Executive Summary

ATLAS

of ecological and biological sensitivity in coastal and offshore areas of West Africa, especially Mauritania, Senegal, Guinea-Bissau, and Sierra Leone

With particular reference to the development of oil and gas in the region

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Executive Summary

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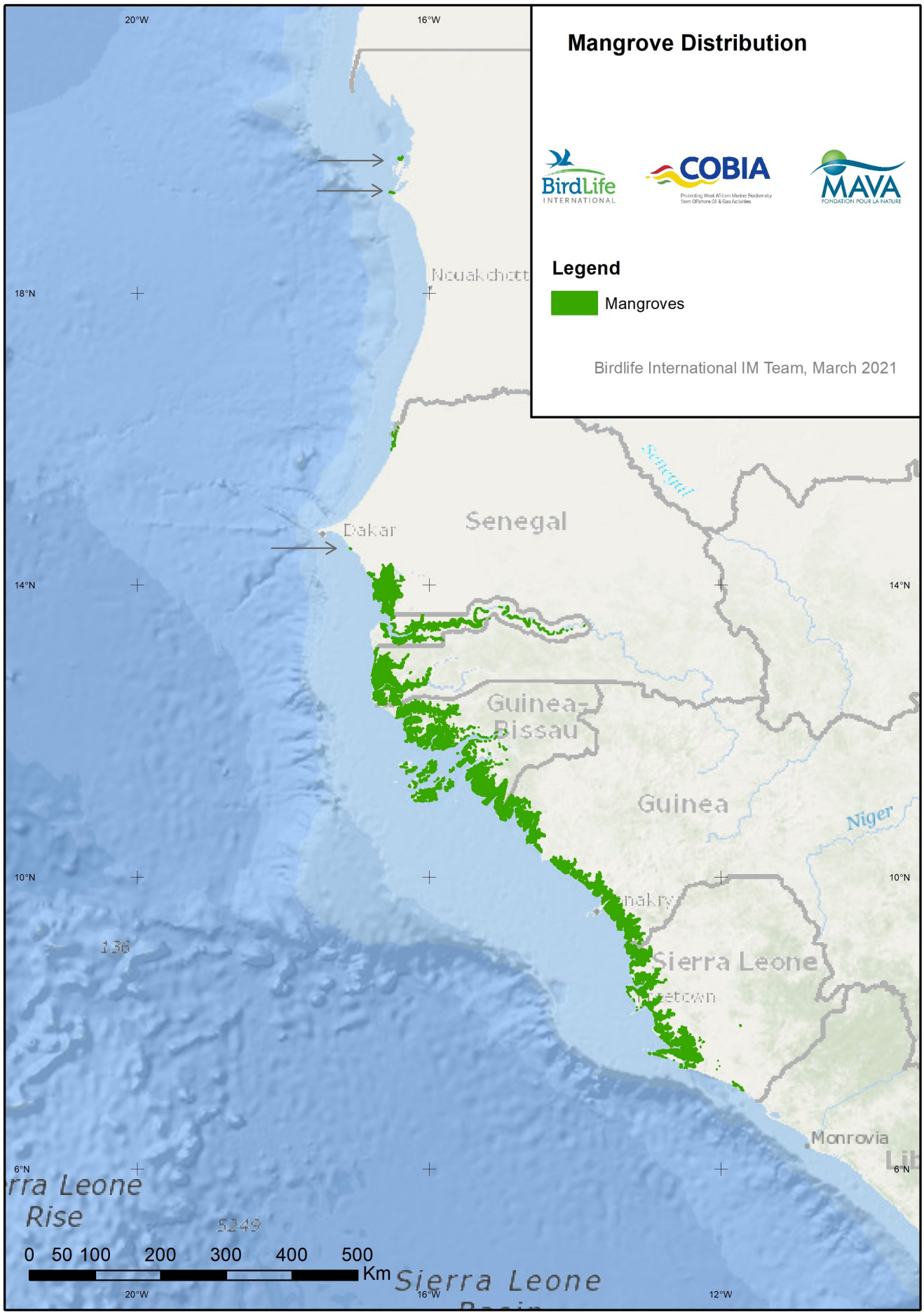
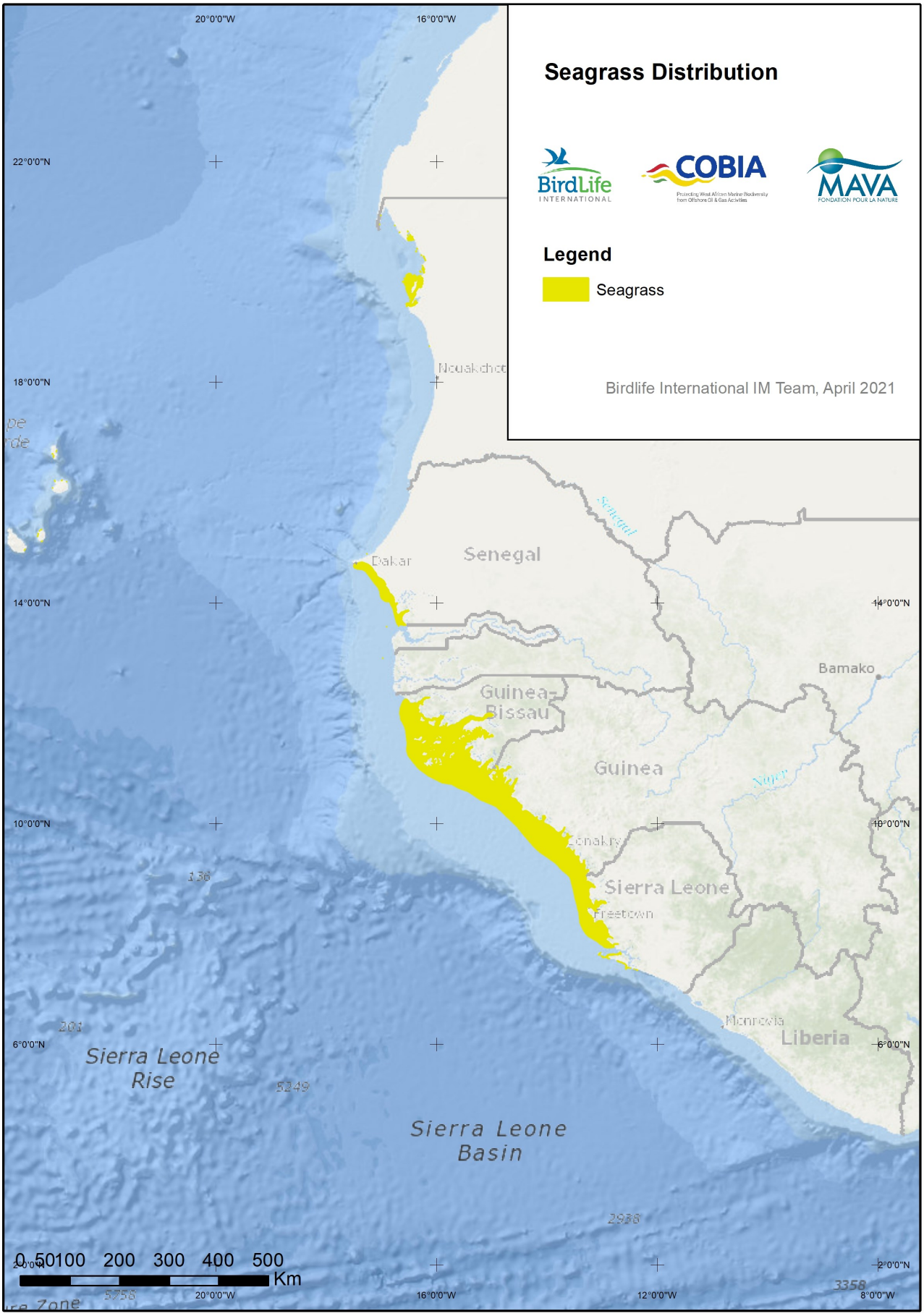
The Atlantic seaboard and marine waters of West Africa are vital assets for the region, supporting globally important fisheries and highly productive areas for wildlife. Coastal habitats include extensive tidal flats, offshore islands, a large archipelago, winding rivers, and long beaches, with tropical ecosystems in the south yielding to desertic landscapes in the north. Offshore, Atlantic currents and a major upwelling combine with a range of underwater features including seamounts, canyons, and cold-water corals to result in a diverse marinescape of great productivity.

