Sirenews

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IN THIS ISSUE:

Pompeyo, the mexican manatee is ready to be back in the wild (Photo: Jaime Cifuentes-Espinosa)

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DE SES RESOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES
Commission de la souvegarde des especes - Species Survival Commission

SSC Species Survival Commission

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CLEARWATER MARINE AQUARIUM RESEARCH INSTITUTE

Taken from https://www.smmconference.org/

It is time to start getting ready for the 2024 biennial conference of the SMM to be held in Australia for the first time. The theme will be, “Culture and Conservation: Fishing for Change” shines a light on one of the most significant threat to marine mammals worldwide – interactions with fishing gear. The conference will cover contemporary marine mammal research, conservation and management issues with focus on cultural aspects and human dimensions. The specific aim will be to identify actions to reduce fishing-related marine mammal mortality, up-skill management agencies and individuals responsible for marine mammal incident response, support capacity building of Indigenous and developing country participants, and facilitate collaboration among scientists, managers, policymakers and Traditional Owners.

The conference will officially open for abstract submission, workshop submission and conference registration on Tuesday, **February 6, 2024 at 12 pm (noon) Australian Western Standard Time (AWST).**

For more information about SMM2024 (https://www.smmconference.org/theme/)

LOCAL NEWS

BRAZIL

University Center creates research group related to the conservation of marine manatees (*Trichechus manatus manatus*) in Brazil

According to studies carried out on sirenians in Brazil, marine manatees (*Trichechus manatus manatus*) are categorized as Endangered. Conservation actions for the species began in the 1980s through ICMBio/CMA and since then some governmental and non-governmental institutions have been created in the country with an emphasis on conserving the species. However, within Brazilian universities the topic of the marine manatee is still little discussed in classrooms and many students finish their degree without knowledge about the species. The International University Center (UNINTER) is an institution of higher education that offers courses related to biodiversity and conservation, including undergraduate and bachelor's degrees in Biological Sciences Distance Learning. Noting the great lack of knowledge about aquatic mammals among students, especially marine manatees, UNINTER created a study group within the Ecology, Health and Environment project focused on studies with marine manatees. Currently, the group has been developing a study on the growth curve and the bibliometric study of the species in different international databases, thus seeking to identify the most researched thematic niches and those that require research, in order to then subsidize public actions and train professionals who can work on the conservation of the species. This group, made up of students from various regions of Brazil and teachers with different backgrounds, holds monthly study meetings to discuss recently published research. The perception of the need to introduce knowledge about the biology, health, genetics and conservation of the species in higher education has been observed at each meeting and theme held. As a result, interest in the conservation of manatees has been increasing within the course and we recommend that this topic should be discussed more within universities, as only by knowing the species will conservation be achieved.

Figure 1. Screen printing. Left. Presentation on marine manatees held during the IV Biology Week – UNINTER (2023). Dir. Monthly meeting of the research group on aquatic mammals, focus on *Trichechus manatus manatus* (2023). Researchers' collection.

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Do manatees eat fish?

Contributing to the national goals of the Brazilian Sirenia Action Plan, under the protocol of ICMBio, the first series of interviews using an ethnobiological approach were implemented in Porto de Pedras, Alagoas, northeastern Brazil (Fig. 1). The municipality of Porto de Pedras is located within the Costa dos Corais Environmental Protection Area (APACC), which is the largest federal coastal marine UC (Conservation Unit). The APACC was created in October 1997 and one of its objectives is to maintain the integrity of the habitat and preserve the marine manatee population (Umezaki, 2010). Porto de Pedras area is a release site for manatees. The first manatee release took place on October 10th, 1994. The manatees Astro and Lua were released back to their habitat (Luna, 2010). This area is located on the Tatuamunha River and is called the "Manatee Sanctuary" where the human population has direct interaction with manatees (Fig. 2).

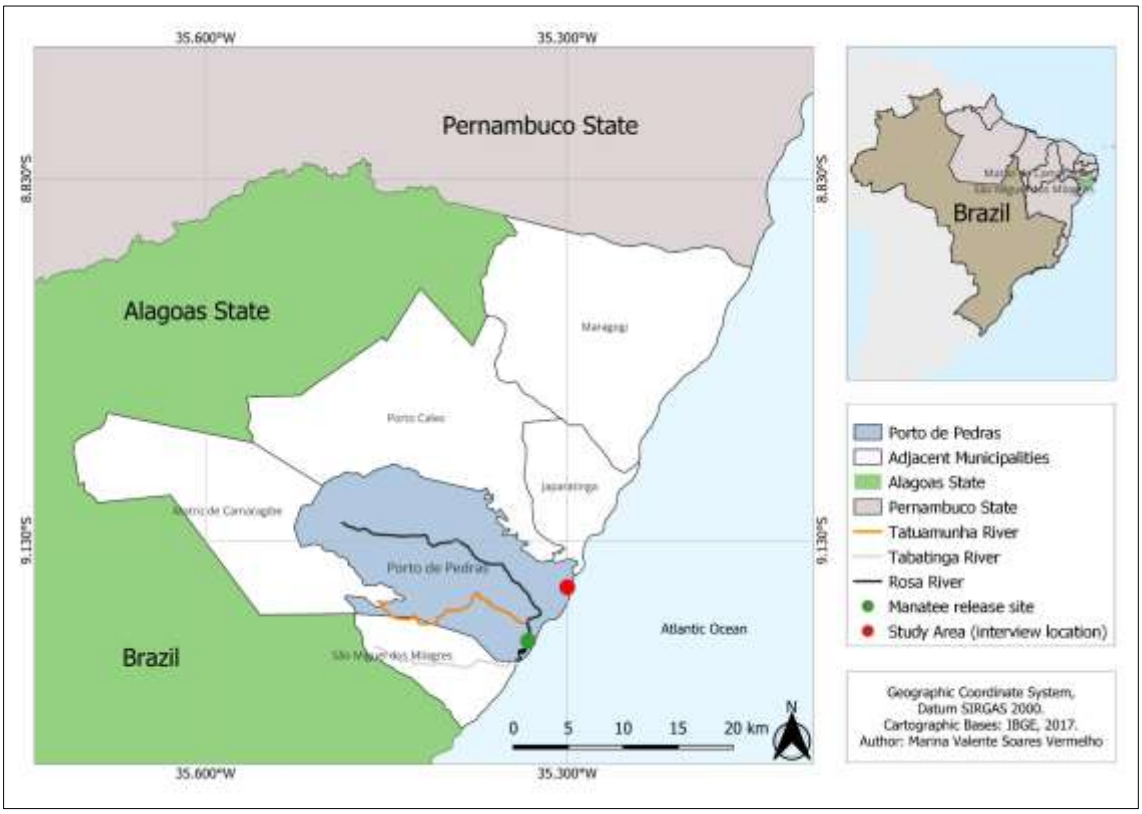

Figure 1. Geographic location of Porto de Pedras, Alagoas State, northeast of Brazil, and indication where the interviews were conducted, in August, 2023.

