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COMMON NAME USAGE FOR *TRICHECHUS SENEGALENSIS*

While working in Africa for the past nine years I have encountered great confusion over the name "West African manatee" which often leads to problematic issues for conservation and management of the species. The designation "West Africa" applies to 13 countries located on the northwestern side of the African continent and this term is deeply embedded in worldwide usage, but particularly by Africans as it applies to specific cultures, music, etc. Therefore, people in other non-West African countries where *T. senegalensis* occurs often believe that they have a different species, and that anything about the West African manatee does not apply to their country and their manatees. A few examples follow:

- During the CITES Conference of Parties in Bangkok in March 2013, we received comments back from a meeting of range states on our up-listing proposal for African manatees stating that "the IUCN Red List states that there are an estimated 10,000 West African manatees, but there seems to be no estimate for the species in the rest of its range". These are the people making important management decisions for the species on an international level, so clarity was important. We did clarify in a response, but the confusion will continue until people are successfully educated that all manatees in Africa are one species.
- CITES permit applications for scientific sample export have twice been returned to me for "correction" in Central African countries because staff states that they have their "own" manatees, not West African ones. CITES office staff positions turn over frequently and therefore many staff may unfortunately not be educated about the correct names of species. Since they have the ultimate power whether or not to

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give an export permit, it can result in a painful process that basically comes down to the biologist's word against theirs, and even showing them the Red List barely makes a difference. More importantly, this is the same agency charged with regulating trade between countries, so it is important for them to clearly understand the number of species that exist. There have been many other instances within African governments where the same misconception is perpetuated at all levels, from national park staff to government ministers.

- There are always questions about West African vs. Central African manatees in every training workshop from participants working with (or beginning work) the species. The good news is that with increased availability of the internet, people in Africa have more access than ever before to information, but without an understanding that the sparse literature that currently exists applies to all manatees in Africa, problems will continue. It's great that more people are becoming aware of the species, but on the other hand it's no longer a matter of just educating a few people that the African manatee is the only manatee throughout the western side of the African continent. It is a matter of educating people in the 21 countries where they occur, and numerous other stakeholder groups worldwide.

There will be significant positive consequences to shifting the common name usage to "African manatee" (a name that is already listed by the IUCN Red List as a common name for the species). My African manatee colleagues and I believe that adjusting the vernacular usage to "African manatee" will lead to positive change, in that people in Africa will understand that *Trichechus senegalensis* is all one species that requires cooperative efforts between the many countries and people involved. There is only one trichechid on the African continent, so this simple change will instantly make it clear there is only one. This change will not greatly affect future literature, because common names have no formal status in the literature, and the Latin name *T. senegalensis* will still always be present.

Many thanks to Daryl Domning, who encouraged me to write this article. –**Lucy Keith Diagne**, Sea to Shore Alliance, lkeithdiagne@sea2shore.org

UPDATE FROM SIRENIA SPECIALIST GROUP SOUTHEAST USA REGION

The Southeast USA Regional SSG has modified its Objectives and Issues of Concern after some feedback from colleagues. They now are:

Objectives

1. Promote policies that protect and conserve Florida manatees and their critical habitats in the southeast USA at the state and Federal levels.
2. Assist in bringing attention to rehabilitation efforts and investigations regarding manatee mortality events.
3. Assist in bringing attention to the potential impacts of climate change on the distribution of manatees in the southeast USA.
4. Promote educational efforts regarding sirenian conservation in the region to a broad array of stakeholders.
5. To be an expert resource panel for the IUCN and other stakeholders.

Issues of concern

1. Red tide and episodic mass die-offs
2. Habitat loss (seagrass and SAV degradation and loss)
3. Protection of warm water refuges
4. Coastal development
5. Boat speed zones
6. Harassment in sanctuaries

-**Chris Marshall** (marshallc@tamug.edu)

RESULTS OF SIXTH INTERNATIONAL SIRENIAN SYMPOSIUM 2013

The Sixth International Sirenian Symposium was held on December 7, 2013. This symposium was held in conjunction with the 20th Biennial Conference on the Biology of Marine Mammals in Dunedin, New Zealand. Delegates from over 10 countries were present. A total of 17 presentations covering manatee physiology, biology, modeling, monitoring techniques and genetics were given. In addition, Dr. Ivan Lawler gave a special update on the IUCN assessment process for Sirenians, introduced the IUCN criteria and described the data requirements to make these assessments. The symposium was generously sponsored by the Secretariat of the Dugong MOU, Convention on Migratory Species Office in Abu Dhabi.

