*Neophocaena phocaenoides*).

DATA PRESENTATION

The information given for each species is based on the minimum set of documentation requirements for taxa included on the IUCN Red List, arranged in the following manner:

Red List Status: The IUCN Red listing of the species is found on the upper right hand corner of the first page of each species account. Details of the Red Listing are shown towards the end of the species information and include the rationale or justification for the respective listing.

Taxonomy: The reference to the scientific name is given to the current valid name applied to the species, with author and date provided below it. Species with taxonomic concerns, e.g., doubtful status, are excluded from the assessment. Each species is provided with the upper level taxonomy (i.e., Kingdom, Phylum, Class, Order and Family).

Synonyms: For each species, there are references to junior synonyms (some of which may still be in current use or entrenched). The complete synonyms (i.e., all references in the literature) are not cited in full as they were found to be not useful in this presentation.

Common Names: For many species, English names are used. The local names, when available, are also provided and presented vernacular form (e.g., Tagalog, Cebuano). In a number of cases, a local name does not necessarily apply to the species alone but possibly to several other species and even to whole families (e.g., balyena for whales or large cetaceans).

Distribution: Reported occurrence of the species is given in the text and illustrated on the map. Its global geographic range and distribution are shown as an inset of the map.

Population: More often, very little to no information is available on the populations of marine mammals in the Philippines. When

possible, estimates are provided as basis for relative increase or decrease of population.

Habitat and Biology: Very limited information is also known about the feeding habits, breeding and calving seasons, and migrations of marine mammals in the Philippines. References to studies on the species outside the Philippines are provided when available.

Threats: Possible threats, as applicable to the species and its habitats, are mentioned here. Threats and issues are based on those earlier discussed under "Threats and Issues" of previous chapter.

Conservation Measures: Past and present conservation measures of the species are mentioned here. All species are protected by various laws. General recommendations are made for threatened species and habitats.

Citation: It is recommended that the Red List Status of each species be cited according to the following format:

> [Assessors]. 2012. *[Species]*, pp xx-xx. *In*: MNR Alava, MLL Dolar, ER Sabater, MTR Aquino, and MD Santos (eds). Red List Status of Marine Mammals of the Philippines. BFAR-NFRDI. 194 pp.

Bibliography: Reference is made to all sources of information used in the review and assessment of the species.

The Red List Assessments of Marine Mammals of the Philippines, which uses the IUCN Red List Categories and Criteria for Regional Assessment, is the most current assessment of the species group in the country.

BALAENOPTERIDAE

Balaenoptera edeni

DD

Taxonomic Authority: Anderson, 1879
Synonym: *Balaenoptera brydei* Olsen, 1913
Common names: Indo-Pacific Bryde's whale, Bryde's whale (English); balyena (Tagalog); bongkaras (Visayan)

UPPER LEVEL TAXONOMY

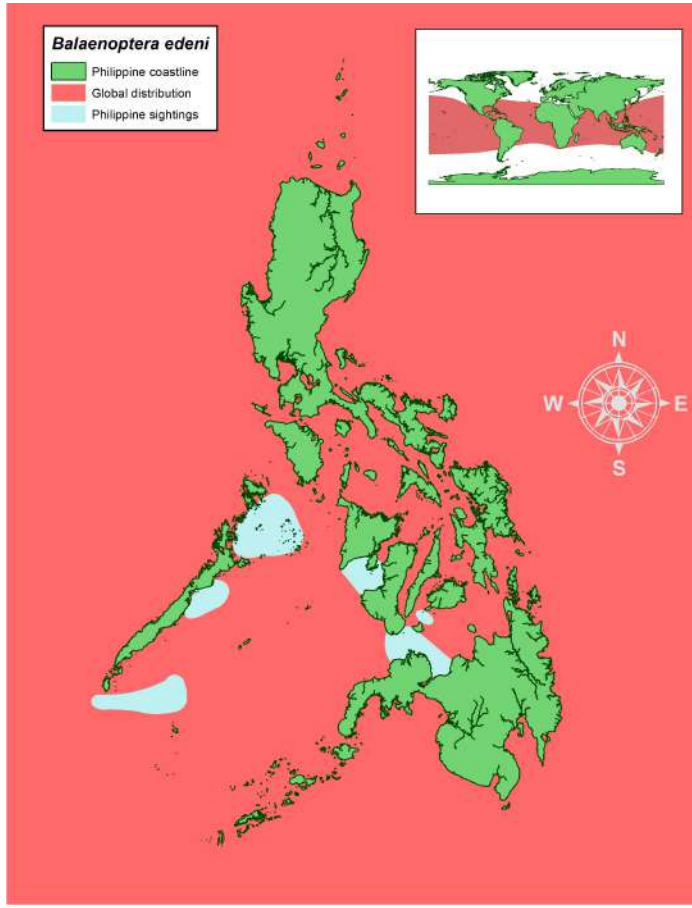
Kingdom:	Animalia
Phylum:	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	BALAENOPTERIDAE

TAXONOMIC NOTES: Identity of the species in the "Bryde's whale complex" is still unclear. It is currently believed that there are several forms of Bryde's whale: the "ordinary" large form, the East China Sea (small) form, South African inshore form (also small), and Asian/Australian small form (Reilly et al. 2008).

GENERAL INFORMATION

DISTRIBUTION

The taxonomy of this species is still unresolved and thus the extent of its distribution is not known. There are currently four forms recognized, the "ordinary" large type, the South China Sea form, the South African form, and the Asian/Australian form. "Ordinary" large-type Bryde's whales occur in the Pacific, Indian, and Atlantic oceans between about 40°N and 40°S or in waters warmer than 16.3°C (Kato and Perrin 2009). The South China Sea form occurs in southern and southwestern Japan, the South African form is a resident inshore population in South Africa, and the Asian/Australian form occurs in Asia and Australia (Reilly et al. 2008). Because of the recent revisions of this species, it is not certain now if the Bryde's whale occurs in the Philippines. Most of what used to be considered the "pygmy" form (Perrin et al. 1996) is now classified as Omura's whale (Yamada et al. 2008).



Occurrence map of *Balaenoptera edeni* in the Philippines in blue. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

A sighting in Balabac Strait near Mangsee Island (Dolar 2006) may have been a Bryde's whale (confirmed not to be Omura's whale by Yamada pers comm). Other sightings include off southeastern Siquijor and Bohol waters near Selinog and Dapitan; and Panay Gulf (Dolar and Wood 1993; Leatherwood et al. 1992). Some researchers refer the large form of Bryde's whale to *Balaenoptera brydei* and the

various small forms (exclusive of *B. omurai*) are collectively assigned to *B. edeni* (Kato and Perrin 2009).

[*Editors' note: The species was nevertheless included in the assessment despite the uncertainties because the local assessors realized that not all Bryde's whale sightings yielded DNA samples. Thus the presence of the Bryde's whale in the country could not be totally ruled out.*]

A possible Bryde's whale encountered in Balabac Strait, Palawan. (PHOTO CREDIT: MTR AQUINO)

POPULATION

No population estimate is available at present.

HABITAT AND ECOLOGY

The species inhabits both inshore and offshore areas, including enclosed seas. They are known to feed on small schooling fish including anchovies, mackerels, pilchards, sardines, and herrings. The animals also feed occasionally on squid, krill, and pelagic crabs (Jefferson et al. 2008). Nothing much is known of its ecology. In the Philippines, two tentatively-identified Bryde's whales were observed feeding in shallow reef area around Mangsee Island in Balabac Strait (Dolar 2006).

THREATS

Omura's whale and probably Bryde's whale were exploited by hunters from Pamilacan, Bohol, and Camiguin (north of Mindanao) until the Fisheries Administrative Order (FAO) 185 was issued in 1992 and later amended as FAO 185-1 in 1997 (Alava 1997). Hunters

reported higher density of baleen whales that could have been Bryde's whale in the whaling area in the '70s and '80s (Dolar et al. 1994).

CONSERVATION MEASURES

The Bryde's whale is listed under Appendix I of CITES (although Japan has held a reservation against this listing since 1983). It is also in Appendix II of CMS. It is protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 and FAO 208.

In Pamilacan, a local ordinance stopped artisanal whaling operations in the island in the wake of FAO 185 (Alava and Dolar 1995). Former hunters of the species were organized by WWF-Philippines to form a dolphin and whale watching enterprise. The enterprise is still thriving today despite some management and economic problems. The former hunters now serve as tour guides/naturalists onboard dolphin and whale watching tours. In addition to this, the Wildlife Act (RA 9147) provides stiffer penalties for the killing or illegal possession of the animal and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

The extent of this species' distribution is not known. There is also no information on total population size or trends. As with the global population, this species is listed as DD for the Philippines.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, and JMO Daclan

NOTES ON RED LISTING: Baleen whale specimens in the region should be identified by DNA analysis. Biopsy sampling should be carried out for the same purpose.

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BALAENOPTERIDAE

Balaenoptera musculus

DD

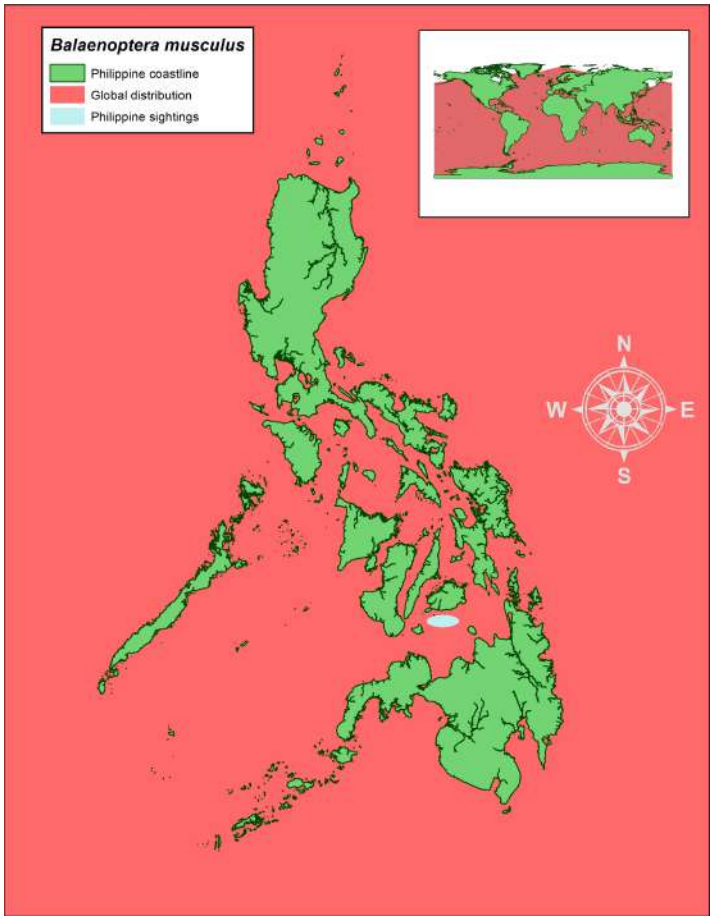
Taxonomic Authority: Linnaeus, 1758
Common names: blue whale (English); balyena (Visayan, Tagalog)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum:	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	BALAENOPTERIDAE

TAXONOMIC NOTES: The subspecific taxonomy of blue whales is not yet fully elucidated. The type subspecies *B. m. musculus* refers at least to the North Atlantic blue whale which was the basis for the first description by Linnaeus. Animals in the northern North Pacific are similar in size and morphology to North Atlantic blue whales and are also regarded as *B. m. musculus*. The Antarctic form *B. m. intermedia* Burmeister, 1871, sometimes called the 'true' blue whale, is distinguished by its large body size and Antarctic distribution in summer. The pygmy blue whale *B. m. brevicauda* (Ichihara 1966) has a number of morphological characteristics that distinguish it from *B. m. intermedia* and *B. m. musculus*, including the characteristic "tadpole" body shape (Kato et al. 2002). It occurs in the southern Indian Ocean, excluding the Antarctic, from Africa and Madagascar across to Indonesia, Australia and Tasmania. Blue whales in the northern Indian Ocean have been assigned the name *B. m. indica* Blyth 1859, although Mikhalev (1996) regarded them as pygmy blue whales and not significantly different from pygmy blue whales in the southern Indian Ocean.

Blue whales in the eastern Pacific from California in the north to 44°S in southern Chile have been considered similar to pygmy blue whales (those off California and Baja California; Gilpatrick et al. 1997) or to the Antarctic form (off the Galapagos; Palacios 1999), while off Peru both pygmy and Antarctic blues have been reported (Donovan 1984; Van Waerebeek et al. 1997). High abundance in summer and lack of sightings south of 44°S suggest that the South American whales are not Antarctic



Occurrence map of *Balaenoptera musculus* in the Philippines in blue. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

blue whales, but some whales caught were larger than the maximum size of pygmy blue whales from the southern Indian Ocean (Branch et al. 2006). LeDuc et al. (2007) found that blue whales off western South America and off Western Australia differed genetically from each other as much as from Antarctic blue whales. No diagnostic genetic markers that distinguish the subspecies or populations of blue whales have been found to date but that does not rule out the possibility that its occurrence might eventually be established.

"In view of these uncertainties, the tendency to try to categorize all blue whales dichotomously into “true” and pygmy blue whales may not be appropriate. Pending further elucidation of the subspecific taxonomy of blue whales, it is preferable to limit the term “pygmy blue whale” to the Indian Ocean populations and to use geographical names such as Antarctic blue whale and North Atlantic blue whale instead of “true blue whale”. In the Pacific (outside the Antarctic), the subspecific taxonomy and nomenclature of blue whales should be considered open until more genetic and morphological data from more locations are available.” (Source: Reilly et al. 2008).

GENERAL INFORMATION

DISTRIBUTION

The blue whale is distributed all over the world, mostly oceanic but sometimes comes close to shore to feed (Jefferson et al. 2008). There were a few sightings in the Philippines, mostly concentrated in the Bohol Sea (Sabater 2005; Digdigan pers comm).

POPULATION

Animals sighted in the Bohol Sea probably belong to the north western Pacific population.

HABITAT AND ECOLOGY

This species is usually seen alone or in pairs (Jefferson et al. 2008). They feed primarily on krill in areas where there is upwelling (Sears and Perrin 2009). Feeding strategies and mechanisms are well described, e.g., lunging with mouth open and gulping large volumes of water and prey. The water is then expelled by the muscular action of the ventral pouch and tongue and the krill swallowed (Sears and Perrin 2009). Calves are born in winter in tropical and sub-tropical breeding areas.

THREATS

There are no known major threats to the species in the Philippines.

CONSERVATION MEASURES

The blue whale is on Appendix I of both CITES and CMS. Having only been recently recorded in the country, the species was not included in FAO 208. It is nevertheless protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550), through FAO 185-1, that provides for the protection of cetaceans in general. The Wildlife Act (RA 9147) also provides protection with stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

A blue whale preparing to dive. (PHOTO CREDIT: V MONTGOMERY-PORDEN)

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

There had only been three sightings of blue whales in Philippine waters as of this writing. These animals possibly belong to the northwestern Pacific population, the size of which is unknown. The species is listed as DD for the Philippines. The global status (EN A1abd) is based on the southern ocean population.

Current Population Trend:	Unknown
Date of Assessment:	8/14/2009
Names of the Assessors:	MLL Dolar and ER Sabater

NOTES ON RED LISTING: FAO 208 needs to be amended to include this species. Furthermore, biopsy sampling and DNA studies should be carried out to establish relationship with global population.

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BALAENOPTERIDAE

Balaenoptera omurai

DD

Taxonomic Authority: Wada, Oishi & Yamada, 2003
Common names: Omura's whale (English); balyena (Tagalog); bongkaras (Visayan)

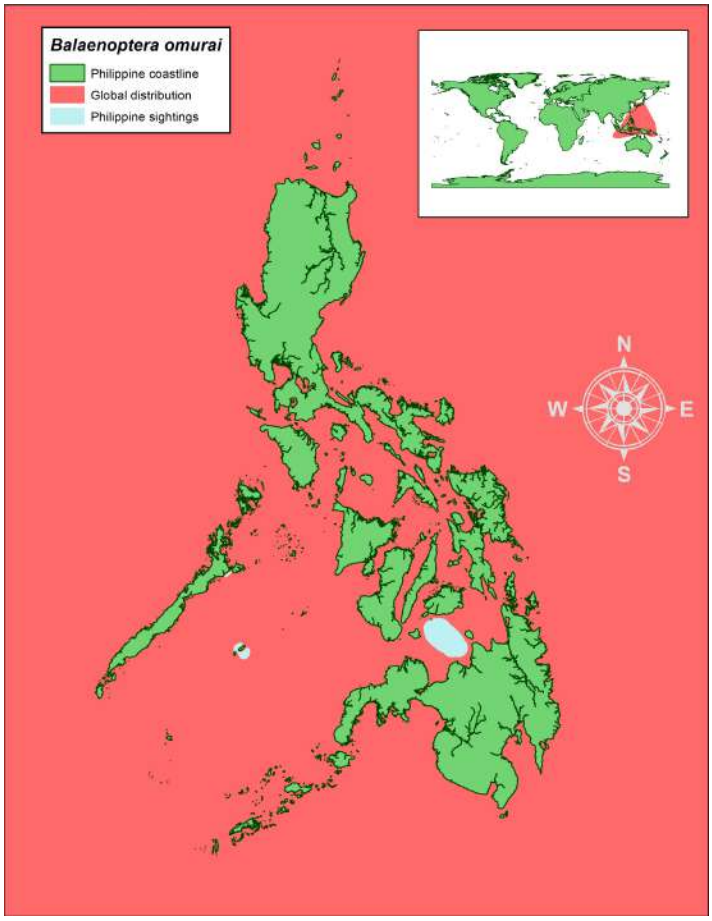
UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum:	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	BALAENOPTERIDAE

TAXONOMIC NOTES: This species was described only recently (Wada et al. 2003) yet the separate species identity of Omura's whale is well established phylogenetically (Sasaki et al. 2006). Though formerly regarded as a pygmy form of Bryde's whale, Omura's whale is not closely related to that group. It lies outside the clade formed by *B. musculus*, *B. borealis*, and two forms of Bryde's whales (called *B. brydei* and *B. edeni* in Sasaki et al. 2006). Omura's whale nomenclature is not yet fully settled nor recognized in the IWC Schedule (Reilly et al. 2008).

The morphological description for this species is only available for the type specimen (a stranding in the Sea of Japan). Its morphology is quite distinct from those of Bryde's whales and other known baleen whales, but its coloration resembles that of the fin whale (Wada et al. 2003).

Based on the specimens collected from the skeletons of whales caught in the former indigenous fishery in Bohol, the Bohol whales turned out to be segregated phylogentically outside the Sei/Bryde's whale clade (LeDuc and Dizon 2002). From a comparison of the published phylogenies, Sasaki et al. (2006) concluded that these specimens correspond to *B. omurai*.



Occurrence map of the Omura's whale *Balaenoptera omurai* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

GENERAL INFORMATION

DISTRIBUTION

Distribution is poorly known. Possible range includes tropical and subtropical waters of the lower latitude of the Indo-Pacific region, including the Solomon Sea, Java Sea, Andaman Sea, Gulf of Thailand, Philippines, South and East China Sea, around Taiwan, and southwest Japan (Yamada 2009). The skulls and skeletal remains collected from

the previously existing artisanal whale fishery in Pamilacan and Camiguin Islands in the Bohol Sea (Dolar et al. 1994) are now believed to be of Omura's whale (Yamada et al. 2008; Sasaki et al. 2006; Reilly et al. 2008). They were previously referred to as "pygmy" Bryde's whales (Perrin et al. 1996).

POPULATION

There is no population estimate for the country or even globally.

HABITAT AND ECOLOGY

Nothing is known of the ecology and habitat of Omura's whale. There was a sighting of a group of what possibly were Omura's whales chasing tuna (Yamada 2009).

THREATS

Direct hunting existed in Pamilacan and Camaguin Islands in the Bohol Sea until 1994 (Dolar et al. 1994). Based on genetic identifications by LeDuc and Dizon (2002) of the skeletal remains collected from the previously existing artisanal whale fishery in Pamilacan and Camiguin Islands in the Bohol Sea, it can be inferred that *B. omurai* have been taken in the Philippine artisanal whale fisheries (Dolar et al. 1994; Perrin et al. 1996). More analysis would be needed to determine what proportion of the Bryde's whales taken there were in fact *B. omurai*.

A markedly hooked dorsal fin may be a distinguishing characteristic of the Omura's whale. This individual was sighted in Tubbataha Reefs Natural Park in the middle of Sulu Sea. (PHOTO CREDIT: MTR AQUINO)

The species was only recently described and has not been included in the list of threatened cetacean species in the Philippines under FAO 208.

CONSERVATION MEASURES

Omura's whale is in Appendix I of CITES and protected in the Philippines under Sec. 11 and 97 of the Fisheries Code of the Phiippines (RA 8550) through FAO 185-1. The Wildlife Act (RA 9147) also provides protection to the species with stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

No population estimate is available for this species in the Philippines. However, the species has been subjected to local hunting in the past and has suffered an undetermined loss due to it.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, and JMO Daclan

NOTES ON RED LISTING: Baleen whale specimens in the region should be identified to the species level by DNA analysis and biopsy sampling should be carried out for the same purpose. Dedicated surveys must be conducted to determine relative abundance in areas where it used to be hunted. Lastly, FAO 208 needs to be amended to include this species.

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BALAENOPTERIDAE

Megaptera novaeangliae

VU

Taxonomic Authority: Borowski, 1781
Common names: humpback whale (English); balyena (Tagalog)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum:	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	BALAENOPTERIDAE

TAXONOMIC NOTES: No distinct subspecies is recognized at present (Reilly et al. 2008).

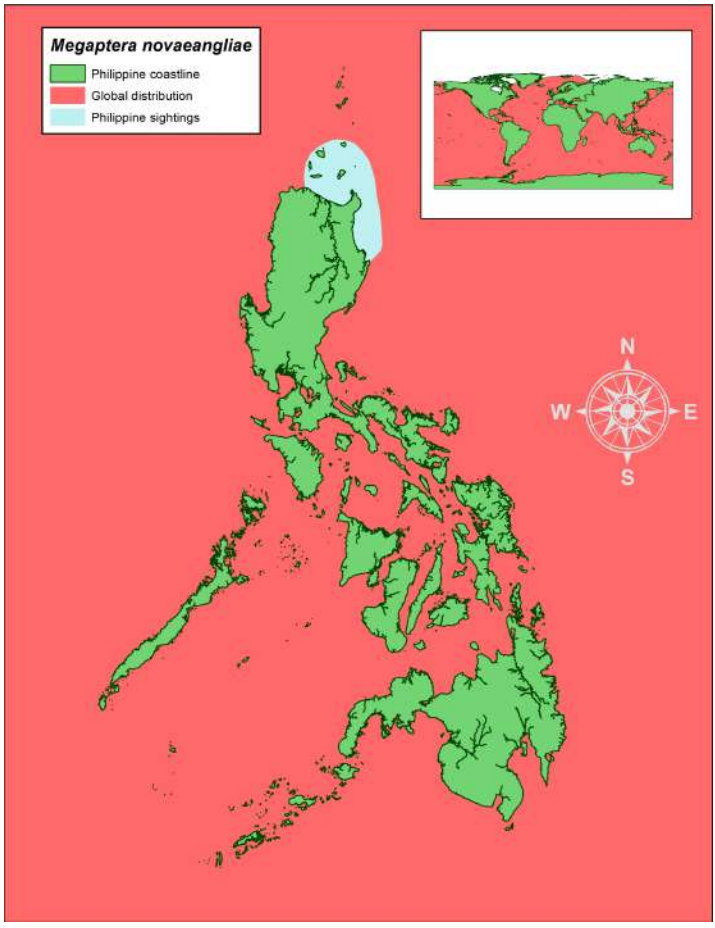
GENERAL INFORMATION

DISTRIBUTION

Humpback whales are found in all oceans of the world and are highly migratory. They spend spring through fall in feeding grounds in the mid or high latitudes and winter in calving grounds in coastal tropical waters (Clapham 2009). It is uncommon in the Philippines. Historically, this species had been sighted off southwestern Palawan, northwest of Luzon and in Western Mindanao (Slijper et al. 1964 in Alava 1997). To date, it has been documented in the Babuyan Islands and the eastern coast of Northern Sierra Madre (Maconacon to Palanan, Isabela) (Acebes et al. 2007). These sites are recognized to be the southernmost limits of the breeding grounds of the western North Pacific humpback whales.

