Annual Report 2019

Together to save our aquatic wildlife
Dear supporters and collaborators,

When we started writing this annual report at the end of 2019, we could never have imagined that in less than 3 months, almost half of the world’s population would be in confinement because of a virus. All my thoughts are with you, and I hope that you take all the necessary precautions to protect yourself and your families wherever you are. At the time of publication of this report, the coronavirus continues to progress in Africa, and it is with great uncertainty that we are monitoring the evolution of the pandemic.

In these difficult times, good news is scarce but we invite you to celebrate the progress we have made in protecting Africa’s threatened marine wildlife - may it be a light to you in these darker times. At the local level, we are seeing encouraging progress and the fruits of the actions that we have taken so far. By communicating the main achievements that have marked AMMCO’s life in 2019, our objective with this annual report is to bring a ray of hope and share our determination - because together everything is possible. As we look forward into the year ahead, we also must take pause to recognize AMMCO’s major accomplishments in 2019. Before anything else, I would like to use this occasion to express my gratitude to our distinguished donors and supporters in 2019. Without you, we would have only existed in hopes and dreams; but through your donations and support, you have given us the power to bring positive change to the life of the African manatee, other aquatic marine species in Cameroon, and the people that live around them.

- In early 2019, with the support of National Geographic Society, we extended our fishermen sighting network to cover for the first time the entire coast of Cameroon. We can now receive real-time information on strandings and sightings from the more than 80 fishermen who have joined our conservation efforts through our citizen science platform. Over 5,500 observations were documented in 2019, up from only 500 in 2018.

- Through this citizen science network, we were able to save 14 sea turtles that were accidentally caught in fishing nets or caught during nesting. We also managed to save over 200 sea turtle eggs.

- For the first time, we mapped and video-recorded the seafloor and sea grasses of the northern coast of Cameroon using sonar and underwater drones. https://www.youtube.com/watch?v=ohWXygdAYq8&t=1s

- Our citizen science data provided us tools to advocate to the government for the legal protection of the Atlantic humpback dolphin, the humpback whale, and the sperm whale, raising their status to the highest class of legal protection in Cameroon.
PRESIDENT’S WORD

Our suggestion was deemed valid and included in the final decree signed by the Minister of Wildlife. The legal protection of this species will hopefully help discourage poachers.

- The middle of 2019 was a moment of celebration for us as four of our student interns graduated with their engineering degrees. We are proud of our contribution in building the skills of these new marine researchers who are now ready to join the work that AMMCO has started.

- We reached more than 1,500 students in Lake Ossa through our environmental education. Over 8000 people around the world received our conservation message.

- The end of 2019 was even more exciting for two reasons. First, the Cameroon government finally delivered us the permit to import the salvinia weevil to be used for the biological control of Salvinia molesta in Lake Ossa. Secondly, I graduated my PhD in Veterinary Medical Sciences from the University of Florida in December 2019. I feel better equipped to support manatees and marine conservation activities in Cameroon and Africa in general and build the capacity of the next generation.

My team and I hope to accomplish even more in 2020. As part of the global conservationist community, we endeavor to give the best of ourselves to address the conservation challenges ahead of us. Our focus will include:

- Biologically control of Salvinia molesta in Lake Ossa
- Continue to raise conservation awareness
- Scale up our alternative livelihood activities (ecotourism, apiculture, vegetable farming, mushroom farming, soap and vinegar making)
- Conduct the first acoustic monitoring of the African manatee
- Develop a recovery plan for the African manatee in Cameroon.

We hope that you will join us on AMMCO’s 2020 conservation journey. Together, we can have an even greater impact on protecting the aquatic wildlife of our only planet.

Aristide Takoukam Kamlia
President and founder of AMMCO
SUMMARY

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OUR TEAM

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Laurent Sanchez
Development

Alice Adenike
Volunteer
INTRODUCTION

This annual report is a brief summary of the main activities carried out by the African Marine Mammal Conservation Organization (AMMCO) in 2019 at our intervention sites, including the Lake Ossa Wildlife Reserve (LOWR), Douala-Edea National Park, (DENP) and the north and south coasts of Cameroon.