-**Nicole Adimey** (Nicole_adimey@fws.gov)

SPANISH LANGUAGE DOCUMENT AVAILABLE FOR COMMUNITY EDUCATION

Sarita Kendall of Fundación Natütama in Colombia has developed a document written in very simple Spanish for teaching community members about the importance of monitoring wildlife and conservation. The document was developed for distribution to teachers, community leaders, fishermen, etc., and includes sections on many species including the manatee. If you feel this document may be of use in your area you can access it at:

http://sirenian.org/library/F_Natutama_Caminos_Conservacion.pdf

REQUEST FOR MANATEE AND DUGONG HEALTH CARE PROVIDERS

My name is Dr. Debra P. Moore and I am a veterinarian involved with health care of manatees in Puerto Rico. I am trying to compile a list of all health care providers working with manatees and dugongs internationally. Would you please send me your complete contact information (name, address, email, and phone number) at your earliest convenience. I would like to communicate with you in the future about projects or health issues in your respective countries. Thank you for your help. -**Debra P. Moore** (debramooredvm@gmail.com)

LOCAL NEWS

BRAZIL

News from Omar, an orphaned manatee in rehabilitation in Marajó Island, Brazil North Coast.

Omar, the orphaned manatee (*Trichechus manatus manatus*) rescued by villagers, the GEMAM/MPEG team and IBAMA/PA personnel on 20 July 2013, is doing well in his semi-captive environment in the locality of Passagem Grande, Salvaterra, Marajó Island, Pará, Brazil. Omar has grown significantly since his arrival, now reaching 1.33 m. He weighs 52.1 kg, a 41% increase in five months. Biologists and veterinarians are taking swabs and collecting fungus on the skin for a continuous evaluation of his health aspects. Swab collection indicated the presence of *Citrobacter freundii* and *Escherichia coli* in the anal slit, *Enterobacter* sp. and *C. freundii* in the genital slit and *C. freundii* in the mouth. Results for *Vibrio* and *Aeromonas* were negative in all samples taken. Skin biopsies and swabs revealed the presence of *Curvularia* sp. Species of *Curvularia* are saprophytes or phytopathogenic, occur mostly in tropical and subtropical environments, and are isolated from soil, air, organic matter, living plants, animals in general, as well as humans. These fungi have also been known to opportunistically infect wounds. According to the literature, the infection causes characteristic lesions and discoloration as the darkly colored fungus grows. Omar was treated with ketoconazole (20mg/g) cream and the lesions have rapidly retreated. Future plans include the release of Omar in his natural environment in the Marajó bay area and monitoring using satellite tracking. We acknowledge IBAMA/PA personnel, especially Veterinarian Leandro Aranha, for providing both logistical support and provisions that are helping Omar's care in Passagem Grande. **-Salvatore Siciliano^{1,2}, Renata Emin-Lima², Maura E. M. Sousa², Jorge A. B. Soares², Dália P. Rodrigues³ and Fernanda S. C. Biancalana²**

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Figure 1. Omar, in his semi-captive environment in the village of Passagem Grande, Marajó Island, Brazil North Coast, is visited by Veterinarian Jairo Moura Oliveira, in October 2013. Photo courtesy: Rodrigo Baleia/GEMAM archives.

HONDURAS

Recent Manatee Research and Conservation Efforts in Honduras. The first Honduran national workshop for the biological monitoring of manatees was held in the city of La Ceiba on January 19-23, 2014. The primary objective of the workshop was to follow the recommendations set out in the National Protocol for Manatee Conservation (NPMC) approved in 2011 and highlighted by Gonzalez-Socoloske *et al.* (2011), by providing training on monitoring techniques and centralizing data collection. This workshop consisted of the first of a series of steps towards the formation of a National Manatee Recovery and Conservation Plan.

Participants from all protected areas with known manatee presence were invited, as well as key members of the federal and local government, such as Jose Galdamez, the vice minister of Wildlife and Protected Areas of the National Institute of Forestry Conservation (ICF). The primary organizing body was CREDIA (Honduran NGO) in collaboration with FUCSA (Honduran NGO), ICF, and Andrews University. Funding was provided by a grant from USAID ProParque.