The key coastal and marine ecosystems and habitats of the region are estuaries, sandy beaches, rocky coasts, archipelagos, mangroves, seagrass beds, seamounts, knolls, canyons, and cold-water corals. Mangroves extend from Sierra Leone to southern Senegal, with smaller pockets in northern Senegal and Mauritania. Western and Central Africa has about 11% of the world's mangrove area. Seagrass beds extend from Sierra Leone north to Mauritania. Both mangroves and seagrass play a vital role in coastal zone defence and carbon capture, as well as significantly contributing to local economies and to supporting fish and other wildlife, from manatees to crabs and seabirds. Coastal development, including that due to oil and gas developments, is the principal threat to the region's mangroves; some restoration initiatives have helped to counter mangrove loss. Seagrasses are susceptible to damage from contact with oil or oil-related chemicals, whilst they are also vulnerable to damage due to their location in shallow coastal seas, often close to areas of development.

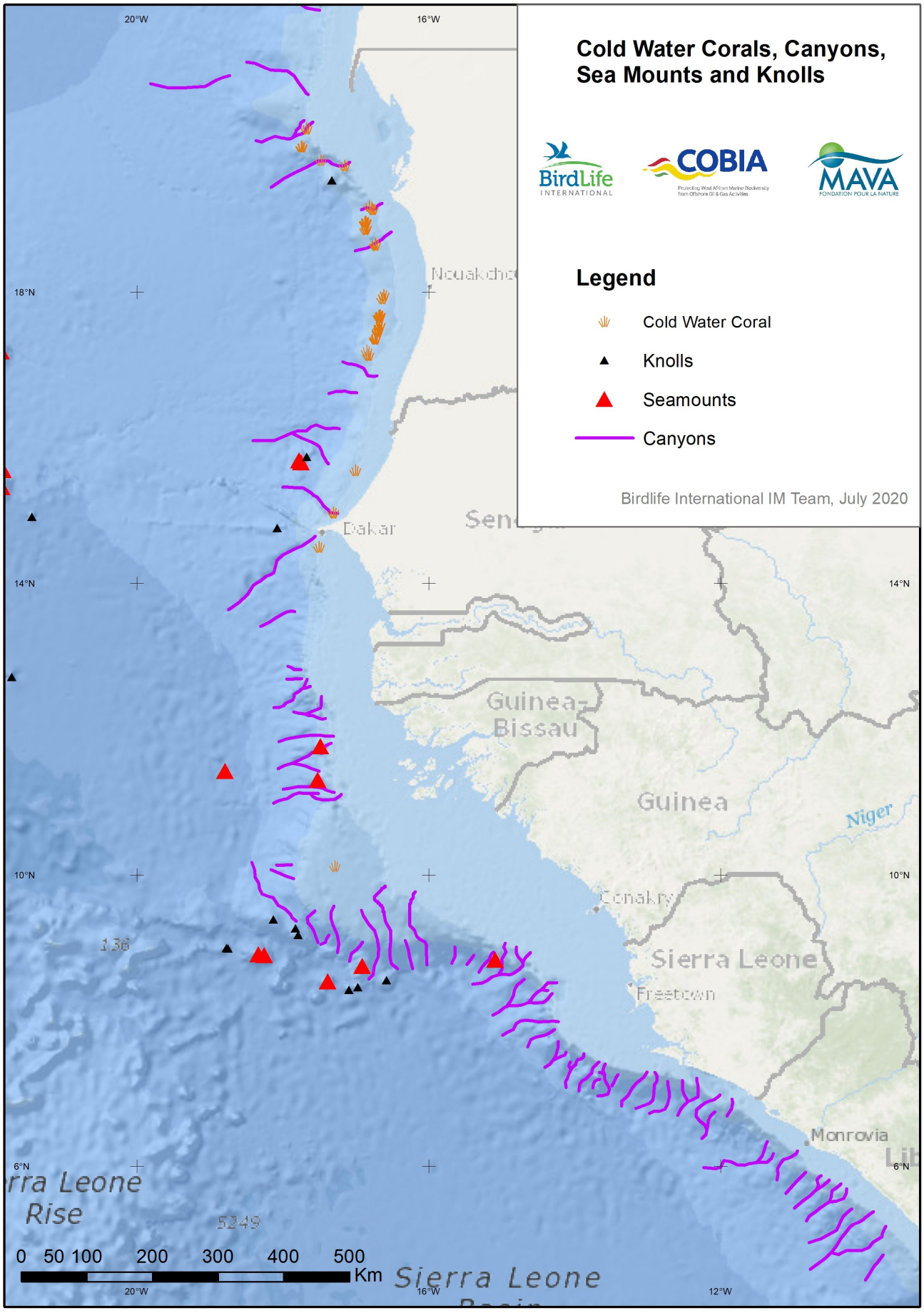
Deep-water habitats also play a major role in supporting biodiversity in the West African Marine Ecoregion (WAME). Seamounts, knolls, and submarine canyons are seabed features that are particularly important, supporting rich biodiversity. They also provide habitat for deep-sea corals, which in turn provide food and refuge for numerous marine species. A key function of these habitats is nutrient regeneration and upwelling, essential for healthy fisheries. Very little protection is in place for these habitats, and all deep-water construction activity poses a direct physical threat, whilst issues such as increased turbidity and pollution impact deep-sea corals and other marine life.