POPULATION

A total of 162 adults have been photo-identified for the Babuyan and Isabela areas (Acebes 2002 in Perrin et al. 2005). The total population is difficult to establish since these animals are highly migratory.



Occurrence map of *Megaptera novaeangliae* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

HABITAT AND ECOLOGY

From spring to fall, humpback whales take advantage of the high productivity in continental shelf waters of mid to high latitudes where they feed on krill and various species of schooling fish such as herring, sand lance, mackerel, sardines, anchovies, and capelin (Clapham 2009). They are known to use bubble curtains in trapping schooling

A humpback whale breaching near the Babuyan Islands. (PHOTO CREDIT: JM ACEBES)

fish. In winter, they migrate to shallow shelf waters near island and reef systems where they breed. During the breeding season, the whales do not feed. Humpback whales in the Babuyan Islands are believed to arrive as early as November and leave in May, though there was a documentation of some whales in July (Acebes 2002). Of the 69 photo-identified whales in the Babuyan Islands group, 12 (30%) matched those that winter in Ogasawara and the Ryukyu Islands, Japan (Acebes et al. 2007). Based on the SPLASH data, two individuals that are known to feed in Russia have been documented as breeding in the Philippines. At least one individual was also found breeding in Hawaii (Aca unpubl data).

THREATS

Identified threats to the population in the Philippines include dynamite blasts (Acebes et al. 2008), ship traffic, entanglement in drift gill net, and disturbance of breeding habitat by unregulated tourism and development (Acebes 2002).

CONSERVATION MEASURES

The humpback whale is listed in Appendix I of both CITES and CMS. It is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 and FAO 208. The Wildlife Act (RA 9147) further provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

In its known breeding site in the Philippines, the local government unit (LGU) has also passed Provincial Ordinance No. 09-2003: Ordinance Declaring the Humpback Whales as Protected Species

within the Territorial Jurisdiction in the Province of Cagayan and Providing Penalties for the Violation thereof. DOT and DA have, likewise, issued Joint Administrative Order No. 1: Guidelines to Govern the Conduct of People Interaction with Cetaceans to help regulate threat from human interaction.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Vulnerable (VU) D2** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

There is only one known breeding location for humpback whales in the Philippines. Due to a restricted area of occupancy (Criterion D2 = number of locations < 5) and the level of threats present to that particular site, it is suggested that the species be listed as Vulnerable (VU).

Current Population Trend:	Unknown
Date of Assessment:	8/14/2009
Names of the Assessors:	JM Acebes and EQ Aca

NOTES ON RED LISTING: The 2008 global assessment for this species is Least Concern (LC) based on continuous increase in population in areas for which data are available. Additional information on abundance and trend data are available compared to previous assessment and changes have been made under the criteria for Vulnerable. The humpback whales encountered in the Philippines belong to the northwestern Pacific subpopulation whose assessment is still in progress. However, because of the concern over the small size of the northwestern Pacific subpopulation, it is speculated that the red listing for this subpopulation will differ from that of the global (Perrin pers comm).

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DELPHINIDAE

Feresa attenuata

DD

Taxonomic Authority: Gray, 1875
Common names: pygmy killer whale (English); balyena (Tagalog); lumba-lumba (Visayan)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	DELPHINIDAE

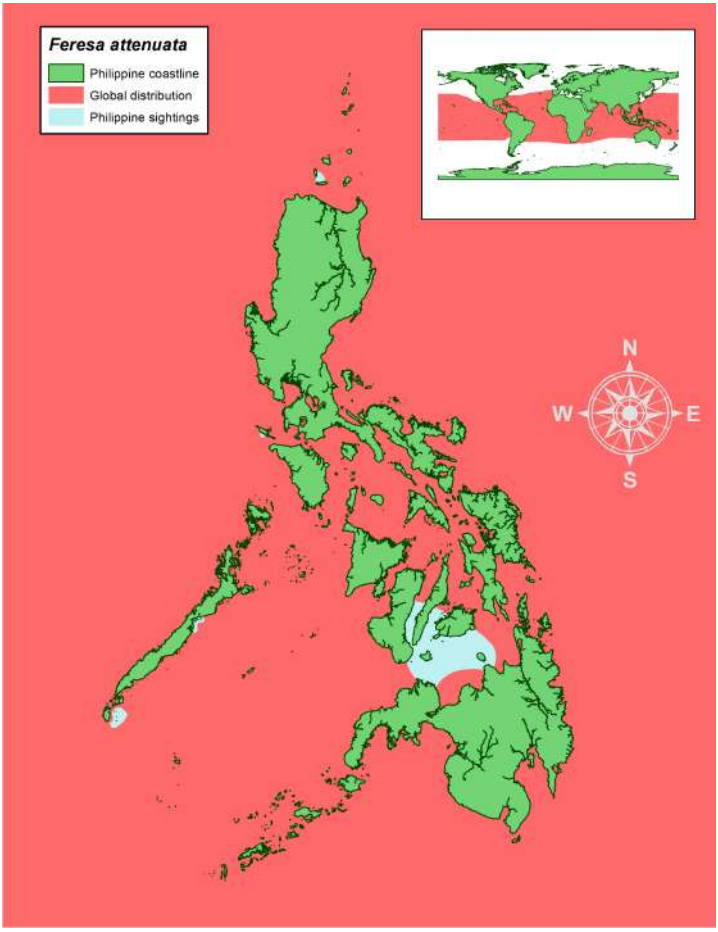
GENERAL INFORMATION

DISTRIBUTION

Found in tropical and subtropical waters worldwide, the species generally does not range beyond 40˚N and 35˚S (Jefferson et al. 2008). The animal has been sighted in the Bohol Sea, Bohol Strait, Tañon Strait, Sulu Sea, Balabac Strait (Dolar and Perrin 1996; Dolar and Wood 1993; Leatherwood et al. 1992; Dolar 2006), and in the waters surrounding Babuyan Islands and Lubang Island (Acebes pers comm). Specimens have been collected from the eastern Sulu Sea (SU-IEMS).

POPULATION

There is no information available on population estimate in the Philippines. Although there is little information on the population biology of this species globally, the pygmy killer whale appears to be naturally uncommon. Wade and Gerrodette (1993) estimated that there were about 38,900 (CV=31%) of these whales in the eastern tropical Pacific. There are estimated to be 817 (CV=112%) in the Hawaiian portion of the US EEZ, and 408 (CV=60%) in the northern Gulf of Mexico (Barlow 2006; Mullin and Fulling 2004).



Occurrence map of *Feresa attenuata* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

HABITAT AND ECOLOGY

The habitat of this species is characterized as generally oceanic. Except in certain areas (e.g., Eastern tropical Pacific, Hawaiian Islands and off Japan), the pygmy killer whale is rarely encountered at sea, making it one of the least known of the delphinid species (Donahue and Perryman 2009; Jefferson et al. 2008). In general, group sizes are small (12-50 individuals), but occasionally herds of up to several

hundreds are seen. Site fidelity has been observed in a group of pygmy killer whales inhabiting the Hawaiian Islands. Almost nothing is known of the pygmy killer whale's habitat and ecology in the Philippines.

THREATS

The species exhibits a vulnerability to loud anthropogenic sounds (Wang and Yang, 2006). One stranding in Honda Bay, Palawan was suspected to have been related to sound disturbance. Oil exploration activities were underway when the stranding occurred. Solid waste pollution also provides additional threat to the species. A dead animal retrieved from Jacana Beach, Palawan in 1996 was found to have died from ingestion of a large number of plastics, severely impacting its digestive tract. PWRCC 1996 clinical records showed that the animal exhibited ruptured capillaries on the aortic wall, suggesting a relatively protracted and very painful death (Aquino unpubl data). High fishing pressure in the animal's habitat may also impact the Philippine population.

The digestive tract of a stranded pygmy killer whale showed impaction with plastics from the distal third of the esophagus to the proximal third of the small intestines. (PHOTO CREDIT: CFI/PWRCC)

CONSERVATION MEASURES

The pygmy killer whale is listed under Appendix II of CITES. It is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550), through FAO 185-1 and FAO 208. The Wildlife Act (RA 9147) further provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

The animal is uncommon in Philippine waters and thus little is known of its population. Globally, the species is listed as DD.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MTR Aquino, MNR Alava, AASP Yaptinchay, MIG Cadigal, BS Albasin, ED Solis, R Lucero, A Salting, and R Cruz

NOTES ON RED LISTING: Further research is needed to determine and reduce the impact of existing and potential threats to the species.

Pygmy killer whale jumping high up and out of the waters of Balabac, Palawan. (PHOTO CREDIT: MLL DOLAR)

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DELPHINIDAE
Globicephala macrorhynchus DD

Taxonomic Authority: Gray, 1846
Synonym: *Globicephala scammoni* Bailey, 1936
Common Name: short-finned pilot whale (English); ambuhutan, bugansiso (Visayan).

A short-finned pilot whale spyhopping in Tubbataha Reefs Natural Park, Palawan. (PHOTO CREDIT: MTR AQUINO)

UPPER LEVEL TAXONOMY

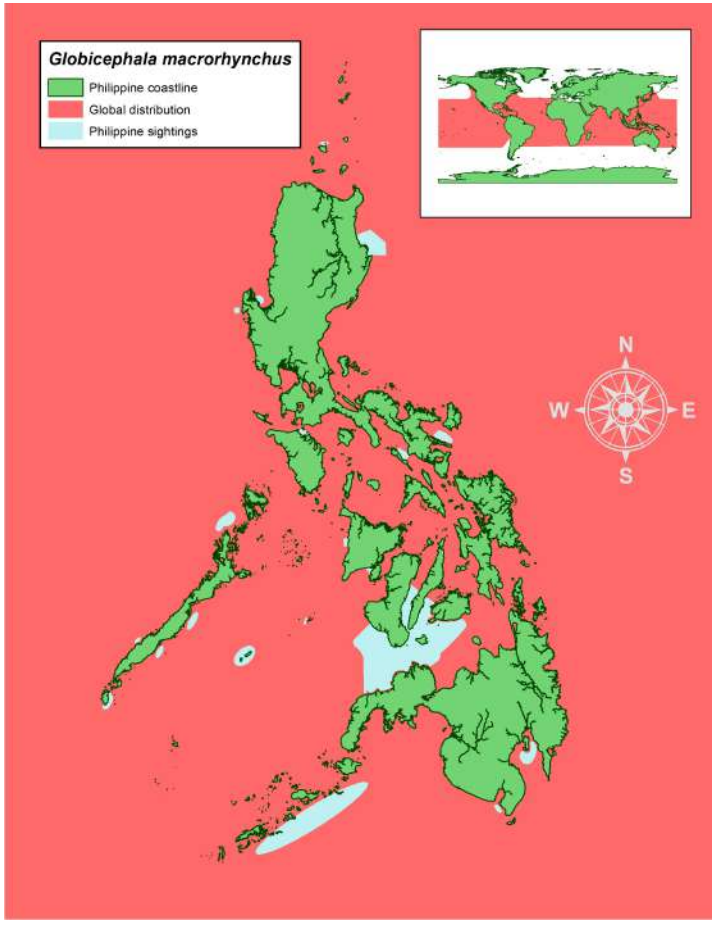
Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	DELPHINIDAE

TAXONOMIC NOTES: "This taxonomic unit is treated as one species even though there is evidence that it may be a complex of two or more species. If it is so designated, the Red List status of this taxon would require reassessment and may change. There are two geographical forms of short-finned pilot whales off Japan, northern and southern, differing in external and cranial morphology (Rice 1998). Their exact taxonomic status is unresolved, but they may represent separate species or subspecies." (Taylor et al. 2008).

GENERAL INFORMATION

DISTRIBUTION

The geographic distribution in the country can be described as warm-temperate to tropical waters, well within 50˚N and 40˚S (Jefferson et al. 2008). Subpopulations appear fragmented and widely distributed all over the country with reports of sightings in Gingoog and Butuan Bay in northern Mindanao and near Balut Island off Saranggani (Gaudiano pers comm), Palawan (PCSDS 2006; Dolar



Occurrence map of *Globicephala macrorhynchus* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

2006; Aquino 2009), and Panay (Santos pers comm). The animals are also sighted in the Sulu and Bohol seas, Tañon Strait, Sulawesi Sea and Davao Gulf (Dolar et al. 2006; Dolar and Perrin 1996; Dolar & Wood 1993; Leatherwood et al. 1992), South China Sea (Aquino 2006), around Babuyan Islands, and Philippine Sea. Strandings in Binmaley, Pangasinan Province (Leatherwood et al. 1992) and in Narra and Balabac in Palawan (Dolar, 2006) have also been recorded. Specimens are kept at the SU-IEMS, UPLB, PWRCC, and AMNH.

POPULATION

The species is widely distributed in the country but there is little information available on its population abundance as a whole. Leatherwood et al. (1992) reported about 370 individuals had been sighted in 1991-92 survey. The eastern Sulu Sea subpopulation has been estimated at 7,492 (CV = 29%) while that in Tañon Strait has been placed at 179 (CV = 96%) (Dolar et al. 2006). Although all other subpopulations in the country have no information on population size, it is still good to note that almost all groups of this species encountered in Palawan included mother and calf units (Aquino and Calderon 2004; Torres 2008).

HABITAT AND ECOLOGY

Populations are usually found in continental shelf break slope waters and areas of high topographic relief (Olson 2009). Although generally known to be nomadic, some resident populations were documented in California coastal waters and Hawaii (Olson 2009). Seasonal inshore-offshore movements have been documented and appear to be related to the availability of squid, their favorite prey (Olson 2009). In the Philippines, short-finned pilot whales are often found over or near steep slopes (Dolar & Perrin 1996; Dolar et al. 2006). Estimated abundance in the eastern Sulu Sea during the 1995-1996 survey was 7,500 (C.V.=0.29) in area of about 23,000 km^2 (Dolar at al. 2006). Individuals are found to associate mostly with Fraser's

Despite its wide distribution in the country, little is known of the overall population abundance of the short-finned pilot whale. (PHOTO CREDIT: ER SABATER)

dolphins (50% of the time) and less frequently with spinner, spotted, Risso's, bottlenose, and rough-toothed dolphins and pygmy killer whales (Dolar et al. 2006).

THREATS

Several strandings have been documented in Puerto Princesa City, Narra, Roxas, and Balabac in Palawan (Dolar 2006). These strandings are speculated to have been triggered by seismic activities in the area. The waters surrounding the province of Palawan all the way to Mindoro have been parceled off by the Philippine government to companies involved in oil exploration activities (DOE website: www.doe.gov.ph). Mortalities in fisheries and other anthropogenic activities have likewise been recorded in Palawan involving purse seine with superlights, dynamite fishing and even "long line" entanglement in pearl farms (PCSDS 2006).

CONSERVATION MEASURES

The species is in Appendix II of CITES and protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 and FAO 208. The Wildlife Act (RA 9147) further provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

Taxonomic uncertainties beleaguer the global population. The species is widely distributed in the country but, given the fragmented nature of the population with insufficient data on its abundance/size as a whole, the species is also listed as Data Deficient (DD).

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MRTAquino, MNR Alava, GM Cadigal, ED Solis, R Lucero, BS Albasin, M Santos, TU Bagarinao, and JPA Gaudiano

NOTES ON RED LISTING: Population studies need to be conducted to fill in these information gaps. Research is also needed to determine the impact of potential threats to the species, e.g., seismic activities and fisheries interaction.

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DELPHINIDAE

Grampus griseus

DD

Taxonomic Authority: G. Cuvier, 1812
Common Name: Risso's dolphin (English); tiw-tiw (Visayan)

UPPER LEVEL TAXONOMY

Kingdom: Animalia
Phylum CHORDATA
Class: MAMMALIA
Order: CETARTIODACTYLA
Family: DELPHINIDAE

Risso's dolphin bowriding in Tubbataha Reefs Natural Park. (PHOTO CREDIT: MTR AQUINO)

GENERAL INFORMATION

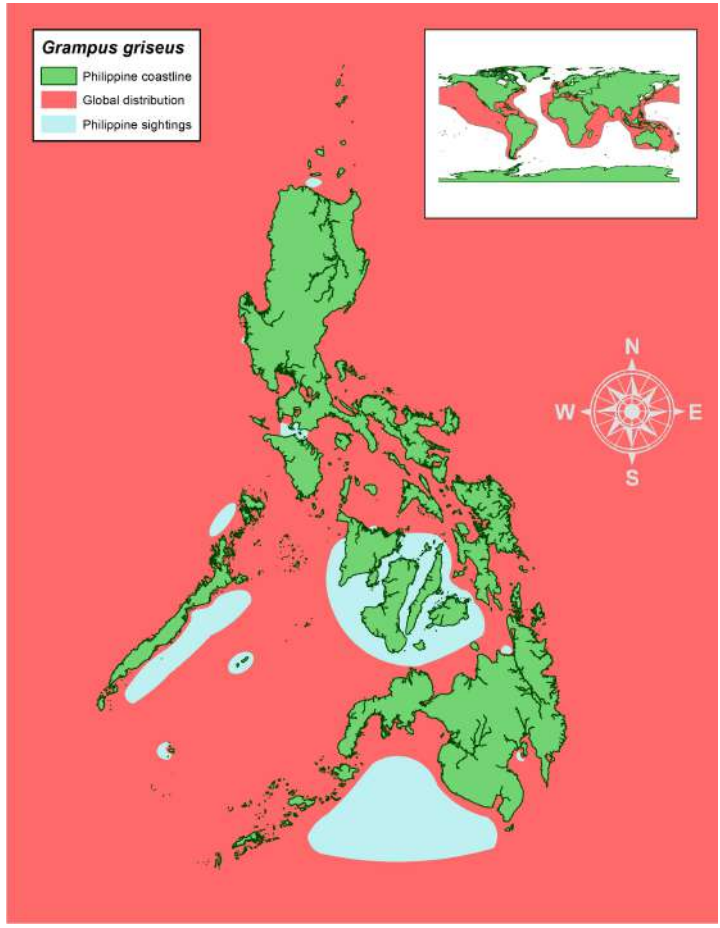
DISTRIBUTION

The species is found worldwide in temperate and tropical waters. In the Philippines, it has been sighted in almost all of the waters surrounding the archipelago.

Sightings have been recorded in the Northern Luzon near the Babuyan Islands (Acebes unpubl data) and Zambales (Santos pers comm) as well as in Southern Luzon specifically in the Verde Island Passage (Dolar 2006). The presence of the species has also been documented in Palawan (Aquino 2009; PCSDS 2006), Visayas (Dolar et al. 2006; Dolar 1999; Dolar and Perrin 1996; Dolar and Wood 1993; Leatherwood et al. 1992; Hammond and Leatherwood 1984; WWF-Phil unpubl data) and in the Mindanao area including Celebes Sea (Dolar and Perrin 1996) and Butuan Bay (Bautista pers comm).

POPULATION

Although the species is encountered in several areas of the country, there is not enough information to estimate its population size. In the eastern Sulu Sea, Dolar et al. (2006) estimated the abundance at 1,514 (CV=47%) individuals.



Occurrence map of *Grampus griseus* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

HABITAT AND ECOLOGY

Risso's dolphins inhabit coastal and offshore waters and have a preference for steep, shelf-edge habitat, between 400-1,000 m deep, (Baird 2002; Jefferson et al. 1993), mostly occurring seaward of the continental slope. They frequent subsurface seamounts and escarpments, where they are thought to feed on vertically migrant and mesopelagic cephalopods. Currents and upwellings that cause local increases in marine productivity may enhance feeding

opportunities, resulting in the patchy distribution and local abundance of this species worldwide (Kruse et al. 1999). Davis et al. (1998) and Baumgartner (1997) reported that in the Gulf of Mexico, Risso's dolphins were mostly found over deeper bottom depths, concentrating along the upper continental slope, which may reflect the distribution of squid, its preferred prey.

In Verde Island Passage where they were found to be fairly common, they inhabit waters 98-600 m deep (Dolar 2006). The species were also found in mean water depths of about 400 m and often in slope waters in the eastern Sulu Sea (Dolar et al. 2006). In Celebes/Sulawesi Sea, they were mostly in deep waters of up to 4,000 m (Dolar and Perrin 1996).

Long-term changes in the occurrence of Risso's dolphins in some areas (e.g., off Catalina Island and in central California) have been linked to oceanographic conditions and movements of spawning squid (Kruse et al. 1999). Risso's dolphins feed on crustaceans and cephalopods, but seem to prefer squid. Squid bites may be the cause of at least some of the scars found on the bodies of these animals. In the few areas where feeding habits have been studied, they appear to feed mainly at night. In Puerto Princesa Bay, local fishermen associate the animals with the season for squid and are often associated with Fraser's dolphins in its feeding habitat (Aquino 2004).

A Risso's dolphin observed slamming its body on the water surface several times. (PHOTO CREDIT: MTR AQUINO)

THREATS

This species often factor in strandings in Palawan (DENR-CFI Records 1997-2000) although the cause for these strandings could not be determined. One stranding mortality in Dumangas, Iloilo, however, implicated

pollution as cause of stranding and death due to ingestion of plastics (Doyola pers comm). Reports of by-catch mortalities in this species have also implicated dynamite and cyanide fisheries in northern Palawan (PC-SDS 2006).

This species, like beaked whales which are deep-divers that feed on squid, is likely to be vulnerable to loud anthropogenic sounds, such as those generated by navy sonar and seismic exploration (Cox et al. 2006). Predicted impacts of global climate change on the marine environment may affect this marine mammal species, although the nature of impacts is unclear (Learmonth et al. 2006).

A stranded Risso's dolphin ultimately dies and yields plastic from its gut. (PHOTO CREDIT: EFL SOLIS)

CONSERVATION MEASURES

Risso's dolphin is on Appendix II of CITES and protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 and FAO 208. The Wildlife Act (RA 9147) provides further protection through the imposition of stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

There is no estimate of global abundance and neither is the population trend known (Taylor et al. 2008) that, globally, the species has been listed as Least Concern (LC). As with similar species, threats that could cause widespread declines include high levels of

anthropogenic sound, especially military sonar and seismic surveys, and by-catch. Locally, these threats include entanglement in fisheries and competition with squid fisheries. The combination of the large global range and high abundance with possible declines driven by these more localized threats is believed sufficient to rule out a 30% global reduction over three generations (60 years; Taylor et al. 2007) (criterion A) (Taylor et al. 2008).

Similar to the global situation, the Risso's dolphin is moderately common in the country but there is limited information on the population abundance of the species on which to base assessment. Furthermore, it has featured in various stranding incidents of unknown causes that result in mortalities often enough to warrant concern. The collective impacts of deep sea fishing pressure, extensive oil exploration activities in its waters, and other threats to the species, albeit unquantifiable, is still a cause for concern. Thus it is listed as Data Deficient (DD).