AMMCO is a Cameroonian non-profit organization created in 2012 and incorporated in 2014. Our vision is to make the African coast and aquatic environments a refuge for the African manatee in particular, and marine and aquatic megafauna species in general. Our mission is to contribute to the protection of the aquatic megafauna and their habitats in Central Africa by improving scientific knowledge and by involving fishermen and other stakeholders in sustainable fishing and the responsible use of watersheds.

This report presents the major activities and results achieved monthly by AMMCO during 2019. Our activities revolve around our four strategic axes:
1) Raising awareness
2) Support for the development of community-driven conservation activities
3) Capacity building
4) Scientific research
PRESENTATION OF THE STRATEGIC AXES OF AMMCO FOR THE YEAR 2019

I- Raising awareness:
AMMCO has set up awareness activities to convey messages on the conservation of the African manatee and other aquatic megafauna, as well as environmental protection in general. AMMCO brings people together of all ages to talk to them about the importance of protecting animals likely to disappear, the dangers of poaching and overfishing, among other topics about conservation. Outside our home base, AMMCO also informs the general public on radio and social networks about issues related to the conservation of the environment. These activities aim to change local perceptions in the short term, and the attitudes of fishermen towards our target species in the longer term.

II- Support for the development of community-driven conservation activities:
With a view to sustainably manage fishery resources, AMMCO offers the fishermen of the LOWR alternative income opportunities that are unrelated to fishing. AMMCO offers several types of activities - including ecotourism, beekeeping, vegetable farming, soap and vinegar making- to vary their sources of income and thus reduce human pressure on the fishery resource.

III- Capacity building:
One of AMMCO’s strategies to save aquatic fauna is to build the capacity of marine biologists, fishermen, students and other conservation stakeholders. Aquatic megafauna today are facing increasing threats that cannot be solved by any one person or organization alone. This is the reason why AMMCO is preparing the next generation of researchers and volunteers committed to meeting these challenges to preserving nature.

IV- Scientific research:
The development of participatory and applied research in Cameroon is a priority for AMMCO. Most of the aquatic fauna species are poorly known scientifically. The information from research is essential because it guides the implementation strategies for conservation actions aimed at protecting aquatic megafauna and their habitats.
Meeting with local communities

AMMCO’s 2018 general meeting took place on January 30, 2019 in Dizangue. About 50 guests were in attendance, made up of local, traditional authorities and fishermen. AMMCO presented the results of its activities for 2018 and the plans for the next year. It was an interactive meeting during which AMMCO gathered external opinions and perceptions of its activities. During this meeting, the fishermen expressed their satisfaction with the support that AMMCO brings to communities through income-generating activities and expressed the wish that the organization continues this activity in the years to come.

The fishermen also asked that AMMCO help them to get rid of the salvinia which harms their fishing activity.

AMMCO’s president interacting with the local communities of Dizangue.
Former manatee hunter saves freshwater turtle eggs at Lake Ossa

Mr. "X" was a hunter of manatee and other wild aquatic animals such as crocodiles and freshwater turtles. In 2018, because of our awareness messages and the safeguarding actions of the conservation service of the LOWR, Mr. X decided to desist from these illegal activities and gave his hunting gear to the Conservator.

On January 16, 2019, during his normal fishing activity at Lake Ossa, Mr. X discovered a freshwater turtle nest on a sandy shore of Lake Ossa. When Mr. X was still a hunter, he would have taken the eggs to consume or sell them; but this time Mr. X had a natural hero reflex and decided instead to call the AMMCO team in order to secure the nest. This act of bravery further strengthened the AMMCO team on the importance of continuously educating and raising awareness among local residents. The noble behavior of the fisherman was symbolically rewarded with domestic chicken eggs, to encourage him to continue similar acts.

The fisherman rewarded for his noble behavior.

Together to save our aquatic wildlife
Training on the use of aquatic and aerial drones

At the beginning of 2019, AMMCO received a Trident aquatic drone donated by OpenRov and the National Geographic Society's OpenExplorer program. The president of AMMCO, Aristide Kamil, trained his staff on how to handle this device. The drone made it possible to characterize the benthic bottom of Lake Ossa and part of the continental shelf of the north coast of Cameroon and therefore to identify potential feeding sites for sea turtles.