The first part of the workshop consisted of a series of presentations on the status of manatees in Honduras and the conservation efforts past and present. Forty people participated in this part of the workshop. Dr. Gonzalez-Socoloske delivered the keynote address. During this part of the workshop, both local and national press were invited and a series of radio and television interviews were given to help raise awareness of manatee conservation at the local and national level.

The second part of the workshop consisted of conducting a pilot study in Cuero y Salado Wildlife Refuge to determine the best manatee monitoring method. Dr. Gonzalez-Socoloske provided training to a small group on both visual (Aragones et al. 2012) and sonar (Gonzalez-Socoloske et al. 2009) boat surveys. Data are currently being collected using these methods to determine which is more adequate for that particular site.

In the third part of the workshop, a working group of 20 individuals was formed with members from all areas with known manatee presence covering the whole Caribbean coast of Honduras. The objective of this group is to coordinate efforts and to centralize data. One of the major results from the formation of this group was the establishment of a Honduran manatee-standing network, which has not existed before. The aim of the standing network is to collect baseline data on manatee mortalities and standing events to give us a better idea of the current threats and how they vary between sites. Dr. Gonzalez-Socoloske provided training on basic necropsies and genetic sample collection for future genetic studies, of which none exist from Honduras. Since the workshop, two manatee mortalities have already been reported and data were collected, including tissue and bones samples. —**Daniel Gonzalez-Socoloske** (Assistant Professor, Department of Biology, Andrews University, Berrien Springs, MI 49103; gonzalezd@andrews.edu) and **Iris Mariela Cruz** (Coordinator of Protected Areas and Biodiversity, CREDIA, La Ceiba, Atlantida, Honduras)



Honduras manatee monitoring workshop participants.

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MEXICO

Presence and persistence of the West Indian manatee (*Trichechus manatus manatus*) after 15 years in the north of Quintana Roo, Mexico. The manatee is an endangered species and is protected by national and international laws throughout its range. In Mexico, manatees are present in the Gulf coast and in the Caribbean Sea. The Mexican Caribbean has a high influx of tourism, which may affect the presence of manatees in the area.

From June to December 2013, 227.27 hours of observation were conducted to detect the presence of manatees in Xel Ha and Xpu Ha inlets, both located north of the state of Quintana Roo, in the popular tourist corridor Cancun-Tulum. This area is particularly important as it is the contact area between the two manatee populations in Mexico. Four different manatees were detected in the estuary of Xpu Ha, presenting a relative abundance index of 0.82 manatee/ hr. Manatees were present in 96.6% of the survey days and during 66.6 % of the time a cow-calf pair was observed. No manatees were observed at Xel Ha.

Our results differ from those obtained by a study conducted 15 years ago, in which eight manatees were observed in Xel Ha and two in Xpu Ha. It suggests that the change in presence and use of such water bodies by manatees is related to the number of tourists using the area. Xel Ha receives on average 2184 visitors per day, while Xpu Ha only receives 22.

However, manatees are using highly impacted tourism areas, such as the north of Playa del Carmen and Holbox, probably moving from protected areas. Management strategies designed to protect manatees in such situations are needed. -**Mireya Díaz Ortiz** (Universidad Autonoma de Guadalajara), **Nataly Castelblanco-Martínez** (Oceanic Society, US) , and **Coralie Nourisson** (GEOMARE; CIBIO, Research Center in Biodiversity and Genetic Resources, University of Porto, Coralie.nourisson@gmail.com)

Manatee pedigrees in Mexico: help for conservation and management. Little is known about pedigrees, relationships and reproduction in manatees. Pedigree studies can shed light on the numbers of breeders in populations and the reproductive success among individuals. Information from pedigrees can be further used to manage levels of inbreeding and genetic diversity in healthy captive populations. Maintaining fitness in captive individuals could allow them to better adapt to changing environments and ensure greater success of management decisions.

A pedigree study was conducted in Mexico on captive Antillean manatees and on 98 wild manatees using two sets of microsatellite markers. Several pairs, both captive and wild, were inferred to have high relatedness and order relationships (i.e., parent-offspring, full sibling, and half sibling). Two captive manatees, which reproduced together three times, had a 99.2% Bayesian posterior probability of being fraternal twins. The high number of inferred half siblings from the population in Jonuta, Tabasco

may indicate that one or more dominant males fathered calves with multiple females, thus illustrating that inbreeding in wild manatees does occur and should be monitored. In the wild pedigree study, several unexpected relationships were detected by the analysis, including some that were implausible. The high number of linked relationships is likely a by-product of low marker polymorphism or latent coancestry. Additional markers will be required to distinguish between these alternatives and to reconstruct more reliable pedigrees.