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MTR Aquino, MNR Alava, GIM Cadigal, ED Solis, R Lucero, BS Albasin, MD Santos, TU Bagarinao, JPA Gaudiano, JMO Daclan, AP Tagarino, R Cruz, A Salting, and AASP Yaptinchay

NOTES ON RED LISTING: Population studies need to be conducted to fill in information gaps. Research is also needed to determine the impact of threats to the species.

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DELPHINIDAE

Lagenodelphis hosei

VU

Taxonomic Authority: G. Fraser, 1956
Common Names: Fraser's dolphin (English); mayahon; lumod (Visayan), lumba-lumba (Visayan and Tagalog)

UPPER LEVEL TAXONOMY

Kingdom: Animalia
Phylum: CHORDATA
Class: MAMMALIA
Order: CETARTIODACTYLA
Family: DELPHINIDAE

Porpoising Fraser's dolphins in Puerto Princesa Bay, Palawan. (PHOTO CREDIT: MTR AQUINO)

GENERAL INFORMATION

DISTRIBUTION

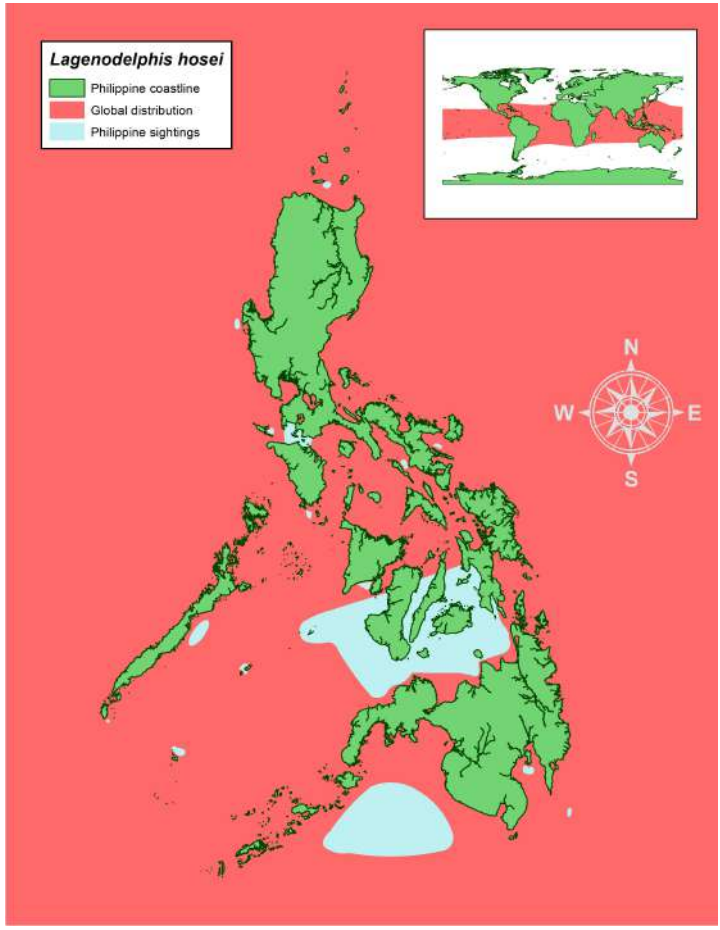
The species is believed to be pantropical, distributed largely between 30°N and 30°S. It is widely distributed in the Philippines.

POPULATION

No total population estimates or trends are available for the Philippines. However, there is an abundance estimate of 13,518 (CV = 27%) for the eastern Sulu Sea (Dolar et al. 2006).

HABITAT AND ECOLOGY

The species is primarily oceanic but can be seen near shore in areas where deep water approaches the coast, as in the Philippines (Dolar et al. 2006; Jefferson and Leatherwood 1994). They feed on mesopelagic fish, squids and crustaceans and dive deep to about 250-500 m to get them (Dolar 2009; Dolar et al. 2003). In the Philippines, these animals were observed in waters 158 to 3,793 m deep (mean = 1,141). They often school with short-finned pilot whales when in deep waters and with melon-headed whales when in relatively shallow areas (Dolar et al. 2006). Other species they associate with are spinner, spotted, Risso's, and bottlenose dolphins as well as pygmy killer whales.



Occurrence map of *Lagenodelphis hosei* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

THREATS

Directed cetacean fisheries in central and southern Visayas, northern Mindanao and Palawan utilized this species for bait or human consumption (Dolar et al. 1994; Alava 1997). By-catch in fisheries in eastern Sulu Sea has been estimated to be unsustainable (Dolar 1999). Similar by-catch occurs in other parts of the Philippines.

CONSERVATION MEASURES

Fraser's dolphin (*Lagenodephis hosei*) is on Appendix II of both CITES and CMS (Southeast Asia populations only). It is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 and FAO 208. The Wildlife Act (RA 9147) provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Vulnerable (VU) A2d** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

Global population is listed as Least Concern (LC) as the species is widespread and abundant with no reported population declines nor major threats identified (Hammond et al. 2008). In the Philippines, there is no total population estimate for the species but substantial by-catch occur in multiple fisheries resulting into the reduction of the population. It is suspected that it may have resulted in the decline of 30% or more in the past 3 generations. Thus the species is listed as Vulnerable (VU) under criterion A2d.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, JPA Gaudiano, ER Sabater, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, JMO Daclan, and MD Santos

NOTES ON RED LISTING: Population and by-catch should be further investigated and estimated.

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DELPHINIDAE

Orcaella brevirostris

EN/CR

Taxonomic Authority: Owen in Gray, 1866
Common Name: Irrawaddy dolphin (English); lumba-lumba (Tagalog and Visayan), lampasut (Tagbanua)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	DELPHINIDAE

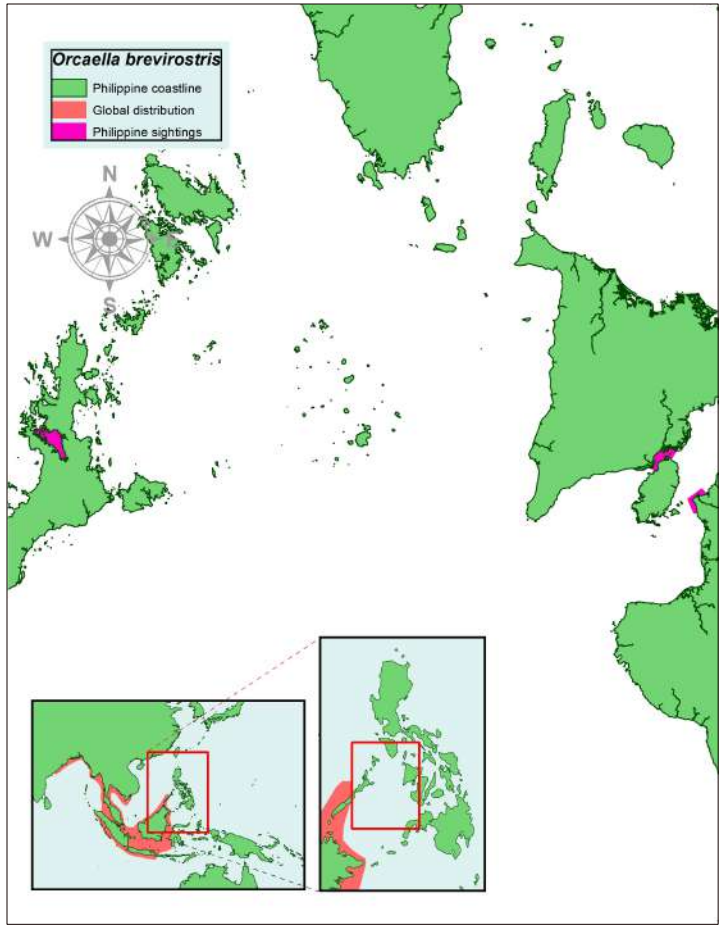
TAXONOMIC NOTES: Dolphins of the genus *Orcaella* were recently split into two species, the Irrawaddy dolphin *Orcaella brevirostris* and the snub-fin dolphin *O. heinsohni* (Beasley et al. 2002, 2005; Smith and Beasley 2004; Reeves et al. 2008).

An Irrawaddy dolphin from the Visayan subpopulation attempting to tail walk. (PHOTO CREDIT: M DELA PAZ)

GENERAL INFORMATION

DISTRIBUTION

Irrawaddy dolphins are patchily distributed in shallow, near-shore tropical and sub-tropical marine waters of the Indo-Pacific, from northeastern Australia in the south, north to the Philippines (Dolar et al. 2002) and west to northeastern India (Stacey and Leatherwood 1997; Stacey and Arnold 1997). Its marine distribution is concentrated in estuaries and semi-enclosed water bodies (i.e., bays and sounds), generally adjacent to mangrove forests. Freshwater populations occur in three river systems - the Mahakam of Indonesia, the Ayeyarwady (formerly Irrawaddy) of Myanmar (formerly Burma) and the Mekong of Lao PDR, Cambodia and Vietnam. Irrawaddy dolphins also occur in completely or partially isolated brackish or freshwater bodies such as Chilka Lake in India and Songkhla Lake in



Occurrence map of *Orcaella brevirostris* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

Thailand. They were first documented in the Philippines as occurring in Malampaya Sound, Palawan during an investigation of dugongs (*Dugong dugon*) in 1986 (Kataoka et al. 1995). The species occurs only in the inner portion of the Sound, an area totalling about 134 km^2.

There are currently two known subpopulations of Irrawaddy dolphins in the country. One subpopulation is situated in Malampaya

Sound, Palawan (Dolar et al. 2002; Smith et al. 2004) while the other occurs in the Visayan Sea (Dolar 2009).

It should probably be noted that the beaching of a carcass in Turtle Islands, Tawi-tawi in 1996 was the first record of an Irrawaddy dolphin in the Philippines. The carcass, initially identified as *Neophocaena phocaenoides* (finless porpoise), was subsequently classified as an Irrawaddy dolphin based on the skull specimen. Nevertheless, this was later deemed as a vagrant from the Borneo subpopulation and not part of any Philippine subpopulation.

A regular-sized pod of Irrawaddy dolphins seen porpoising in the Inner Sound of Malampaya Sound. (PHOTO CREDIT: MV MATILLANO)

POPULATION

Malampaya Sound Subpopulation

There is no estimate for the total population in the Philippines. The first dedicated cetacean survey in Malampaya Sound conducted in 1999 recorded 17 sightings during a 230-linear km search effort with a mean encounter rate of 7.4 dolphins/100 km (SE=2.9) and a mean group size of 5.3 individuals (SE=1.1; Dolar et al. 2002). All sightings were made in shallow waters of the Inner Sound, although survey efforts also included waters of the Outer Sound.

Line transect surveys conducted in 2001 covered 884 km of trackline in the entire Sound (total area of 230.7 km^2) and resulted in a total population estimate of 77 individuals (CV=27.4%) confined to the inner portion of the Sound (133.7 km^2). Seasonally stratified

estimates were calculated as 67 (CV=38.6%), 78 (CV=78.1%) and 81 (CV=31.7%) during the pre-monsoon, monsoon and post-monsoon seasons (Smith et al. 2002 in Perrin et al. 2005).

The close agreement among abundance estimates from the various seasons and the absence of sightings in the Outer Sound (Dolar et al. 2002; Smith et al. 2002 in Perrin et al. 2005) strongly suggest that the subpopulation is resident within the Inner Sound. Furthermore, the photoidentification catalog established by Austria (2009) accounted for only 39 individuals, possibly suggesting a continued decline in the population despite current conservation efforts.

Visayan Subpopulation

The Visayan subpopulation frequents the shorelines near the alcohol factory in Pulupandan, Negros Occidental and are often seen feeding near its pier. (PHOTO CREDIT: M DELA PAZ)

There is no available abundance estimate for the newly discovered population in Iloilo and Guimaras Straits (Bagarinao 2005; Dolar 2009). Thus far, only 10 animals have been photo-identified. This population is believed to be small and initial research

Heavy boat traffic is an added threat to the Irrawaddy population. (PHOTO CREDIT: M DELA PAZ)

results strongly suggest that the subpopulation is likewise critically endangered.

An Irrawaddy dolphin in Malampaya Sound attempting to tail walk. (PHOTO CREDIT: MV MATILLANO)

HABITAT AND ECOLOGY

In general, the species inhabits deep pools of large rivers, sheltered inshore marine environments with substantial freshwater inputs and partially isolated brackish or fresh water lagoon or lake systems (Stacey and Leatherwood 1997; Stacey and Arnold 1999; Smith and Jefferson 2002).

The known Irrawaddy dolphin habitat in the Philippines is brackish estuarine waters. In Malampaya Sound, the habitat has recently shifted to include higher salinity areas in the transition zone between the Inner and Outer Sound (Matillano 2007). Average salinity is 27.3 ppt. Prey includes pelagic fishes such a pony fish and trevally. Matillano (2007) also noted that demersal shrimps and sea cucumber have been consumed by Irrawaddy dolphins on occasion. In Northeastern Iloilo Strait, its habitat had a mean salinity of 19.98 ppt (±0.872 SE) (Dolar 2009).

THREATS

Threats indicated in global assessment all applies to the Philippines. The recorded mortalities from by-catch in the Malampaya Sound identified an immediate threat to the population (del Valle and Aquino 2002 in Perrin et al. 2005) that was pegged, at the time, at only 77 individuals (CV=27%) limited to an area of the Inner Sound of around 133.7 km^2 (Doc. 14).

Although the dolphins are not believed to be hunted in Malampaya Sound, dolphin mortalities are attributed directly to an

increase in fisheries interaction. Sheer density of fishing gears employed in the area at any given time has accounted for a major number of mortalities in the subpopulation (Gonzales and Matillano 2007). Furthermore, fishing gears, including fish corrals (*baklad*), liftnets (*bukatot*) and crab traps, pose a potential threat primarily because they occur in the same area as the dolphins (Dolar et al. 2002). As a result, 34 mortalities have been recorded from 2001-2007 (Matillano 2007).

Habitat loss and population fragmentation in several areas have resulted from the proliferation of fixed fishing gears. These fishing structures are left in place year-round and restrict dolphin movements such that their habitat is substantially reduced. In Iloilo Strait, ship strikes and disturbance by heavy boat traffic are added threats to the small population found in the area.

Climate change is another major threat to the Irrawaddy dolphin population. Because their habitat is tied to the coastal waters and estuaries, changes brought about by climate change to these habitats will affect their survival. Severe weather disturbances such as droughts could decrease freshwater inputs and increase salinity, thereby shrinking the estuarine environment vital to their survival.

An Irrawaddy dolphin observed breaching in Malampaya Sound. (PHOTO CREDIT: MV MATILLANO)

CONSERVATION MEASURES

The Irrawaddy dolphin (*Orcaella brevisrostris*) is listed under Appendix I of both CITES and CMS. It is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550), through FAO 185/185-1. The species, however, is not listed in FAO 208. The Wildlife Act (RA 9147), nevertheless, provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products. One subpopulation is also located in a nationally established Protected Area (i.e., Malampaya Sound) providing additional protection to the animals.

A municipal ordinance (No. 05-04) was issued in 2004 for the local protection of the Malampaya subpopulation and its habitat. Senate Bills 178 and 2146 (establishment of Malampaya Sound as a Landscape and Seascape under NIPAS Act RA 7586) have been filed in 2007 and 2010, respectively, but enactment into law is still pending.

WWF-Philippines has also introduced ecotourism as an alternative livelihood to fishermen in the area to reduce fishing pressure. The project is currently adopted by the LGU of Taytay and is managed by the local tourism office.

IUCN RED LISTING

Philippine population

Red List (using 2001 IUCN system) **Endangered (EN) B1ab (iii)** (version 3.1).

Malampaya Sound subpopulation

Red List (using 2001 IUCN system) **Critically endangered (CR) C2a (i,ii)** (version 3.1).

RATIONALE FOR THE RED LIST ASSESSMENT

The Philippine Irawaddy dolphin population is found in two fragmented habitats (i.e., Malampaya Sound and Iloilo-Guimaras Straits) estimated to have a total area of less than 5,000 km^2. Threats to the global population and its habitat as indicated in the global assessment also apply to the Philippines. The Philippine population

qualifies as Endangered, meeting criterion B1a and b (iii) with continuing decline in habitat quality and incline in mortalities due to gear entanglement and/or ship strikes. Current assessment of the Malampaya subpopulation follows that of Smith and Beasley in 2005 as Crticially Endangered C2a (i, ii). There is no available population abundance estimate for the newly discovered Iloilo-Guimaras subpopulation, but with an initial record of 10 photo-identified individuals and a continuing decline of the habitat quality brought about by increased commercial and cargo boat traffic, the subpopulation may also be at a higher risk level warranting critically endangered category.

Current Population Trend: Decreasing
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, MVD Matillano, MTR Aquino, AASP Yaptinchay

NOTES ON RED LISTING: There is a need to survey other potential estuarine habitats in the Philippines. In addition, FAO 208 needs to be amended to include this species and strict regulation of fisheries in known habitats of the Irrawaddy dolphin needs to be implemented.

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DELPHINIDAE

Orcinus orca

DD

Taxonomic Authority: Linnaeus, 1758
Synonym/s: *Orcinus glacialis* (Berzin & Vladimirov, 1983); *Orcinus nanus* Mikhalev et al. 1981
Common Names: Orca, killer whale (English)

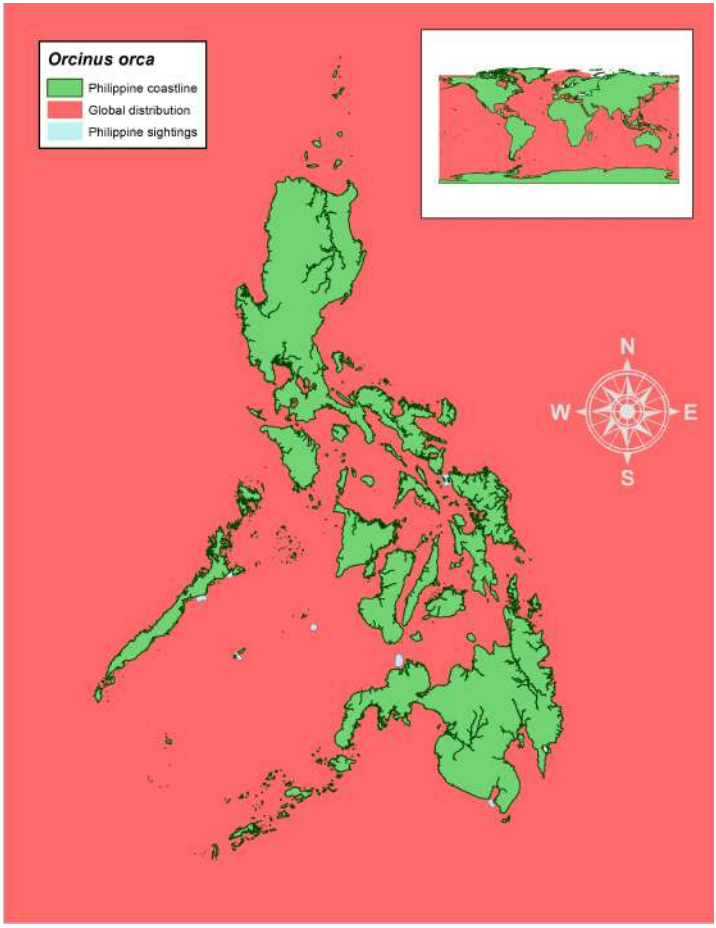
UPPER LEVEL TAXONOMY

Kingdom: Animalia
Phylum CHORDATA
Class: MAMMALIA
Order: CETARTIODACTYLA
Family: DELPHINIDAE

The killer whale has only been sighted in a few areas in the Philippines. (PHOTO CREDIT: MLL DOLAR)

TAXONOMIC NOTES:

"Killer whales are presently considered to form a single cosmopolitan species, *Orcinus orca* (Rice 1998). Separate species status has been suggested for different morphological forms found in the southern Ocean (Mikhalev et al. 1981; Berzin and Vladimirov 1983; Pitman and Ensor 2003). Pitman et al. (2007) describe one of these as a dwarf form of killer whale. Killer whales in the eastern North Pacific are known to consist of at least two and maybe three distinct forms, colloquially known as 'resident', 'transient' and 'offshore' killer whales (Ford 2002). Separate species status has also been suggested for at least two of these different forms, based on color pattern, diet, association patterns and morphological traits (Baird et al. 1992; Baird 1994). Genetic differences are found among these forms, with particularly marked differences between resident and transient forms (Stevens et al. 1989; Hoelzel and Dover 1991; Hoelzel et al. 1998; Barrett-Lennard 2000). The taxonomy of this genus is clearly in need of review and it is likely that *O. orca* will be split into a number of different species or at least subspecies over the next few years (Reeves et al. 2004)" (Taylor et al. 2008).



Occurrence map of *Orcinus orca* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

GENERAL INFORMATION

DISTRIBUTION

The species is described as cosmopolitan, occurring in polar latitudes to the equatorial regions. Killer whales appear to be more common in nearshore, cold temperate to subpolar waters (Jefferson et al. 1993). Apparently rare in the Philippines, the species have only been sighted in a few areas such as in the Sulu Sea and Sarangani Bay (Dolar et al. 2006) and the Bohol Sea.

POPULATION

No total population estimates or trends are available for the Philippines.

HABITAT AND ECOLOGY

Found in any marine region, including nearshore, offshore, and oceanic waters, the species is most common in coastal, temperate waters. Killer whales are also known to ascend rivers (Jefferson et al. 2008). These animals feed on a wide range of prey, from marine mammals to fish, cephalopods, seabirds, and marine turtles. Over 140 species have been recorded as prey (Ford 2009).

Ecotypes of killer whales have been recognized, e.g. types A, B, and C in the Antarctic and transient, resident, and offshore (like type A) in the Pacific Northwest (Jefferson et al. 2008). The ecotype of Philippine population is unknown.

THREATS

Killer whales have been exploited at low levels in several regions worldwide (Jefferson et al. 1993). This species is potentially at risk to persistent bio-accumulating contaminants due to its high trophic position in the marine ecosystem (Taylor et al. 2008). Habitat shifting and alteration may be a matter of concern in areas inhabited by killer whales (Reyes 1991). The reduction of their food supply makes them

Threats to the killer whale in the Philippines have yet to be identified. (PHOTO CREDIT: MLL DOLAR)

vulnerable to population declines. In the Philippines, no threats have yet been identified against the species.

CONSERVATION MEASURES

The killer whale is on Appendix II of CITES and Appendices I and II of CMS. It is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185/185-1 and FAO 208. The Wildlife Act (RA 9147) provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

The species is rare in the Philippines, having been sighted only in a few areas. There is no information on total population size, trends, or ecotypes.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, JMO Daclan, and MD Santos

NOTES ON RED LISTING: Population size and ecotypes in the country should be investigated.

