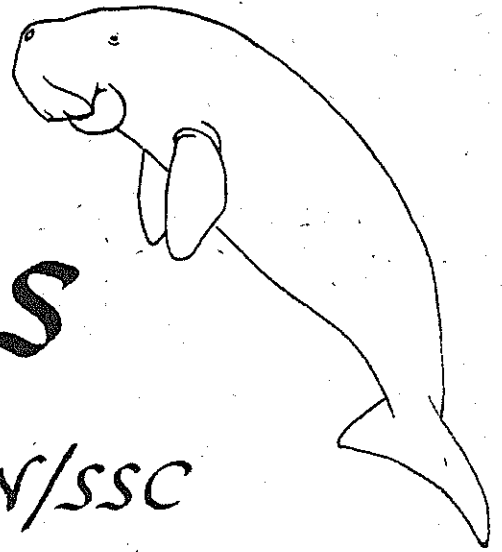


Sirenews



Newsletter of the IUCN/SSC Sirenia Specialist Group

NUMBER 38

OCTOBER 2002

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EDITORIAL: MOVING THE GOALPOSTS IN FLORIDA

On October 9, 2002, the Florida Fish and Wildlife Conservation Commission (FWCC) released a preliminary report recommending that the Florida manatee be down-listed from endangered to threatened. This may (or may not) do significant damage to manatee conservation. According to their press release:

"The preliminary biological status review has been sent to a panel for external scientific review. Because this is a preliminary report, that has not yet undergone peer review, the recommendation is only that and is subject to change. Based on peer evaluations, staff will produce the final biological status report and present their recommendation to the Commission during their January meeting. If the Florida manatee is down-listed protections will still be in place. Before any change to the status of the manatee could be implemented a management plan will have to be developed for the species."



UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DE SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

Commission de la sauvegarde des espèces—Species Survival Commission

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Thus the change in the manatees' status proposed in this document is not yet official; and even if it becomes official, federal laws may preclude actual weakening of manatee protection measures already in place. But at the very least, it provides a propaganda weapon to opponents of manatee protection, because it gives official credence to the claim that Florida manatees are no longer "endangered".

Of course, U.S. political scandals in recent years have reminded us to pay close attention to the definitions of words used by lawyers. In this case, it all depends on what the meaning of "endangered" is, because (as explained in the following editorial by Pat Rose) we're not all reading from the same dictionary. - **DPD**

* * *

In early October, the Florida Fish and Wildlife Conservation Commission (FWCC) finished its preliminary review of the currently endangered manatee population's status and found that it meets their definition for "Threatened."

Some fishing and boating groups are rejoicing. They are getting what they wanted -- a declaration by the state of Florida that manatees are no longer endangered. Never mind that manatees are still listed as endangered under the federal Endangered Species Act. Never mind that anywhere else in the world manatees would still be considered endangered if these same standards were applied. Never mind that the FWCC review found the Florida manatee population might be reduced by more than 50 percent within the next 45 years. And don't forget that a new record for manatees being killed by boats is being set nearly every week.

What changed, you may ask, to bring about this miraculous recovery? They simply changed the definition of the classification. "What's in a name?" Shakespeare asked. This time, a name could have dire and lasting consequences.

We can no sooner eliminate poverty and save starving children by lowering the definition of poverty than we can recover an endangered species by raising the standards for it to qualify as endangered. Yet this is just what the state of Florida has done. They did it to the federally listed endangered red-cockaded woodpecker, because of pressure from logging and development interests, and they are about to do it to the federally listed endangered manatee, because of pressure from boating and marine industry interests.

Faced with a continuation of accelerating boating-related manatee mortality and the prospects of new slow speed zones in order to protect manatees from increasing numbers of boating strikes, a recreational fishing group, the Coastal Conservation Association, petitioned the FWCC last year to reevaluate the endangered status of manatees. Knowing that in 1999, following heavy lobbying from the legislature, the FWCC made it much more difficult for species to be listed as endangered or threatened, the fishing group hoped that by forcing the FWCC to review the status of the manatee population under their new, much stricter criteria, manatees would not meet the new definition for endangered:

You see, although the FWCC had adopted the basic listing criteria used by the International Union for the Conservation of Nature (IUCN) for classifying imperiled species, they conspicuously elected to use different titles or names for these classifications. Under the modified language, in order for manatees to remain classified as Endangered, they would now have to meet the IUCN standards for Critically

Endangered, which means a species may have to undergo or be at the risk of undergoing an 80 percent decline in its population. Similarly, in order for manatees to even be classified as threatened, they would have to meet the IUCN standards for Endangered [the IUCN definitions can be found at <http://www.redlist.org/info/categories_criteria2001.html>]:

- IUCN Critically Endangered = FWCC Endangered;
- IUCN Endangered = FWCC Threatened.

Under the new criteria, the FWCC has made it almost impossible for any species currently listed as endangered on the state's protected species list to remain so. The federal Marine Mammal Commission (MMC) has stated that even the critically endangered northern right whale, with a population of around 300 individuals, would not continue to be listed as endangered under the state's too-stringent criteria. The MMC also stated that the FWCC's criteria "as currently formulated are fundamentally flawed and inappropriate for marine mammals, as well as sea turtles and perhaps certain other species" and strongly recommended the manatee retain its endangered status and that the state revise its criteria.

The findings of the FWCC review should serve as a warning that we must reduce human-related manatee mortality and other negative impacts to manatees and their habitat. Certainly, with record-breaking manatee mortality from watercraft collisions (85 deaths, or 33 percent of all mortalities so far this year), and more and more boats operating in manatee habitat every day, manatees need all the help we can give them.

Save the Manatee Club maintains that the state criteria need to be modified in order to be meaningful for the evaluation of long-lived marine mammals such as the manatee. The FWCC should immediately convene a scientific panel to develop appropriate species-specific listing criteria.