In addition, AMMCO’s staff and interns were trained on piloting the Mavic Pro aerial drone. AMMCO now uses the drone to monitor manatees, resting areas (with the aim of limiting accidental catches and excessive fishing), and to map the distribution of Salvinia molesta in Lake Ossa. A considerable step for research and conservation of marine biodiversity, especially for the aquatic megafauna of Cameroon.

Expedition at sea and training in the use of the aquatic drone off the coast of Batoke.

Handling of one of our drones.
Monitoring of boat landing and beach patrols on the north coast

AMMCO conducts weekly patrols on the beaches along the north coast of Cameroon and monitors boat landings to record the incidental catches of aquatic megafauna species.

AMMCO has established a network of nearly 50 volunteer fishermen to gather information. They use the SIREN app to send the images and the location of the observations in real-time. SIREN is a free mobile application that allows a user to record and send timely observations on aquatic fauna to our server. SIREN and the fishermen's network were created with the vision to encourage participatory contribution to the scientific knowledge of the aquatic fauna in Africa in spite of the glaring deficit of human resources and specialized logistics.

To date, AMMCO has recorded more than 5,500 observations in Cameroon via the SIREN application, including around 4,000 fish, 620 rays, 280 sharks and 35 mammals. The rest of the observations are made up of birds, crustaceans, and jellyfish. For the north coast of Cameroon specifically, we conducted boat monitoring at 71 boat landings, 86 beaches, and 10 at sea, over a distance of almost 77 km from Tiko to Bamusso.

Monitoring of boat landings and incidental catches in Yupwe (Douala)
The reforestation of the banks of Lake Ossa: a hope for the survival of the manatee

AMMCO trained a number of fishermen in November 2018 to begin the restoration process of the forest habitat surrounding Lake Ossa. This process began in February 2019, and its goal is to limit the degradation of the aquatic habitat for the manatees of Lake Ossa. Forest restoration is imperative to reduce the erosion and slow siltation of the lake. The most concrete solution was to reforest the banks of the lake through the transplantation of 5000 plants. The plants produced by the nursery created by the AMMCO for the occasion were transplanted into the areas to be reforested. In late March, 4,500 plants were used to reforest the banks of the lake at Koungue-lac. The trained fishermen, as well as AMMCO staff, continued the restoration process by monitoring the reforested areas around Lake Ossa. AMMCO intends to extend this activity to other sites affected by deforestation.

The SIREN mobile application and the fishermen’s network for more effective citizen science

In order to extend its fishermen’s information network, AMMCO held a training workshop for focal points in February 2019 on the use of the SIREN mobile application. These focal points, in turn, trained fishermen along the Cameroonian coast on the use of the application.
Three large networks were established:

- The network of the north coast which goes from the border of Cameroon with Nigeria to the Mounago river
- The central coast network, which consists of two groups:
  - The Wouri estuary network
  - The network of the lower Sanaga watershed;
- The south coast network also made up of two groups:
  - The Lokoundje rivers network up to the Lobe river
  - The Lolabe network to Campo.

 Throughout the Cameroonian coast, this network, via the SIREN application, has enabled AMMCO to identify 12 observations of living dolphins, mostly common dolphins (Tursiops truncatus).
FEBRUARY

Participation in the second edition of the training-employment forum of the University of Douala.

On February 14, 2019, AMMCO participated in the forum organized by the Institute of Fisheries Sciences (ISH) of Yabassi, around the Master in Integrated Management of Coastal and Marine Environments (GIELM) of the University of Douala. At the gathering, AMMCO had the opportunity to interact with other organizations working on coastal and marine environments. We also had the privilege to share our mission and to discuss our work with students aspiring to engage in the field of the protection of the aquatic megafauna of Cameroon. AMMCO took the opportunity to reiterate its commitment to support young researchers through the practical internships that its students can benefit from.

Working session with students of the GIELM Master’s
Training of conservation officers in monitoring manatees

AMMCO and the Ministry of Forests and Wildlife (MINFOF), through the Conservation Department ofLOWR and DENV, have decided to strengthen their collaborative ties to ensure the protection of the manatee and its habitat. At the request of the curators of the two protected areas, AMMCO trained four eco-guards on monitoring the manatee in Lake Ossa and monitoring poachers in the reserve. Five DENP eco-guards have received training on the use of the SIREN application and have received smartphones with SIREN App installed. Today, these eco-guards contribute to the collection of timely data during their routine patrols in the park.