Figure 2. Area located on the Tatuamunha River called the "Manatee Sanctuary" where the population has direct interaction with manatees.

This initiative is part of a doctorate study implemented by a candidate at the Ecology and Natural Resources Program of Universidade Estadual do Norte Fluminense – UENF, Rio de Janeiro, Brazil. During the period of August 22th-24th, 31 interviews were conducted in the region (Fig.3), with the goal of understanding the perception of locals in relation to the activities of the local "Projeto Peixe-boi" and the released manatees in the area. This project has been releasing rehabilitated individuals for 28 years (Luna, 2010).

Figure 3. Interviews with the local population of Porto de Pedras, Alagoas, northeastern Brazil, in August, 2023.

Logistical support was provided by Centro Mamíferos Aquáticos (ICMBio/CMA – Centro Nacional de Pesquisa e Conservação de Mamíferos Aquáticos/Instituto Chico Mendes de Conservação da Biodiversidade). Interactions of locals with manatees, and how the population perceives them, both good and bad, were the main focus of the study. Notably, manatees were pointed out as responsible for low fishing yields in recent years. Manatees are blamed for capsizing boats, damaging fishing nets,

and eating their fish. Such negative perceptions of manatees were particularly noted in six interviews; this number refers to the total number of fishermen interviewed, different from the other 25 that involved the general population, and which indicated a positive perception regarding manatees. During the survey, one of the interviewees mentioned that… "manatees feed on mullets, the best fish, leaving only the spines"… Mullets is the common name for several fish in the mugilidae family, and that a wild manatee, named "Tinga", "teaches the others to prey on fish". In the literature, there are a few cases that confirm the consumption of fish by manatees. Although no analysis of fecal samples or stomach contents of "Tinga" were carried out, the behavior of consuming fish by this individual was confirmed by the ICMBio/CMA team that monitors these animals. According to the team, this behavior is common and one of the ways to identify that "Tinga" is in a certain area, as calls for assistance to the animal are always related to the consumption of fish. Suggesting that this individual does not consume fish sporadically but frequently, and that the consumption of this protein is not done opportunistically, but intentionally.

These preliminary results are particularly valuable for understanding the complex relationship of fishers to the local population of manatees, mostly released in the Northern coast of Alagoas state, and how they are 'accepted' as part of the natural environment. Interviews will continue and will focus on the fishermen's behavior towards manatees, evaluating their perception and proposing new ways of managing their survival in the region.

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FLORIDA

Save the Manatee Club expands Webcams for Education and Research

In previous issues, we reported on our live webcams at Blue Spring State Park and Ellie Schiller Homosassa Springs Wildlife State Park. Those above- and underwater pan/tilt/zoom (PTZ) live webcams allow the public to experience the world of manatees from the comfort of their own home and without getting physically close to the animals. Thousands of viewers from around the world are enjoying these cameras.

Figure 1. Viewers from around the world can enjoy watching manatees underwater via our livestreams. Pictured here are manatees nursing their young in the wintertime at Homosassa Springs.

In 2022, over 150,000 viewers watched our live feed from Homosassa and over 30,000 viewers enjoyed the livestreams from Blue Spring. More watched the cameras via our collaboration with Explore.org which opens another new avenue for viewers not specifically looking for manatee-related content to come across our cameras. In addition, the webcams have been invaluable for our ongoing photo-ID research and have not only helped us obtain additional photos for the statewide manatee photo identification database (MIPS), but also allowed us to monitor sick, injured, or recently released manatees and share these data with our partners. For the first time, in 2022, we were also able to fully record and review all footage from the Homosassa cameras and provide additional scar ID photos from this location in addition to our decade-long ongoing research at Blue Spring.

This year, with direct support of the Department of Environmental Protection, we launched a completely new set of webcams at Silver Springs State Park in collaboration with Explore.org. Just like at the other two parks, we are using an above water PTZ-camera, but in addition we installed a brand new 360-degree underwater camera that will soon be streaming via our YouTube channel and the

Explore.org platform and will provide viewers with a completely new perspective and interactive experience to view manatees and other wildlife. Viewers will have the opportunity to toggle the camera via YouTube to get the full 360-degree view. We are excited and hopeful to use these new cameras for research purposes in the future.

Figure 2. A mother and calf travel by our new above water webcam at Silver Springs State Park

Figure 3. A curious manatee checks out the new underwater 360-degree camera at Silver Springs State Park.

-Cora Berchem, SMC Director of Multimedia and Manatee Research Associate

GUATEMALA

Strengthening the response capacity of Manatee Stranding Networks in Guatemala: exchanging experiences with the Stranding Network in the Mexican Caribbean

Strandings of live and dead manatees (*Trichechus* spp.) and other species of marine mammals occur due to natural causes or anthropogenic activities (Mignucci-Giannoni et al. 1999) in many locations where these species live. These events are generally attended by stranding networks that interconnect the effort of government agencies, research institutions, non-governmental organizations, and the local citizens. Stranding networks often follow national (e.g. "PACE Manatí" in Mexico) or international (e.g. Bonde et al. 1983) technical protocols that intend to guarantee the correct data collection and, in the case of live animals, the welfare and survival of the individuals. In Guatemala, there is no formally structured marine mammal stranding network nor local protocols to deal with manatee stranding cases. However, previous events evidenced the need of building capacity of governmental agencies and conservation organizations in order to address stranding cases, even under limited human and financial resources.