It should be a wake-up call for everyone who loves manatees that their protected status under Florida law presently hinges on a question of semantics. Playing word games doesn't change the reality of the serious and increasing threats manatees are facing for their long-term survival; as clearly described in the FWCC status review. The manatee's status should remain unchanged until they are adequately protected, their habitat is secured, and a healthy, sustainable population is ensured for many generations to come.

- **Patrick M. Rose** (Director of Government Relations, Save the Manatee Club)
(Reprinted from the *Daytona Beach News-Journal*, Oct. 10, 2002.)

SIRENIAN GENETICS WORKING GROUP

I am in the process of tabulating a list of Who's Who in the sirenian genetics community. If you have been working on a related genetics project, or are presently working on a genetics component of research, or know someone who plans to or is, please contact Bob Bonde (bonde@usgs.gov) of the U.S. Geological Survey. I would like your detailed contact information (name, address, phone number, and e-mail address) and a brief paragraph on your project design and accomplishments to date. I would also

like to form a Genetics Working Group and would add your name to a list of active researchers. Perhaps we could even develop an electronic newsletter, look at ways of communicating and sharing information, and trouble-shoot communal problems in a group format. - **Robert K. Bonde** (Biologist - Sirenia Project, U.S. Geological Survey, Florida Caribbean Science Center, 412 N.E. 16th Avenue, Room 250, Gainesville, Florida 32601-3701; phone: (352)372-2571 ext.17; fax: (352)374-8080)

LETTER

To *Sirenews*:

In *Sirenews* No. 33 (April 2000) you mention our company. You are of the opinion that there is little known about the "true" status of African manatees in the wild.

In recent years there were at least two [major] researches on *Trichechus senegalensis* in Guinea-Bissau: [one by] Schuhmann et al. (1996) published in *Natur und Museum* (Frankfurt), and [one] by ICN Portugal (1998). Both expeditions came to the same result of very strong populations of this species in all the greater freshwater rivers on the mainland as well as in the Bijagos Archipelago.

Also it is not [true that] there is "continued commerce" in this species. The demand [for captive animals] will be world-wide very [much] less than the annual export quota of 6 animals in Guinea-Bissau. The locals capture much more of them just to eat them. - **M. Schuhmann** (River Zoo-Farm, Guinea-Bissau)

NEW WEBSITE

I wish to announce the "official opening" of the *Fundación Salvemos al Manati de Costa Rica*'s website (www.fundacionmanati.org). I think that it is a good showcase of the things that we've been doing in the region since I started working with manatees as an M.Sc. student until now, and a good way to be grateful to the organizations who have funded our work during the last years.

Though the site has been thought to fill what I consider a great gap of information about manatees in the Spanish-speaking community, we have also designed an English version of our website to share our results, documents and future plans with the wider manatee community and our funding sources. The English version has not been thoroughly reviewed for spelling and grammatical errors but I think it will fulfil its role until then. I hope you enjoy it. - **Ignacio Jiménez**

NEW JOURNAL

It is our pleasure to bring to your knowledge the launch of *The Latin American Journal of Aquatic Mammals (LAJAM)*. The journal aims to promote and disseminate scientific knowledge concerning aquatic mammals and their environment in Latin America. Ideally, such knowledge will be developed through collaboration among scientists from many countries and various disciplines. For several years there has been discussion within the Latin American Society for Aquatic Mammals (SOLAMAC) about

the importance of producing a journal of this kind. Members of the Society have expressed differing views on the subject, and as a consequence the journal's gestation has taken longer than many of us had hoped it would. Despite obvious progress in the quantity and quality of aquatic mammal science in Latin America during the last decade, the dissemination of scientific knowledge has been limited. The SOLAMAC believes the Journal is an appropriate way to expand the frontiers. The success of the Journal will depend on the dedication and good will of all members of the Society and researchers. All members of SOLAMAC, aquatic mammal researchers and students are invited to be a part of this challenge.

The *LAJAM* will be published twice a year in English. Additional information, including the 'guide to authors' can be obtained from the SOLAMAC webpage (www.solamac.org) or by contacting the editors (lajam@infolink.com.br).

The inaugural volume of the journal (Special Issue on the Biology and Conservation of the Franciscana) has just come out and will be officially launched during the 10th South American Conference on Aquatic Mammals/4th Meeting of the Latin American Society for Aquatic Mammals to be held from 14 to 19 October in Valdivia, Chile. - **Eduardo R. Secchi and Salvatore Siciliano**, Managing Editors

CALL FOR PROPOSALS

Sirenian International is a grassroots organization dedicated to worldwide manatee and dugong conservation through research and education. We are interested in sponsoring research, conservation, and education projects focused on manatees and/or dugongs around the world, with priority given to projects in developing nations where funding is traditionally difficult to secure. Typical awards are US \$500 - \$1,000.

There is no deadline for application; proposals are accepted year-round. HOWEVER, grants are awarded subject to review by our Scientific Advisory Council and the availability of funds. Please send a preliminary email to Sirenian International Grant Proposals (c/o caryn@sirenian.org) to determine current availability of funds and status of the review process, which is semi-annual and roughly correlated with *Sirennews* publication dates of April and October.

In keeping with our mission of sirenian conservation through inter-cultural collaboration, we encourage networking, community outreach, and student development components in all proposals. We will use the following criteria to evaluate grant proposals:

- Involvement of recognized representatives of host countries (e.g., governmental agencies, NGOs, academic institutions, local students) in the planning, implementation and/or evaluation of the proposed project.
- Inclusion of local people/communities in project design, implementation, data collection, data reduction, etc.
- Sound project design, meeting the standards of peer review.
- Demonstrated effectiveness at presenting results to popular and technical audiences.

- Intent to publish findings at scientific meetings, in peer-reviewed journals and/or through the public media (e.g., popular magazines, newsletters, radio, TV, Internet).
- Plan for educational outreach prior to, during, and/or after the conclusion of the project (e.g., newsletter articles, local presentations).

