

Aquatic Bushmeat in West Africa

A Briefing by OceanCare

In summary

- Endangered species are being over-harvested as aquatic bushmeat, for either human consumption or as bait. This growing problem is spread across the West African coastal region. At least manatee, five species of turtle, seven species of dolphin and one species of crocodile are regularly hunted.
- Declining fisheries resources have caused the rise of bushmeat harvest, as evidenced by anecdotal information. This is impacting large aquatic mammal biodiversity in the region.
- There is insufficient implementation of regionally agreed actions, including the Convention on Migratory Species marine turtle and aquatic mammal agreements. Aquatic bushmeat is 'falling through the cracks' between environment and fisheries Ministries, agencies and international processes.
- Existing conventions, agreements and local regulations need to be implemented and enforced.
- Better understanding of the scope of the problem needs to be developed. A thorough assessment of aquatic bushmeat on sale in markets should be conducted to collect data about the origins of the meat, if specific species are being traditionally caught and consumed, or the reasons for new species harvest. This assessment can reveal the drivers behind the increased aquatic bushmeat harvest, incidences of illegal local or international trade, where endangered species are involved, and harvest levels that are unsustainable.
- The assessment of aquatic bushmeat can uncover potential solutions, as well as possible incentives for change. Strengthening partnerships in the region, making information transparent and easily shared, and establishing a taskforce to leverage this information is crucial.

Context

The meat of wild animals—bushmeat—long has been a part of the staple diet of many indigenous and local communities in equatorial rainforest and savannah regions. This form of meat includes any non-domesticated terrestrial mammals, birds, reptiles and amphibians that are harvested for food, medicine or other traditional uses. Bushmeat is often locally traded for income or other community needs.

For generations, terrestrial and aquatic bushmeat consumption has been sustainable, but modern pressures and growing human population has changed the balance. (Milner-Gulland and Bennett, 2003; Brashares, *et al.*, 2011; Cawthorn and Hoffman, 2016) Changing climate, scarcity of other meat sources and community displacement by industrial mining, commercial forestry, palm oil plantations and distant water industrialised fisheries has forced many communities into marginal areas, and their reliance on bushmeat has grown.

Until recent decades, the intentional wild harvest of aquatic mammals, reptiles and amphibians was comparatively small. In many ways, this harvest has been the aquatic equivalent of bushmeat—it is 'aquatic bushmeat' or 'aquatic wildmeat'. At least manatee, five species of turtle, seven species of dolphin and one species of crocodile are regularly hunted and consumed as aquatic bushmeat. It is likely many more species are hunted and consumed as well. Some key species (manatee and marine turtles) are threatened, and the more abundant species face localised extinctions due to over hunting.

While a small proportion of these animal products enter international trade, trade is mostly local, although often illegal.

OceanCare believes this is a systemic and global problem; and is difficult to locally manage. Decision makers are forced to grapple with incomplete information, as well as insufficient connection between environment and fisheries

Ministries, agencies and international processes. Distant water fleets operate in regions with impunity from the chain of impact their harvests have on local fishing communities.

It is crucial that decision makers are empowered with information about the drivers for aquatic bushmeat harvest, the rate of consumption and the regulatory mechanisms available to them to ensure future harvests do not endanger species.

An issue with no 'home'

Fisheries have been an important food source for many people in West Africa, but there is now evidence of increased hunting of aquatic bushmeat as well.

Aquatic bushmeat takes don't fit easily into fisheries management, and they fall outside the common focus of bushmeat discussions. The hunting methods and catch rates differ from traditional fisheries or terrestrial bushmeat hunting. Aquatic bushmeat is most often obtained by harpoon hunting, netting and by making use of stranded (dead or alive) animals.

As a result of the different form and focus, aquatic bushmeat takes have not been the focus of systematic harvest investigation, although research clearly indicates catch rates are increasing. (Costello and Baker, 2011; Robards and Reeves, 2011)

Aquatic mammals and reptiles fare poorly when hunted at these levels. Marine turtles are at historically low numbers and cannot withstand sustained harvest. There are significant risks of over-harvest for many other aquatic reptiles. (Carranza *et al.*, 2006; Böhm *et al.*, 2013) Marine mammals are especially susceptible to exploitation because of their low reproductive rates and many other threats they face, including habitat loss, prey declines and climate change. (Perrin *et al.*, 2009)

A number of international mechanisms should be considering aquatic bushmeat in the West African region but, to date, they have not given the issue strategic focus. These are:

1. the Convention on Migratory Species of Wild Animals (CMS) appendices and the Western African regional agreements for marine turtles and marine mammals—the *Memorandum of Understanding concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa* and the *Memorandum of Understanding*

Concerning the Conservation of the Manatee and Small Cetaceans of Western Africa and Macaronesia

2. the Convention on International Trade of Endangered Species of Flora and Fauna (CITES) appendices
3. the United Nations Office on Drugs and Crimes (UNODC) list of species in illegal trade.