Eco-guards practicing the inventory of the manatee
AMMCO trains its staff in citizen science

The actors of biodiversity protection in sub-Saharan Africa gathered in Naïrobi (Kenya) during a seminar on the analysis and interpretation of citizen science data, organized by Tropical Biology Association. AMMCO was represented at the conference by Cédrick Fogwan, our field assistant and biostatistician. The seminar involved training on the collection of data and analysis approaches with R studio software and the use of results. As we plan to involve more people in scientific research, this training will allow AMMCO to formulate better approaches to engage communities as well as analyze and share the collected data better.

Cédrick Fogwan receiving his certificate for completing his training
ISH students immerse themselves in Sonar technology

AMMCO trained the students of the Institute of Fisheries Science (ISH) of Yabassi on the use of echo-location. This training for undergraduate and master's students in oceanography was carried out as part of a data collection campaign on the bathymetry and cartography of the Nyong River's seabed. Sonar echolocation makes it possible to determine the structure and composition in the water column and the bottom of the water of lakes, streams, and seas despite the opacity of the water.

The students following instructions from AMMCO field coordinator
A day dedicated to endangered species

On May 11, AMMCO celebrated the 2019 Day of Endangered Species in collaboration with Pandrillus Cameroon, the Da Nzimbistic Cultural Center, and the regional delegation of the Ministry of Forests and Wildlife, the Limbé municipal council, UNESCO, and the Program for Sustainable Management of Natural Resources (PSMNR) -SWR), under the patronage of the Prefect of the Fako department. Together, we inaugurated a campaign aimed at changing behaviors towards the protection of wildlife.

The campaign aimed at involving citizens in the urgent need to protect wildlife. Limbé and its surroundings, from the volcanic region of Mount Cameroon to the Atlantic Ocean, is home to one of the last refuges for many species, in particular: the endangered Nigeria-Cameroon chimpanzee, the highly threatened forest elephant, the most trafficked animal in the world - the pangolin, several species of sea turtles, and the magnificent humpback whale. Their populations are drastically declining due to various human activities. Several big billboards were placed at the entrance of the town of Limbe to raise awareness. If no action is taken, these emblematic fauna could disappear forever!

Billboard to raise awareness on plastic pollution and cetacean conservation
Workshop on the documentation of small cetaceans in West Africa

From May 7 to 9, 2019 in Nairobi (Kenya), AMMCO participated in a workshop aimed at solving the problem of the under-documentation of small cetaceans on the West African coast. The goal was to bring together stakeholders working on cetaceans from around the world in order to share current knowledge and define the recommendations aimed at better protecting young cetaceans. Our presentation focused on the assessment of threats to small cetaceans on the Cameroonian coast. The working group adopted recommendations at the end of the session, including capacity building and revision of laws in several countries, as well as the creation and management of marine protected areas.

International Conference of Living Lakes and IAAAM

As an active member of the Living Lakes network, AMMCO took part in the 15th International Conference of Living Lakes which was held from May 7 to 9 in Valencia, Spain. The President of AMMCO once again took this opportunity to inform the scientific community specializing in the conservation of lakes of the ecological disaster caused by the proliferation of salvinia. The following week the President of AMMCO participated in the 50th annual conference of the International Association for Aquatic Animal Medicine (IAAAM) in Durban, South Africa, in order to continue lobbying about the situation of Lake Ossa and of the salvinia. These events made it possible to meet collaborators who support AMMCO in the fight against salvinia in Lake Ossa.

Celebration of the 20th anniversary of Living Lakes (Credits: GNF)
Control of Salvinia molesta in Lake Ossa

A biological disaster is currently occurring in Lake Ossa through the proliferation of an invasive plant called Salvinia molesta. This floating plant, which doubles in size approximately every ten days, strongly impacts the habitat of the manatees and the socio-economic conditions of the fishermen of the lake. Sadly, this invasive plant competes with the plant Echinochloa pyramidalis, locally known as “sissongo” which represents almost 80% of the diet of the manatee in Lake Ossa. The absence of Echinochloa could lead to the disappearance of manatees in the affected areas. In addition, by covering the entire water surface, salvinia can prevent manatees from surfacing to breathe. Some fishermen have seen their fishing activity slow down because the presence of salvinia has seriously reduced the stock of fish - which sometimes leads them to hunt the manatee to meet their needs.