Each grant recipient agrees to register with Sirenian International as a Participating Member and to submit information about their project to SI for use on our website and in our newsletters. To apply for a small grant, please submit the following:

- Cover letter, briefly outlining your request for funds (1-2 pages).
- A concise proposal (5-10 pages) that includes:
 - relevance of project and appropriate background information, including a literature review;
 - clearly stated objectives and how the anticipated results of the project relate to the stated goals of any appropriate manatee or dugong conservation efforts within your host country or at the regional level if your host country has no conservation program;
 - clearly stated methods, estimated duration of the project, and plans for follow-up, application of results, and/or future work;
- resume or CV (1-2 pages) for each project leader;
- detailed budget (1-2 pages), including matching funds if necessary to complete project, and whether matching funds are applied for or already secured.
- two (min.) to three (max.) letters of recommendation (1-2 pages), complete with your reference's contact information (e-mail addresses and phone numbers preferred). If you are a student, one letter should be from your academic advisor; if you are working within an organization, one letter should be from your supervisor or executive director. **Important: If you are working as a visiting researcher/conservationist/educator outside of your own homeland, one reference must come from a local collaborator.**

IMPORTANT: Electronic submissions in English are preferred. **Combine** the cover letter, proposal, CV, budget, etc., in **ONE** file and send as an attachment to e-mail [MSWord document (.doc) or Rich Text Format (.rtf)]. **DO NOT** use fancy formatting; **DO NOT include images or photos in the document.** Please ask your references to send letters without any images or logos. Submit to <caryn@sirenian.org>. For more information about Sirenian International, please visit our website at <<http://www.sirenian.org>> or contact Caryn Self Sullivan (200 Stonewall Drive, Fredericksburg, VA 22401 USA; e-mail: <caryn@sirenian.org>). Sirenian International, Inc., is a non-profit, tax-exempt 501(c)(3) organization incorporated in Virginia, USA.

LOCAL NEWS

COSTA RICA

Offshore Oil Drilling Defeated.

- Plans to open Costa Rica's Talamanca coast to oil drilling have been killed by the Costa Rican government, following two years of protests on behalf of the region's wildlife (including manatees), indigenous population, and ecotourism industry. The U.S.-based Natural Resources Defense Council (NRDC) helped in expanding the protests internationally.

Drilling rights had been lobbied for by Harken Costa Rica Holdings, a company co-owned by MKJ-Xplorations and Harken Energy, a Houston-based oil and gas company with ties to U.S. President George W. Bush. NRDC is seeking to obtain State Department documents detailing how the Bush administration may have pressured the Costa Rican government on behalf of Harken interests. - (Source: NRDC newsletter *Nature's Voice*, Jan./Feb. and Sept./Oct. 2002)

FLORIDA

Manatee Deaths Hit Record High. - Watercraft-related manatee mortality has reached an all-time record high of 83 deaths as of late September. On September 26, a manatee died at the Sea World of Florida rehabilitation facility in Orlando, Florida. The manatee had been struck by a boat in Brevard County in July 2002. This recent manatee death also sets a new all-time record high of 14 watercraft deaths in Brevard County, which also leads the state in total manatee mortalities.

In general, about 25% of manatee deaths can be attributed to boat strikes,

said Tom Pitchford of the Florida Fish and Wildlife Conservation Commission's Pathobiology Laboratory. "Last year there were 81 manatees killed by boats, which is about average for the past three years," he said. So far this year, however, 33% of manatee deaths have been from collisions with boats, as of September.

Since the early 1990s, boat registration in Florida has more than doubled. Presently, there are over 900,000 boats registered in Florida and approximately 400,000 boats registered in other states using Florida's waterways.

Statistics from the Florida Marine Research Institute show that most watercraft-related manatee deaths are attributed to impacts from the boat hull or lower unit of the motor rather than propeller cuts. Because they feed on aquatic vegetation, they prefer shallow waters where there is often not enough clearance for a boat hull to pass safely over a manatee's back. Therefore, any fast-moving boat can injure or kill a manatee.

To put these numbers in some perspective, the total annual Florida manatee mortality in recent years has been in the range of 7-13% of the highest statewide minimum population count ever recorded (3,276 in 2001). This is about the same as some estimates of the manatee's intrinsic rate of increase, indicating that the population may already be barely able or unable to replace losses of this magnitude, and certainly could not sustain much of an increase in mortality rate without going into a decline. - (Sources: *St. Petersburg Times*, July 10, 2002; FMRI.)

"Manatee Chow" Developed -

Manatees at the Homosassa Springs Wildlife State Park primarily eat romaine lettuce and other greens. Now a researcher suggests the park could save another kind of green - cash - by altering the sea cows' diet.

In recent months, the park has fed its nine manatees a new chow that University of Florida (UF) veterinarian Paul Cardeilhac developed. The nuggets are a concentration of all the nutritional ingredients the captive creatures would pick up if they were munching weeds in the open waters.

Each manatee consumes 50 or more pounds of lettuce per day, so Cardeilhac estimates the park could save US\$73,000 per year by feeding them his chow along with lesser amounts of lettuce and other vegetables.

Because the food has a concentrated nutrient density, a manatee would need just 2½ pounds of the chow a day at an annual cost of US\$2,000. Fresh produce could cost US\$18,000 per year for each animal.

"The manatees in captivity are there primarily because of injuries caused by humans," Cardeilhac was quoted as saying in a UF news release. "It's our responsibility to take care of those animals. We don't want the cost of feed to be prohibitive of keeping a manatee in captivity as long as needed."

The nine manatees in Homosassa Springs are among 43 manatees in captivity nationwide. Park visitors can observe the gentle giants.

The park manatees get the nuggets - which consist of alfalfa, soybean meal and hulls, kelp, wheat and vitamins and minerals - as a part of the daily manatee shows. The nuggets also float, although when dropped in the park's feeding area - known as the "salad

bar" - they tend to get snatched by the wild sheepshead that share the fishbowl area with the manatees, according to veterinarian Mark Lowe.