Two cases of orphaned manatees rescued in Guatemala have been reported. The first occurred in August 2008 and consisted of a female manatee named "Guatecita" found in Izabal Lake. Initially, the Fundación Defensores de la Naturaleza (FDN) took care of the calf, but it was subsequently transferred to Wildtracks (Corozal, Belize) in coordination with the Consejo Nacional de Áreas Protegidas (CONAP) (Quintana-Rizzo et al. 2008). In July 2021, an orphaned manatee called "Ximena" was found in Livingston and was under the care of veterinarians from the Fundación Protectora de Animales en vía de Extinción (FAE) and by CONAP staff. Weeks later, the calf was moved to Wildtracks (Josselyn Esquite Pers. comm., 2023). In both cases, international marine mammal specialists advised on the rescue and rehabilitation processes. However, both calves died in Belize due to health complications (Machuca-Coronado & Corona-Figueroa; Josselyn Esquite pers. comm., 2023).

"Pompeyo" was found alone in Laguna Milagros (Quintana Roo, Mexico) in August 2021, and rescued by the Marine Mammal Stranding Network of the State of Quintana Roo (RVMMQROO) in Mexico. It was transferred to the Estación de Campo of the Reserva Estatal Santuario del Manatí - Bahía de Chetumal of the Instituto de Biodiversidad y Áreas Naturales Protegidas del Estado (IBANQROO) in Laguna Guerrero. Since then, Pompeyo underwent a rehabilitation program aiming for its release (Castelblanco-Martínez et al. 2022). The rehabilitation process has also been an educative opportunity for Mexican and international interns volunteering during Pompeyo's management and care activities.

Since Pompeyo's rehabilitation has faced many challenges common to other Caribbean countries with similar socio-economic contexts, we considered it as a unique opportunity for Guatemalan partners (i.e. FDN, FAE and CONAP) to learn first-hand about the logistic and technical details of Pompeyo's rehabilitation. Hence, in June and August 2023, Rocío Paz (FDN) and Josselyn Esquite, Carlos Palala and Ana de Palala (FAE) accepted our invitation to be part of this rehabilitation experience.

Our visitors went to the field station and participated in the collection, cleaning and offering of algae to Pompeyo (Figure 1). Rocío Paz participated in one of the health assessments of Pompeyo (Figure

2A). All of them visited the Vertebrate Collection of the Universidad Autónoma del Estado de Quintana Roo (UAEQROO) in order to learn about the disposition of the bones and tissue samples of manatees and other marine mammals attended by the RVMMQROO (Figure 2B). In addition, we organized a talk on manatee tagging and tracking methods and exchanged experiences on the importance of stranding networks and manatee rehabilitation with our visitors (Figure 2CD).

Figure 1. Collecting, cleaning, and offering algae, with a supplement of lettuce, for the manatee "Pompeyo". Photos: N. Contreras, C. Palala and F. Corona.

Figure 2. A) Health assessments of Pompeyo during August 2023, B) visit to the collection of bones and tissue samples of marine mammals and talks on C) tagging and tracking methods and D) rehabilitation of manatee calves and stranding networks. Photos: M. I. Di Pietro, R. Paz and F. Corona.

The exchange of experiences in manatee rehabilitation in Latin American countries is fundamental to strengthening the capacities of local veterinarians, biologists and technicians working with aquatic mammals. Also, we consider that a Latin American network of specialists and institutions dealing with cases of orphaned manatee calves would be very useful, particularly for those teams with lesser experience. We hope that these experiences will encourage key institutions in Guatemala to implement a formal stranding network and consider the creation of a manatee rehabilitation center.

Acknowledgements: We thank FDN and FAE for the permission granted to their members to come and learn about this process. And to Socorro García for accompanying the activities during the stay of our visitors.

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Dissemination of results on the detection of gentle giants in the dark rivers of Guatemala

During August to December 2022, we conducted aquatic surveys in the Lagartos, Oscuro, Ciénega, Chocón-Machacas and Sarstún rivers, in Izabal, Guatemala, as part of the thesis of two students from the Universidad de San Carlos de Guatemala (Corona-Figueroa et al. 2022). We used side-scan sonar (SSS) in order to detect the presence of manatees (Gonzalez-Socoloske & Olivera-Gómez 2012) and also to characterize their habitat (McLarty et al. 2019), that is, to know the depths, temperature and type of bottom of each river. At each sampling, we made sonar recordings to review the transects sampled and take screenshots of those objects that were manatee shaped. After this, we consulted other scientists who have experience using SSS in manatee studies to evaluate the images with potential manatees (Castelblanco-Martínez et al. 2017).

After several months analyzing data, we finally have the results of the study and a first draft of the final report. We have disseminated the results to local institutions that have collaborated in the logistics of this project. We shared the results in August 2023, starting with the staff of FUNDAECO (Fundación para el Ecodesarrollo y la Conservación), followed by CECON (Centro de Estudios Conservacionistas), CONAP (Consejo Nacional de Áreas Protegidas), DIPRONA (División de Protección a la Naturaleza) and AMASURLI (Autoridad para el Manejo Sustentable de la Cuenca del Lago de Izabal y Río Dulce) and, finally, with FDN (Fundación Defensores de la Naturaleza) (Figure 1A). During the meetings, we provided infographics on the use of SSS, so that it can be proposed as a tool for monitoring manatees in the protected areas of Izabal (Figure 1B). Finally, we shared the results at the I Mesoamerican Congress of Ecology and Evolution, organized by the Sociedad Mesoamericana de Ecología y Evolución, in Guatemala City (Figure 2).

Some relevant results are that the Sarstún, Oscuro and Lagartos rivers presented the highest relative abundance of manatees and the presence of patches of submerged vegetation. We detected three manatees in the Chocón-Machacas River, where they had not been reported before. Although the Ciénega River has favorable characteristics for the presence of manatees, we did not detect manatees in this river during the study period. We recommend that institutions integrate the SSS methodology into monitoring programs and strengthen management and surveillance activities in protected areas in order to reduce the impact of anthropogenic activities on the distribution of the manatee in Izabal.