In order to find ways to effectively eliminate salvinia and restore Lake Ossa, AMMCO has initiated a series of studies aimed at better understanding the origin of the threat and its impact on the manatee. The limnological study on the chemical quality of the lake revealed that the lake has become highly enriched in nutrients such as nitrogen and phosphorus, thus causing eutrophication. The concentration gradient and the date on which this enrichment was noticed suggests that the opening of the Lom-Pangar Dam in late 2016 can be linked to this enrichment. Biological monitoring of the manatee in relation to the progression of salvinia in Lake Ossa has shown that the frequency of observation of this mammal has reduced by more than half after the invasion of salvinia. It remains to be determined whether these manatees died or migrated to other ecosystems.

A part of the lake invaded by the salvinia
After consultation with national and international experts specializing in invasive species, it emerged that biological control remains the most effective and sustainable solution.

Solutions implemented by AMMCO
- As an immediate solution AMMCO opted for the mechanical removal of the plant in critical corners of the lake. AMMCO mobilized nearly 50 fishermen who removed a total of more than 165 tons of salvinia. Unfortunately, this approach has a very limited impact to overcome the threat because the plant multiplies very quickly.

Manual removal of the salvinia in Lake Ossa by the local communities

- As a sustainable solution, AMMCO has chosen biological control by using the natural enemy of salvinia: the salvinia weevil, known under the scientific name Cyrtobagous salviniae. By feeding heavily on salvinia, this weevil causes the death of the plant. Once the plant is eradicated, the weevil itself disappears for lack of food. After several negotiations with the Cameroonian government, AMMCO finally obtained an import permit. In December 2019, AMMCO imported the first sample of weevils from Louisiana State University. These weevils are raised in tanks before being released into the lake once their population has reached a sufficient number, probably in March or April 2020.

Cyrtobagous salviniae, the weevil eater of Salvinia © CSIRO
**JULY**

**Bushmeat market monitoring**

AMMCO makes weekly visits to the bushmeat markets of the cities of Edéa and Douala in order to document the sale of manatee meat and identify sales channels. This will make it possible to target interventions to combat poaching. Manatee meat has been observed for sale three times in the Saker Market in Douala and never in the Edge Market in Edéa. While manatee meat is exhibited in public at the Saker market, we suspect that this sale is very sneaky in Edéa, by word of mouth.

This year, thanks to our fishermen monitoring network, AMMCO documented four dead manatees at Lake Ossa and a total of seven along the Cameroonian coast, six of which were attributed to poaching. We have submitted these results to the conservation services and to the regional delegation of the Ministry in charge of wildlife and forests.

**AUGUST**

**Promotion of beekeeping as an alternative to fishing**

With a view to sustainably manage the aquatic resource, AMMCO identifies alternative sources of income to fishing with LOWR fishermen. This year, AMMCO focused on beekeeping and trained 51 people. The communities involved in this activity are those located near the lake, and who thus have a significant impact on the ecosystem. These communities are, among others: Beach, Pongo Pitti, Mevia and KM3. To date, 50 beehives have been distributed. Two hives have been colonized in Mevia and Pongo Pitti and will produce around twenty liters of honey in a few weeks. This honey will be bottled, labeled as "Manatee Honey" and sold to tourists by the lake and at the local market. The profit from this sale will allow fishermen to buy additional hives and provide for their families. The low number of colonized hives suggests that the type and shape of the hives are factors to be taken into account - all the rectangular hives made of planks and bamboo were colonized compared to the cylindrical hives which remained empty.
Environmental education program