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DELPHINIDAE

Peponocephala electra

DD

Taxonomic Authority: Gray, 1846
Synonym/s: *Electra electra* (Gray, 1846); *Lagenorhynchus electra* Gray, 1846
Common Names: melon-headed whale (English); pakatang (Visayan); lumba-lumba (Tagalog)

UPPER LEVEL TAXONOMY

Kingdom: Animalia
Phylum CHORDATA
Class: MAMMALIA
Order: CETARTIODACTYLA
Family: DELPHINIDAE

Melon-headed whale encountered in Bohol Sea. (PHOTO CREDIT: MTR AQUINO)

GENERAL INFORMATION

DISTRIBUTION

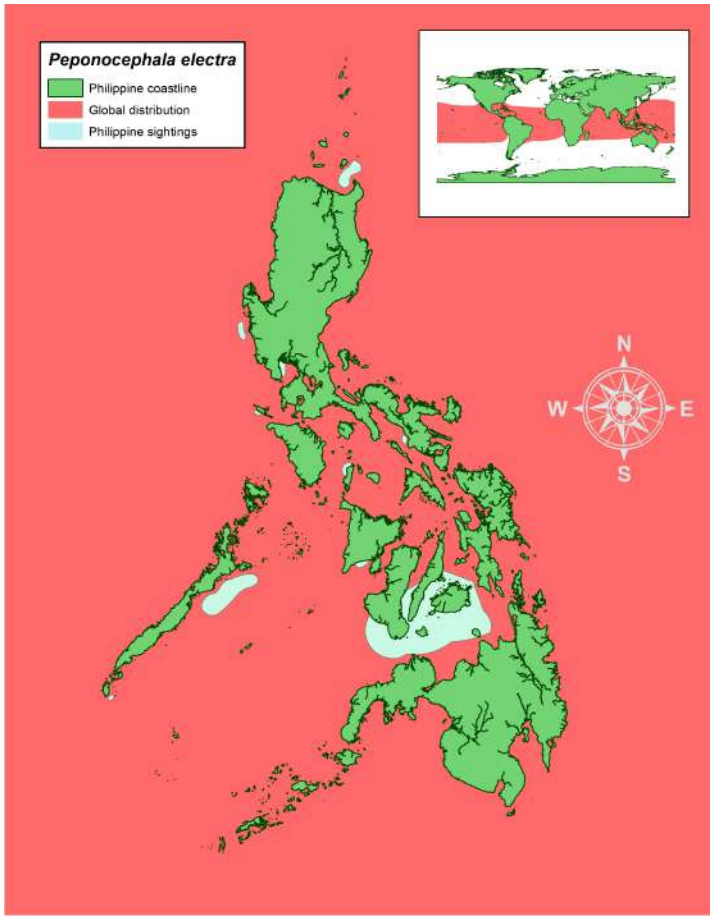
Melon-headed whales are found in tropical and subtropical oceanic waters between 40°N and 35°S (Jefferson et al. 2008). In the Philippines, the species is also seen in relatively shallow waters adjacent to deep waters. Strandings have also been reported in many areas.

POPULATION

There is no total estimate for the species in the Philippines. For the eastern Sulu Sea, the population estimate is 921 (CV = 80%) (Dolar et al. 2006). Sighting rate in the northwestern Bohol Sea (Bohol Marine Triangle area) is 18/1,000 km (Sabater 2008).

HABITAT AND ECOLOGY

The species occur in both coastal and oceanic waters. It feeds mostly on squids and occasionally on small fishes and shrimps (Jefferson and Barros 1997). Large groups of tens or hundreds have been observed, behaving much like pilot whales, i.e., "logging" in



Occurrence map of *Peponocephala electra* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

groups at the surface. In the Philippines, the species is associated frequently with Fraser's dolphins and less frequently with bottlenose dolphins in the eastern Sulu Sea, and with spinner and short-finned pilot whales in Tañon Strait (Dolar et al. 2006). In the Bohol Sea, it co-occurs less frequently with bottlenose and spinner dolphins (Sorongon unpubl data) and with Risso's dolphins (Sabater 2008). Associations with humpback whales and small delphinids have also been documented in Babuyan Island (Daclan pers comm).

Mass stranding of melon-headed whales in Romblon in 2009. (PHOTO CREDIT: J TAN)

Two mass strandings occurred in 2009, one in Bataan on February 10 and another in Romblon on March 3. Most of these animals were successfully guided back to sea.

THREATS

Direct and indirect takes have been reported (Leatherwood et al. 1992; Dolar and Wood 1993; Dolar et al. 2006). Melon-headed whales are vulnerable to loud anthropogenic sounds such as those generated by navy sonar and seismic exploration (Cox et al. 2006). This species may also be at risk from pollution like discarded plastic items. Predicted impacts of global climate change on the marine environment may affect this species of whale although the nature of impacts is yet unclear (Learmonth et al. 2006).

Apart from loud noise, the melon headed whale may be at risk from pollution such as discarded plastics and other non-biodegradable waste. (PHOTO CREDIT: MLL DOLAR)

CONSERVATION MEASURES

The species is on Appendix II of CITES and protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185/185-1 and FAO 208. The Wildlife Act (RA 9147) further provides protection through stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

No information on population size or trends in the country is available. Known by-catch and directed catches may be impacting the population (Dolar et al. 1994). Recent mass strandings may have had anthropogenic causes.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: ER Sabater, MLL Dolar, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, and JMO Daclan

NOTES ON RED LISTING: Research is needed to determine population size and scale of interaction with fisheries. Causes of mass strandings must also be investigated fully.

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DELPHINIDAE

Pseudorca crassidens

DD

Taxonomic Authority: Owen, 1846
Common Name: false killer whale (English)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	DELPHINIDAE

Porpoising false killer whales in northern Sulu Sea. (PHOTO CREDIT: MLL DOLAR)

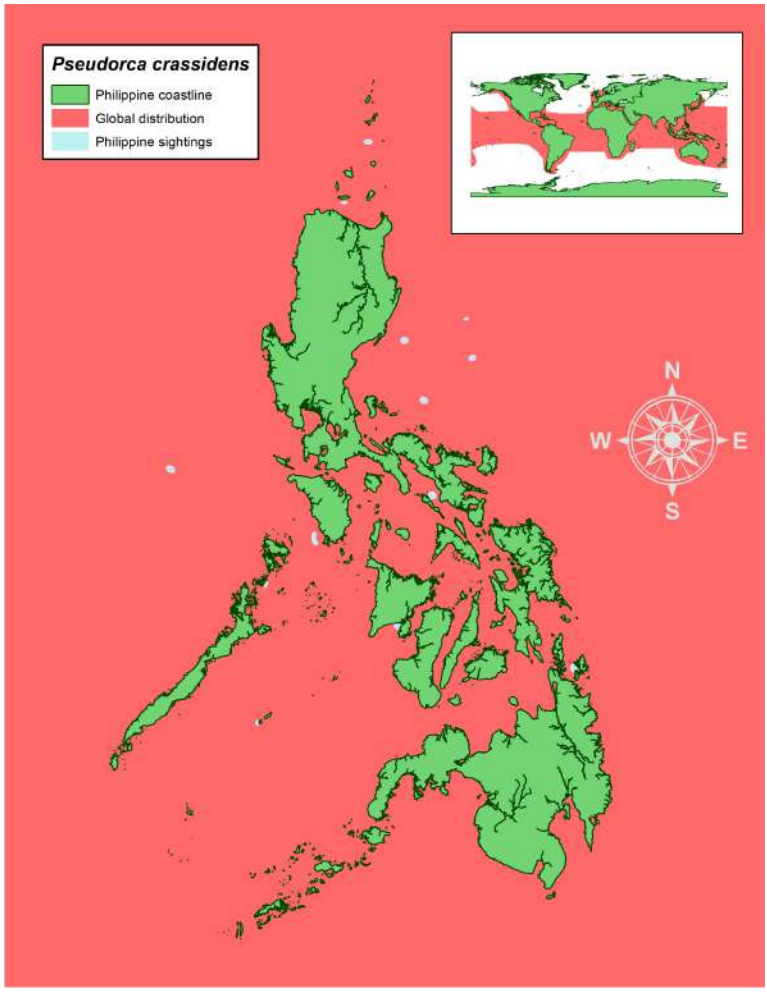
GENERAL INFORMATION

DISTRIBUTION

The species is known to inhabit tropical to warm temperate zones and do not range beyond 50° in either hemisphere. It has been sighted in the Philippine Sea (northeast and east of Luzon), South China Sea (Perrin et al. 1996), Tañon Strait, northern Sulu Sea (Dolar 1999) and Balabac Strait (Dolar 2006). Individuals have also been encountered in the waters surrounding Babuyan Islands (Fuga Island) (Aca pers comm), Ticao Pass (Bautista pers comm), and Tubbataha Reefs (Aquino and Calderon 2004). Strandings involving this species have also been recorded in Iloilo City in 2008 (Bagarinao pers comm) and from Amlan to Dumaguete from 2007 to 2009 (Sabater unpubl data).

POPULATION

There is no available information on the Philippine population. Elsewhere in the world, however, studies on population structure of this species indicate both broad (between-oceans) (e.g., Kitchener et al. 1990) and smaller scale (within-ocean) (Chivers et al. 2007) limits on gene flow. Nevertheless, there is still no information on global trends in abundance.



Occurrence map of *Pseudorca crassidens* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

HABITAT AND ECOLOGY

The species may be found in deep offshore waters as in Tubbataha Reefs (Aquino and Calderon 2004) but sometimes occurs over continental shelf and occasionally goes into shallow areas and enclosed seas. In the Philippines, the most inshore locality was approximately 80 km northeast of San Miguel Bay, Luzon (Perrin et al.

1996). Diet is diverse and includes oceanic squid and fish and, occasionally, other delphinids (Baird 2009).

THREATS

There are no known major threats targeting the species. It should also be noted that, although not supposedly collected from the Philippine population, a local dolphinarium is known to keep the species in captivity. These captive animals, however, may be potential sources of infection for the wild cetacean populations in general.

CONSERVATION MEASURES

The species is on Appendix II of CITES and protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185/185-1 and FAO 208. The Wildlife Act (RA 9147) further provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

False killer whale encountered in the Bohol Sea. (PHOTO CREDIT: ER SABATER)

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

Global trend or abundance data for this species are unavailable. The species is uncommon in the Philippines where there is, likewise, no available data on abundance and trends.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MTR Aquino, MNR Alava, AASP Yaptinchay, MIG Cadigal, BS Albasin, ED Solis, R Lucero, A Salting, and R Cruz

NOTES ON RED LISTING: Population studies need to be conducted to fill information gaps. Research is also needed to determine impact of potential threats on the species.

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DELPHINIDAE

Stenella attenuata

DD

Taxonomic Authority: Gray, 1846
Synonym/s: *Stenella graffmani* Lönnberg, 1934
Common Name: Pantropical spotted dolphin (English); lumba-lumba (Tagalog and Visayan); lumod, balakiki (Visayan)

UPPER LEVEL TAXONOMY

Kingdom: Animalia
Phylum CHORDATA
Class: MAMMALIA
Order: CETARTIODACTYLA
Family: DELPHINIDAE

Spotted dolphins seen off Balicasag Island, Bohol. (PHOTO CREDIT: ER SABATER)

TAXONOMIC NOTES:

"Recent genetic work suggests that the genus *Stenella* is paraphyletic, and it is likely that the Delphininae will be restructured in coming years (LeDuc et al. 1999). Two subspecies are recognized: *S. a. attenuata* in oceanic tropical waters worldwide and *S. a. graffmani* in the coastal waters of the eastern tropical Pacific (ETP) (Perrin 2002)" (Hammond et al. 2008).

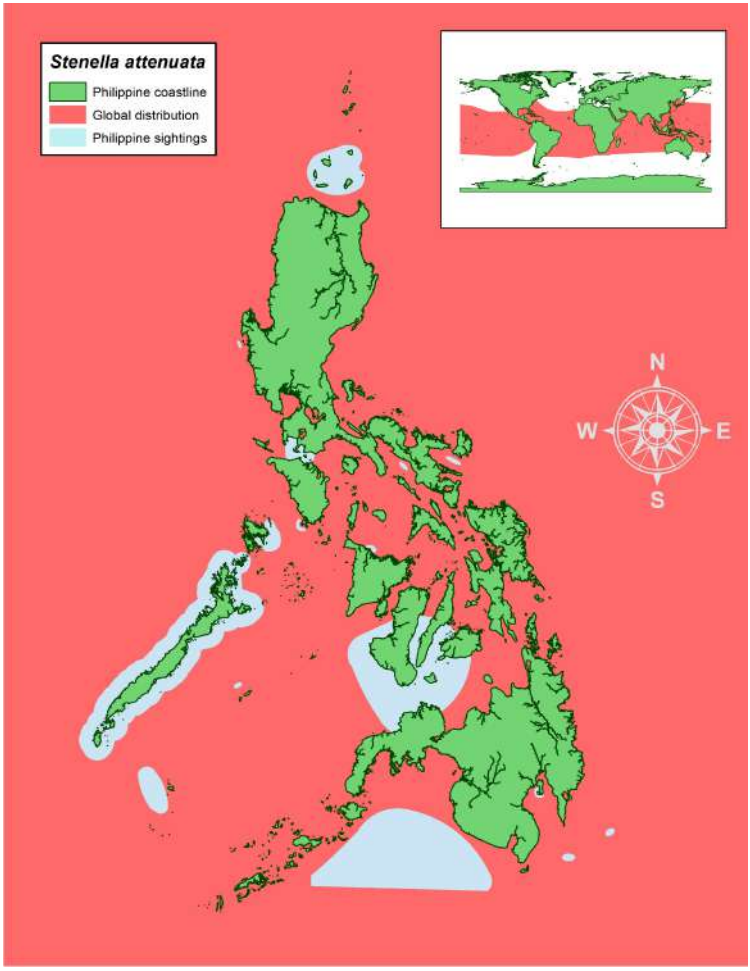
GENERAL INFORMATION

DISTRIBUTION

The species is found in all oceans in the tropical and subtropical zones, between 40°N and 40°S, although more abundant in lower latitudes (Jefferson et al. 2008). It is widely distributed and abundant in the Philippines.

POPULATION

There is no total population estimates or trends for the Philippines. In the Eastern Sulu Sea, population is estimated at 14,930 (CV = 14%); in Tañon Strait, it is placed at 640 (CV = 26%) (Dolar et al. 2006).



Occurrence map of *Stenella attenuata* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

HABITAT AND ECOLOGY

The species is found nearshore and offshore waters. It is most abundant in waters where there is a sharp thermocline at depths of about 50 m and sea surface temperatures of over 25˚C (Perrin 2002). Prey appears to vary with geographic location. In the eastern tropical Pacific, spotted dolphins feed mainly on mesopelagic fishes, squids and crustaceans. In other areas, flying fish is the major diet (Perrin 2002).

In the Philippines, spotted dolphins are seen in shallow and deep waters (range: 40-4,000 m). They associate mostly with spinner dolphins and less frequently with Fraser's and bottlenose dolphins, pygmy killer and short-finned whales (Dolar et al. 2006) and humpback whales (Daclan pers comm).

THREATS

The major threat to the species in the Philippines is from interaction with fisheries as by-catch (Dolar 1994; Alava 1997). Stranding reports from PCSDS (2006) indicated incidence of entanglements in longline pearl farms in Coron. This species was also taken in hand-harpoon fisheries (Dolar et al. 1994).

Part of a large group of spotted dolphins encountered in Balabac Strait in 2006. (PHOTO CREDIT: MTR AQUINO)

CONSERVATION MEASURES

The Pantropical spotted dolphin is on Appendix II of both CITES and CMS (eastern tropical Pacific and Southeast Asian populations). It is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185/185-1 and FAO 208. The Wildlife Act (RA 9147) provides further protection through stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

There is no information on total population size or trends. The major threat to the species is from interaction with fisheries as by-catch but the impact to the local population has not been

determined. The species is thus listed as Data Deficient (DD).

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, JMO Daclan, and MD Santos

NOTES ON RED LISTING: Population size and by-catch rate should be investigated.

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DELPHINIDAE

Stenella coeruleoalba

DD

Taxonomic Authority: Meyen, 1833
Synonym/s: *Stenella euphrosyne* Gray, 1846; *Stenella styx* Gray, 1846
Common Name: striped dolphin (English); lumba-lumba (Tagalog and Visayan); lumod (Visayan)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	DELPHINIDAE

TAXONOMIC NOTES: "Recent genetic work suggests that the genus *Stenella* is paraphyletic, and it is likely that the Delphininae will be restructured in coming years (LeDuc et al. 1999)" (Hammond et al. 2008).

GENERAL INFORMATION

DISTRIBUTION

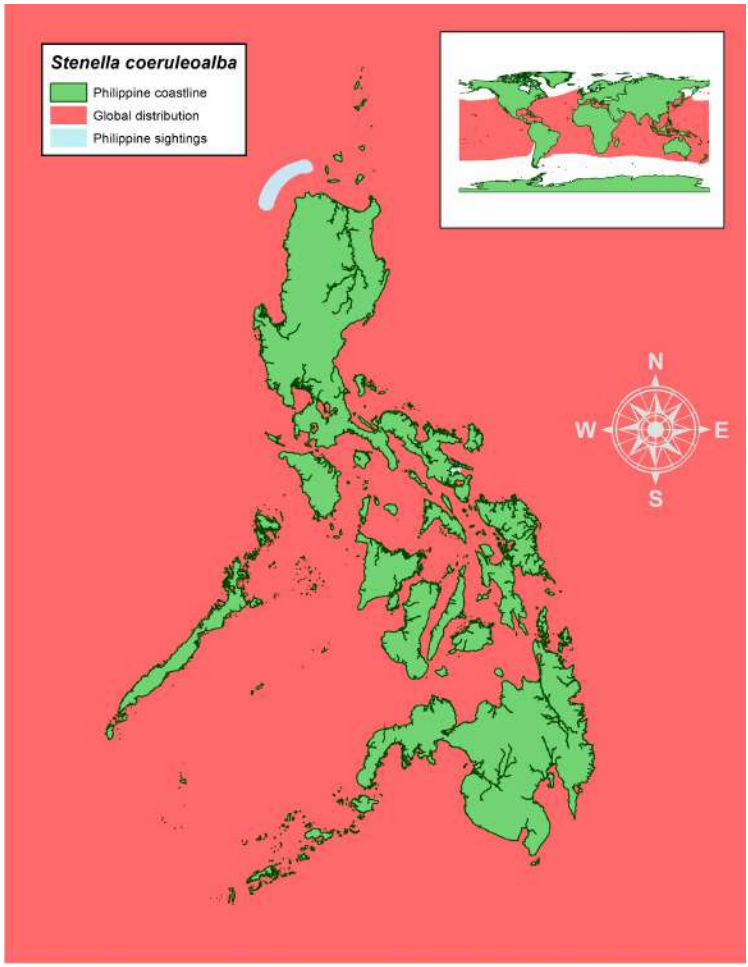
The species is found primarily in warm waters, but also sometimes seen in temperate regions (between 50°N and 40°S) (Jefferson et al. 2008). It is widely distributed in all oceans and has been sighted in the South China Sea (northwest of Luzon and west of Batanes; Perrin et al. 1996). WWF-Philippines reported a by-catch incident in Albay Gulf in 1997 (Bautista 2002 in Perrin et al. 2005).

POPULATION

There is no information on the population in the Philippines.

HABITAT AND ECOLOGY

The species is known to frequent oceanic waters, usually found outside the continental shelf (Archer 2009). The animals are seen near shore only when deep water approaches the coast (Van Waerebeek et al. 1999; Jefferson et al. 2008). They feed on pelagic or benthic fish and squids.



Occurrence map of *Stenella coeruleoalba* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

THREATS

Direct and incidental takes for the species occur in many parts of the world but there is no evidence of a major global decline (Hammond et al. 2008). In the Philippines, there is only one mortality reported for this rare species and that was of an individual accidentally caught in a fish corral in Albay Gulf (Bautista 2002 in Perrin et al. 2005). The immediate cause of death could not be determined.

The lack of information on by-catch incidents involving this species, however, does not preclude a vulnerability of the species through negative impacts to its marine environment from various pressures that include deep sea fisheries and seismic activities currently being conducted in Philippine waters. Although there is no direct evidence available, global climate change can also affect the species as it does other cetacean populations.

CONSERVATION MEASURES

The striped dolphin is on Appendix II of both CITES and CMS (eastern tropical Pacific and Mediterranean populations). It is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185/185-1 and FAO 208. The Wildlife Act (RA 9147) provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

The striped dolphin is uncommon in the Philippines. Thus there is no known information on the population and habitat range. Its habitat, however, may be vulnerable to high fisheries pressure, oil exploration activities and the impacts of global climate change.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MTR Aquino, MNR Alava, AASP Yaptinchay, MIG Cadigal, BS Albasin, ED Solis, R Lucero, A Salting, R Cruz, W Castillo, JMO Daclan, AP Tagarino, and MD Santos

NOTES ON RED LISTING: Research is needed to determine the impact of threats on this species and its habitat.

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DELPHINIDAE

Stenella longirostris longirostris

VU

Taxonomic Authority: Gray, 1828
Common Name: Gray's spinner dolphin (English); lumba-lumba (Tagalog and Visayan); lumod (Visayan)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	DELPHINIDAE

Bowriding spinner dolphins in Puerto Princesa Bay, Palawan. (PHOTO CREDIT: MTR AQUINO)

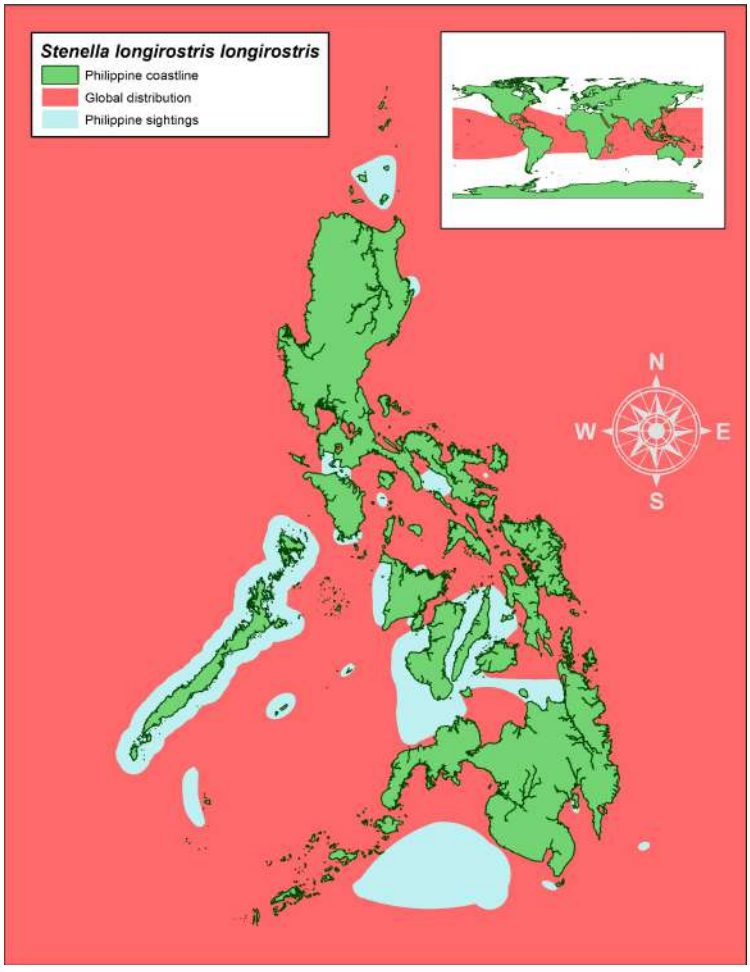
TAXONOMIC NOTES:

"Recent genetic work suggests that the genus *Stenella* is paraphyletic, and it is likely that the Delphininae will be restructured in coming years (LeDuc et al. 1999). Some species, including the spinner dolphin, may move to different genera. Four subspecies of spinner dolphins are currently recognized: *S. l. longirostris* (Gray's spinner), *S. l. orientalis* (eastern spinner), *S. l. centroamericana* (Central American spinner) and *S. l. roseiventris* (dwarf spinner) (Perrin 2009). Smaller individuals in Arabian waters (in both the Red Sea and Persian Gulf) may represent an undescribed subspecies (Van Waerebeek et al. 1999)". (Hammond et al. 2008).