Lowe said he is monitoring the manatees closely to make sure the new food doesn't cause more problems than it might solve. Manatees are built to process large quantities of vegetation every day, so lettuce and carrots will always be part of their menu at the park.

"There is no way I would ever dare stop that. Manatees are a browser, a grazing type of animal," Lowe said.

"My manatees in Homosassa are fat and I was hoping to give them something that might help them lose 100 pounds or so," Lowe said. That means the chow that has been used so far, which was designed to be highly digestible and packed with calories, would not be good in the long run to feed the Homosassa captive herd. It was basically created to help captive injured animals who need concentrated nutrition.

No problem. Cardeilhac, who is a professor at UF's College of Veterinary Medicine and Institute of Food and Agricultural Sciences, has devised a second formula for manatee maintenance. Lowe said that version soon will be tried at the park. It is less digestible and contains fewer calories. - **Barbara Behrendt** (*St. Petersburg Times*, October 16, 2002)

5,500,000 More Floridians by 2025. - A new report by Negative Population Growth (NPG) estimates that if Florida does not institute a plan to limit population growth, it can expect more than 5.5 million new residents to its present population of over 16 million in the next 25 years, further overwhelming the infrastructure and

damaging the environment for people, manatees, and other wildlife alike.

An NPG poll in 1999 found that over 70% of Florida voters believe overcrowding and overpopulation is a major problem in the state; nearly 60% believe that adding 5 million more people is a serious problem; and 68% agree that "Florida would be better-off in the long term with a smaller population."

In a related development, the *St. Petersburg Times* reported on Nov. 10, 2001, that an internal document of the U.S. Fish and Wildlife Service (FWS), prepared over the previous summer by the FWS Vero Beach office and labeled "Not For Release", had come to light as part of the manatee-protection lawsuit filed by the Save the Manatee Club and other environmental groups. In it, FWS officials wrote that if there were enough officers on the waterways enforcing boat-speed regulations, "then the number of boats on the water ... would largely be irrelevant." They calculated that because the state had recently hired 25 new game officers and reassigned 23 more to manatee protection duties, Florida could add 369,920 more boat slips over the next 10 years. Currently, the state averages about 5,000 new slips a year.

Environmental advocates said that they were appalled at the philosophy expressed in the document, and that it undercut the whole premise of having individual Florida counties develop their own manatee protection plans - a process that has been underway since 1989. These plans are premised in large part on the critical need to control the number of boats in manatee habitat.

For a copy of "Focus on Florida: Population, Resources, and Quality of

Life", contact NPG at 1-202-667-8950 or <npg@npg.org>.

Guiltless in Miami. - O.J.

Simpson has pleaded innocent to a charge that he sped through a no-wake zone near Miami's downtown in a power boat, his attorney said Sept. 25. Simpson's 30-foot boat was ticketed July 4 by a Marine Patrol officer for creating a wake in an area where speed limits have been reduced to protect endangered manatees, authorities said. Also on board was Simpson's ex-girlfriend, Christie Prody.

Lawyer Yale Galanter said Simpson entered his plea Sept. 17, five days after he was issued an "affidavit of noncompliance" by a judge for failing to appear for an arraignment. Galanter said he did not believe Simpson was required to appear in court on that date. A hearing on the boating charge has not yet been set. Simpson chose to plead not guilty rather than pay the US\$65 fine, Galanter said.

Simpson, 55, was acquitted of murder charges in the 1994 slayings of his wife, Nicole Brown Simpson, and her friend, Ronald Goldman. A civil jury later held the former football star liable for the killings and ordered him to pay the victims' survivors US\$33.5 million. He continues to maintain his innocence in the killings. - (Sources: Associated Press Online; *The Orlando Sentinel*)

JAPAN

International Dugong Symposium. - An International Dugong Symposium was held in Tokyo on 28-29 September 2002. It was sponsored by the World Wide Fund for Nature Japan, the Nature Conservation Society of Japan, and the Save Dugong Campaign Center,

with the cooperation of the Mammalogical Society of Japan.

The purpose of the symposium was to study the United Nations Environment Programme (UNEP) "Dugong Status Report and Action Plans for Countries and Territories," adopted in Feb. 2002 <<http://www.unep.org/DEWA/reports/dugongreport.asp>>, and to exchange recent information about research and conservation activities regarding the dugong in various parts of the world, and also to draw up an action plan for the protection of the dugongs of Okinawa.

The central to northern coastline of Okinawa Island is the only known habitat of the dugong in Japan. This distribution area is extremely restricted and isolated from other populations, and the number of individuals is thought to be very small. Okinawa's dugongs face serious threats from incidental bycatch in fishing nets and plans for the construction of a military base in the middle of their habitat [see *Sirenews* Nos. 31 and 34]. Protection measures are urgently needed to keep the Okinawan population of dugongs from going extinct. The most important thing will be to stop construction of the military base in their habitat. Meanwhile, elsewhere in Okinawa:

Landfill in Dugong Habitat Already Begun. - Authorities have announced that they would start landfill work at the Awase tidal flat area in Okinawa, beginning 8 October 2002.

The Okinawa General Bureau, the central government agency in charge of development projects in Okinawa, has thus ignored its own Review and Monitoring Committee for the Environment. The Committee was established to review the feasibility of

large-scale mechanical transplanting of seagrass beds at Awase. The last meeting of the Committee was held on 30 September, and some members expressed their doubts about the feasibility of such large-scale mechanical seagrass transplanting. However, the Okinawa General Bureau concluded that the Committee had spent enough time on discussion, and that the monitoring of transplanted seagrass should be continued while construction goes ahead, with a view to improving transplanting techniques. Meanwhile, they decided that most of the transplanting of seagrass will be carried out by hand.