Mangrove extent between Mauritania and Sierra Leone



Distribution of seagrass beds from Mauritania to Sierra Leone. Seagrass is predicted to also occur between Cap Vert in Senegal and the Banc d'Arguin, and west and south of Cap Blanc in Mauritania (ResilienSEA 2020b).

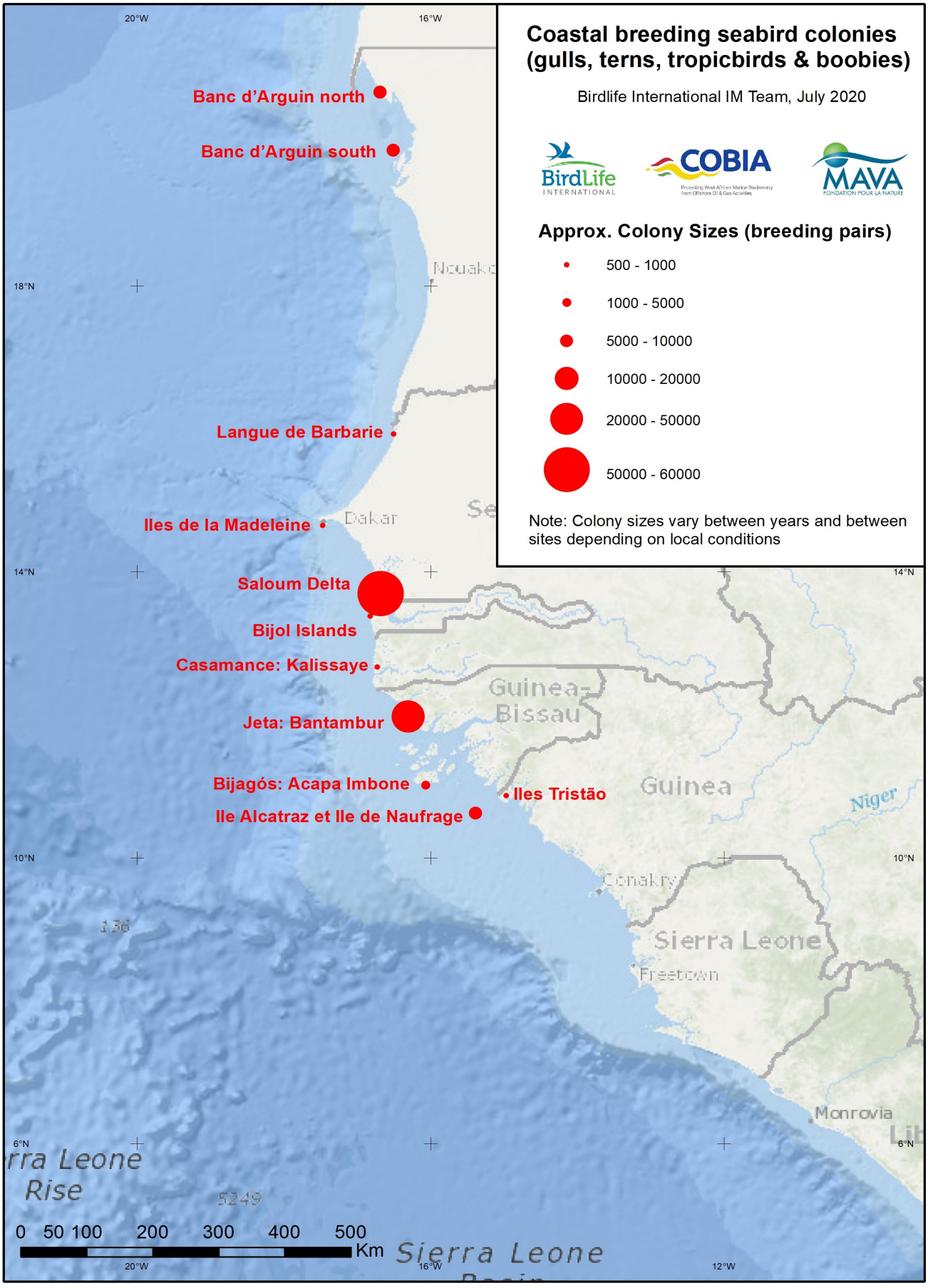


Seamounts, knolls, canyons and cold-water corals

The marine waters of West Africa are particularly rich in seabirds and waterbirds. The atlas presents an overview of the species richness and range rarity of 22 pelagic seabird species. These birds have a key – and often overlooked - role in oceanic ecosystems as top predators, and are important vectors of nutrients between marine and terrestrial ecosystems. Although a number of key areas for seabirds have been identified and designated as Marine Protected Areas (MPAs) or marine Important Bird & Biodiversity Areas (IBAs), active protection and management of such areas and of seabirds at sea present many challenges. Oil and gas developments represent a serious threat to pelagic seabirds, including through their attraction to well-lit infrastructures, pollution, shipping, and displacement from important feeding areas.

Many seabirds and waterbirds breed along the coastline, often on small islands. Senegal's Saloum Delta, Guinea-Bissau's Bantambour island, and Mauritania's Banc d'Arguin are particularly important for breeding gulls and terns, whilst there are important breeding areas for many waterbirds, such as the Senegal Delta, which supports colonial breeding sites for several species, notably Great White Pelican and Lesser Flamingo. Although efforts have been made to strengthen the conservation status of seabirds and waterbirds in the region, including the designation of protected areas, these birds still face an uncertain future, due largely to anthropogenic pressures. These include those linked to oil and gas development, the major threat being oil contamination. Scavenging birds such as Hooded Vulture (CR) are also vulnerable. Colonial breeding birds are particularly at risk as they depend heavily on specific breeding sites and areas close by for feeding. The coastal zone of West Africa is also of high international importance for migratory waterbirds, many of which breed in Europe and the Arctic. So, impacts in West Africa will have wider impacts along the birds' flyways.