Initiated in the 2014-2015 school year, the environmental education program in secondary schools in Dizangue was once again on the agenda this year. The goal of this program is to a) draw students' attention to issues related to preserving the environment and b) influence their perception and attitude towards the manatee and its habitat so that they will be more respectful of the environment when they become socially active in the future. AMMCO reached nearly 1,500 students in total at St Gérard College and the Lycée Bilingue de Dizangue. During educational sessions in the classroom, we also shared information about the functioning of the LOWR, the conservation of the manatee, and the importance of biodiversity. Extracurricular activities - such as the creation and monitoring of nurseries, planting, and monitoring of fruit trees - have enabled students to practice positive actions that contribute to the preservation of our environment. Before and after each course session, the students were assessed on their level of knowledge on the subject in order to measure the impact of our environmental education program. The results showed that there is a marked improvement in the knowledge and perception of the pupils about the manatee in particular and the environment in general. These activities will be intensified in 2020.
Raising awareness among local communities

Having regular awareness sessions strengthens the relationship between AMMCO and local communities in order to facilitate better adherence to our vision of conservation. AMMCO has conducted several sessions to raise awareness among fishermen along the Cameroonian coast. The focal points (local volunteers that act as the “point person”) of our coastal stranding network, in addition to collecting data on accidental catches, also encourage artisanal fishermen to release sea turtles, dolphins and sharks accidentally caught in fishing nets. More than 500 fishermen in total received the awareness messages from our focal points. Following our awareness messages, 14 sea turtles accidentally caught in nets or laying eggs were saved by the fishermen during 2019.

First edition of the AMMCO Newsletter

Since September, in addition to being active on Facebook, Twitter, and Instagram, AMMCO periodically shares its information via electronic newsletters via email to our partners and subscribers in order to reach an even broader audience. Register on our website to receive our newsletters.
Staff training for AMMCO and other RASTOMA member NGOs

In October 2019, the AMMCO team and the NGOs ACBM (Cameroonian Association of Marine Biology) and Tubè Awu, and members of RASTOMA (Network of Actors in the Protection of Marine Turtles in Central Africa) participated in a training on the identification of elasmobranch species (a group made up of cartilaginous fish like sharks and rays) in Cameroon. Given the lack of knowledge about these species and the strong human pressures on them, the objective of this training was to strengthen the capacities of local NGOs in data collection and identification methods to better protect these animals. Elasmobranchs are the groups of aquatic species most affected by accidental catches in Cameroonian fisheries. During this training initiated by AMMCO with the contribution of RASTOMA and technical support from the University of Sfax (Tunisia), the 18 participants also learned the use of cartographic and statistical tools, QGIS and R-studio respectively. The training was organized at two sites, one in Kribi and the other at AMMCO headquarters at LOWR.
Ministry of Forestry and Wildlife (MINOF) revises Cameroonian wildlife law

From October 16 to 18, a workshop was held in Nkolandom for the revision of decrees 0648 and 0649 of December 18, 2006, with regards to the classification of wildlife species in Cameroon. The opening ceremony was chaired by Mr. Joseph Lekealem, Director of Wildlife and Protected Areas at MINOF. At the invitation of MINOF, AMMCO took part in this important meeting, during which we made a plea for the inclusion of certain cetacean species on the list of fully protected species in Cameroon. Among these species were the Atlantic humpback dolphin, the long-billed dolphin, the humpback whale, and the great sperm whale. This advocacy was made on the basis of scientific information from our data gathering at sea but especially data reported by our network of fishermen using the SIREN app.

Presentation of AMMCO’s activities to representatives from the MINOF
Construction of a hatchery in Batoke

Nesting sites along the Cameroonian coast are frequently prey to human and animal predators such as dogs. To reduce sea turtle egg hunting on the north coast, AMMCO built a hatchery in Batoke (Limbé, Southwest region of Cameroon) with technical support from our partner NGO Tube Awù, active on the south coast from Cameroon. This hatchery receives sea turtle eggs found in their initial nest, to ensure better protection and monitoring. Between November and December, a total of 177 eggs were incubated there. Their monitoring is currently underway. The locality of Bakinguili (South-West region) will house the second hatchery.
Africa now has an African doctor specializing in the manatee.