GENERAL INFORMATION

DISTRIBUTION

Gray's spinner dolphins are found in the tropical and subtropical zones, between 40°N and 40°S. The species is sighted all over the Philippine archipelago and the most widespread and abundant of the delphinids in the country.



Occurrence map of *Stenella longirostris longirostris* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009)

POPULATION

There are neither available total population estimates nor trends for the Philippines. Dolar et al. (2006) estimated the subpopulation in the Eastern Sulu Sea at 31,512 (CV = 27%) whereas Tañon Strait has 3,489 (CV = 26%).

HABITAT AND ECOLOGY

Although typically a high seas species, coastal and nearshore populations do exist in numerous places. It has been observed to be associated with islands and coasts, venturing out to deeper waters at night to feed (Perrin 2009). Diet consists of mesopelagic fish and squids that exhibit vertical diel migration. In the Philippines, spinner dolphins are found to inhabit shallow and deep waters, offshore and nearshore. Spinner dolphins in the Sulu Sea feed on mesopelagic prey that migrate to the upper 200 m at night and may occasionally dive to 400 m (Dolar et al. 2003). They are known to associate with various species, including spotted, Fraser's, bottlenose, Risso's, and rough-toothed dolphins and short-finned pilot, melon-headed, pygmy killer, Bryde's, and Humpback whales (Dolar et al. 2006; Daclan pers comm).

Unregulated dolphin watching may affect the behavior of the animals. (PHOTO CREDIT: MTR AQUINO)

THREATS

Throughout their range, spinner dolphins are taken as by-catch in purse seine, gill net, and trawl fisheries (Perrin and Gilpatrick 1994; Donahue and Edwards 1996). Incidentally taken animals in the Philippines and Venezuela are utilized for shark bait and human consumption (Dolar et al. 1994; Perrin and Gilpatrick 1994). In some cases, this has led to direct fisheries wherein direct kills occur in the region (Dolar 1994).

This species is taken most frequently in drift nets. In one study, the by-catch in several fisheries in the eastern Sulu Sea was estimated to be unsustainable (Dolar 1999). Artisanal surface drift net in Gingoog and Butuan Bays, northern Mindanao was also found to take spinner dolphins as by-catch (Gaudiano pers comm). Unregulated dolphin watching in Pamilacan and Balicasag Islands, Bohol may also affect their feeding and migratory behaviors (Sorongon unpubl data).

CONSERVATION MEASURES

The Gray's spinner dolphin is on Appendix II of both CITES and CMS (eastern tropical Pacific and Southeast Asian populations). The species is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185/185-1 and FAO 208. The Wildlife Act (RA 9147) provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Vulnerable (VU) A2d** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

Although there is no total population estimate of the species in the Philippine, a substantial degree of by-catch occurs in multiple fisheries and, in one case, has been shown to be unsustainable (Dolar 1999). It is suspected that it may have resulted in a decline of 30% or more in the past three generations. It is thus listed as Vulnerable (VU) for the Philippines.

Current Population Trend: Decreasing
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, JMO Daclan, and MD Santos

NOTES ON RED LISTING: Population size and by-catch incidence should be investigated. Impacts of unregulated dolphin watching should, likewise, be studied.

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DELPHINIDAE

Stenella longirostris roseiventris

DD

Taxonomic Authority: Wagner, 1846
Common Name/s: dwarf spinner dolphin (English); lumba-lumba (Tagalog and Visayan); lumod (Visayan).

UPPER LEVEL TAXONOMY

Kingdom: Animalia
Phylum CHORDATA
Class: MAMMALIA
Order: CETARTIODACTYLA
Family: DELPHINIDAE

Bowriding dwarf spinner dolphins in the Balabac area. (PHOTO CREDIT: MTR AQUINO)

GENERAL INFORMATION

DISTRIBUTION

The subspecies is found in the inner waters of Southeast Asia: Gulf of Thailand, Sarawak, Philippines (Balabac Strait), Arafura and Timor Seas off northern Australia (Perrin et al. 1999; Dolar 2006).

POPULATION

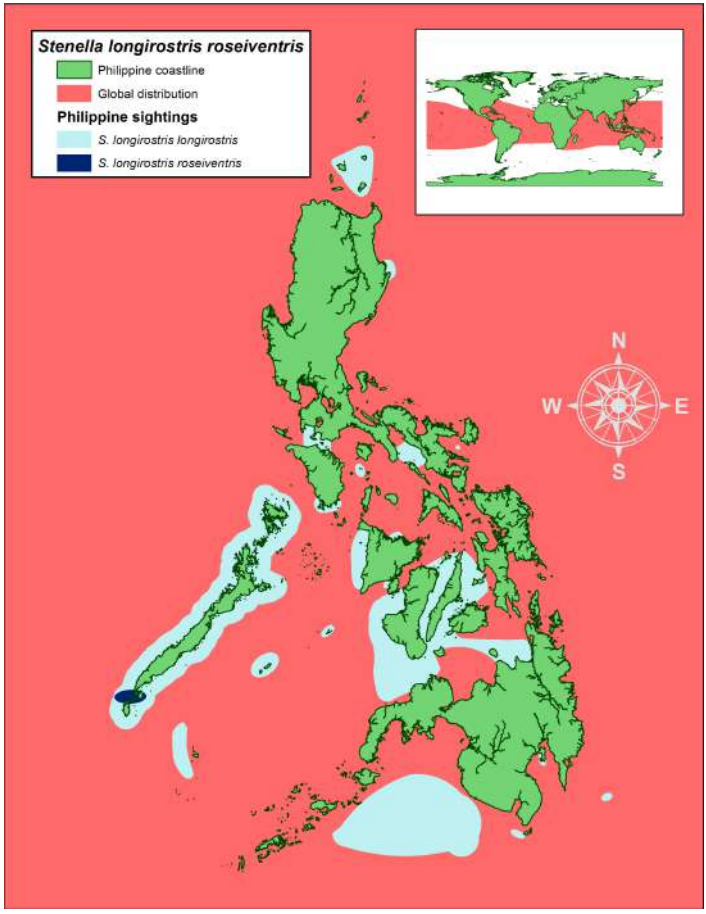
No total population estimate or trend is available for the Philippines. However, abundance estimate in Balabac Strait is placed at 261 individuals (CV = 106%) (Dolar 2006).

HABITAT AND ECOLOGY

This species utilizes the shallow (<50m), coastal waters near reefs. It is believed to feed on reef and benthic animals (Perrin et al. 1989). In the Philippines, a group of 15-25 animals was sighted in the reef area near Bugsuk Island, Balabac, Palawan in waters 30-50 m deep (Perrin et al. 2007).

THREATS

Directed takes for use as bait in nautilus fishery, blast fishing and possible fishery by-catch (Dolar 2006) have been identified as threats to the population in the Philippines.



Occurrence map of *Stenella longirostris roseiventris* overlaid on the distribution map of *S. l. longirostris* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

CONSERVATION MEASURES

There is no specific conservation measure for the dwarf spinner dolphin. *Stenella longirostris* is on Appendix II of both CITES and CMS (eastern tropical Pacific and Southeast Asian populations). The species is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185/185-1 and FAO 208. The Wildlife Act (RA 9147) provides stiffer penalties for the

killing or illegal possession of wild animals and/or its by-products.

Porpoising dwarf spinner dolphin showing its rosy belly. (PHOTO CREDIT: MTR AQUINO)

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

The presence of the spinner dolphin subspecies was only recently confirmed in the Philippines. Information on total population size, trends and distributional extent is unknown. There is no assessment of its status globally. Locally, it is subjected to illegal direct takes, blast fishing, and by-catch which may have a significant impact to the subpopulation.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, JMO Daclan, and MD Santos

NOTES ON RED LISTING: Population studies need to be conducted to fill information gaps. Impact of threats to the species and its habitat needs to be assessed. FAO 208 needs to be amended to include this subspecies.

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DELPHINIDAE

Steno bredanensis

DD

Taxonomic Authority: G. Cuvier in Lesson, 1828
Common Name: rough-toothed dolphin (English); lumba-lumba (Tagalog); lumod (Visayan)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	DELPHINIDAE

Rough-toothed dolphins were often associated with humpback whale sightings around the Babuyan Islands. (PHOTO CREDIT: JM ACEBES)

GENERAL INFORMATION

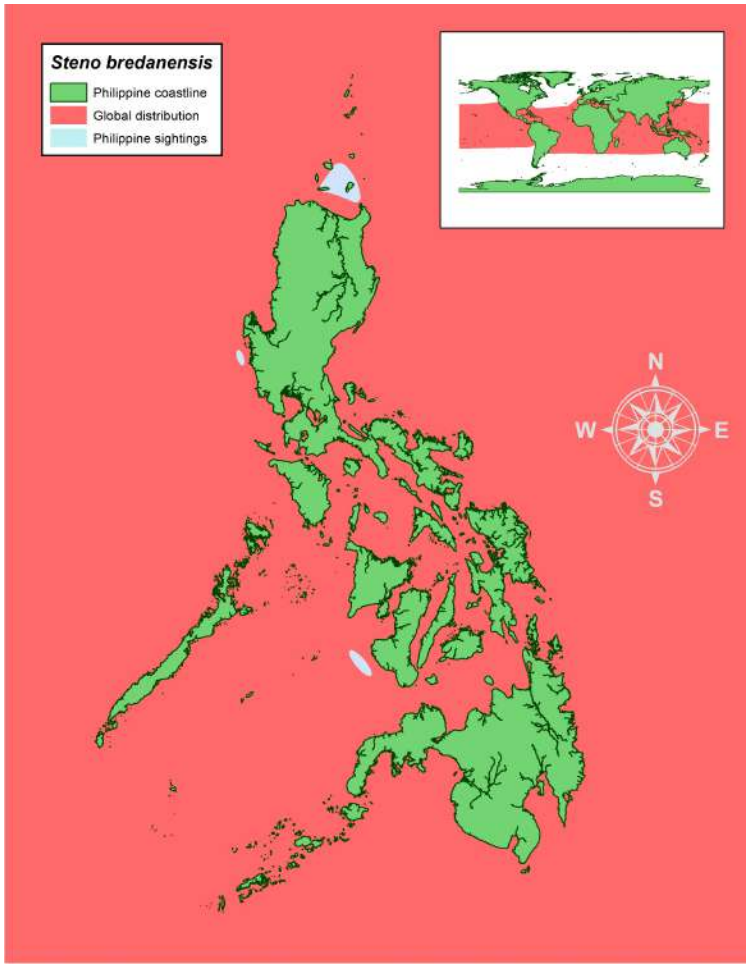
DISTRIBUTION

Uncommon in the Philippines, the species is tropical to subtropical, distributed between 40°N and 35°S. Individuals have been sighted in the Sulu Sea (Dolar et al. 2006), South China Sea and around the Babuyan Island group specifically Calayan and Camiguin (Acebes and Lesaca 2003; Acebes 2002), Zambales (Bautista 2002 in Perrin et al. 2005). One by-catch has been reported in a fishery in Sarangani Bay (Dolar & Wood 1993).

Note: Sightings have been limited because surveys have been conducted in coastal waters. Globally, it is a deep water species (Jefferson 2009).

POPULATION

There is no information on the population of the species in the Philippines.



Occurrence map of *Steno bredanensis* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

HABITAT AND ECOLOGY

The rough-toothed dolphin inhabits deep oceanic waters. Although it prefers waters deeper than 1,500 m, it can also be seen over the continental shelf in shallow, coastal waters (Jefferson 2009). Its ecology is poorly studied. A few reports on its feeding habits indicate that it feeds on a variety of coastal and oceanic fish and cephalopod species. In the Philippines, the species is rarely

encountered, often in small numbers and mixed with other species (e.g., spinner dolphin, short-finned pilot whale and Bryde's whale) (Dolar et al. 2006). In the Babuyan Island, the sighting pod size is between 6 - 8 individuals, often associated with humpback whales, Fraser's dolphins and melon-headed whales (Aca & Acebes unpubl data).

THREATS

Threat to the species is from incidental takes in gill net fisheries. By-catch (drift gill nets) in Babuyan Island and southern Mindanao have been noted and the possibility of this threat being present in other areas is also suspected (Dolar et al. 1994).

CONSERVATION MEASURES

The rough-toothed dolphin is on Appendix II of CITES and protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185/185-1 and FAO 208. The Wildlife Act (RA 9147) provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

No information on population size and trend is available. Most deep water habitats typical of the species have yet to be surveyed in the Philippines. It is listed as Data Deficient (DD).

Current Population Trend:	Unknown
Date of Assessment:	8/14/2009
Names of the Assessors:	JM Acebes, EQ Aca, MLL Dolar, and ALB Barcelona

NOTES ON RED LISTING: A more focused study on the species and its interaction with the local fishery is recommended.

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DELPHINIDAE

Tursiops aduncus

DD

Taxonomic Authority: Ehrenberg, 1833
Common Name: Indo-Pacific bottlenose dolphin (English); lumba-lumba (Tagalog and Visayan); lumod (Visayan).

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	DELPHINIDAE

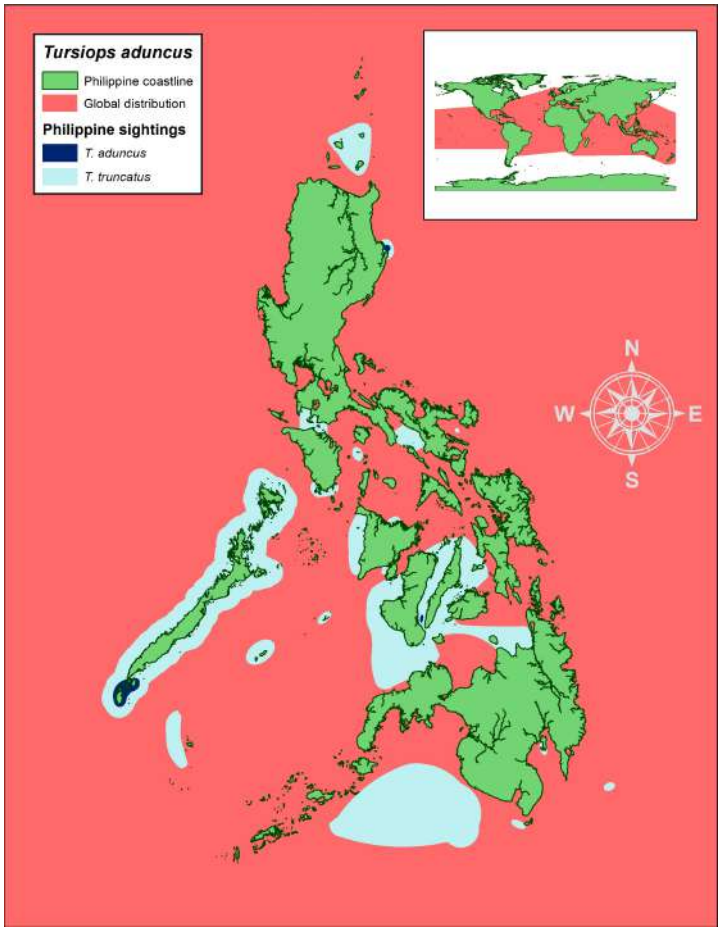
Spyhopping Indo-Pacific bottlenose dolphin exhibiting spots on its ventral side. (PHOTO CREDIT: MTR AQUINO)

TAXONOMIC NOTES: "Until recently, the genus *Tursiops* was monospecific, but a second species - the Indo-Pacific bottlenose dolphin - is now also recognized (Rice 1998). It is known to be taxonomically distinct based on concordance in genetics, osteology, and external morphology (Wang et al. 1999; Wang et al. 2000). The taxonomic status of several subpopulations of *Tursiops* (for example off South Africa and Western Australia) is questionable, and the genus may be split further (Natoli et al. 2004)." (Hammond et al. 2008).

GENERAL INFORMATION

DISTRIBUTION

Because the Indo-Pacific bottlenose dolphin is a newly recognized species, nothing much is known about its distribution. Current evidence indicates that it is distributed in the coastal waters of the Indian and western Pacific Oceans, from Solomon Islands and New Caledonia in the east to the southern tip of South Africa in the west (Wang and Yang 2009). In the Philippines, it was first identified from a photograph of a stranding in Subic Bay (Torno pers comm). Sightings in northern Sierra Madre, Tañon Strait (Wang and Yang 2009) and Balabac Strait (Dolar 2006) are tentatively identified as *T. aduncus*.



Occurrence map of *Tursiops aduncus* overlaid with that of *T. truncatus* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

POPULATION

There are no available population estimates or trends for the Philippines.

HABITAT AND ECOLOGY

The Indo-Pacific bottlenose dolphin appears to prefer continental shelf waters close to shore and in areas with coral reefs, sandy

bottom or seagrass beds where water depth is < 100 m (Wang and Yang 2009). Though mainly a shallow water species, movement across deep oceanic waters has been reported. Primary prey consists of benthic and reef-dwelling fish and cephalopods, but occasionally some pelagic and epipelagic species are also eaten (Wang and Yang 2009).

Plastic debris wrapped around the snout of a bottlenose dolphin in Balabac Strait, Palawan. (PHOTO CREDIT: MTR AQUINO)

THREATS

There is an indication of directed fishery in Balabac, Palawan for use as bait in nautilus fishery (Dolar 2006). Blast fishing was also observed close to a group of Indo-Pacific dolphins in Balabac Strait (Dolar 2009). An individual in Balabac Strait was also seen with plastic debris wrapped around its snout.

CONSERVATION MEASURES

The Indo-Pacific bottlenose dolphin is included in the Appendix II of both CITES and CMS (Arafura/Timor Sea populations). The species is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185/185-1. However, the species is not yet listed in FAO 208. The Wildlife Act (RA 9147) nevertheless provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

The Indo-Pacific bottlenose dolphin is a newly recognized species in the Philippines. Information on total population size or trends and extent of distribution are unknown.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, JMO Daclan, and MD Santos

NOTES ON RED LISTING: Population size and by-catch should be investigated and FAO 208 needs to be amended to include this species.

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Wang, J, LS Chow and BM White. 2000. Osteological differences between two sympatric forms of bottlenose dolphins (Genus: *Tursiops*) in Chinese waters. *J Zool*, London 252: 147-162.

Wang, JY and SC Yang. 2009. Indo-Pacific bottlenose dolphin, *Tursiops aduncus*. *In*: WF Perrin, B Würsig, and JGM Thewissen (eds), Encyclopedia of Marine Mammals (pp 602-608). Academic Press, San Diego. 1315pp.

DELPHINIDAE

Tursiops truncatus

DD

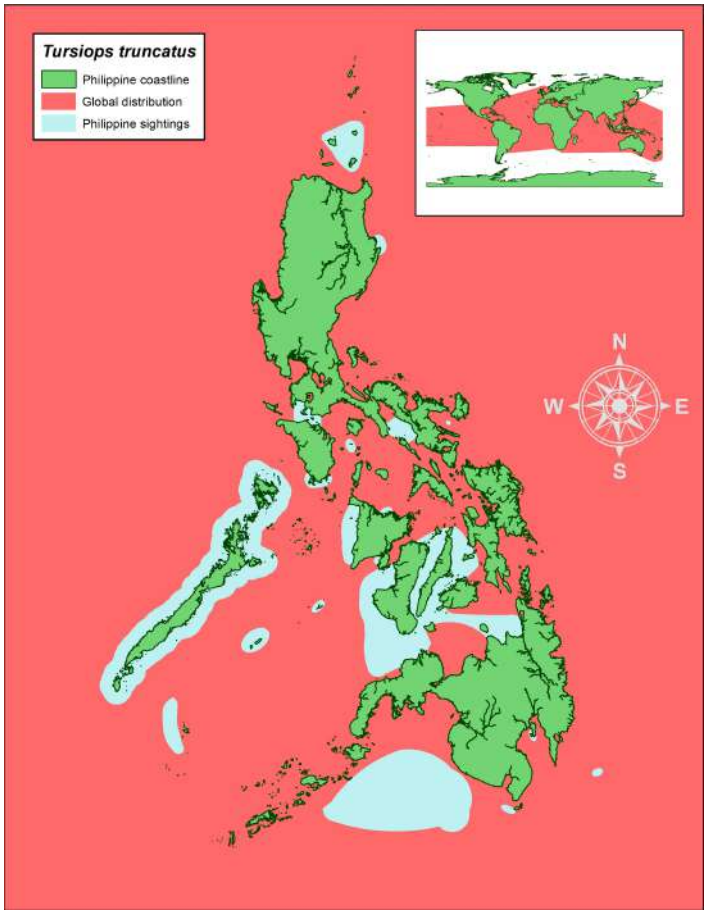
Taxonomic Authority: G. Cuvier in Lesson, 1828
Synonyms: *Tursiops gephyreus* Lahille, 1908; *Tursiops gilli* Dall, 1873; *Tursiops nuuanu* Andrews, 1911.
Common Names: common bottlenose dolphin (English); lumba-lumba (Tagalog and Visayan); lumod (Visayan).

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	DELPHINIDAE

TAXONOMIC NOTES: "All bottlenose dolphins around the world were previously recognized as *T. truncatus*, but recently the genus has been split into two species: *T. truncatus* and *T. aduncus* (the smaller Indo-Pacific bottlenose dolphin – Wang et al. 1999, 2000a, b). However, the taxonomy of bottlenose dolphins is confused, due to geographical variation, and it is very possible that additional species will be recognized in the future" (Hammond et al. 2008). Species identity of bottlenose dolphins in the Philippines has been uncertain in most instances.

Common bottlenose dolphins encountered in Balabac Strait, Palawan. (PHOTO CREDIT: MTR AQUINO)



Occurrence map of *Tursiops truncatus* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

GENERAL INFORMATION

DISTRIBUTION

This species is found in the tropical and temperate waters between 45°N and 45°S. It is common in the Philippines and found all throughout shallow areas.

The taxonomic status of the species is still unclear and field identification is difficult. Some bottlenose dolphins identified as *T. truncatus* may have been *T. aduncus*.

POPULATION

No total population estimates or trends are available for the Philippines. For *Tursiops spp.*, the eastern Sulu Sea subpopulation is estimated at 2,628 (CV = 40%) while the Tañon Strait subpopulation is at 269 (CV = 105%) (Dolar et al. 2006).

HABITAT AND ECOLOGY

This species is most commonly found in coastal and continental shelf waters. It also occurs in enclosed seas, bays, lagoons, and deep, oceanic waters (Jefferson et al. 2008). Its diet is comprised of a variety of fish (e.g., scianids, scrombrids and mugilids) and squid species. Occasionally, they also feed on crustaceans.

In the Sulu Sea and Tañon Strait, distribution is restricted to shallow and intermediate depths on the inside of the shelf break (Dolar et al. 2006). In Panay Gulf, common bottlenose dolphins have been seen following shrimp trawlers. Cetacean species it associates with includes spinner, spotted, Fraser's, and Risso's dolphins and short-finned pilot, pygmy killer, and melon-headed whales (Dolar et al. 2006).

THREATS

This species (primarily the coastal and island-centered populations) is vulnerable to hunting, incidental catch, and habitat degradation (Curry and Smith 1997). By-catch of common bottlenose dolphins are known throughout the species' range, in gillnets, driftnets, purse seines, trawls, long-lines, and on hook-and-line gear (i.e., commercial and recreational fisheries) but the level of mortality is often poorly documented (Wells and Scott 1999). Possible illegal, unregulated, unreported (IUU) live capture and dolphin watching tours may also impact the population. In the Philippines, the species factor in both direct and indirect takes (Alava 1997).