Anecdotal connection to declining fisheries resources

There are distinct shifts in the species hunted as fish supplies fall away and fish prices rise. Studies have shown correlations between the low availability and high price of fish in markets and increased demand for bushmeat. (Clapham and Van Waerebeek, 2007; Brashares *et al.*, 2011; Lindsey *et al.*, 2013)

The distant-water fleet overexploitation of West Africa's fishery resource has produced devastating social, economic and human consequences. The livelihoods of artisanal fishers are being destroyed, a vital source of protein is being lost, and opportunities for the development of regional production and trade are disappearing. (Watson and Brashares, 2004; Daniels *et al.*, 2016)

OceanCare doesn't believe the rise of aquatic bushmeat is a local fisheries management failure. Local and national fisheries regulations are evolving and this should continue, including management measures to reduce accidental bycatch of aquatic mammals, reptiles and amphibians. What should be considered is the strong anecdotal connection to declining fisheries resources and rising aquatic bushmeat harvest. The flow on impact of illegal, unreported and unregulated fishing is heavily implicated in the increasing aquatic bushmeat take. (Watson and Brashares, 2004; Daniels *et al.*, 2016)

Yet, anecdotal information is not enough. We need to develop better understanding of the drivers for, and the levels of, aquatic bushmeat takes to design and implement local and national management programmes that can address unsustainable and illegal hunting and the use of aquatic mammals, reptiles and amphibians.

Bycatch of the same species

Analysis shows that bycatch of marine mammals and turtles are widespread at a global level. Wide-ranging mega-fauna species such as dolphins and turtles are likely to encounter multiple fishing gear types, and experience cumulative effects from multiple fisheries across the seascape. Wallace has documented the global bycatch of turtles in offshore fisheries was over 9000 animals between 1990 and 2008. The bycatch of turtles in local fisheries over the same period was 387. (Wallace, *et al.*, 2010)

Region-gear combinations showing high bycatch rates, low research coverage and no publicly available bycatch reports warrant urgent conservation action due to the important consequences of high bycatch rates for vulnerable populations, for instance in offshore trawl fisheries in West Africa. (Wallace, *et al.*, 2010) Researchers are concerned that many hotspots of bycatch of marine mammals and turtles remain to be identified, particularly in small-scale fisheries and data-deficient ocean regions, such as West Africa where the research indicates the cumulative bycatch is very high. (Moore, *et al.*, 2010; Lewison, *et al.*, 2014)

However, it is likely the numbers of animals being locally harvested in West Africa are being caught intentionally as aquatic bushmeat, more so than as bycatch. Although, there are critical data gaps that still need to be considered.

Towards solutions for managing bushmeat

Hunting for some aquatic mammals, reptiles and amphibians is already illegal in parts of West Africa, yet the real need for food and low awareness of regulations makes these laws ineffectual.

Raising general awareness about the vulnerability of many aquatic mammals, reptiles and amphibians from bushmeat harvest could be a useful focus. Similarly, providing support and capacity to shift gear types that mitigate aquatic mammal, reptile and amphibian bycatch would also be worthwhile.

OceanCare believes these measures will not solve this growing problem. Empowering West African governments with verified information to address this problem systematically should be the focus.

Working with local partners including the IUCN-SSC Cetacean, Sirenian, Marine Turtle and Crocodile Specialist Groups, local universities and NGOs, a thorough assessment of bushmeat harvest of aquatic mammal, reptile and amphibian species on sale in markets should be conducted along the West African coastline. This would build on the existing, excellent data available from terrestrial bushmeat market assessment of Cameroon and Nigeria published in 2006. (Fa, *et al.*, 2006)

This assessment should collect data about the origins of the meat, if specific species are traditionally caught and consumed, or reasons for a new species harvest.