Figure 1. A) Dissemination of results to local entities in the study area. B) Infographic on the use of SSS for the study of manatees in Izabal, Guatemala. Photos: F. Corona, L. Barrientos, DIPRONA, R. Paz and A. Escobar.

Figure 2. Presentation of results at the 1st Mesoamerican Congress of Ecology and Evolution. Photo: K. Ovando.

Acknowledgment: We thank the park rangers and technicians who accompanied the aquatic surveys and our funders and donors PANACETACEA, IUCN SSC and Environment Agency – ABU DHABI, IDEA WILD and ReefMaster for their support in this research.

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The death of manatees reveals the need for control and surveillance of human activities and the strengthening of capacities in the attention of strandings in Izabal, Guatemala

In Guatemala, manatees face threats from some human activities that take place in their range. Hunting for the consumption of meat is a current problem, despite its prohibition by national laws (CONAP 2004). Bycatch, by trawls and fishing nets, is also harmful to manatees, causing wounds that become infected over time, or death from suffocation when they become entangled in them (UNEP 2010; Machuca-Coronado & Corona-Figueroa 2019). Another threat is collision with vessels that travel at high speeds, especially in areas such as Río Dulce, where traffic is more intense (Corona-Figueroa 2012). Likewise, the loss of habitat caused by deforestation, sedimentation, and water pollution affects this species' habitat (CONAP 2004). Previously, cases of manatee strandings have been reported, indicating that poaching is the main cause, followed by undetermined causes, bycatch, and boat collision (Machuca-Coronado & Corona-Figueroa 2019; Machuca-Coronado et al. 2023). Here we report the most recent cases of strandings that occurred in Izabal Lake and Río Dulce in 2023, one of these involving a pregnant manatee.

On June 13, an adult and pregnant female manatee (total length = 215 cm) was found in San Felipe de Lara, Livingston (Figure 1). The manatee had advanced decomposition, exposing intestines and placenta with a developing female fetus (Figure 2A). As far as is known, this is the first case of death of a pregnant female reported for Guatemala. It is speculated that the cause of death was asphyxiation

because the manatee had fishing net marks on its snout and body (T. Sandoval, Pers. Obs.). According to the people who attended the stranding, there was another smaller manatee near the corpse, so follow-up was done to find out if it was a calf or a juvenile. Days later, the individual was not found, so it is presumed that the manatee moved to another location. The fetus was collected by personnel from the Consejo Nacional de Áreas Protegidas (CONAP) and is stored in the offices of CONAP Nororiente, in Puerto Barrios.

On July 21, community members from Chapín Abajo, El Estor (Figure 1), found a dead female calf near the beach. However, the report was made three days after the event. Although staff from the Fundación Defensores de la Naturaleza (FDN) tried to search for the body, it could not be found. Therefore, no further information is available.

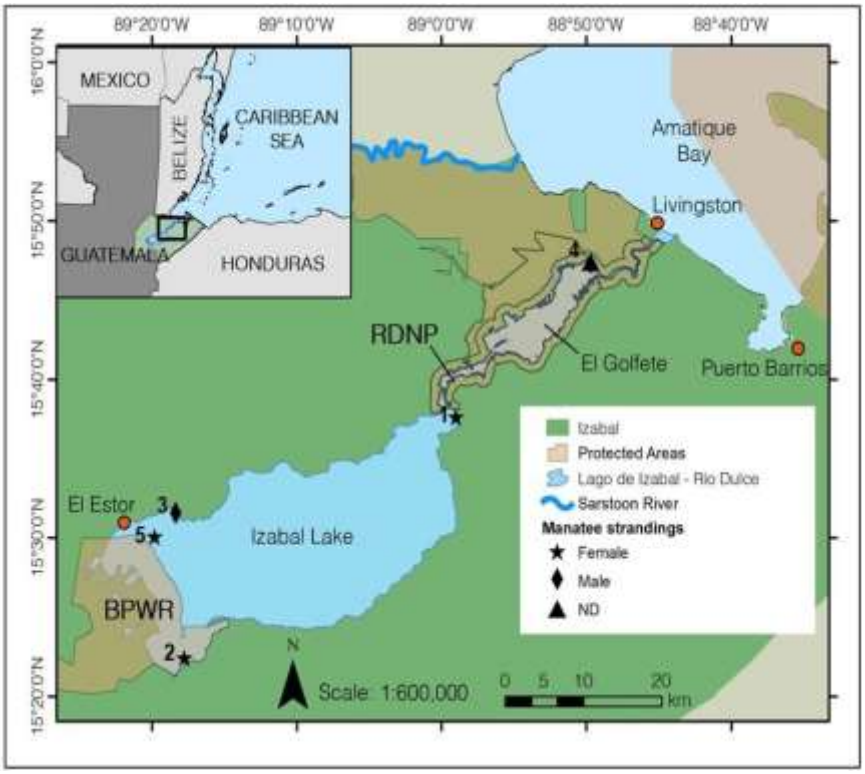

Figure 1. Location of stranded manatees in Izabal Lake, Bocas del Polochic Wildlife Refuge (BPWR) and Río Dulce National Park (RDNP).

Figure 2. Manatees found in the area: A) fetus (female) found in the stranded manatee in San Felipe de Lara, B) male manatee found in El Estor, C) attention to the stranding of the female manatee in El Estor; D) the swollen nipple is observed on the manatee's left fin. Photos: T. Sandoval, Brigada de Infantería Marina (BIM) and A. Bravo.

On August 28th, an adult male manatee (total length = 290 cm) was found in El Estor (Figure 1). The manatee was in an advanced state of decomposition (Figure 2B), but there were wounds on the caudal fin and a hole in the back, possibly caused by a harpoon, so it can be deduced that the manatee's death was due to poaching. The personnel who attended to the manatee buried it on a beach near the stranding site (R. Paz, Pers. Obs.).

On September 7th, the community of Creek Jute, in the Río Dulce National Park, reported the stranding of a manatee found dead floating near the area (A. Caal, Pers. Comm., 2023). However, the manatee could not be attended to, so no further information is available.