CONSERVATION MEASURES

Tursiops truncatus is included in the Appendix II of both CITES and CMS (North Sea, Baltic Sea, Mediterranean and Black Sea populations). The species is also protected in the Philippines under

Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185/185-1 and FAO 208. The Wildlife Act (RA 9147) provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

No information on total population size or trend is available. Taxonomic status is still unclear and field identification is difficult. Some bottlenose dolphins identified as *T. truncatus* may have been *T. aduncus*. The species is listed as Data Deficient (DD).

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, JMO Daclan, and MD Santos

NOTES ON RED LISTING: Population size and by-catch should be investigated.

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Jefferson, TA, MA Webber and RL Pitman. 2008. Marine Mammals of the World; a Comprehensive Guide to their Identification. Academic

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Wang, J, LS Chow and BM White. 1999. Mitochondrial DNA analysis of sympatric morphotypes of bottlenose dolphins (Genus: *Tursiops*) in Chinese waters. *Mol Ecol* 8: 6103-6112.

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Wang, J, LS Chow and BM White. 2000b. Osteological differences between two sympatric forms of bottlenose dolphins (Genus: *Tursiops*) in Chinese waters. *J Zool*, London 252: 147-162.

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KOGIIDAE

Kogia breviceps

DD

Taxonomic Authority: de Blainville, 1838
Common Names: pygmy sperm whale (English)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum:	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	KOGIIDAE

TAXONOMIC NOTES: Only one species of the genus *Kogia* (*K. breviceps*) was recognized until 1966, when studies clearly showed the pygmy and dwarf (*K. sima*) sperm whales to be distinct species (Handley 1966; Chivers et al. 2005).

GENERAL INFORMATION

DISTRIBUTION

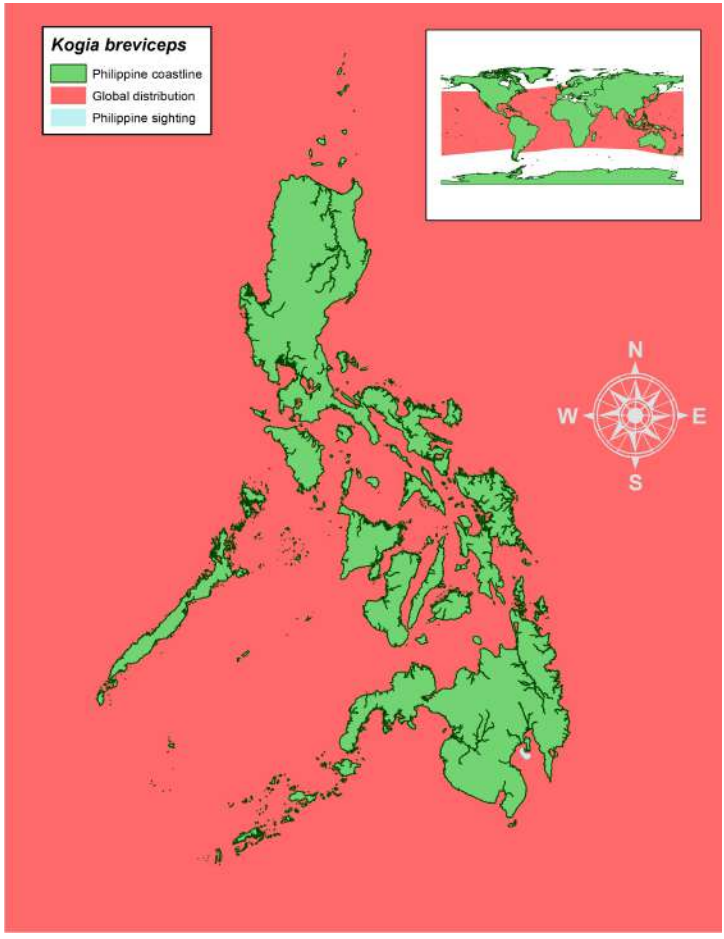
The pygmy sperm whale occurs in the tropical to warm temperate zones of all oceans. There has only been one recent record for the Philippines and it involved a live stranding in Davao (Acebes pers comm).

POPULATION

There is no available total estimate or trend for the Philippine population.

HABITAT AND ECOLOGY

These animals are often encountered near the continental slope and in deep waters. Because pygmy sperm whales are very quiet animals rafting motionless at the water surface with no visible blow, they are often difficult to detect except in very calm seas. Most sightings consisted of small groups of five or six individuals. When startled, they may emit a reddish-brown fluid from the anal region. Though rarely seen at sea, pygmy sperm whales strand quite frequently



Occurrence map of *Kogia breviceps* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

in some areas (e.g., southeastern U.S. and South Africa), indicating that they may be more common than the rare sightings suggest. The little information known on their ecology was learned from these strandings. Stomach content remains from stranded whales suggest that they feed on deepwater cephalopods, fish and shrimps (McAlpine 2009).

THREATS

Solid waste pollution, e.g., plastic bags, has been implicated wherein ingestion caused gut-blockage or may have prevented digestion of food, ultimately leading to death (Caldwell and Caldwell 1989; Laist et al. 1999; Leatherwood and Reeves 1983). Also, this species is vulnerable to loud anthropogenic sounds like those generated during seismic explorations and navy sonar (Cox et al. 2006). In the Philippines, a direct take by harpoon was documented for this species in Pamilacan Island, Bohol (Leatherwood et al. 1992).

CONSERVATION MEASURES

The pygmy sperm whale is on Appendix II of CITES and protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 and FAO 208. The Wildlife Act (RA 9147) further provides protection through stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

There is insufficient information to determine the conservation status of the species in the Philippines.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, JMO Daclan, and MD Santos

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KOGIIDAE

Kogia sima

DD

Taxonomic Authority: Owen, 1866
Common Names: dwarf sperm whale (English)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum:	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	KOGIIDAE

TAXONOMIC NOTES: "This taxonomic unit is treated as one species even though there is genetic evidence to suggest that there may be two separate species of dwarf sperm whales, one in the Atlantic and one in the Indo-Pacific (Chivers et al. 2005). If confirmed, the Red List Category of this taxon may change" (Taylor et al. 2008).

"Because this species was not generally recognized until the mid-1960s, there is still some confusion in the older literature about which species of *Kogia* is represented. The specific name, *simus*, was recently changed to *sima* to reflect proper gender" (Taylor et al. 2008).

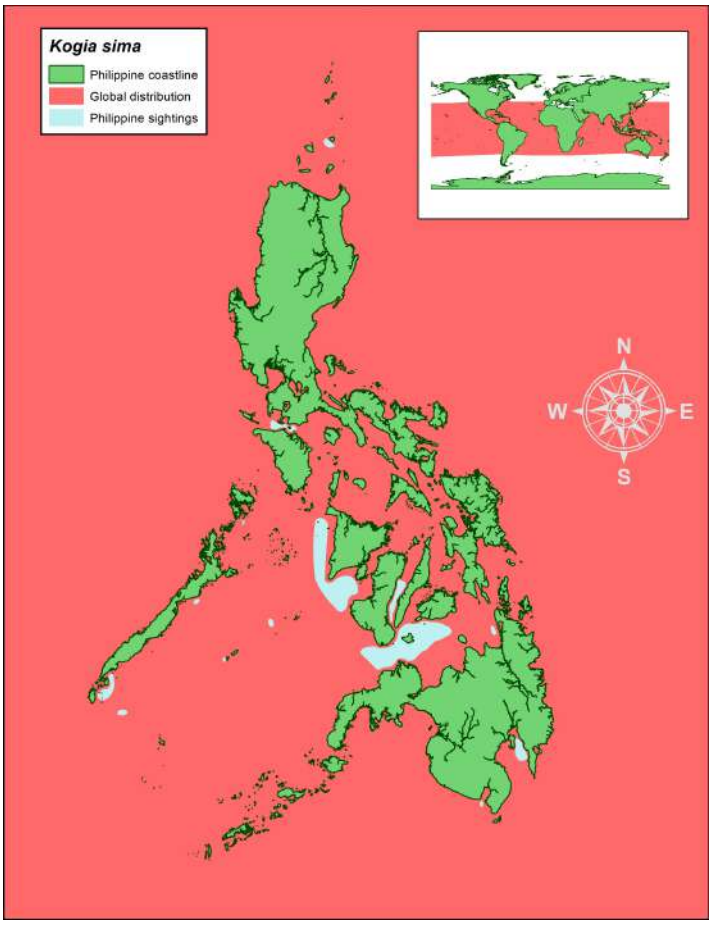
GENERAL INFORMATION

DISTRIBUTION

The species is distributed worldwide in temperate and tropical waters of the Atlantic, Pacific and Indian Ocean. It is fairly common in some areas in the Philippines, such as in the Verde Island Passage, Sulu Sea and Tañon Strait (Dolar et al. 2006). A stranding event was reported in Dumaguete City, south of Tañon Strait.

POPULATION

There is no total estimate nor trend available for the Philippine population but the eastern Sulu Sea subpopulation has an estimated abundance of 326 (CV = 58%) while Tañon Strait has an estimate of 670 (CV = 62%) (Dolar et al. 2006).



Occurrence map of *Kogia sima* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

HABITAT AND ECOLOGY

Like the pygmy sperm whale, the dwarf sperm whale is cryptic and is rarely seen at sea. It appears to prefer warmer waters and is more pelagic than the pygmy sperm whale (McAlpine 2009). Information from stranded animals suggests that dwarf sperm whales feed on mid- and deep-water cephalopods. In the Philippines, dwarf sperm whales have been seen in the eastern Sulu sea in waters 117-

3,744 m deep (mean depth = 1,824 m). Tañon Strait, though much shallower than the eastern Sulu Sea, interestingly appears to be a more preferred habitat. Density there is 15 times more than in the eastern Sulu Sea (Dolar et al. 2006). Mean depth at sightings in Tañon Strait was 255 m. Dwarf sperm whales seen in the Sulu Sea were always in pure schools, but those in Tañon Strait were seen with spinner dolphins on some occasions (Dolar et al. 2006).

THREATS

No major threats are known. Interaction with fishing operations as by-catch may be a possible threat (Jefferson et al. 1993). Solid wastes such as plastic bags have been reported to be present in the stomach of this species (Caldwell and Caldwell 1989) which may have led to death. High levels of anthropogenic sound have the potential to impact *Kogia* species just like other deep diving odontocetes (Hohn et al. 2006).

One of five dwarf sperm whales seen rafting south of Balicasag Island, Bohol. (PHOTO CREDIT: E SABATER)

CONSERVATION MEASURES

The dwarf sperm whale is on Appendix II of CITES and protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 and FAO 208. The Wildlife Act (RA 9147) provides further protection through stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

There is no information on the total population size or trends for this species in the Philippines. The species may be subject to multiple low-level threats.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, JMO Daclan, and MD Santos

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Chivers, SJ, RG Leduc, KM Robertson, NB Barros, and AE Dizon. 2005. Genetic Variation of *Kogia spp*. with Preliminary Evidence for Two Species of *Kogia sima*. *Mar Mam Sci* 21(4): 619 – 634.

Dolar, MLL, WF Perrin, B Taylor, G Kooyman, and MNR Alava. 2006. Distributional ecology of cetaceans in the central Philippines. *J Cet Res Manage* 8: 93-111.

Hohn, AA, DS Rotstein, CA Harms, and BL Southall. 2006. Report on marine mammal unusual mortality event UMESE0501Sp: Multispecies mass stranding of pilot whales (*Globicephala macrorhynchus*), minke whale (*Balaenoptera acutorostrata*), and dwarf sperm whales (*Kogia sima*) in North Carolina on 15-16 January 2005. US Dep Commer, NOAA Tech Memo. NMFS-SEFSC-537, 222pp.

Jefferson TA, S Leatherwood, and MA Webber. 1993. FAO Species identification guide. Marine mammals of the world. UNEP/FAO, Rome. 320pp.

McAlpine, DE. 2009. Pygmy and Dwarf sperm whale, *Kogia breviceps* and *K. sima*. *In*: WF Perrin, B Würsig, and JGM Thewissen (eds), Encyclopedia of Marine Mammals (pp 936-938). Academic Press, San Diego. 1315pp.

Taylor, BL, R Baird, J Barlow, SM Dawson, J Ford, JG Mead, G Notarbartolo di Sciara, P Wade, and RL Pitman. 2008. *Kogia sima*. *In*: IUCN 2008. 2008 IUCN Red List of Threatened Species. <www.iucnredlist.org>.

PHYSETERIDAE

Physeter macrocephalus

VU

Taxonomic Authority: Linnaeus, 1758
Synonym: *Physeter catodon* (Linnaeus, 1758); *Physeter catodon* Linnaeus, 1758; *Physeter macrocephalus* Linnaeus, 1758
Common Names: sperm whale (English); balyena (Tagalog)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum:	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	PHYSETERIDAE

GENERAL INFORMATION

DISTRIBUTION

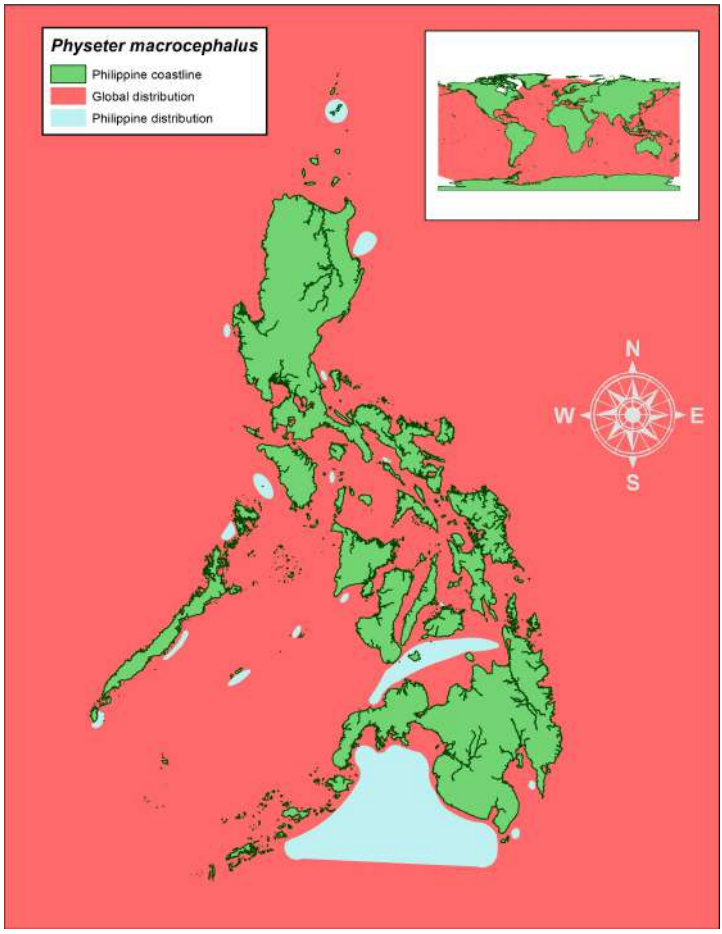
The species is found worldwide and fairly common in the Philippines. Individuals have been sighted in the Sulu, Bohol and Sulawesi Seas and in the mouth of Sarangani Bay Philippines Sea, Visayan Sea, South China Sea, around Babuyan Islands and Apo Reef (Dolar & Perrin 1996; Dolar and Wood 1993; Leatherwood et al. 1992, Dolar unpubl. data; Libosada pers comm). Strandings have been recorded in Palawan (Leatherwood et al. 1992), Balut Island and Luzon (Dolar unpubl. data). Specimens from stranding incidents are kept at the SUML/IEMS (from Sulu Sea), the PWRCC (from Palawan) and the Philippine National Museum (from Philippine Sea).

POPULATION

There are no estimates or trends available for the Philippine population.

HABITAT AND ECOLOGY

The species is mainly oceanic but may also be found nearshore where deep water occurs near the coast (Jefferson et al. 2008). Only large males venture to the icy high latitudes, while the females and young males mostly stay in latitudes less than 40˚. Extremely deep and long divers (reaching depths of 3,200 m or more for well over an hour), sperm whales



Occurrence map of *Physeter macrocephalus* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

feed mainly on a variety of cephalopods, including the giant squid, *Architeuthis*, and less frequently, deep-sea fish. The animals have been observed near fish aggregating devices (FADs) in the Sulu Sea (Tagarino and Daclan 2007).

THREATS

Extensive commercial whaling, which was considered the greatest threat to sperm whale populations, has ceased. However, a number of other threats of various dimensions remain (Taylor et al. 2008). At the regional level, none have been identified although marine debris and noise population are potential causes for concern.

Although there is little information about most whale species, sperm whales appear to be particularly sensitive to seismic testing. Sperm whales in the Gulf of Mexico appeared to be displaced by more than 50 km when surveys began there. Similarly, sperm whales in the Indian Ocean stopped vocalizing in response to seismic pulses from airguns that were more than 300 km away. In an archipelagic country where most islands are closely located to each other, a deviation from the migratory path by even 50 km can cause the animal to strand.

CONSERVATION MEASURES

The sperm whale is on Appendix I of CITES and Appendices I and II of CMS. It is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 and FAO 208. The Wildlife Act (RA 9147) provides further protection through stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Vulnerable (VU) A1d** (version 3.1)

A group of sperm whales encountered near Sablayan going to Apo Reef. (PHOTO CREDIT: C LIBOSADA)

RATIONALE FOR THE RED LIST ASSESSMENT

There are no total population estimates or trends available for this species in the Philippines. No major threats have been identified although marine debris and noise pollution are potential causes for concern. The impact of this potential threat on the population needs to be quantified. The species could have been listed as Data Deficient (DD) for the Philippines but, given that it is part of the global population, it is listed as Vulnerable (VU) instead under criterion A1d based on the assessment done by Taylor et al. (2008), as cited below:

> "The cause of the population reduction in this species (commercial whaling) is reversible, understood, and is not currently in operation. Empirical trend data for this species globally are unavailable. However, commercial whaling at a large scale for this species in the North Pacific and Antarctic within the last three generations (82 years) certainly resulted in a global decline during this period. Commercial whaling for this species has ceased and therefore this population is evaluated under the A1 criterion rather than under the A2-4 criteria (Taylor et al. 2008).

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MLL Dolar, ER Sabater, JPA Gaudiano, TU Bagarinao, PME Sorongon, ALB Barcelona, AP Tagarino, JMO Daclan, and MD Santos

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Jefferson, TA, MA Webber, and RL Pitman. 2008. Marine Mammals of the World; a Comprehensive Guide to their Identification. Academic Press, San Diego. 573pp.

Leatherwood, S, MLL Dolar, CJ Wood, LV Aragones, and CL Hill. 1992. Marine mammal species confirmed from Philippine waters. *Silliman Journal* 36:

65-86.

Tagarino A and JM Daclan. 2007. Recent sightings of possible beaked whales, (*Indopacetus pacificus*) in the Sulu Sea Philippines. The 9th PAMS (Philippine Association of Marine Science) National Symposium, Iloilo City, Philippines, 24-26 Oct 2007. (Poster)

Taylor, BL, R Baird, J Barlow, SM Dawson, J Ford, JG Mead, G Notarbartolo di Sciara, P Wade, and RL Pitman. 2008. *Physeter macrocephalus*. *In*: IUCN 2008. 2008 IUCN Red List of Threatened Species. <www.iucnredlist.org>.

ZIPHIIDAE

Indopacetus pacificus

DD

Taxonomic Authority: Longman, HA, 1926
Synonyms: *Mesoplodon pacificus* (Longman 1926); *Mesoplodon pacificus* Longman, 1926
Common Names: Longman's beaked whale, Indo-Pacific beaked whale (English)

Upper Level Taxonomy

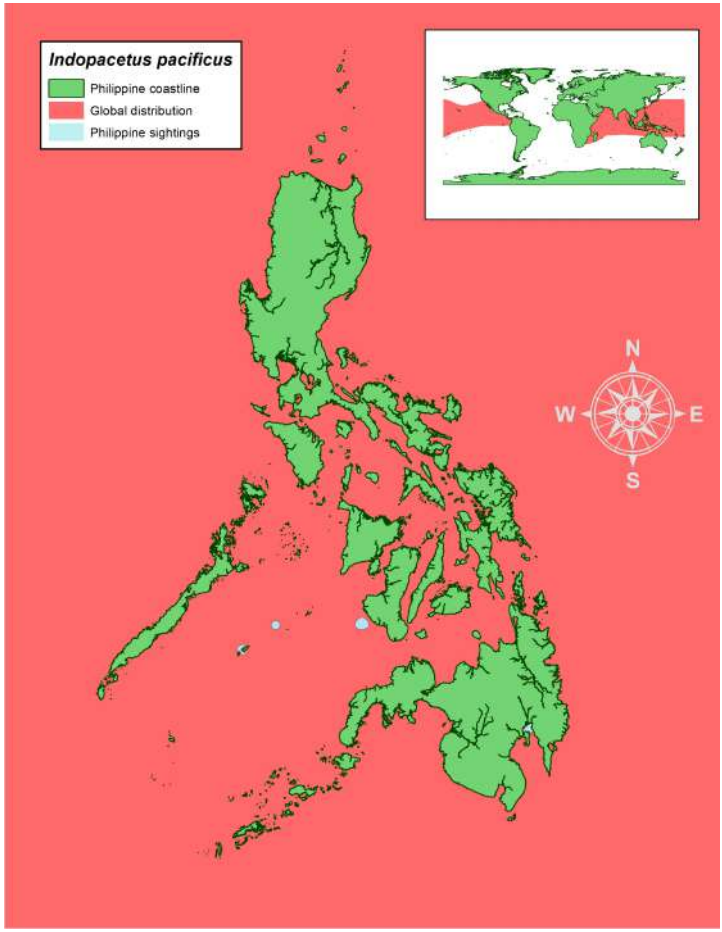
Kingdom:	Animalia
Phylum:	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	ZIPHIIDAE

TAXONOMIC NOTES: "Some marine mammal scientists believe this species should be in the genus *Mesoplodon*. In 1996, it was listed under *Mesoplodon*, but it is now generally considered under *Indopacetus* (Rice 1998). Until just a few years ago, this species was only known only from two skulls. Sightings of what are now known to be this species in tropical waters were often mistakenly attributed to a whale of the genus *Hyperoodon* (Dalebout et al. 2003)" (Taylor et al. 2008).

GENERAL INFORMATION

DISTRIBUTION

Distribution is not fully known, but believed to be limited to the Indian and Pacific Oceans (Taylor et al. 2008). This species is uncommon in the Philippines. Confirmation of its presence in the Philippines came from a stranding of a juvenile male in Matina Aplaya, Davao City in 2004 (Acebes et al. 2005). Live sightings at sea included one in the eastern Sulu Sea close to Hinoba-an, Negros in the 1994 survey (Dolar et al. 2006), another near Arena Island in the Sulu Sea in 2006 (Tagarino and Daclan 2007), and northern Sierra Madre in 2004 (John Wang pers comm). In the early 1990s whale hunters in Bohol Sea described catching whales with descriptions



Occurrence map of *Indopacetus pacificus* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009)

similar to that of Longman's beaked whale, which were reported by Dolar et al. (1994) as "bottlenose whale, *Hyperoodon sp*."

POPULATION

The species is not common. There is no information on population abundance of this species in the Philippines.

HABITAT AND ECOLOGY

Most sightings were in deep and warm (21-31˚C) waters of the tropical to subtropical Indo-Pacific region. This species is observed to occur singly or in large herds of up to 100 individuals (Jefferson et al. 2008). They often swim in tight groups and have been seen with pilot whales as well as bottlenose and spinner dolphins. Ecology and biology are poorly known, as of 2005, the species was only known from seven specimens. Stomach contents of a single stranding in Japan indicate that this species feed primarily on cephalopods.