This assessment can reveal the drivers behind the increased aquatic bushmeat harvest. It will inform where incidences of illegal local or international trade are taking place, where endangered species are involved, and where harvest levels are unsustainable.

It can uncover where incentives for change might be possible. And, it can support governments to assess if new regulations are required, or design new arrangements to protect traditional food sources, such as coastal fisheries, to ease the pressure of hunting on aquatic mammals, reptiles and amphibians.

The first step is to reach agreement that such information is important, and should be gathered and assessed.

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Annex

Known aquatic bushmeat harvests

A summary of the known aquatic bushmeat local harvests are summarised below (from west to east). Many of these studies have been opportunistic and reported by biologists investigating other issues. Few have set out to investigate the drivers for the aquatic bushmeat harvest or any changes in that harvest. The scarcity of targeted science is a serious problem than needs to be addressed.

Key species are listed in table 1 (page 8), that also includes IUCN Red List status for each species.

Mauritania

Manatee

No literature was found to indicate if manatees are hunted.

Dolphins

No literature was found to indicate if dolphins are hunted.

Marine turtles

Marine turtles (loggerhead, green and leatherback) are intentionally hunted and also regularly caught in local fisheries, and the meat sold in market. The shells are used for tourists. The eggs are also harvested. (UNEP/CMS, 2000)

Cape Verde

Manatee

No literature was found to indicate if manatees are hunted.

Dolphins

The use of dolphins for human consumption and handicraft production dates back several decades. (Reiner *et al.*, 1996) Dolphin carcasses obtained opportunistically, mostly from strandings events, are used for food, handicrafts and decorations. (Reiner *et al.*, 1996; Hazevoet *et al.*, 2010; Brito and Carvalho, 2013)

Marine turtles

Marine turtles (loggerhead, green, hawksbill) are regularly caught in local fisheries, and the meat and fat are sold in market and as a form of traditional medicine. Turtle fat is specifically used as a medicine. The shells are used for tourists. Eggs are also harvested, (UNEP/CMS, 2000)

Senegal

Manatee

Historically, manatees have been hunted in Senegal on a scale that brought the population close to extinction. (Maigret, 1994; Van Waerebeek *et al.*, 1997; Perrin, 2001) When animals are bycaught today the meat is still consumed and the oil used for medicinal purposes. (Maigret, 1994; Powell, 1996; Van Waerebeek *et al.*, 1997; Diop, 2006; Ba *et al.*, 2008)

Dolphins

Dolphins have been consumed opportunistically since the 1990s. (Maigret, 1994; Van Waerebeek *et al.*, 2004, 2008) Dolphin meat continues to be illegally traded as food and bait in the cephalopod fishery. (VanWaerebeek *et al.*, 1997; Leeney *et al.*, 2015)

Marine turtles

Marine turtles (loggerhead, green, hawksbill, olive ridley and leatherback) are intentionally hunted and caught in local fisheries. The meat is consumed at home and as a form of traditional medicine. The shells are used for tourists. Eggs are occasionally harvested. (UNEP/CMS, 2000)

The Gambia

Manatee

Manatees are widely and illegally hunted by fishermen for food and traditional medicine. (Powell, 1996; Jallow, 2008)

Dolphins

Hunting of dolphins may occur on a minor scale, mainly for food and medicinal uses. (Murphy *et al.*, 1997; Alfaro and Van Waerebeek, 2001; Leeney *et al.*, 2015)

Marine turtles

Marine turtles are occasionally hunted. The meat is consumed at home and the shells are used for tourists. Eggs are occasionally harvested. (UNEP/CMS, 2000)

Guinea-Bissau

Manatee

Manatee hunting is thought to be declining in Guinea-Bissau, but bycatch remains a threat to the species. Manatee carcasses are used for food and other purposes. (Powell, 1990; Silva *et al.*, 1998; Silva and Araújo, 200; Sa *et al.*, 2008)

Dolphins

Bycaught dolphins are consumed locally and used in traditional ceremonies and for medicinal purposes. (Leeney *et al.*, 2015)

Marine turtles

Marine turtles (loggerhead, green, hawksbill, olive ridley and leatherback) are regularly caught in local and industrialised fisheries. The meat is consumed at home and as a form of traditional medicine. The shells are used for tourists. Eggs are also harvested. (UNEP/CMS, 2000)