On September 8th, the stranding of an adult female manatee (total length = 314 cm) was attended to in El Estor (Figure 1 and 2C). The manatee showed advanced decomposition, although it could be seen that both breasts were swollen, so it could have been a lactating or pregnant female (Figure 2D). However, no nearby manatees or the presence of any fetus were observed. It is presumed that the cause of death was due to a fishing net, due to the marks and lacerations that the body had on both sides (R. Paz, Pers. Obs.). Tissue samples (vibrissae, hair, skin, nails, muscle, and intestine fragments) were collected for future analysis, which were stored in the offices of the Fundación de Defensores de la Naturaleza (FDN). Finally, the manatee was buried on a beach near El Estor.

Poaching of manatees is considered opportunistic and is strongly related to fishing activities in Izabal (Machuca-Coronado & Corona-Figueroa 2019). These activities are carried out even during the closed season, despite the fact that it is recognized that this contributes to overfishing and low economic profits (Andrade-Rodríguez 2015). In addition to this, there is a hypothesis that manatees that die when accidentally caught in fishing nets or trawls are used while they are still fresh and, if they show advanced decomposition, they are untangled and sunk or set adrift (T. Sandoval, Obs. Pers.). The five recent strandings that we report here occurred in a period of three months (June to September 2023), which is worrying as it is a species within Category 1 (Critically Endangered) of the List of Threatened Species of the CONAP (DCA 2021; CONAP 2022) and that three of these cases were females, one of them carrying another female fetus.

Strandings occurred within or near protected areas (Figure 1), with the Bocas del Polochic Wildlife Refuge (RVSBP) being one of the most important habitats for manatees in Izabal (Quintana-Rizzo 1993). It is important that the administrative entities of the protected areas, as well as the Dirección de Normatividad de la Pesca y Acuicultura (DIPESCA), strengthen the control and surveillance activities of fishing gear, especially those whose use is not permitted in the Izabal Lake and in the Río Dulce National Park (PNRD). Given that fishing is an important activity for subsistence and for local sales (FDN 2003; CONAP 2019), we recommend strengthening training on the use of fishing gear that is sustainable with the ecosystem so that it does not represent a risk to the population of manatees and other fauna species (e.g. American crocodile, Neotropical otter, etc.) that inhabit these water bodies, which also become entangled with fishing nets and trammel (J. Benitez-Moreno and F. Corona-Figueroa, Pers. Obs.). Likewise, we recommend the development of education and awareness strategies on manatee conservation aimed mainly at the fishing and tourism sectors. For example, participatory monitoring of manatees has been an effective awareness and conservation strategy in Campeche, Mexico (Guevara-Porras et al. 2019), which could be replicated in the future.

Finally, these reports demonstrate the effort and commitment of local entities and communities in addressing these cases. However, they also reflect the need for training for immediate reporting, adequate data capture, performance of necropsies, collection of tissue and bone samples, and storage in scientific collections for research. In this sense, we recommend carrying out periodic training on stranding attention aimed at technicians, park rangers, community members, and key people in Izabal.

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MEXICO

They learn, we learn: Accomplishments and lessons from the first year of the Biocultural Corridor for Manatee Conservation and Monitoring (Quintana Roo, Mexico)

The Antillean manatee is considered an Endangered aquatic mammal over its distribution area in Mexico. In the coastal ecosystems of Quintana Roo, habitat loss and degradation, as well as disturbances caused by touristic activities are considered important stressors for manatees. Since threats to manatees are mainly related to anthropogenic factors, management actions must be community-centered.

Biocultural corridors (BCs) emerge as a biological conservation strategy, and consist of a community-led approach — i.e. based on knowledge, traditions and perceptions of local people — aiming to monitor, conserve and recover endangered species. Thus, local inhabitants are placed at the center of the program, as designers, executors and co-researchers. With this in mind, we started in 2022 the implementation of the Biocultural Corridor for the Conservation and Monitoring of the Manatee in Quintana Roo, led by FINS (Fundación Internacional para la Naturaleza y la Sustentabilidad) and supported by One Earth and Grounded.

This long-term project has three fundamental axes: 1) environmental education and awareness; 2) transformation of tourist practices towards the appropriation of the manatee image rather than its direct use; and 3) citizen monitoring and surveillance. The corridor connects the protected areas with the highest manatee density in the Mexican Caribbean (From North to South: Yum Balam Flora and Fauna Sanctuary, Sian Ka'an Biosphere Reserve, Manatee Sanctuary State Reserve), and concentrates its actions in tourist, fishing and lobster towns that coexist with manatees.

During the first year, 13 socialization meetings were held with environmental authorities, local communities and fishing and tourism cooperatives, reaching 122 adults. A communication strategy was developed and implemented including the design and preparation of educational material, infographics, and documentaries, complemented with dissemination through our social networks. An intense environmental education campaign was carried out in schools; reaching 619 preschool/school age children and young adolescents; and workshops were developed for community artisans. We also applied semi-structured interviews to fishermen, lobster collectors, and tour operators to gather their perception and ethno-knowledge about manatees. We are learning about the historical and cultural context of manatees in the Mayan culture, as well as distribution, ecology and behavior of the species from the local inhabitants' point of view.