Currently, successful manatee mating has occurred in captive facilities in Mexico between biologically related individuals. Now that empirical relatedness data are available, it is recommended that breeding between closely related manatees be restricted and that selective breeding be employed to optimize the genetic health of progeny. **-Nourisson C.^{1,2}, Morales-Vela B.³, Tringali M.⁴, Padilla-Saldivar J.³, Clark A.⁵ and McGuire P.M.⁶**

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- 3- El Colegio de la Frontera Sur, Av. Centenario km 5.5, Chetumal, Quintana Roo, Mexico
- 4- Florida Fish and Wildlife Research Institute, 100 Eighth Avenue S.E., St Petersburg, FL 33701, USA
- 5- ASPCA UF Veterinary Forensic Program, W.R. Maples Center for Forensic Medicine, College of Medicine, University of Florida, 4800 SW 35th Drive, Gainesville, FL 32608
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ABSTRACTS

Modeling habitat and bycatch risk for dugongs in Sabah, Malaysia. Dana K. Briscoe, Seth Hiatt, Rebecca Lewison, Ellen Hines. 2014. In press, Endangered Species Research.

Bycatch of marine megafauna in fishing gear is a problem with global implications. Bycatch rates can be difficult to quantify, especially in countries where there are limited data on the abundance and distribution of coastal marine mammals, the distribution and intensity of fishing effort, coincident interactions, and limited bycatch mitigation strategies. The dugong (*Dugong dugon*) is an IUCN listed vulnerable species found from the eastern coast of Africa to the western Pacific. As foragers of seagrass, they are highly susceptible to bycatch in small-scale fisheries. To address the knowledge gaps surrounding marine mammal bycatch, we used existing survey and fishing effort data to spatially characterize the risk of bycatch for this species. With Sabah, Malaysia as a case study, we used presence-only modeling techniques to identify habitat associations of dugongs using a maximum entropy distribution model (MaxEnt) based on published sightings data and several geophysical parameters: coastal distance, depth, insolation, and topographic openness. Model outputs showed distance from the coast as the highest-contributing variable to the probability of dugong presence. Results were combined with previously published fishing effort maps of this area to develop a predictive bycatch risk surface. Our analyses identified several areas of high risk where dugong surveys were conducted, but also identified high-risk areas in previously unsurveyed locations. Such methods can be used to direct field activities and data collection efforts and provide a robust template for how existing sightings and fishing effort data can be used to facilitate conservation action in data limited regions.

Variation in the hindgut microbial communities of the Florida Manatee, *Trichechus manatus latirostris* over winter in Crystal River, Florida. Merson, S.D., D. Ouwerkerk, L-M. Gulino, A. Klieve, R.K. Bonde, E.A. Burges and J.M. Lanyon. 2014. FEMS Microbiology Ecology 87(3):601-615. DOI: 10.1111/1574-6941.12248.

The Florida manatee, *Trichechus manatus latirostris*, is a hindgut-fermenting herbivore. In winter, manatees migrate to warm water overwintering sites where they undergo dietary shifts and may suffer from cold-induced stress. Given these seasonally induced changes in diet, the present study aimed to examine variation in the hindgut bacterial communities of wild manatees overwintering at Crystal River, west Florida. Faeces were sampled from 36 manatees of known sex and body size in early winter when manatees were newly arrived and then in mid-winter and late winter when diet had probably changed and environmental stress may have increased. Concentrations of faecal cortisol metabolite, an indicator of a stress response, were measured by enzyme immunoassay. Using 454-pyrosequencing, 2027 bacterial operational taxonomic units were identified in manatee faeces following amplicon pyrosequencing of the 16S rRNA gene V3/V4 region. Classified sequences were assigned to eight previously described bacterial phyla; only 0.36% of sequences could not be classified to phylum level. Five core phyla were identified in all samples. The majority (96.8%) of sequences were classified as Firmicutes (77.3 – 11.1% of total sequences) or Bacteroidetes (19.5 – 10.6%). Alpha-diversity measures trended towards higher diversity of hindgut microbiota in manatees in midwinter compared to early and late winter. Beta-diversity measures, analysed through PERMANOVA, also indicated significant differences in bacterial communities based on the season.

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