Guinea

Manatee

Some cultures in Guinea hunt manatees and the meat is typically consumed within the hunter's family, or shared between fishermen and hunters from the village. The oil and bones are used for medicinal purposes. (Powell, 1996; Keita, 2002; Richard *et al.*, 2008)

Dolphins

There is little evidence of dolphins hunting. (VanWaerebeek *et al.*, 2004; Bamy *et al.*, 2010)

Marine turtles

Marine turtles (loggerhead, green, hawksbill, olive ridley and leatherback) are regularly caught in local fisheries, and the meat and fat are consumed and the fat, and shells are used as a form of traditional medicine. Eggs are also harvested. The harvest of turtles is particularly intensive on the island of Bioko (Castroviejo, *et al.*, 1994; UNEP/CMS, 2000; Tomás, *et al.*, 2010)

Sierra Leone

Manatee

Manatees have been hunted with nets and harpoons since the 1980s (Reeves *et al.*, 1988), and hunting likely continues (Maigret, 1994; Powell, 1996; Perrin, 2001; Siaffa and Jalloh, 2008). Rice farmers see manatees as pests and use traps to catch them. (Reeves *et al.*, 1988)

Dolphins

There is little evidence of dolphins hunting. (Maigret, 1994)

Marine turtles

Marine turtles (olive ridley and leatherback) are regularly caught in local fisheries, and the meat is consumed at home. Eggs are also harvested. (UNEP/CMS, 2000)

Liberia

Manatee

Manatees have been hunted in for many decades. (Robinson, 1971; Wiles and Makor, 2008)

Dolphins

No literature was found to indicate if dolphins are hunted.

Marine turtles

No literature was found to indicate if marine turtles are hunted.

Côte d'Ivoire

Manatee

Manatees were heavily hunted in the 1980s and illegal hunting continues. (Powell, 1996; Perrin, 2001; Kouadio, 2008)

Dolphins

No literature was found to indicate if dolphins are hunted.

Marine turtles

Marine turtles (green, hawksbill, olive ridley and leatherback) are regularly caught in local fisheries, and the meat is consumed at home and sold in market. It is estimated that fishermen catch 12-13 turtles per village each year. Eggs are also harvested and sold at market. (UNEP/CMS, 2000)

Ghana

Manatee

Manatees hold different values between communities, some of which hunt them for food (Powell, 1996; Amlalo, 2008) while others kill them for bait (Ofori-Danson *et al.*, 2008).

Dolphins

Dolphin meat became a source of bushmeat sales in the 1980s and the captures of dolphins in Ghana are currently among the highest in West Africa, both in terms of animals landed and the number of species caught. (Van Waerebeek and Ofori-Danson, 1999; Alfaro and Van Waerebeek, 2001; Robards and Reeves, 2011) Dolphin bycatch has now transferred to direct catches in at least in Apam, Dixcove, and Axim, where landing rates have greatly increased since the mid-1990s. In Apam they have gone from 1.117 per month in between 1995 and 1999, to 5.57 between 2001 and 2003. (Ofori-Danson *et al.*, 2003; Debrah *et al.*, 2010) Between 2013 and 2014, 743 dolphins were landed at Dixcove, representing an increase of almost 400 per cent since 2003 levels. (Debrah *et al.*, 2010; Van Waerebeek *et al.*, 2014) All body parts are used, including the internal organs, both for food and as bait. (Ofori-Danson *et al.*, 2003; Weir *et al.*, 2008; Van Waerebeek *et al.*, 2009, 2014; Debrah *et al.*, 2010; Robards and Reeves, 2011; Weir and Pierce, 2013)

Marine turtles

Marine turtles (green, olive ridley and leatherback) are regularly caught in local fisheries, and the meat is consumed at home. The meat and other products are used as a form of traditional medicines, and turtle meat holds cultural and religious values for some communities. Eggs are also harvested. (UNEP/CMS, 2000)

Togo

Manatee

Manatees are illegally hunted for their meat, which is sold and consumed locally and used in traditional medicine and ceremonies. (Segniagbeto *et al.*, 2008)

Dolphins

Dolphins are hunted and landed at Lomé harbour, where they are butchered and sold to regional markets. (Alfaro and VanWaerebeek, 2001; Segniagbeto *et al.*, 2014)

Marine turtles

Marine turtles (green, hawksbill, olive ridley and leatherback) are regularly caught in local fisheries and used as a form of traditional medicine. The shells are used for tourists. Eggs are also harvested. (UNEP/CMS, 2000)

Benin

Manatee

There is little evidence of organized manatee hunting, although killing a manatee remains an important event in a fisherman's life (Rihanath Olga and Tchibozo, 2008) and manatee are used for food, medicines and traditional ceremonies (Tchibozo, 2002; Dossou-Bodjrènou *et al.*, 2004).