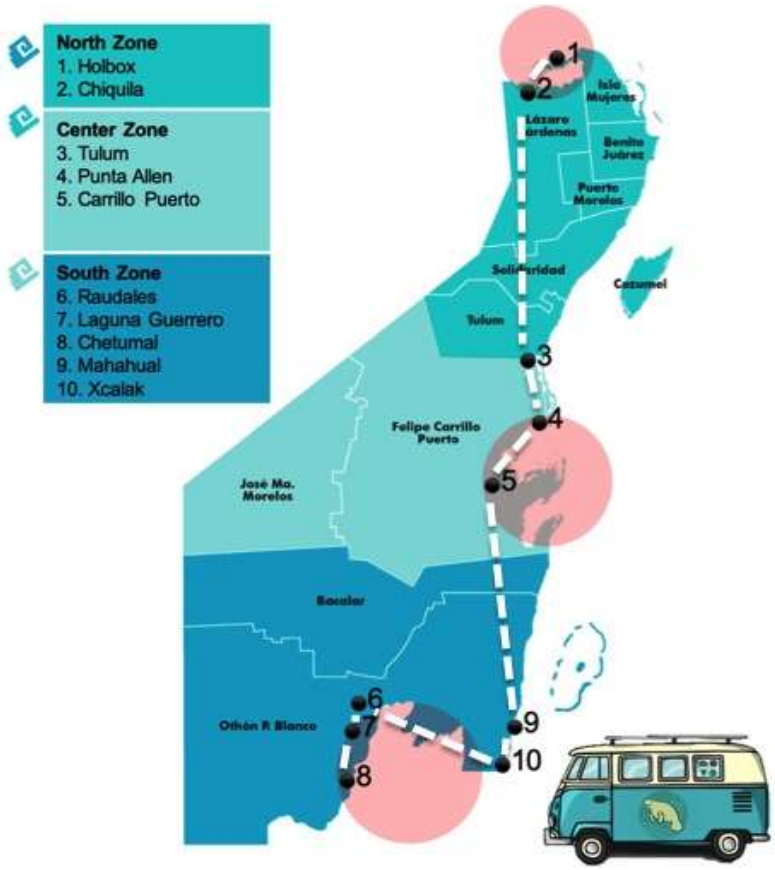

Figure 1. The Biocultural Corridor for the Conservation and Monitoring of the Manatee (State of Quintana Roo, Mexico). Red circles indicate hotspots of manatee abundance. Black dots indicate the principal cities and towns where the Biocultural Corridor campaign was launched.

Figure 2. Example of activities implemented during the first year the Biocultural Corridor for the Conservation and Monitoring of the Manatee (State of Quintana Roo, Mexico). Credits: Laura María Díaz, Lizbeth Lara, Alonso Rodríguez.

The results of the first year demonstrate an advanced local ethno-knowledge about the species, and — although we detected a negative perception about the conservation status of the manatee and its habitats— a positive and proactive attitude was also evident for its recovery in Quintana Roo. Our main goal for 2023-2024 is to build and implement a participatory monitoring program to inspire conservation of manatees and their feeding grounds in the Mexican Caribbean. This program will be designed with local stakeholders and will emphasize traditional Mayan knowledge about manatee's biology, ecology, conservation, and perceptions. As a pilot monitoring project, we plan to create a community group in Laguna Guerrero, which will be in charge of the post-release monitoring of a manatee calf (Pompeyo) that has been rehabilitated and released in this area.

Through initiatives such as environmental education, participatory mapping, abundance and distribution surveys, and post-release monitoring of a rehabilitated manatee, our project aims to raise awareness about manatees and their value as natural and cultural heritage. Consequently, our proposal conceives cultural and biodiversity elements present in the Mexican Caribbean, and specifically in the Mayan culture, as being intimately connected to each other: a biocultural corridor for both manatees and people.

¡Learn more about the Biocultural Corridor activities following our social networks!

https://www.instagram.com/manati.biocultural/
https://www.facebook.com/profile.php?id=100088405605470
https://twitter.com/manatibcultural

https://www.tiktok.com/@manatibcultural

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The wildlife: New challenges for Pompeyo, the manatee

"Pompeyo", a male manatee calf, was rescued in August 2021 by the Red de Varamientos de Mamíferos Marinos del Estado de Quintana Roo (RVMMQR), the environmental government agency PROFEPA (Órgano de la Procuraduría Federal de Protección al Ambiente), and underwent rehabilitation at the Centro de Atención y Rehabilitación de Mamíferos Acuáticos (CARMA) in Laguna Guerrero, Quintana Roo, Mexico (for more details see Castelblanco-Martínez et al. 2021).

During the first 14 months of rehabilitation, Pompeyo was bottle-fed with a lacto-replacer formula designed for orphan manatees, and the offered volume was increased according to the individual's acceptance (Fig. 1). In February 2022, we began to provide Pompeyo with solid food consisting of algae from Laguna Guerrero. Pompeyo was weaned in October 2022, and the algae diet was supplemented with lettuce to guarantee food acceptance and adequate nutrient intake.

Figure 1. Sup.: Pompeyo receiving lacto-replacer formula. Inf.: Native algae, lettuces, and a mix of both prepared to be offered to Pompeyo. Solid food was located on the bottom of the enclosurement. Photo credits: N. Garcés-Cuartas, J. Padilla, Ch. Henaut.

Unlike many orphan calves undergoing rehabilitation, Pompeyo has shown excellent health, with normal physiological parameters for the species and age, as well as a curious and active temperament. Despite the good condition of the young manatee, his management meant a great challenge, especially because the institutions involved in the process have no resources previously allocated to respond to these contingencies. Therefore, from the beginning of the process, the Fundación Internacional para la Naturaleza y la Sustentabilidad (FINS) was committed to a fundraising campaign aiming to get the necessary support to cover Pompeyo's needs. Aid in kind and in cash was received to acquire management equipment, milk formula, vitamin supplements, fuel for boat transportation for the collection of native algae, cultivated vegetation, and to pay salaries to caregivers. The Instituto de Biodiversidad y Áreas Naturales Protegidas de Quintana Roo (IBANQROO) is responsible for maintaining the infrastructure of the station, as well as supporting personnel, vehicles and vessels for the tasks of handling the equipment, collecting vegetation and transporting lettuces. Clinical management and veterinary care have been in charge of the Mexican Association of Habitats for the Interaction and Protection of Marine Mammals (AMHMAR) and The Dolphin Company.

Other institutions that have supported this project are: the Procuraduría de Protección Ambiental (PPA), the Consejo Nacional de Humanidades, Ciencia y Tecnología (CONAHCYT), the Universidad Autónoma del Estado de Quintana Roo (UAQROO), and the Instituto Tecnológico de Chetumal (ITCH). Pompeyo's needs were covered thanks to donations received from: AMHMAR, Save the Manatee Club (SMC), Clearwater Marine Aquarium (CMA), Jacksonville Zoo and Gardens, Animal Welfare Institute (AWI), El Colegio de la Frontera Sur (ECOSUR), One Earth, International Fund for Animal Welfare (IFAW), Grupo Xcaret and dozens of generous citizens. The coordinator of Pompeyo's rehabilitation project is Dr. Nataly Castelblanco Martínez, the clinical supervision and health assessment has been in charge of M. V. Z. Roberto Sánchez Okruckry. The project has relied on constant technical and logistical assistance from M. T. I. Janneth Adriana Padilla Saldívar, M. en C. Fabiola Corona Figueroa, Dr. Natalia Garcés Cuartas, and Br. Socorro García Rosado.