After nearly five years of study at the University of Florida, the founding president of AMMCO completed his doctoral thesis, the research of which focused on the African manatee in the two protected areas of the Sanaga watershed that are the Lake Ossa Wildlife Reserve (LOWR) and the Douala-Edea National Park (DENP). Through this study, Dr. Kamla adapted a genetic approach to identify and estimate manatee populations from DNA found in feces. Thanks to his research, we now know more about the manatee diet in these areas. He also characterized the physico-chemical quality of Lake Ossa, which made it possible to detect the rapid eutrophication of the lake following the enrichment in nitrogen and phosphorus which led to the proliferation of Salvinia. As part of his thesis, Dr. Kamla established the first bathymetric map of Lake Ossa which now allows hydrodynamic modeling of the lake.

Dr. Kamla was supervised by internationally-renowned researchers specialized in manatee, including Drs. Robert Bonde, Lucy Keith-Diagne, Margaret Hunter, Ruth Francis-Floyd and Tom Frazer. The knowledge acquired by Dr. Kamla will further strengthen the research and conservation of manatees and other aquatic mammals in Africa and prepare young researchers aspiring to work in this field. This accomplishment would not have been possible without the support of the Fulbright, the Wildlife Conservation Network, the Wildlife Conservation Society, the US Geological Survey, Save the Manatee Club, and the University of Florida Aquatic Animal Program.
World Science Conference on Marine Mammals and International Symposium on Sirens

The 2nd World Science Conference on Marine Mammals took place from December 9 to 12, 2019 in Barcelona, Spain. On the sidelines of this conference, the 19th international colloquium on sireniens (the order of herbivorous aquatic mammals that includes the manatee) took place. AMMCO’s project coordinator Mr. Eddy Nnanga and our president Dr. Aristide Kama participated; they respectively presented an update on the invasion of the salvinia in Lake Ossa and the advances in genetics research that made it possible for the first time in history to use the DNA contained in manatee feces to identify individuals and estimate the size of their population. This meeting was also an opportunity for AMMCO to reconnect with its longtime partners and collaborators and to establish new relationships.

Aristide Kama presenting AMMCO’s research activities
MAPS

Map of Lake Ossa
AMMCO’S IMPACTS SINCE 2014

Aquatic fauna
- Nearly all restaurants around Lake Ossia stopped serving manatee meat.
- At least 50% reduction in manatee hunting in Lake Ossia.
- 3 poachers transformed in aquatic wildlife protectors.
- 14 sea turtles rescued.
- 340 sea turtle eggs saved from predation.
- 75 African freshwater soft-shell turtle eggs saved from predation.
- 5 marine mammal species recently included in the list of integrally protected species of Cameroon thanks to AMMCO advocacy.

Habitat protection
- 4,500 trees planted.
- 200 tons of salvinia removed in Lake Ossia.
- First mapping and characterization of the seafloor of the northern coast of Cameroon conducted.
- Diversity and abundance of aquatic plant species of the lower reaches of Sanaga watershed now well known.

Local community and livelihood improvement
- 51 fishers trained and equipped in bee farming
- 60 women trained in artisanal soap and vinegar manufacturing
- 30 women benefited from our revolving fund.

Awareness
- Over 8,000 students received our environmental education program.
- Over 2,000 fishermen received our awareness messages.

Capacity building of the young generation
- 15 Master and Engineer students graduated.
- 5 technicians from the wildlife and forest schools of Maroua and Mbalmayo.
- Over 50 graduate and undergraduate students trained in various fields of study.
- 10 interns employed at AMMCO.
- 5 formal staff hired at renowned international organizations.

Citizen science
- Over 5,500 observations of aquatic wildlife species reported.
- 80 people, mostly fishermen reported observation on SIREN.
- Over 2,000 observations shared on international databases such as iNaturalist.
- Over 250 species of aquatic wildlife and flora documented in Cameroon.
AMMCO’S IMPACTS SINCE 2014

Innovations

- 5 mobile applications developed to help monitor wildlife species participatively (SIREN, SIREN-Turtles, SIREN-Fish, SIREN-Elephant, SIREN-Terrestrial wildlife).
- First citizen science with fishermen along the coast of Cameroon.
- First use of a biological control approach against aquatic invasive species in Cameroon.
- First use of eDNA to detect the African manatee using water samples.
- First use of manatee fecal DNA for individual identification and population size estimate.
- First characterization and mapping of the seafloor in Cameroon.
- First high-resolution bathymetric map in Cameroon.
- Discovery and filming of a coral reef on the northern coast of Cameroon.
Annual Report 2019

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