Dolphins

Information on dolphins in Benin is virtually non-existent. One of the only dedicated articles in the literature recorded that at least nine dolphin species were occasionally consumed. (Sohou *et al.*, 2013)

Marine turtles

Marine turtles (green, olive ridley and leatherback) are regularly caught in local fisheries, and the meat is consumed at home. The fat is used for medicines. The shells are used for tourists. Eggs are also harvested. (UNEP/CMS, 2000)

Nigeria

Manatee

Manatee hunting was intensive in the past (Henshaw and Child, 1972; Sikes, 1974; Maigret, 1994; Angelici *et al.*, 2001) and continues at a lower scale for consumption and medicinal purposes, despite a sharp decline in the manatee population (Adeola, 1992; Maigret, 1994; Perrin, 2001; Oboto, 2002; Fa *et al.*, 2006; Awobamise, 2008).

Dolphins

Dolphin hunting in Nigeria is a significant issue. Thousands of animals are likely being harvested each year (Lewison and Moore, 2012; Uwagbae and Van Waerebeek, 2010).

Marine turtles

Marine turtles (green, hawksbill, olive ridley and leatherback) are regularly caught in local fisheries, and the meat and fat are consumed at home and sold in market. The shells are used for tourists. Eggs are also harvested. (UNEP/CMS, 2000) It has been estimated that catch rates of turtles are in the thousands. High numbers of turtle nests are harvested and thousands of nesting females are hunted each year. (Fa, *et al.*, 2006; Lewison and Moore, 2012)

Crocodiles

Significant numbers of crocodiles are harvested as meat to be sold in markets. (Fa, *et al.*, 2006)

Parties and Range States: CMS, CMS Turtle MoU, CMS Marine Mammal MoU

	CMS	CMS Turtle MoU	CMS Marine Mammal MoU
Mauritania	1998	1999	2008
Cape Verde	2006	2007	2008
Senegal	1988	2002	
The Gambia	2001	1999	
Guinea-Bissau	1995	1999	2008
Guinea	1993	1999	
Sierra Leone		2002	
Liberia	2004	2005	2008
Côte d'Ivoire	2003	2002	2008
Ghana	1988	1999	2008
Togo	1996	1999	2008
Benin	1886	1999	2008
Nigeria	1987	1999	

Key species that are taken as aquatic bushmeat in West Africa

Species	CMS Appendix	CMS Turtle MoU	CMS Marine Mammal MoU	CITES Appendix	IUCN Red List Status
Hawksbill turtle (<i>Eretmochelys imbricata</i>)	I & II	Yes		I	Critically endangered
Green turtle (<i>Chelonia mydas</i>)	I & II	Yes		I	Endangered
Loggerhead turtle (<i>Caretta caretta</i>)	I & II	Yes		I	Vulnerable
Olive Ridley turtle (<i>Lepidochelys olivacea</i>)	I & II	Yes		I	Vulnerable
Leatherback turtle (<i>Dermochelys coriacea</i>)	I & II	Yes		I	Vulnerable
West African manatee (<i>Trichechus senegalensis</i>)	I & II		Yes	I	Vulnerable
Pantropical spotted dolphins (<i>Stenella attenuata</i>)	II		Yes	II	Near Threatened
Clymene dolphins (<i>Stenella clymene</i>)	II		Yes	II	Data deficient
Melon-headed whales (<i>Peponocephala electra</i>)			Yes	II	Least concern
Common bottlenose dolphins (<i>Tursiops truncatus</i>)			Yes	II	Least concern
Short-finned pilot whales (<i>Globicephala macrorhynchus</i>)			Yes	II	Data deficient
Rough-toothed dolphins (<i>Steno bredanensi</i>)			Yes	II	Least concern
a long-beaked form of common dolphin (<i>Delphinus sp.</i>)			Yes	II	Least concern
Dolphin spp.	II		Yes	II	Data deficient - Least concern
Crocodile spp., likely Nile crocodile (<i>Crocodylus niloticus</i>)				I	Least concern

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