Local conservation NGOs have naturally raised the question of why the Committee went to so much trouble to study the mechanical transplantation process if transplanting by hand is feasible, and further, whether a sufficient extent of seagrass beds can be transplanted by hand. The rationale behind the experimental mechanical transplantation idea was that a large amount of seagrass must be transplanted to make room for the landfill. Most NGOs oppose the project altogether, as it would needlessly destroy one of the few remaining natural tidal flat/sea grass wetlands in Okinawa.

It is apparent that the Okinawa General Bureau, together with the Okinawa Prefectural Government and Okinawa City, want to start landfilling within this fiscal year no matter what their Committee says. This is irregular procedure. Moreover, developers have paid insufficient attention to domestic and international concern about the importance of remaining tidal flat areas in Okinawa Island.

The Ministry of Environment published a list of "500 Important

Wetlands in Japan" this year. The Awase Tidal Flat Area is one of them. A recent survey by the same Ministry has also revealed that the Awase area is one of the three most important sites for endangered dugongs. It is unbelievable that the Japanese authorities would seriously embark on the destruction of such important wetland between the Johannesburg Summit and the Ramsar Convention on Wetlands Conference of the Parties (coming up in November).

For further information on Awase, please visit the web pages in English prepared by local conservation NGOs: <<http://www.ne.jp/asahi/awase/save/english/>>. If you would like to express your concern over this disturbing decision, please help local NGOs in Okinawa by sending messages to the following e-mail addresses or through those web pages:

The Prime Minister, Mr Jun-ichiro Koizumi: <<http://www.kantei.go.jp/foreign/forms/comment.html>>

The Minister in charge of Okinawa Affairs, Mr Hiroyuki Hosokawa: <<http://www.iiynet.or.jp/cao/kanbou/opinion-kokusai-e.html>>

The Ministry of Environment: <MOE@env.go.jp>

The Okinawa General Bureau: <soumu2@ogb.cao.go.jp>

The Okinawa Prefectural Government: <okinawa@pref.okinawa.jp>

Please CC to a local conservation NGO in Okinawa, to which you can also write for further information: <awase_info@yahoo.co.jp> - (Source: SIRENIAN listserv)

SOUTHEAST ASIA

Tri-national Dugong Conservation Project in Vietnam-Cambodia-Thailand, July 2002. - Sirenian

International awarded a small grant to Kanjana Adulyanukosol of the Phuket Marine Biological Center (Phuket 83000, Thailand), enabling her to participate in the design and set-up of a dugong and seagrass habitat research and monitoring project sponsored by the Marine and Coastal Programme of WWF Indochina. Ms. Adulyanukosol joined Dr. Ellen Hines from San Francisco State University, USA; Mr. Nick Cox from WWF Indochina; Mr. Nguyen Xuan Hoa from the Institute of Oceanography, Nha Trang, Vietnam; Ms. Hoang Thi To Linh from WWF Indochina; Mr. Phay Somany from WCS, Cambodia; and Mr. Leng Sam Ath from the Department of Fisheries, Cambodia, for a two-week expedition in July.

Objectives - During the expedition, the WWF team interviewed local fishermen and conducted habitat surveys in Cambodia and Vietnam. The general objectives were: (1) to interview local fishermen about the status of dugongs and seagrass; (2) to investigate fishing gear that causes injury to dugongs and fishing gear that destroys seagrass habitat; (3) to survey seagrass areas in order to know the density, species, and status of seagrass habitat; (4) to learn what the local people believe about dugongs, such as the usage and sales of dugong parts as food, medicine, and amulets, and myths/legends about dugongs; and (5) to learn the opinions of the local people regarding dugongs and seagrass conservation. Forty people from Cambodia (20) and Vietnam (20) were interviewed during the two-week expedition.

Results - In Cambodia, from Kampot village south to Kep village, 8 species of seagrasses were found. At present, no one studies the seagrass

habitat. Few of the people interviewed knew anything about the diversity of seagrass species in the area. However, they did know that seagrass beds are good habitats for marine economic species such as fish, shrimp, and crabs. Trawlers operated in the seagrass beds and contributed to destruction of the seagrass habitat. Most dugong deaths reported were related to the fishing nets set in the seagrass beds. Local people sometimes keep dugong parts such as dried skin, dried sex organs, skulls, ribs and other bones for luck; some have collected dugong parts over a 10-year period. Some people believe dugong bone powder (especially from the ribs) can cure fever and that dugong oil heals a wound. Dugong teeth are used to make necklaces, ribs are carved into amulets, and dugong tusks bring a high price. No reports of dugong legends or myths were recorded. Since 1979, when Pol Pot was deposed and fishermen were allowed to return to the sea, all marine creatures have decreased in the areas surveyed, including dugongs.

In Vietnam, 20 persons from Con Dao Island and Phu Quoc Island were interviewed. Nine species of seagrass were reported. During the survey at Con Dao, the WWF team observed an abundance of *Halophila ovalis* at Lo Voi Bay. Unfortunately, no dugongs were seen at Dat Doc Bay during a 3-hour observation period. Con Dao Island seems to be good habitat for dugongs because of its remote location and the fact that much of its area (both on land and in the sea) lies within the Con Dao National Park. Park regulations protect coral and seagrass resources, and marine organisms - especially the endangered dugongs and sea turtles. Despite the protection afforded to dugongs in the park, 10 animals have

died since 1997. There are (probably) no big users of fishing gear, such as trawlers, operating in the area. One local reported that dugong ribs are used to make pipes.

Historically, a large group of dugongs inhabited the waters around Phu Quoc Island, especially along the east coast. Abundant seagrass habitat was observed and 9 species of seagrass were reported. In the recent past, 5-6 dugong hunters have been known to take dugongs near Phu Quoc Island; some were interviewed. Hunters used a special net, called a "sting ray gillnet", to catch dugongs, green turtles, sharks, and rays. One to two dugongs were harvested per year, and sometimes a cow-calf pair was taken -- a cow-calf pair was only counted as one individual by the fishermen. Dugongs greatly increase income as every part of the dugong can be sold. The tusk is the most expensive, followed by the skin and meat, respectively. Locals here also ground the rib into a powder that could cure fever. The oldest dugong hunter, having 60 years' experience, decorated the wall of his house with dugong ribs, which were used for hanging his hat and shirt. Dugong hunters always kept a pair of tusks for luck. If they got longer tusks they would sell the shorter ones -- longer tusks were more valuable than shorter ones.