THREATS

Based on the solitary stranding in Davao City, ingestion of solid waste can cause mortality by blocking the digestive tract (Acebes et al. 2005).

CONSERVATION MEASURES

The Indo-Pacific beaked whale is on Appendix II of CITES. It is also protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 but is not listed in FAO 208. The Wildlife Act (RA 9147) nevertheless provides general protection for the species through the imposition of stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

The Longman's beaked whale with its bulbous head encounterd in Tubbataha Reefs Natural Park. (PHOTO CREDIT: MTR AQUINO)

RATIONALE FOR THE RED LIST ASSESSMENT

The species is uncommon in the Philippines and no information is available on population.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: JM Acebes, AP Tagarino, MLL Dolar

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ZIPHIIDAE

Mesoplodon densirostris DD

Taxonomic Authority: de Blainville, 1817
Common Name: Blainville's beaked whale (English); pakatang (Visayan).

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum:	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	ZIPHIIDAE

GENERAL INFORMATION

DISTRIBUTION

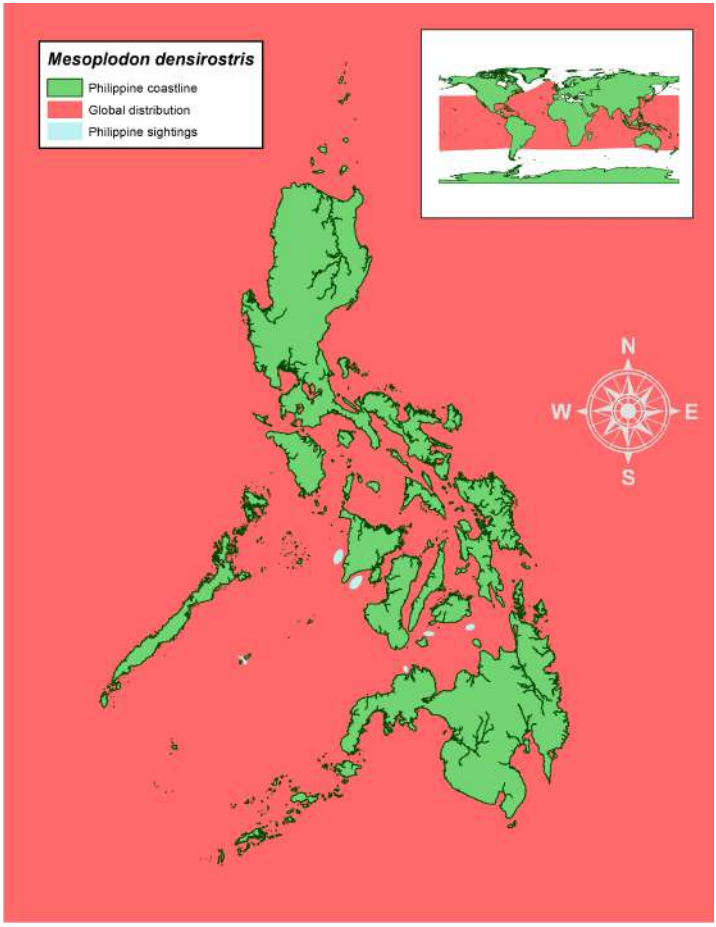
The species is known to inhabit temperate and tropical waters in all oceans. It has the most extensive distribution and is one of the most tropical of the *Mesoplodon* species (Taylor et al. 2008; Pitman 2009). In the Philippines, the animals have been sighted in Panay Gulf, the Bohol and Sulu seas and along the channel of Tubbataha reefs (Dolar and Perrin 1996; Aquino and Calderon 2004). Strandings have been reported in lower Baluan, General Santos City in 1999 (Santos pers. comm.) and in Nueva Valencia, Guimaras in 2006 (Bagarinao unpubl. data). The lone specimen found in the Philippines came from the Bohol Sea and is currently in the museum collection of SU-IEMS.

POPULATION

There is very little information on the population in the country. Whatever little information available comes from singular encounters or stranding reports (Dolar and Wood 1993; Dolar et al. 2006; Aquino and Calderon 2004).

HABITAT AND ECOLOGY

The animals are usually found in offshore and deep waters. Often seen in groups of 3-7, singles or pairs have also been recorded. A



Occurrence map of *Mesoplodon densirostris* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

single male associates with a "harem" of females that stay separate from the group of sub-adults. The "harems" tend to occur in more productive waters over the continental shelf whereas the sub-adults tend to occur in inshore waters (Jefferson et al. 2008). In the Philippines, sightings of this species were often in deep waters close to shore (Dolar pers comm) with the exception of the encounter in Tubbataha Reefs Natural Park (Aquino and Calderon 2004).

THREATS

Direct hunting has never been associated with this species. Nevertheless, pervasive gillnet and longline fisheries throughout the species' range raises concern that some by-catch is likely. Even low levels of by-catch might cause unsustainable impacts on this naturally rare cetacean.

It is unknown if military, seismic or other loud noise-producing human activities resulted in the live stranding of a possible mother/calf pair in NE Taiwan (Wang and Yang 2006; Yang et al. 2008). However, "bubble-like lesions" were reported in at least one of these whales by Yang et al. (2008). This species, like other beaked whales, is likely to be vulnerable to loud anthropogenic sounds, such as those generated by navy sonar and seismic exploration (Cox et al. 2006). There is some evidence from Sri Lanka for occasional incidental or directed takes of animals identified as 'bottlenose whales' which are likely to be *Indopacetus* (Dayaratne and Joseph 1993). There are reported strandings of the species in Guimaras and General Santos (Santos pers comm) but cause of stranding has not been assessed.

Blainville's beaked whale sighted in Sulu Sea. (PHOTO CREDIT: MTR AQUINO)

Evidence from stranded individuals of several similar species of beaked whales indicates that they have swallowed discarded plastic items, which may eventually lead to death (Scott et al. 2001). This species may also be at risk. Furthermore, predicted impacts of global climate change on the marine environment may affect this cetacean species, although the nature of impacts is unclear (Learmonth et al. 2006).

CONSERVATION MEASURES

The Blainville's beaked whale is on Appendix II of CITES and protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 and FAO 208. The Wildlife Act (RA 9147) provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

The species is fairly uncommon in the Philippines. Information on the population or even its habitat range is not available. In view of the existing threats in the known habitats of this poorly understood population, it is suggested that this species be listed as Data Deficient (DD).

There is almost no information on abundance and trends in global abundance for this species. As a relatively uncommon species, it is potentially vulnerable to low-level threats and a 30% global reduction over three generations cannot be ruled out.

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MTR Aquino, MNR Alava, BS Albasin, GM Cadigal, ED Solis, R Lucero, MD Santos, TU Bagarinao, and JPA Gaudiano

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ZIPHIIDAE

Ziphius cavirostris

DD

Taxonomic Authority: G. Cuvier, 1823
Common Name: Cuvier's beaked whale (English)

UPPER LEVEL TAXONOMY

Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	CETARTIODACTYLA
Family:	ZIPHIIDAE

TAXONOMIC NOTES: Recent genetic analysis confirmed that this genus is monotypic (Dalebout et al. 2004).

GENERAL INFORMATION

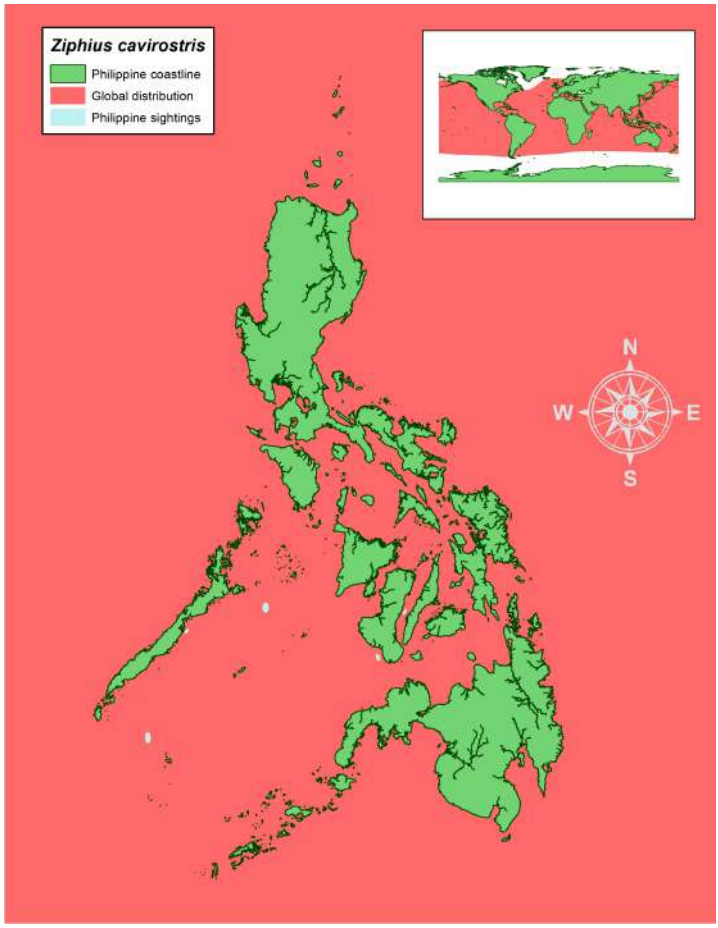
DISTRIBUTION

In the Philippines, the species has been sighted in the Sulu Sea, Tañon Strait (Dolar et al. 1997; WWF-Phils. unpubl data) and in Puerto Princesa Bay in Palawan (Torres 2008 and Aquino 2009). One individual was accidentally caught in a drift gillnet in the eastern Sulu Sea on 10 June 1996 (specimen archived at SU-IEMS). Strandings of this species have also been reported in Alabel, Saranggani and Matina, Davao City by BFAR Region 11 and in Canigaran Beach, Puerto Princesa City, Palawan by Aquino (2009). The skeletal remains are displayed at the PWRCC (previously CFI).

POPULATION

This is the only widely-distributed beaked whale species for which a global assessment of genetic diversity has been conducted. The results of this study suggest that there is probably little movement of Cuvier's beaked whales among different ocean basins and may even be a distinct subpopulation in the Mediterranean Sea (Dalebout et al. 2004).

Global trend or abundance data for this species are unavailable but abundance is at least 100,000. This species also has a very large



Occurrence map of *Ziphius cavirostris* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

range. As with other beaked whales, threats that could cause widespread declines include high levels of anthropogenic sound, especially military sonar and seismic surveys, and by-catch. The combination of the large global range and relatively high abundance with possible declines driven by more localized threats is believed sufficient to rule out a 30% global reduction over three generations (criterion A) (IUCN global status 2009).

There is very limited information on the population in the Philippines. The species is not commonly encountered in the country, with sightings only occurring singly or in small groups (e.g., Tañon Strait, Puerto Princesa Bay) (Dolar et al. 1997 and Torres 2008).

HABITAT AND ECOLOGY

The species are found mostly in deep offshore waters. Because of its wide distribution and frequent stranding, it is one of the most known beaked whales (Jefferson et al. 2008). They are encountered mostly in groups of 2-7 animals but can also occur alone. These animals prefer to feed in deep waters mostly on deep-sea squids but occasionally also on fish and crustaceans.

Although Cuvier's beaked whales can be found nearly anywhere in deep (>200 m) waters, they seem to prefer waters near the continental slope, especially those with a steep sea bottom. Off Japan, whaling records indicate that *Z. cavirostris* is most commonly found in waters deeper than 1,000 m (Heyning 1989). The species is known around many oceanic islands, and in some enclosed seas. It is rarely found close to mainland shores, except in submarine canyons or areas where the continental shelf is narrow and coastal waters are deep (Heyning 1989; 2002) and mostly a pelagic species that appears to be confined by the 10°C isotherm and the 1,000 m bathymetric contour (Houston 1991; Robineau and di Natale 1995).

Cuvier's beaked whales, like all beaked whales, appear to prefer deep waters for feeding. Dives of up to 40 minutes have been documented. Although few stomach contents have been examined, they appear to feed mostly on deep-sea squid, but also sometimes take fish and

Cuvier's beaked whales are found in small numbers in the country. (PHOTO CREDIT: MTR AQUINO)

some crustaceans (MacLeod et al. 2003). They apparently feed both near the bottom and in the water column. As with other beaked whales, suction appears to be used to draw prey into the mouth.

THREATS

Elsewhere in the world, several studies have identified by-catch as a major cause of mortalities in this species (Heyning 1989; Jefferson et al. 1993; Omura and Kimura 1955; Mignucci-Giannoni et al. 1999; Julian and Beeson 1998; Mora Pinto et al. 1995). In contrast, only one by-catch mortality was recorded in DGN, Siaton, Philippines (Dolar pers comm). All other mortalities recorded in the country were due to stranding of undetermined causes.

In recent years, there has been increasing concern that loud underwater sounds, such as active sonar and seismic operations, may be harmful to beaked whales (Malakoff 2002). The use of active sonar from military vessels has been implicated in a number of mass strandings of Cuvier's beaked whales, including in the Mediterranean Sea in 1996 (Frantzis 1998), the Bahamas in 2000 (Balcomb and Claridge 2001), the Madeira Islands in 2000 (Frietas 2004), and the Canary Islands in 2002 (Jepson et al. 2003). Mass strandings of Cuvier's beaked whales in Japan also apparently correlate with locations of naval exercises (Brownell et al. 2006). A stranding of two Cuvier's beaked whales in the Gulf of California was closely related with a seismic survey (Malakoff 2002).

This species may also be at risk from pollution. Evidence from stranded individuals of several similar species indicates that they have swallowed discarded plastic items, which may eventually lead to death (Scott et al. 2001). Furthermore, predicted impacts of global climate change on the marine environment may affect this species of whale, although the nature of impacts is unclear (Learmonth et al. 2006).

CONSERVATION MEASURES

Cuvier's beaked whale is on Appendix II of CITES and protected in the Philippines under Sec. 11 and 97 of the New Fisheries Code (RA 8550) through FAO 185-1 and FAO 208. The Wildlife Act (RA 9147) provides stiffer penalties for the killing or illegal possession of wild animals and/or its by-products.

IUCN RED LISTING

Red List (using 2001 IUCN system) **Data Deficient (DD)** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

Considered to be the most common and most abundant of all beaked whales worldwide, its abundance is likely to be well over 100,000. However, there is no information on population trends of this species (Taylor et al. 2008). This species also has a very large range. As with other beaked whales, threats that could cause widespread declines include high levels of anthropogenic sound, especially military sonar and seismic surveys, and by-catch. The combination of the large global range and relatively high abundance with possible declines driven by more localized threats is believed sufficient to rule out a 30% global reduction over three generations (criterion A).

The species may be uncommon in the Philippines but it is known to interact with drift gill net fishing operations as by-catch. There is no known information on the population in the Philippines and thus is listed as Data Deficient (DD).

Current Population Trend: Unknown
Date of Assessment: 8/14/2009
Names of the Assessors: MTR Aquino, BS Albasin, MNR Alava, M Santos, MLL Dolar, A Salting, R Cruz, AASP Yaptinchay, GM Cadigal, ED Solis, and R Lucero

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Taylor, BL, R Baird, J Barlow, SM Dawson, J Ford, JG Mead, G Notarbartolo di Sciara, P Wade, and RL Pitman. 2008. *Ziphius cavirostris*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. <www.iucnredlist.org>.

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Dugongidae

Dugong dugon

CR

Taxonomic Authority: Müller, 1776
Synonym/s: *Dugong dugon dugon* (Müller, 1776); *Dugong dugon hemprichii* (Ehrenberg, 1833); *Dugong dugon tabernaculi* (Rüppell, 1834); *Dugong dugong* (Gmelin, 1788)
Common Names: Dugong, seacow (English); duyong, baboy dagat (Tagalog); navago (Batanes).

UPPER LEVEL TAXONOMY

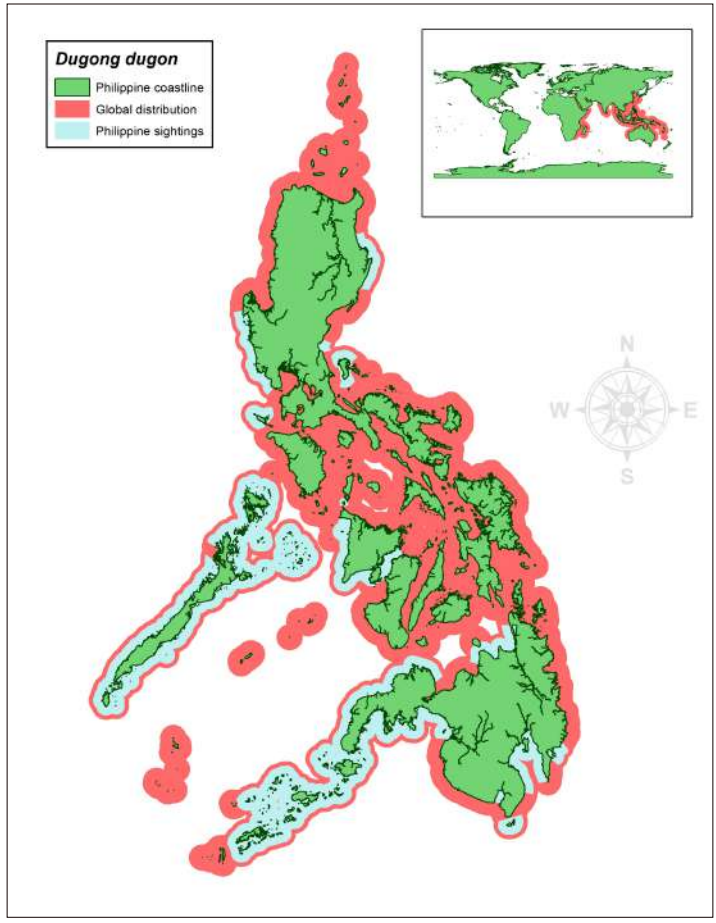
Kingdom:	Animalia
Phylum	CHORDATA
Class:	MAMMALIA
Order:	SIRENIA
Family:	DUGONGIDAE

GENERAL INFORMATION

DISTRIBUTION

The species has a large range of distribution that spans some 48 countries and territories and includes tropical and subtropical coastal and island waters from East Africa to Vanuatu. Its habitat covers the area between about 26° north and 27° south of the Equator (Marsh 2008; Nishiwaki & Marsh 1985).

In the Philippines, dugongs reportedly occured all throughout the Archipelago (Marsh et al 2002; Yaptinchay 1997; Yaptinchay 1994). Historical accounts on the species date back to the 1600s and early 1900s (e.g., Dickerson et al. 1928; de Elera 1915, 1895; Seale 1915; Alzina 1668) which persisted well into the late '70s and early '80s when large herds were still reported in some sites (e.g., Kasiguran, Aurora, DENR-PAWB/WWF-Phil 1998). Confirmed sightings, however, were documented only in some areas such as the Palawan Province, Romblon Island, Guimaras Island, Pujada Bay in Davao Oriental, eastern Luzon coast (Isabela to Quezon), southern Mindanao to the Tawi-Tawi Islands, Saranggani Bay, Davao Gulf and Cape San Agustin Areas. Sightings became rare in most sites (e.g.,



Occurrence map of *Dugong dugon* in the Philippines. Red shade represents the global distribution of the species. (Source of inset global distribution map: IUCN 2009).

Fuga Island, Babuyan chain of islands) and the species is believed to be extirpated in certain areas (e.g., northwestern coast of Luzon: La Union, Pangasinan, Zambales, Bataan, and Manila Bay; Batangas, southernwestern Luzon; Marinduque and Tayabas Bay; Bicol region) (DENR-PAWB/WWF-Phil 1998).

In recent years, documented sightings became infrequent and sporadic (Aquino 2009; WWF-Phils 2008a; PCSDS 2006; Dolar 2006;

Dolar et al. 2005; Byrne 2005; Lucero 2005). The greater bulk of the Philippine population is still found around the islands of Palawan and some parts of Mindanao, but the subpopulations are somewhat fragmented.

Historical accounts, which date back to 400 years, suggest that the distribution of dugongs coincided with total coastline of the Philippine archipelago, spanning an estimated total of 36,289 kilometers. The current reported dugong sightings only covers about 13,288 km of coastline, suggesting a decline in the species' extent of occupancy by about 63%.

POPULATION

Globally, the population size of dugong was estimated at more than 100,000 individuals throughout its range (Marsh 1995 in Yaptinchay 1997). In areas where aerial surveys have been conducted, the population was estimated at more than 10,000 (Arabian Gulf and Red Sea; Preen 1989) to more than 80,000 individuals (Australia; Marsh and Lefebrve 1994). With the exception perhaps of Australia and the Arabian Sea, dugong populations have drastically declined in much of its global range (Marsh 2008).

In the Philippines, there is no total population count for the species. A few dedicated population surveys were conducted in the past, including an aerial survey in Palawan in 1995. Results from this survey showed a raw count of 45 individuals while flying over the coastline of Puerto Princesa going northward to El Nido, Palawan (Marsh et al. 2002). Sighting reports have also been largely opportunistic. As of 1997, the dugong population in the country was described as sparse and of low density (Trono et al. 1993; Nishiwaki et al. 1979; Nishiwaki and Marsh 1985). Where counts were made, e.g., Davao Gulf (Lucero 2009) and around Calauit Island in Palawan (Aragones 1994), the numbers reported, however, were as low as less than 50 individuals per site. The age, sex, and maturity of which were also undetermined. Sightings and stranding reports often were on a few individuals only (i.e., less than 5). "Large herds", as reported in years past, no longer apply to current encounters.

HABITAT AND ECOLOGY

Dugongs are the only marine mammals that are predominantly herbivorous. It is a seagrass specialist, uprooting whole plants when they are accessible, but feeding only on leaves when the whole plant cannot be uprooted (Anderson and Birtles 1978; Lanyon et al. 1989). Their preferred habitats are shallow tropical seas with abundant seagrass beds such as protected bays, wide shallow mangrove channels and on the lee side of large inshore islands. Feeding ecology studies conducted on the subpopulation in Davao Gulf (Lucero 2009) and Dimakya Island, Palawan (Uri et al. 1998) suggest that dugongs may exhibit site fidelity to a certain degree, i.e., repeated and regular grazing of certain sites (De Iongh et al.2007; Preen 1995).

Dugongs can live for more than seventy years, have their first calf between 10 and 17 years of age and, on average, have a calf every three to seven years, with each pregnancy lasting about a little over a year. Sustainable harvest of dugongs is only about 1-2% of the females per year. For species with this sort of life history strategy, the most important life history parameter is the survival of adults (DENR-PAWB/WWF-Phil 1998).

THREATS

Dugong stranding and by-catch incidents have been increasing in many parts of the country, with mortalities often associated with fisheries interaction as by-catch of such gears as fish corral, oto-shiami, beach seine, purse seine, Danish seine, bottom-set gillnet for crabs, long-line for small pelagic, even in cyanide “poison” fishing for live reef fish. Incidentally caught animals, however, can sometimes qualify as direct takes as locals may butcher trapped animals for food/consumption (DENR-PAWB/WWF-Phil 1998). Dynamite fishing has also been implicated in both direct and by-catch incidents. Covert directed takes employing spear fishery have also been reported in certain areas (PAWB-PCP unpubl data). Very little is known about diseases in dugongs in the country but parasitism was suspected as cause of death in one individual from Davao Gulf (Lucero pers comm).

Habitat loss and degradation is another major threat to the dugong population in the Philippines. The historic distribution of dugong is believed to have been broadly coincidental with the tropical Indo–Pacific distribution of its food plants, the phanerogamous seagrasses of the families Potamogetonaceae and Hydrocharitaceae (Husar 1978). Seagrass cover in the Philippines, however, has recorded a 30-50% decline over the recent years (Pernatta 2009) which has direct negative impact on the dugong population.