Around 65 volunteers from 28 institutions and seven different countries donated their time to take care of the manatee. Ninety-eight volunteers participated during the health assessment sessions, including inhabitants of the communities of Laguna Guerrero and Raudales. The environmental awareness and education campaign for Pompeyo's release has been promoted by IBANQROO in coordination with the Biocultural Corridor Project for Monitoring and Conservation of Manatee in Quintana Roo (FINS) (Lara-Sánchez et al. 2022).

Currently, Pompeyo consumes a completely solid diet including native vegetation, and is perfectly adapted to the environmental conditions of Laguna Guerrero. This lagoon, belonging to the Santuario del Manatí Bahía de Chetumal, was proposed as the release area because it presents typical characteristics of manatee habitat: high offer of submerged aquatic vegetation, low level of high-speed boat traffic, connectivity to other systems, and constant presence of manatees, especially moms and calves. Despite Pompeyo's small size (total length: 151cm, weight: 71 kg) in comparison with other rehabilitated and released Antillean manatees, the technical-scientific team considered that he is fit to be released. After consulting with experts in telemetry, a VHF tagging system coupled to the caudal peduncle with a belt was chosen. Pompeyo was tagged on September 11, 2023 (Fig.2), and the release is planned to be soon.


Figure 2. Pompeyo's tagging. Photo credits: C. Ocampo, H. Bahena-Basave.

However, Pompeyo's rehabilitation process does not end with his release. The aim of the post-release monitoring is to periodically track and locate the individual to understand its movements, as well as check its health status and adaptation to the wildlife. This process requires local citizen collaboration to inform us about the presence of this manatee, and to follow the rules of not feeding or harassing Pompeyo or any other manatee of the Santuario. We hope that Pompeyo's release serves to reinforce the message of responsibility that we all have in the care and protection of this emblematic species.

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PHILIPPINES

Category 5 super typhoons striking dugong (*Dugong dugon*) areas in the Philippines: Some considerations for anticipatory action in wildlife conservation

Anticipatory action, initially a humanitarian sector intervention, has found recent application in the nexus of wildlife conservation and climate change adaptation, such as addressing elephant-human conflict during extreme drought. In developing this novel case for designing integrated human-wildlife anticipatory action in the Philippines, we note extreme weather here took form as Category 5 Super typhoons Haiyan ("Yolanda"), which hit in 2013, Goni ("Rolly") in 2020, and Rai ("Odette") in 2021, affecting millions of Filipinos. We utilize dugongs (*Dugong dugon*) as model species since dugongs have been assessed as critically endangered in the Philippines. We note the following initial considerations for conservation planning: (1) 11 of the 23 identified dugong priority conservation areas intersected with the super typhoons' paths, including northern Palawan areas, which have the highest known dugong counts in the country; (2) east facing areas of the islands were more exposed to damage compared to west-facing coasts since "Yolanda," "Rolly," and "Odette" developed in the Pacific Ocean then steered westward across the Philippines; (3) "Odette's" track was 100–200 km below "Yolanda," indicating that areas in lower latitudes are now also at risk; and (4) the >200km diameter of the three super typhoons may indicate the need for correspondingly-sized conservation areas. Although dugong-seagrass conservation areas and adjacent human communities were impacted, the number of years separating the three catastrophic events indicates an open but closing window of opportunity for structuring integrated human-wildlife anticipatory actions aimed at alleviating or even counteracting, effects of future extreme weather events predicted for climate change.

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PERU

Conservation Triumph: Releasing captive manatees into the Amazon River in Peru

With the aim to celebrate the successful efforts of Rainforest Awareness Rescue Education Center (RAREC) and promote the conservation of Amazonian manatee in Peru, on April 5th, 2023 two captive-raised manatees were released into the Amazon River. This milestone highlights the power of collaborative conservation initiatives of the vulnerable species.

Gregory and Jennifer, the young chosen manatees, were named in tribute to Dr. Gregory Bossart and his wife for their substantial support towards RAREC's efforts concerning the Amazonian manatee. The journey to release these creatures was an adventure itself, involving a truck ride and a boat journey deep into the heart of the Amazon. The chosen release site was near the San Juan de Yanayacu community, Iquitos.

The mission was led by John Garnica, the dedicated Director of RAREC, and Edmundo Parada DVM, the center's skilled veterinarian. They were supported by esteemed manatee biologists Diogo de Souza from Brazil and Dr. Sarah Farinelli from EUA, along with diligent RAREC interns who ensured meticulous post-release tracking.

Following the successful release, the team engaged with the local community, emphasizing the ecological importance of conservation and how individuals can contribute to the Amazon River.

This release is just the beginning of a hopeful legacy. With two biologists monitoring Gregory and Jennifer daily, valuable insights into their behavior and habits will inform future releases, contributing to the conservation of these magnificent creatures.

Collaborators like the Nashville Zoo, Georgia Aquarium, Pittsburgh Zoo and Aquarium, Columbus Zoo and Aquarium, Save the Manatee Club, Worldwide Vets and the Grand Amazon Lodge, especially Mr. Rick Schwartz and DVM Heather Schwartz from Nashville Zoo, played a crucial role in the success of this release.

This achievement not only represents a triumph of conservation but also signifies a promise of continued efforts to protect the fragile ecosystems of the Amazon for generations to come in the long term.

Figure 1. John J. Garnica, RAREC Director, Diogo de Souza, Manatee Biologist from Brazil, and RAREC staff, minutes before the first manatee release.

Figure 2. John J. Garnica, RAREC Director, Diogo de Souza, Manatee Biologist from Brazil, and RAREC volunteers and staff, before to transport the manatees to the release site.