Comments - The Cambodian fishermen know that the marine organisms are now decreasing and they care about conservation of coastal resources, including dugongs and seagrass. The basic issues in Cambodia are the reduction or banning of near-shore trawler operations and the banning of surrounding net operations within the seagrass beds. In general, local people have poor education; more education is

needed, especially about coastal conservation and management. Officers from the Cambodian Ministry of Fisheries also play an important role in dugong and seagrass conservation.

Most Vietnamese fishermen do not have the same conservation concerns about dugongs, sea turtles, and seagrass habitats. They believe that whether they kill or do not kill the dugongs, there will still be dugongs in the sea. As for sea turtles, they observe that they lay many eggs and many hatchlings return to the sea, so many locals don't believe that the turtles will become extinct. There are still active dugong hunters in Vietnam. Three hunters were interviewed, including one who has also trained his son. In general, conservation education is urgently needed in Vietnam. Cambodia and Vietnam are currently considering endangered species legislation, a necessary component to

conservation efforts in both nations. WWF Indochina is seeking funds to act on the findings and recommendations of this survey. - **Kanjana Adulyanukosol** (report edited by Ellen Hines, Nick Cox and Caryn Self Sullivan)

WEST AFRICA

Manatee Research in the Bight of Benin. - A field research and conservation project on West African manatees in countries around the Bight of Benin (Benin, Togo, and parts of Nigeria and Ghana) is being planned by Jean-Paul Risch. It will involve both visiting (mostly European) and local researchers, as well as collaborators from NGOs. For further information and an outline of the proposed project, contact **Jean-Paul Risch**, 86, Kohlenberg, L-1870 Luxembourg (tel./fax: (+352) 48 16 89).

ABSTRACTS

The following abstracts are of presentations at the XXVII International Meeting for the Study of Marine Mammals held in Veracruz, Mexico, 12-15 May 2002.

Manatee Outreach Programs in Latin America: Helping People Help Endangered Species.

Gregory D. Bossart *Division of Marine Mammal Research and Conservation, Harbor Branch Oceanographic Institution, 5600 US 1 North, Ft. Pierce, FL 34946, USA*

Conservation outreach programs involving the medical care and rehabilitation of Antillean manatees (*Trichechus manatus manatus*) and Amazonian manatees (*Trichechus inunguis*) have been established in Guyana, Brazil, Trinidad, Colombia, Belize, and Mexico through the Division of Marine Mammal Research and Conservation at Harbor Branch. These outreach programs support emerging conservation projects in these countries. The projects range in infrastructure organization, personnel support and scientific and philosophical goals. The manatee components of these projects have been either planned or accidental, the latter generally involving the presentation of a dependent orphaned manatee calf. Orphaned calves are typically presented as a consequence of opportunistic hunting of the dam. Veterinarians from Harbor Branch have provided veterinary medical consultations for injured, sick and fishery-interaction animals in these countries. Consultations have been made via the Internet, telephone and on-site visits. Medical supplies, natural manatee milk, artificial milk formulas and manatee immunoglobulins have been sent via air express delivery. Additionally, on 10 occasions, on-site assistance has been provided. The site visits were structured as animal care and teaching programs and included aspects of manatee husbandry, veterinary medicine and natural history. The care of orphaned manatees has represented the most common situation. Manatee calf care is a complex issue and involves husbandry (caretaker experience, habitat, life support, artificial milk formulation, etc.) and medical issues. Calf medical problems generally include treatment of the metabolic effects of prolonged inanition and life-threatening gastrointestinal inflammation

that is due to probable combined immunologic, artificial nursing formula and infectious disease factors. The facilities in Brazil, Mexico, Colombia, and Belize, either have or are in the process of reintroducing rehabilitated animals to a free-ranging state. Other facilities are maintaining manatees in captivity for educational purposes. This presentation will describe this unique conservation program that has shown that the wildlife veterinarian can play an important role in emerging endangered species conservation programs throughout the world.

Behavior of Two West Indian Manatees (*Trichechus Manatus Manatus*) Kept in a Controlled Area at Puerto Aventuras, Quintana Roo, México.

Antonio Mauricio Cortez Aguilar¹, Roberto Sánchez Okrucky¹ & Gregory D. Bossart².

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In August, 2001 two West Indian manatees, a male and a female, coming from Jonuta, Tabasco arrived at the Dolphin Discovery facility in Puerto Aventuras. The area where they are living is a 497 m² deposit of sea water with sources of freshwater coming from several cenotes. The area is divided into five different zones, each with distinctive characteristics. During the months of November and December of 2001 and January of 2002, behavioral observations were carried out by means of continuous focal sampling. These observations were made in periods of 20 minutes throughout the day, with each behavioral event being monitored in the area where the manatees were found at that moment. We made observations for 46 days bringing a total of 104 hr and 20 min of accumulated observation time. The behaviors displayed most frequently were: Feeding (27.4%), Stay over the bottom (19.9%), Grazing (18.5%), Belly retraction (16.9%) and Swimming or moving towards a defined direction (12.5%). The correlation of the behavior with the hour in which it was recorded turned out to be significant ($P < 0.01$) as well as that of occupation or area preference by sex ($P < 0.01$). Both animals showed a marked preference for the deepest area which also happens to be the area where they are fed. This early behavior analysis will serve as a basis to analyze later behavior changes as their environment and daily activities change when they are integrated into an interactive program for the purpose of environmental education.

Mortality of Manatees (*Trichechus manatus*) in Chetumal Bay, México (1990 – 2002).