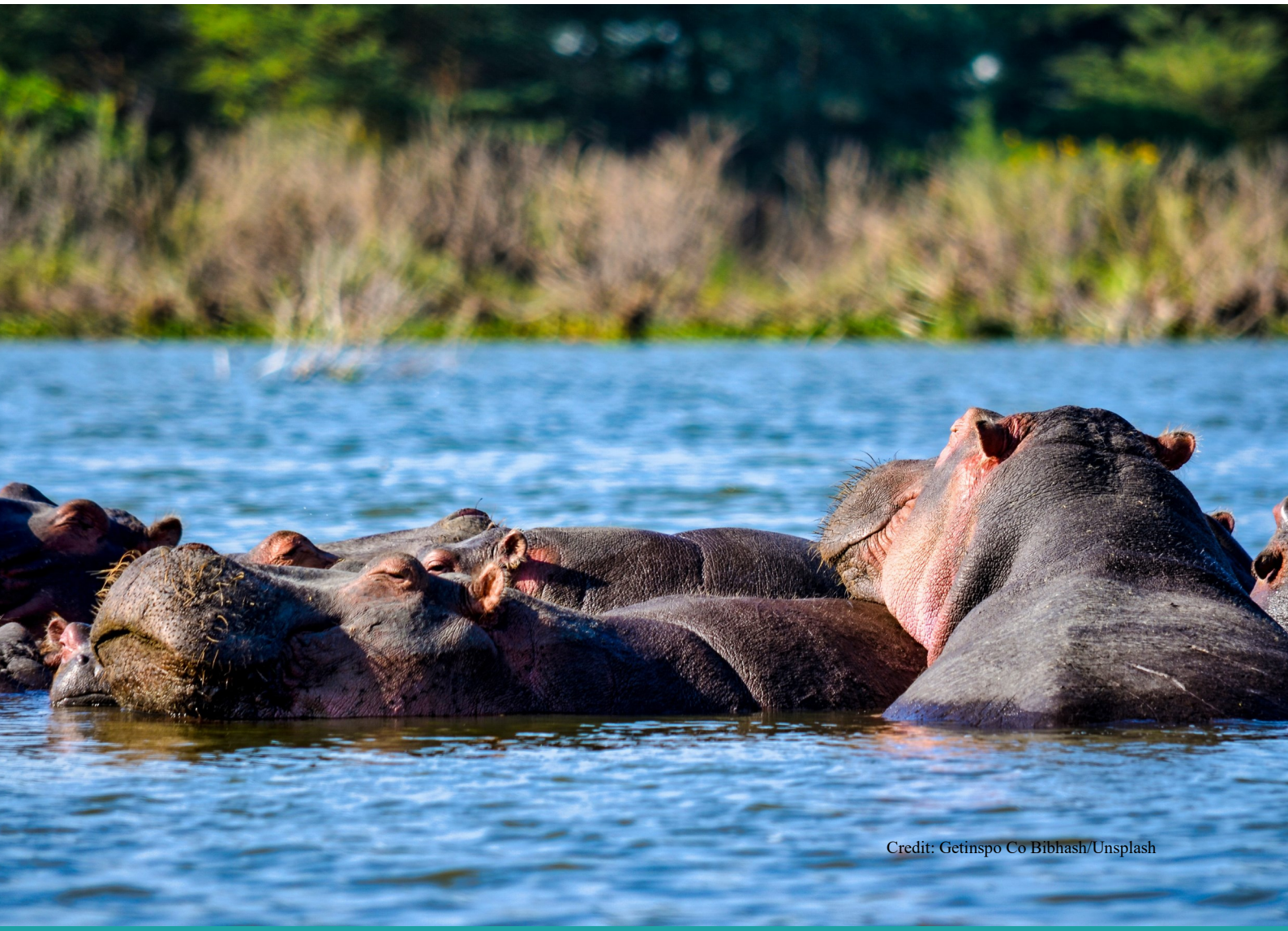
The East Atlantic flyway



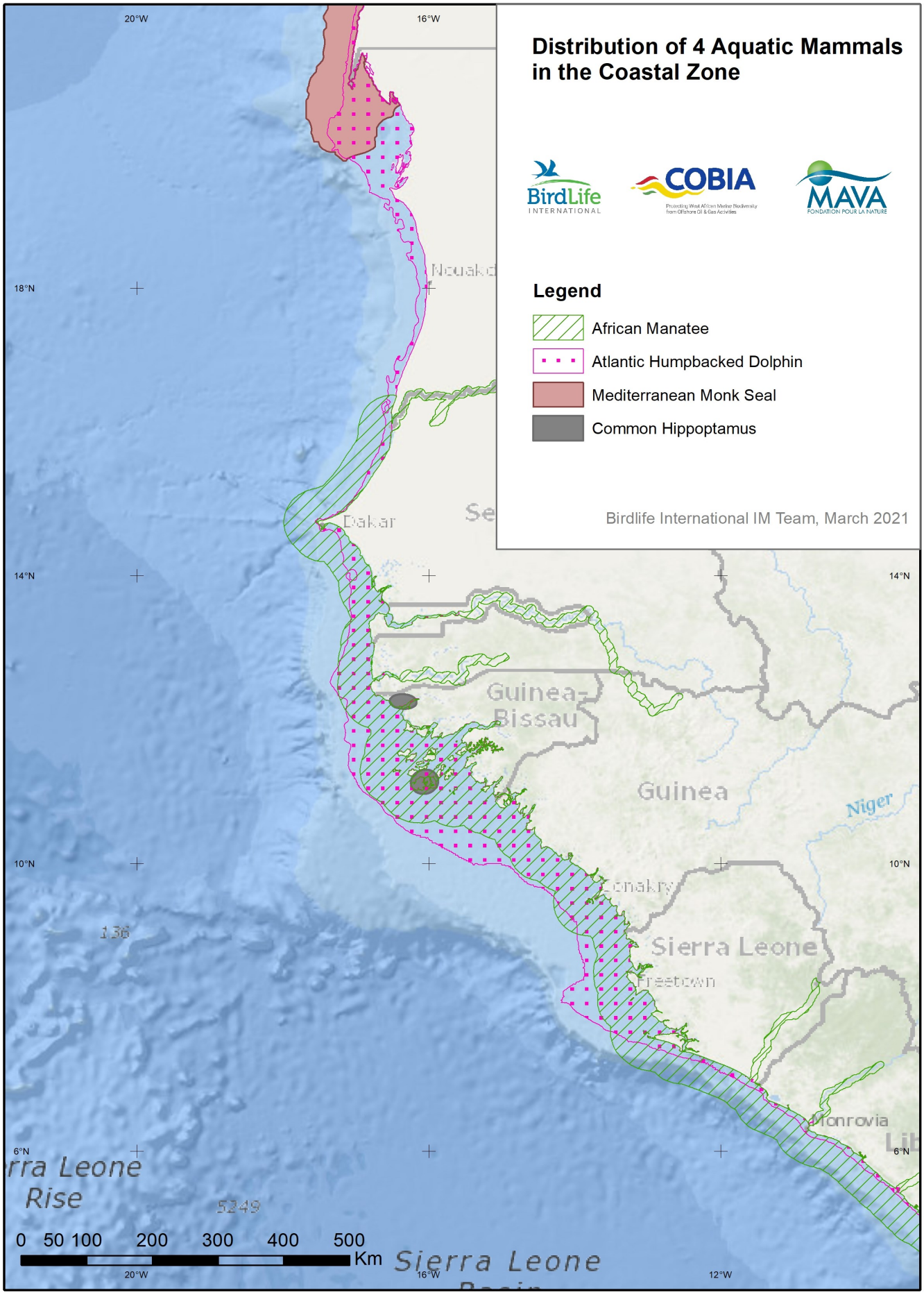
Coastal breeding seabird colonies (gulls, terns, tropicbirds & boobies)

The WAME supports a wide range of cetaceans, the most threatened of which is the Atlantic Humpback Dolphin (CR), which is endemic to the tropical Atlantic coastline of Africa. Cetaceans are vulnerable to impact by oil and gas developments, as different actions can impact them in various ways. Seismic surveys used in oil exploration may adversely affect them, especially Sperm Whales (VU) and baleen whales. Collision through increased marine traffic is another impact, whilst pollution damages cetaceans, including through increasing their susceptibility to infectious diseases. The Atlantic Humpback Dolphin occurs almost exclusively in coastal waters and is especially vulnerable to impacts affecting the coastal zone, such as higher levels of shipping, onshore and coastal developments, and pollution.

Other mammals in the coastal zone include the African Manatee (VU), which occurs from Sierra Leone to southern Mauritania, and the Mediterranean Monk Seal (EN), which has a population of over 300 animals in the Cap Blanc Peninsula at the northwest coast of Mauritania. The Bijagós Archipelago of Guinea-Bissau also supports a unique population of Common Hippopotamus (VU), which moves between islands, whilst two species of otter also live in the region. All aquatic mammals living in the coastal zone are vulnerable to impacts from the oil and gas sector, especially those affecting inshore waters, such as pollution. Like cetaceans, manatees are also prone to collision, so increasing levels of marine traffic in their key areas can be problematic.