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VENEZUELA

Record of presence of a Manatee (*Trichechus manatus manatus*) on the central coast of the Venezuelan Caribbean

The geographical distribution of the manatee *(Trichechus manatus manatus)* in Venezuela includes the Lake Maracaibo basin, the Gulf of Paria and the Orinoco River basin. Its presence on the Venezuelan coast of the Caribbean Sea has been very controversial due to the habitat requirements, which in this area are limited, due to a very rugged geography without large river mouths, which limit access to fresh water for consumption. However, the presence of a manatee was recorded in the bay of Puerto Cabello, Carabobo state (Boede and Mujica, 1991), and on the eastern coast of Venezuela, at the mouth of the Neverí River, Anzoátegui state (Boher and Porras, 1991). After three decades, a specimen was recovered on the island of La Blanquilla, later identified as a lost individual from Brazil (Viloria et all, 2022). Since the 90s, there were no reliable records of live local specimens on the coast, until August 25, 2023, in a fishing club in the bay of Puerto Viejo, east of the state of La Guaira (715633.22 E – 1173683.58 N). The sighting generated uncertainty among the inhabitants who did not recognize the species. The event was filmed with cell phones and shared on social networks, calling on the authorities to address the situation. Salvador Boher, a Venezuelan biologist with extensive experience, was present at the site, verifying that it was a subadult specimen, with a certain tameness, apparently healthy, without visible scars or signs of dehydration, which was approaching a hose with fresh water that those present supplied (pers. comm., 2023). Upon the arrival of the Venezuelan environmental authorities, the manatee was no longer in the bay, so the sex could not be determined or epibiont samples taken. On August 30, 2023, the same animal was seen by fishermen from Tuja, a town in the state of Aragua (666963.056 E – 1164645.723 N). They shared videos on social networks, since they did not know the species. Subsequently, the specimen left in an unknown direction to this date. It is presumed that the specimen could come from eastern or western Venezuela, where the largest populations of manatees in the country are known. This sighting in the area of the central Venezuelan coast is of great importance, as it justifies the short-term need to carry out population studies and monitor the presence of other groups or solitary individuals, evaluate the possible reasons for movement along the Venezuelan coast, and the implementation of strategies such as the Action plan for the conservation of aquatic mammals in Venezuela (Ferrer et al, 2017). It is important to

highlight that the presence of this animal in both areas generated amazement and curiosity in the residents, evidencing the lack of knowledge about this aquatic mammal. Likewise, it highlighted the importance of access to technology in communities. It is very important to start educational campaigns that make it known as well as the importance it has as part of our biological diversity.

Figure 1. Manatee observed in Tuja, State of Aragua, Venezuela.

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-Silva, Carlos[1,2]; Ovalle–Moleiro, Leonel[3,4]; Boher, Salvador[5].

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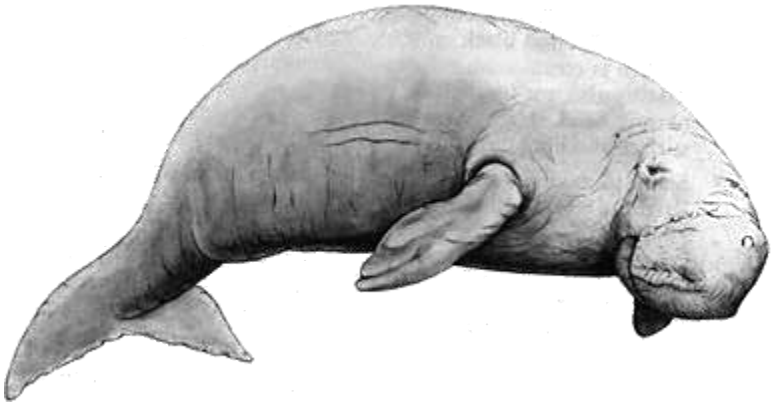
[4] Ministerio del Poder Popular para el Ecosocialismo.

[5] Sociedad Venezolana de Ciencias Naturales



Sirenews – Dugong

(End of Local News)

REQUEST FOR SURVEY PARTICIPATION
Manatee Study

Greetings! My name is Léanna Frafjord Saint-Victor, and I am currently pursuing a master's degree in archaeology at the Norwegian University of Science and Technology (NTNU) in Trondheim.

At present, I am in the process of writing my MA thesis on the human use of manatees, and its changing role in human societies throughout history. This dissertation will be tied to the European Research Center (ERC) Synergy Project, 4-OCEANS; A Human History of Marine Life c.100 BCE to c.1860 CE and will be a historical ecology and zooarchaeology focused project on the Greater Caribbean. I will explore themes focused on the examination of the interconnectedness between human beings and the marine environment, to better our knowledge on how people perceived and utilized the manatee in the past, as well as in the present. The study will thus help promote discussions where the manatee can be placed in the centre of different sociocultural contexts and compared.

As part of my research, I have developed an online survey aimed at assessing the current understanding and value attributed to manatees by individuals from educational and research institutions, as well as fishing communities in the Circum-Caribbean. Considering the species history of being a target to exploitation and its current status as an endangered species, this study will allow for a better chronology of its misuse and encourage further archaeological understanding of the social dimensions of human-animal interactions.

Would you, dearest reader, be interested in participating in the survey? I believe your insights and contributions would be immensely valuable to my research.

Should you want to participate in the survey, all you have to do is scan the QR-code or click on the link below, and you will swiftly be sent to the survey site. It will take approximately five to ten minutes of your time.

Thank you for considering my request.

Online link to survey: https://nettskjema.no/a/342812

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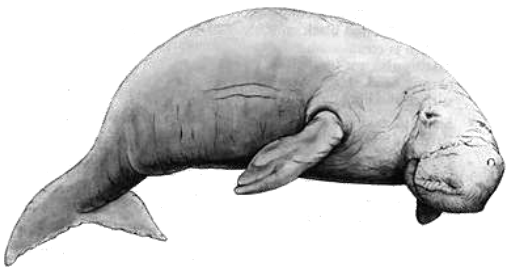

Sirenews – Dugong

NOTES FROM THE EDITORS: We would like to thank all of those who have contributed articles for *Sirenews*. On occasion, we have taken the liberty to make minor edits in an effort to accommodate our formatting style and provide clarity for our readership. However, we have restrained from making all grammatical edits in an effort to preserve the original intent of the submitting author.

We would also like to encourage you to submit any manatee and dugong sketches or old-time prints for publication in future issues!

⇨ **COPY DEADLINE FOR NEXT ISSUE: March 1, 2024** ⇦

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