Benjamín Morales Vela, Janneth Padilla Saldivar & Mauro Sanvicente López.

El Colegio de la Frontera Sur, Unidad Chetumal. Carretera Chetumal - Bacalar km 2. Zona Industrial 2. Chetumal, Quintana Roo. 77049. MÉXICO.

From 1990 to 2002, 24 dead manatees have been recorded in Chetumal Bay (CHB). For 17 manatees the cause of death was unidentified, but it was determined that seven died due to a variety of human activities (two because of fishing nets, two due to collisions with watercraft, two were wounded and one was hunted). This sample consisted of 13 adults, six young manatees and five calves. These records are considered as a sample as consistent monitoring and surveillance are not carried out along the entire CHB shoreline. The recovered bone samples are deposited in the Zoology Museum of ECOSUR at Chetumal. Fishing nets set in shallow waters and watercraft traffic occasionally cause accidental manatee deaths. The impact of the various activities developing in the CHB and Hondo River margins must be evaluated. The regulations governing use that are included in the Manatee Sanctuary management program must be enforced in order to minimize risks that threaten this species and the integrity of its habitat. Signs warning of the manatees' presence, informing of their protected status, and regulating boat speed are priority for the reserve.

The Manatee (*Trichechus manatus manatus*) in the Lagoon System of Catazajá, Chiapas: A Prospective Study.

Jacqueline Núñez Saldaña.

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From November 1999 to July 2000, four trips were made to the lagoon system of Catazajá, Chiapas. The localities of Playas de Catazajá, Pajonal, Paraíso and Zaragoza were visited to interview fishermen, other inhabitants as well as local and regional authorities. A total of 65 written sheets were obtained together with data on local knowledge and uses of manatee as well as anecdotal stories of encounters with manatees in areas of fishing. This information was completed with the information of other colleagues working in the

region. Also, surveys by land and water were carried out to make observations of breeding behavior. All this poses the urgent need to start a program for management and conservation and thus, this work started to give information to local people for a better knowledge and usage of their resources. An indirect management of the manatee and other regional fauna is proposed by means of manual. Basic information is gathered for future studies on distribution and behavior of the manatees in the lagoon system of Catazajá, Chiapas.

Conservation of the Caribbean Manatee (*Trichechus manatus manatus*) in the Bay of Chetumal, Quintana Roo, México: An NGO Perspective.

Adriana Yoloxóchitl Olivera Gómez.

Amigos del Manatí AC. Avenida Chapultepec 272 altos. Col. Centro. Chetumal, Quintana Roo. 77000. MÉXICO.

Since "Amigos del Manatí AC" was established formally on September 10, 1996, five broad action lines were designed: 1) Institutional strengthening, 2) Environmental education, 3) Community development, 4) Collaboration with the protected natural area (ANP) of Manatee Sanctuary and 5) Support to scientific research. These lines have generated projects to deal with the challenge of manatee conservation at the Bay of Chetumal which implies an awareness of the responsibility we must assume as citizens and as active participants of the social development process in the South of Quintana Roo making possible to conciliate development and conservation. Our role as a non-governmental organization has been to implement and operate these projects at rural communities inserted within the ANP and with urban population in Chetumal as this is the main impact zone. With all this, we help to strength the objectives of the ANP's management program. Informal environmental education has been the main action line in two approaches: support to formal education with kindergarten, elementary and secondary school children and education addressed to the adult population as advisors in management of their integrated coastal resources. In all of these activities we support young people at high school and college in their professional practices and university theses. In the near future, we expect many of them will deal with application of these efforts to reach equilibrium between conservation and development in an area of vital importance for the manatee.

Spatial Modeling for Manatee Habitat Conservation in Alvarado, Veracruz, México.

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2. *Instituto de Investigaciones Biológicas, Universidad Veracruzana. Xalapa, Veracruz. MÉXICO.*

Suitable habitat identification and protection are two of the priority strategies for the recovery of the endangered Antillean manatee (*Trichechus manatus manatus*). However, study of the manatee habitat and population in the Alvarado wetland is difficult due to a lack of manatee aggregations and the presence of relatively turbid waters throughout the year. All this makes it difficult to study manatees in the wild. As an alternative approach to manatee habitat diagnosis, a predictive spatial model was developed from the geomorphological and ecological characteristics of the region. Ecological resources for the manatee included in the model were shallow waters (1-3 m deep) and the availability of aquatic vegetation, which provides food. Anthropogenic factors included the potential effects of human activities on the areas frequented by manatees. These variables were incorporated into a geographic information system (ArcView) and were analyzed using thematic digital cartography. Output maps were constructed in a grid format, which includes a numerical attribute that quantifies each cell with a quality value. In this manner, the 314,000 ha region was classified into four categories of important manatee habitat. Critical areas were considered those with large values and are essential for manatee survival. These areas should also have priority attention in a protection plan for the Alvarado lagoon system.

Advances in Manatee Conservation Efforts in Veracruz, México.

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3. *Oceanographic Center, Nova Southeastern University. Dania Beach, Florida. USA.*

4. *Acuario de Veracruz. Veracruz, Veracruz. MÉXICO.*

We present a synthesis of conservation activities for the manatee (*Trichechus manatus manatus*) in Veracruz State developed during the last four years (1998-2001). The manatee is considered an endangered species throughout its international distribution range. The threat of extinction has two main causes, poaching and habitat destruction. Both of these influence manatees in several areas of their occurrence within Veracruz State. An interdisciplinary group has collaborated for the last four years on research, rehabilitation, management promotion, and in an educational campaign. Research involved an analysis of manatee spatial distribution, habitat assessment, threat analysis and the interaction of manatees with humans. Also, a pair of manatee calves has been maintained successfully since 1998 in the Veracruz Aquarium. With regards to management, periodic meetings with governmental agencies and local groups have been held in order to promote manatee protection. A modest educational campaign started in the wetlands of Alvarado. Educators are now looking to extend the campaign to the whole State. In this analysis, each line of work is evaluated and the achievements, challenges and perspectives of each are discussed.