An adult dugong coming up for air in Davao. (PHOTO CREDIT: MLL DOLAR)

Impacts of global climate change also needs to be considered, such as increasing storm frequency and storm surges, which may also affect foraging individuals. Stranding of dugongs after a strong typhoon and injured individuals have also been reported (Yaptinchay 1997).

CONSERVATION MEASURES

Dugong dugon is on Appendix 1 of CITES and Appendix II of CMS. In the Philippines, dugong conservation took a leap with the issuance of DENR Administrative Order (DAO) No. 55-1991 which made the dugong the first marine mammal protected in the Philippine waters. The Wildlife Act (RA 9147) provides stiffer penalties for the killing or illegal possession of wild animals and/or its-product. Under DAO 2004-15, the species is afforded additional protection when listed as a Critically Endangered species pursuant to RA 9147.

In Palawan, the Palawan Council for Sustainable Development (PCSD) penned Resolutions 03-216 and 04-226 (http://www.pcsd.ph/

resolutions/resolutions/wildlife/index.htm) to reiterate the protection of the species in the province. The Municipality of Roxas in Palawan which records a high incidence of dugong by-catch also created a local ordinance establishing marine protected areas, which included seagreass meadows and are known dugong habitats, to further protect the species (WWF-Phils 2008b). Similarly, Barangay Lukata in Taragona, Davao Oriental established their own marine protected area to strengthen their efforts in protecting their dugong subpopulation (Salting unpubl data).

Stranding networks in several areas in the country have responded successfully to live dugong by-catch incidents. In Palawan alone, the Palawan Marine Wildlife Rescue Society recorded over 30 dugongs released after being accidentally trapped in fish corrals from 1998 to 2000 (DENR-CFI Records 1998-2000).

IUCN RED LISTING

Red List (using 2001 IUCN system) **Critically Endangered (CR) A4c** (version 3.1)

RATIONALE FOR THE RED LIST ASSESSMENT

In the Philippines, the dugong population has shown a significant decline despite the conservation measures already in place as threats continue to decimate the population and its habitat. It is suspected to have been extirpated in many areas where it has been historically known to occur (i.e., at least 50-100 years ago). Sightings and stranding reports strongly suggest that the Philippine dugong population has become largely fragmented over the years. Available information, however, has not been comprehensive enough to establish trends in abundance or decline for most areas.

Nevertheless, inferred data suggests a possible reduction in its extent of occupancy in the Philippines of about 63% as illustrated by the distribution map. In addition to this, a 30-50% decline of the seagrass habitats in the country has already been documented (Pernatta 2009) brought about by various factors such as coastal

development, siltation, nearshore fisheries operation, among others, which may be worsened by impacts of climate change (e.g., storm surges).

In view of the severe decline over the past years, the continuing threats that are not expected to fully cease in the future and are even expected to be exacerbated by climate change impacts, and the very low possibility of reversing these conditions, a precautionary attitude had been taken, maintaining the classification of the species as Critically Endangered under criterion A4c.

Current Population Trend: Decreasing
Date of Assessment: 8/14/2009
Names of the Assessors: MTR Aquino, BS Albasin, MNR Alava AASP Yaptinchay, MIG Cadigal, ED Solis, R Lucero, A Salting, and R Cruz

NOTES ON RED LISTING: Population size and by-catch should be investigated (conflict between dugongs and fishing activities should be studied to estimate incidental captures and other human-induced mortalities). More research needs to be conducted on the distribution and abundance of seagrasses. Data about the dugong and its habitat should be consolidated, perhaps in a national data base. Kahn (pers comm. 2001) reported that throughout the Philippines, STD (submarine tailings "dumping") mining proposals are currently under review for approval. Research into the ecological toxicological effects of mine waste disposal on the marine food chain (including dugongs and seagrass) should be thoroughly examined before disposal is approved.

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4

POLICY CONSIDERATIONS FOR THREATENED MARINE MAMMALS

RFN Quicho Jr and EB Alesna

The present legal and policy framework recognizes the importance of wildlife species, among them marine mammals, in promoting ecological balance and enhancing biological diversity, as can be read from Section 2 of the Wildlife Resources Conservation and Protection Act of 2001 (Republic Act No. 9147). The National Integrated Protected Areas System (NIPAS) Act of 1992 (Republic Act No. 7586) declares that it is the policy of the State to secure for the Filipino people of present and future generations the perpetual existence of all native plants and animals through the NIPAS in order to protect and maintain the natural biological and physical diversities of the environment as well as plant and animal life (Sec. 2). Additionally, Section 2 of the Philippine Fisheries Code of 1998 (Republic Act No. 8550) recognizes the management development, conservation and protection of fishery and aquatic resources to achieve food security.

International Agreements

As manifestation of its commitment to the conservation of marine mammals in particular, and wildlife in whole, the Philippine Government had earlier on signed international agreements on the subject.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement that regulates international trade of wildlife under a system of permits and certificates. Among the commitments of Parties or member-countries is the adoption of a national legislation to implement the provisions of CITES. Wildlife species are listed under three Appendices. Under Appendix I are species generally prohibited for

international trade. Those listed under Appendix II are allowed for trade but must be regulated. Species listed under Appendix III require the cooperation of other Parties.

All marine mammals are listed either in Appendix I or Appendix II of the CITES. However, as stated above, commercial trade of marine mammals under Appendix I is not allowed under the rules of the Convention.

The Convention on Migratory Species (CMS) of 1979, also known as the Bonn Convention, aims to conserve terrestrial, aquatic, and avian migratory species throughout their range. It is an intergovernmental treaty concerned with the conservation of migratory species, their habitats, and migration routes on a global scale. The Convention recognizes that wild animals are an irreplaceable element of the Earth's natural system which must be conserved for the present and future generations.

The CMS is a framework Convention, wherein agreements may range from legally binding treaties to less formal instruments, such as Memoranda of Understanding. As such, the CMS promotes concerted actions among Range States of migratory species and encourages these Range States to conclude global or regional agreements. Thus, migratory marine mammals can benefit from regional cooperation among Range States in protecting their habitats and migratory routes.

The Convention on Wetlands of 1971, also popularly known as the Ramsar Convention, commits to protect wetlands realizing that they function as regulators of water regimes and habitats supporting a characteristic flora and fauna. Wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or

temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres (Art. 1).

National Statutes

In compliance with the abovementioned international commitments, the Philippine Government has enacted several major pieces of legislation. It further issued administrative acts to conserve, protect and manage wildlife found in the Philippines.

The Wildlife Conservation and Protection Act (RA 9147) is the primary law that governs wildlife species. This law regulates the collection, possession, transport, exportation and importation, introduction, reintroduction of wildlife, among others, including bioprospecting. In addition, it enumerates violations and imposes penalties therefor.

RA 9147 mandates three government agencies to implement its provisions, namely, the Department of Environment and Natural Resources (DENR), the Department of Agriculture (DA), and the Palawan Council for Sustainable Development (PCSD). Hence, its main implementing rules and regulations (IRR) is Joint DENR-DA-PCSD Administrative Order (JAO) No. 1, s. 2004. However, there are other supporting implementing rules separately issued by the DENR and the DA as they have different mandates under the law.

The DENR has jurisdiction over all terrestrial species, turtles, and tortoises as well as wetland species that include, among others, the dugong. For its part, the DA is tasked to implement the law with regard to all declared aquatic critical habitats, all aquatic resources that include all marine mammals, except dugong. Nevertheless, all wildlife species found in Palawan are under the jurisdiction of the PCSD (Sec. 4, RA 9147).

In 2004, the DENR issued DENR Administrative Order (DAO) 2004-15 which contains the list of threatened species under its jurisdiction, and their categories. It lists dugong among critically endangered species.

In the case of the DA, the implementation of RA 9147 also has to be reckoned along with The Philippine Fisheries Code of 1998 (RA 8550). RA 8550 mandates the DA to take conservation and rehabilitation measures for rare, threatened and endangered species as well as the fishing or taking thereof (Sec. 11, RA 8550). Thus, Section 97 of the same law prohibits the fishing or taking of rare, threatened, or endangered species of aquatic wildlife as listed in the CITES. This prohibition, which applies to all aquatic species listed in all Appendices of the CITES, is deemed stricter than the CITES. It will be recalled that only those species listed under Appendix I of CITES are not to be the subject of international trade. However, a reading of the aforecited Section 97 shows that all those species listed in any of the Appendices of the CITES cannot be caught or taken within Philippine waters. Since marine mammals are listed in the Appendices of CITES, these animals are automatically prohibited from being taken from the wild, regardless of the Red List categories where they are listed. Thus, a marine mammal that is categorized as Data Deficient remains covered by this prohibition, as long as it is listed under any of the Appendices of the CITES.

In 2001, the DA issued Fisheries Administrative Order (FAO) No. 208, which complements DAO 2004-15. FAO 208 contains a list of rare, threatened and endangered fishery species in the Philippines, along with a blanket prohibition for any person, natural or juridical, to take or catch or cause to be taken or caught the listed species (Sec. 2, FAO 208). Whales and dolphins are listed as Endangered.

To provide scientific basis for the protection and conservation of wildlife, the DENR and the DA Secretaries are both mandated to classify wildlife species into critically endangered, endangered, vulnerable or other accepted categories based on the best available data (Sec. 22, RA 9147). To do this, JAO 1, s. 2004, provides for the creation of a Philippine Red List Committee (PRLC) for Plants/Animals

by both the DENR and the DA to develop the criteria for the determination of threatened species and their classification as critically endangered, endangered, vulnerable or other accepted categories based on the best scientific and commercial data available and with due regard to internationally accepted criteria and additionally by disease or predation Rule 22.2, JAO 1, s. 2004).

DAO 2004-15 also provides that the DENR Secretary, in consultation with scientific authorities, the academe and other stakeholders, shall regularly review and update its list of wild fauna and flora, with an addendum that a species listed as threatened shall not be removed therefrom within three years following its initial listing (Sec. 6, DAO 2004-15).

Meanwhile, the DA issued FAO 233, s. 2010, which also implements RA 9147 albeit the rules are specific to DA. It defines "aquatic wildlife" as wildlife species living in aquatic environment including microbial species, its products and derivatives, and those in captivity or are being bred or farmed (Sec. 1[a], FAO 233, s. 2010). Section 4 of said FAO provides for the creation of a Philippine Aquatic Red List Committee (PARLC) to develop the criteria for the determination of threatened aquatic wildlife and their classification as critically endangered, endangered, vulnerable or other internationally accepted categories, based on the criteria in Section 22 of RA 9147, and those developed by the International Union for the Conservation of Nature (IUCN). Noteworthy is the specific reference to the IUCN Red List Criteria and Categories, which is the strategy used in this Red List book. PARLC shall also develop criteria for the determination of critical habitats, and identify critical habitats to be declared by the Secretary of Agriculture. Appropriate regulatory intervention shall be formulated for wildlife species when classified according to threat category.

The critical habitats created under RA 9147 are those outside of NIPAS sites, which are governed under RA 7586 (Sec. 25, RA 9147).

Next Steps

The publication of this book necessarily forms part of the attempt of Filipino marine scientists and conservationists to render Red listing in the Philippines dynamic. In 2009, the First Philippine Conservation Incorporated, a foundation within the Lopez Group of Companies, published its seminal work entitled Red List Status of Marine Endemic Teleosts (Bony Fishes) of the Philippines (Alava, et al. 2009) in support of the Global Marine Species Assessment (GMSA), an initiative of IUCN, Conservation International and the Old Dominion University in Norfolk, VA, USA to dramatically increase the number of marine species in IUCN's Red List.

Recognizing the sufficiency of the legal framework for the moment, the aforementioned publication then called for continued "search, research and protect" initiatives by government and other stakeholders. The same remains appropriate in the case of the marine mammals being highlighted in this book. Of the 28 species, subspecies and subpopulations categorized here, 71% is classified as Data Deficient. This only means that we do not have much knowledge of their conditions at sea, the elements that threaten them, and their capacity for survival. This also means that we do not have sufficient scientific information for appropriate management actions.

The need for scientific information cannot be overemphasized especially with the reality of climate change. As climate change is certain to impact the abundance and survival of biodiversity, it is critical that we work to establish its resiliency. This publication is thus an urgent call to generate more information on marine mammals in our seas.

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APPENDICES

Annex A. Checklist of Marine Mammal Species in the Philippines

	TAXA	REMARKS
Order Cetacea OR Cetartiodactyla (Whales, Dolphins and Porpoises)		
Sub-Order MYSTICETI Baleen Whales		
Family Balaenopteridae - Rorquals		
1	*Balaenoptera edeni* Anderson, 1879	**DD.** Sighted off Bohol Sea, Panay Gulf and Sulu Sea; no information on population size or trends. The taxonomy of global population still unresolved, possible a species complex; extent of distribution is unknown.
2	*Balaenoptera musculus* (Linnaeus, 1758)	**DD.** Animals sighted in Bohol Sea possibly belong to the northwestern Pacific population, of which population size is unknown.The global status (ENA1abd) is based on the southern ocean population.
3	*Balaenoptera omurai* Wada, Oishi & Yamada, 2003	**DD.** A recently described species; no reliable population estimates available. Local population off Bohol Sea subjected to hunting in the past and suffered an undetermined loss due to it.
4	*Balaenoptera physalus* (Linnaeus, 1758)	**NA.** Only one sighting [western Sulu Sea, near Dumaran Island, east of Palawan]; identification needs verification.
5	*Megaptera novaeangliae* (Borowski, 1781)	**VU D2.** Only one known breeding location of less than 200 adults off northeastern Philippines [Babuyan Island - northern Sierra Madre].
Sub-Order ODONTOCETI Toothed Whales		
Family Delphinidae - Ocean Dolphins		
6	*Feresa attenuata* Gray, 1875	**DD.** The species is uncommon; population information unknown. The species factors in stranding events [e.g., Palawan] resulting from various threats (e.g., seismic activities, fisheries interaction, solid wastte pollution) the impacts of which need to be determined.
7	*Globicephala macrorhychus* Gray, 1846	**DD.** The species has taxonomic uncertainties. Although widley distributed in the country, populations are fragmented. Population size and trends also unknown.
8	*Grampus griseus* (G. Cuvier, 1812)	**DD.** The species is moderately common but information on population size and trends is limited. The species factors in stranding events [e.g., Palawan, Iloilo] resulting from various threats (e.g., seismic activities, fisheries interaction, marine debris) the impacts of which need to be determined.

	TAXA	REMARKS
Family Delphinidae - Ocean Dolphins (continued)		
9	*Lagenodelphis hosei* Fraser, 1956	**VU A2d.** Philippine status differs from global status (LC) as substantial by-catch is observed to occur in multiple fisheries [i.e., in central and southern Philippines] and, in one case shown to be unsustainable (i.e., easterm Sulu Sea) .
10	*Orcaella brevirostris* (Owen in Gray, 1866)	**EnB1ab(iii).** The Philippine status of the species differs from global (VUA4cd) in that the species is found in only two fragmented habitats in the country (i.e., Malampaya Sound and Iloilo-Guimaras Straits) which together has an estimated total area of less than 5,000 km2. Habitat quality is declining due to various stressors (e.g., increasing number and frequency of fisheries operations and boat traffics) which negatively impact small-sized subpopulations (of possibly with less than 100 individuals) . Current assessment of the Malampaya subpopulation follows that of Smith and Beasley in 2005 as **Critically Endangered C2a (i, ii)**. Pending results of population studies being conducted, the Visayan subppoplation may also be at a higher risk level warranting critically endangered category.
11	*Orcinus orca* (Linnaeus, 1758)	**DD.** The species is rare in the Philippines, having been sighted only in a few areas (i.e., Sulu Sea, Saranggani Bay, Bohol Sea). Information on population size, trends, or ecotypes unknown.
12	*Peponocephala electra* (Gray, 1846)	**DD.** Information on population size and distribution extent limited. Philippine status differs from global status (LC) as the species factors in stranding events [e.g., Romblon, Bataan] possibly resulting from various threats (e.g., seismic activities, fisheries interaction, marine debris) the impacts of which need to be determined.
13	*Pseudorca crassidens* (Owen, 1846)	**DD.** The species is uncommon in the Philippines; information on population abundance and trends unknown.

TAXA		REMARKS
Family Delphinidae - Ocean Dolphins (continued)		
14	*Sousa chinensis* (Osbeck, 1765)	**NA.** Only one record from a stranding in Turtle Island; suspected to be extralimital.
15	*Stenella attenuata* (Gray, 1846)	**DD.** The species is common in the Philippines yet information on population abundance and trends unknown. Philippine status differs from global status (LC) in that the species factors in various fisheries operations as by-catch, the rate and impact of which has not been determined.
16	*Stenella coeruleoalba* (Meyen, 1833)	**DD.** The species is uncommon in the Philippines; information on population abundance, trends and habitat range unknown. Philippine status differs from global status (LC) in that the species factors in fisheries operations as by-catch, the impact of which may be significant to the population.
17	*Stenella longirostris longirostris* (Gray, 1828)	**VU A2d.** Philippine status of the species differs from global status (DD) as substantial by-catch is observed in multiple fisheries throughout its range, with some leading into illegal direct takes. By-catch rate in one case was shown to be unsustainable (i.e., easterm Sulu Sea).
18	*Stenella longirostris roseiventris* Wagner, 1846	**DD.** The spinner dolphin subspecies is confirmed present in the Philippines only recently. Information on total population size, trends and distributional extent is unknown. There is no assessment of its status globally. Locally, it is subjected to illegal direct takes, blast fishing and by-catch which may have a significant impact to the subpopulation.
19	*Steno bredanensis* (G. Cuvier in Lesson, 1828)	**DD.** Philippine status of the species differs from global status (LC). Globally, the species is widespread and abundant with no major threats identified. In the Philippines, it is relatively rare. Information on population size and trends unknown; its habitat types are largely unsurveyed. Yet it factors in as by-catch to gill net fisheries operations (e.g., Babuyan and southern Mindanao).

	TAXA	REMARKS
Family Delphinidae - Ocean Dolphins (continued)		
20	*Tursiops aduncus* (Ehrenberg, 1833)	**DD.** The species is newly recognized in the Philippines. Information on total population size, trends, or distributional extent is unknown. Potential threats exist such as illegal direct takes, blast fishing, by-catch, and proliferation of plastic garbage.
21	*Tursiops truncatus* (Montagu, 1821)	**DD.** Philippine status of the species differs from global status (LC). Globally, the species is widespread and abundant with threats believed to not result in major population decline. In the Philippines, information on total population size or trends is limited; illegal direct takes, by-ctach, IUU catches for live capture, and unregulated dolphin watching tours may negatively impact the population.
Family Kogiidae - Pygmy and Dwarf Sperm Whales		
22	*Kogia breviceps* (Blainville, 1838)	**DD.** There is insufficient information to determine the conservation status of the Pygmy sperm whale in the Philippines.
23	*Kogia sima* (Owen, 1866)	**DD.** No information on the total population size or trends for this species in the Philippines. The species may be subject to multiple low-level threats.
Family Physeteridae - Sperm Whale		
24	*Physeter macrocephalus* Linnaeus, 1758	**VU A1d.** Philippine status follows that of global status by Taylor et al (2008). Commercial whaling, which is the major cause of threat to the global population has ceased. Other potential threats to the species at the regional level (e.g., Philippines) such as marine debris and noise pollution are causes for concern.
Family Ziphiidae - Beaked Whales		
25	*Ziphius cavirostris* G. Cuvier, 1823	**DD.** The species is uncommon in the Philippines; information on population size, trends, or habitat range is unknown. Philippine status differs that of global status (LC) as the species factors in fisheries operations as by-catch.

TAXA		REMARKS
Family Ziphiidae - Beaked Whales		
26	*Mesoplodon densirostris* (Blainville, 1817)	**DD.** The species is uncommon in the Philippines; information on population size, trends, or habitat range is unknown.The species likely factors in fisheries operations as by-catch. Features in stranding incidents (e.g., Guimaras and General Santos) possibly resulting from various anthropogenic threats such as sonar and seismic activities, fisheries interaction and marine debris.
27	*Indopacetus pacificus* (Longman, 1926)	**DD.** The species is uncommon in the Philippines; information on population size, trends, or habitat range is unknown. Features in a stranding incident (e.g., Davao) possibly resulting from ingestion of plastic.
Order Sirenia (Manatees and Dugongs)		
Family Dugongidae - Dugong		
28	*Dugong dugon* (Müller, 1776)	**CR A4c.** Dugongs are reported to occur all throughout the country with accounts of large herds of about 50-100 individuals that date back to the 1600s well up to the early '80s. Severe declines have been observed despite conservation measures put in place (i.e., DAO 55-1991, DAO 15-2004/RA 9147). Populations are reported to be extirpated in many areas where they are historically found while remaining populations have become fragmented. The extent of occupancy has been reduced to about 63%, habitat loss, and degradation to about 30-50%. The number of stranding incidents are increasing in recent years. Persistent threats to both population and habitats include increased interaction with fisheries operations (either direct takes or by-catch), coastal development, siltation, nearshore fisheries operations, and pollution, possibly exacerbated by climate change impacts. Threats are not expected to fully cease in the future and the possibility of reversing such conditions is very low. The Philippine status differs from global status (VU A2bcd).

ANNEX B. Summary of the five criteria (A-E) used to evaluate if a taxon belongs in a threatened Category (Critically Endangered, Endangered, or Vulnerable)

(Source: www.iucnredlist.org)

Use any of the criteria A–E	Critically Endangered	Endangered	Vulnerable
A. Population reduction (declines measured over the longer of 10 years or 3 generations)			
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%
A1. Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased, based on and specifying any of the following: **(a)** direct observation **(b)** an index of abundance appropriate to the taxon **(c)** a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality **(d)** actual or potential levels of exploitation **(e)** effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.			
A2. Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible, based on (a) to (e) under A1.			
A3. Population reduction projected or suspected to be met in the future (up to a maximum of 100 years) based on (b) to (e) under A1.			
A4. An observed, estimated, inferred, projected or suspected population reduction (up to a maximum of 100 years) where the time period must include both the past and the future, and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible, based on (a) to (e) under A1.			
B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)			
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following:			
(a) Severely fragmented, OR Number of locations	1	≤ 5	≤ 10
(b) Continuing decline in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** area, extent and/or quality of habitat; **(iv)** number of locations or subpopulations; **(v)** number of mature individuals.			
(c) Extreme fluctuations in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** number of locations or subpopulations; **(iv)** number of mature individuals.			
C. Small population size and decline			
Number of mature individuals	< 250	< 2,500	< 10,000
AND either C1 or C2:			
C1. An estimated continuing decline of at least (up to a max. of 100 years in future)	25% in 3 years or 1 generation	20% in 5 years or 2 generations	10% in 10 years or 3 generations
C2. A continuing decline AND (a) and/or (b):			
(a i) Number of mature individuals in each subpopulation:	< 50	< 250	< 1,000
or			
(a ii) % individuals in one subpopulation =	90–100%	95–100%	100%
(b) Extreme fluctuations in the number of mature individuals.			
D. Very small or restricted population			
Either:			
Number of mature individuals	< 50	< 250	D1. < 1,000
AND/OR			
VU D2. Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.			D2. typically: AOO < 20 km² or number of locations ≤ 5
E. Quantitative Analysis			
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations (100 years max.)	≥ 20% in 20 years or 5 generations (100 years max.)	≥ 10% in 100 years

Annex C. Conceptual scheme of the procedure for assigning an IUCN Red List Category at the regional level (as specified by IUCN 2001).
(Source: www.iucnredlist.org)