Proposal of a Management Plan for the Manatee (*Trichechus manatus manatus*) in the Children's Park at Jonuta, Tabasco.

Silvia Deysi del Carmen Ortiz Chan & Fabiola Romero Murillo

División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco.

Captive manatees in Tabasco are not properly treated due to the lack of management plans that ensure their conservation and reproduction. In this work we propose the necessary elements to elaborate a management plan based on the criteria established by SEMARNAT for the function of an UMA (Unit for the Conservation, Management and Sustainable Use of Wildlife). This study was made in a natural lagoon in the Children's Center at Jonuta, Tabasco that was modified as a habitat for manatees. We recorded environment, surface and near-bottom temperature, pH, transparency, depth and dissolved oxygen concentration every month from April 2000 to April 2001. We also characterized the area's biota to determine the factors influencing the manatees. In bacteriological analyses, we found a higher index of fecal coliforms for September, November, February, March and May and lower values for January. We conclude that biotic factors influence manatees because of improper management and that abiotic factors are not restrictive for the settling of these animals.

Preliminary Results on Preferred Areas of Manatees in the Ilusiones Lagoon, Tabasco.

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División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco.

"Ilusiones Lagoon", an ecological reserve of Tabasco State, hosts a population of manatees which has not been systematically studied before this thesis work and about which we present preliminary results of efforts carried out from March 2001 to February 2002. 250 questionnaires were applied to inhabitants of the lagoon surroundings between May 2000 and March 2001, getting sight records of manatees since 1986 with year 2000 having more sightings. In accordance with the information gained, 10 monitoring sites were selected and visited twice every month in morning, noon and afternoon using a 15 HP outboard boat to complete a total of 76 hours of effort. The presence of manatees was registered by direct observation in 9 out of the 10 monitoring sites. Feeding areas were identified and general aspects of behavior were recorded.

Hematological Values for Manatee Calves (*Trichechus manatus manatus*) up to Two Years Old in Captivity, Veracruz Aquarium.

Fabián Francisco Vanoyé Lara. *Acuario de Veracruz, AC.*

This work was done in the Veracruz Aquarium, where two manatees have been kept since March 6, 1998. These manatees are called Silvia and Pablo and at the moment of their arrival, they weighed and measured 1.07 m with 23 kg and 1.05 m with 22 kg respectively, being about 1.5 months old. During this study they stayed in a circular tank of 6 m diameter, variable depth of 0.75 m to 2 m and continuously filtered water. The manatees were changed afterward to an exhibition tank of 30 m³. They were fed with special milk, and vegetables were offered little by little. Blood samples were obtained, using vacuum tubes to avoid coagulation, from the brachial plexus (after a year of age) and from the ventral face of the fluke (under a year of age). A total of 13 samples were taken from Silvia for hemogram and blood chemistry. From Pablo, 15 samples were taken for hemogram and 14 for blood chemistry. Sampling started in March 1998 and ended in March 2000. The laboratory results did not report the presence of metamielocytic, in band, eosinophil, or basophil cells.

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Belize Coastal Zone Management Authority & Institute's Manatee Research Program:
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The Call of the Siren (Caryn Self Sullivan): <<http://www.sirenian.org/caryn.html>>

Caribbean Environment Programme, Regional Management Plan for the West Indian Manatee: <<http://www.cep.unep.org/pubs/techreports/tr35/ct35indx.htm>>

Caribbean Stranding Network: <<http://netdial.caribe.net/~mignucci/>>

Columbus (Ohio) Zoo manatee exhibit: <http://www.colszoo.org/animalareas/shores/manatee_coast/index.html>

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Dugong necropsy manual (available for downloading): <http://www.gbrmpa.gov.au/corp_site/info_services/publications/research_publications/rp64/index.html>

Florida Fish and Wildlife Conservation Commission, Bureau of Protected Species Management: <<http://www.floridaconservation.org/psm/>> [NEW]

Florida Fish and Wildlife Conservation Commission, Florida Marine Research Institute (Florida manatee mortality data): <<http://www.floridamarine.org/manatees/>> [NEW]

Friends of the Manatee Association, Manaus & Balbina, Brazil: <http://www.amigosdopeixe-boi.org.br/english/Ing_index2.htm> [Includes a bibliography of INPA aquatic mammal project publications and abstracts] [NEW]

Fundación Salvemos al Manatí de Costa Rica: <www.fundacionmanati.org> [NEW]

Great Barrier Reef dugongs: <http://www.gbrmpa.gov.au/corp_site/info_services/publications/dugong/index.html>

IBAMA manatee project, Brazil: <www.projetoixe-boi.com.br>

Jacksonville University (Florida) Manatee Research Center Online:
<www.ju.edu/juconnect/research/marco>

Manatee neuroanatomy: <<http://www.neurophys.wisc.edu/Manatee/>>

"Manatee Watchers" Internet discussion list: <<http://www.listbot.com/archive/MANATEE>>

News clippings on Florida manatees: <<http://www.n-jcenter.com/menus/enmanate.htm>>

Philippines Dugong Research and Conservation Project: <<http://www.wwf-phil.com.ph>>

Save the Manatee Club: <<http://www.savethemanatee.org>>

Sea World of Florida: <<http://www.seaworld.org>>

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Smithsonian Institution sirenian bibliography: <<http://www.si.edu/resource/faq/nmnh/sirenia.htm>> [This is a relatively short bibliography, compiled by Joy Gold, that provides a very good introduction to both the technical and the popular literature.]

Steller's sea cow: <<http://www.online.de/home/Rothauscher/steller.htm>>; also the website [in Finnish] of Dr. Ari Lampinen, University of Jyvaskyla, Finland: <<http://www.jyu.fi/~ala/ilmasto/steller.htm>>

West African manatee in Chad (Jonathan H. Salkind): <<http://members.aol.com/neeii/manatee-index.html>>

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