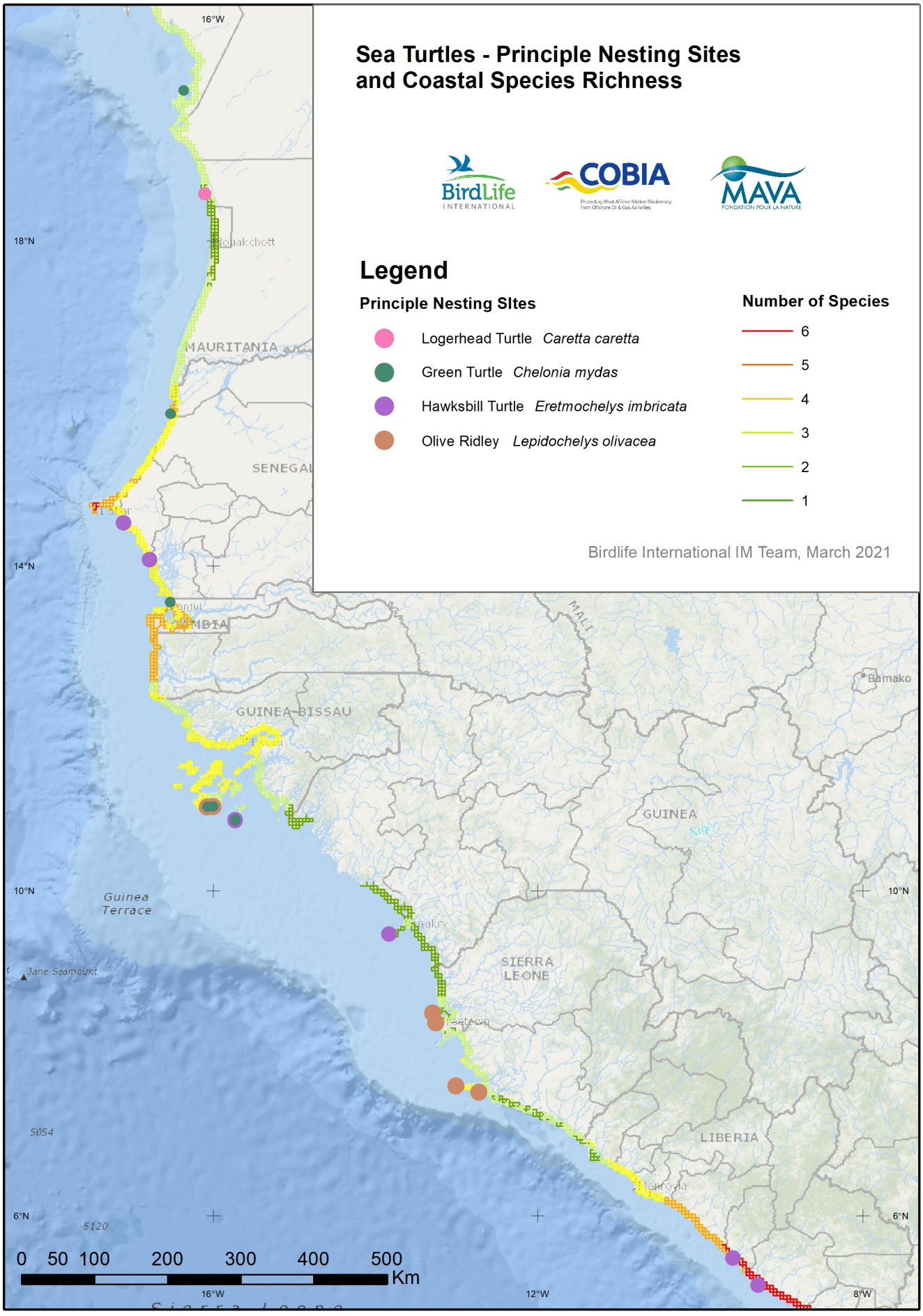
Credit: Getinspo Co Bibhash/Unsplash



Selected West Africa aquatic mammal's distribution ranges

Five species of sea turtles breed in West Africa. The island of Poilão in Guinea-Bissau's Bijagós Archipelago hosts the largest Green Turtle (EN) breeding site in Africa, with around 25,000 clutches laid every year. Sea turtles are widely subject to numerous threats, including bycatch, predation of adults and eggs, coastal erosion, pollution, and acoustic noise. The oil and gas industry adds cumulatively to these threats through the potential for pollution, underwater noise, and disturbance of the seabed (e.g. impacting water quality). The region also supports three species of crocodiles, including the Slender-snouted Crocodile (CR) and the African Dwarf Crocodile (VU), both with small fragmented populations, and both highly prone to coastal development and disturbance.

Credit: Geoff Trodd/Unsplash

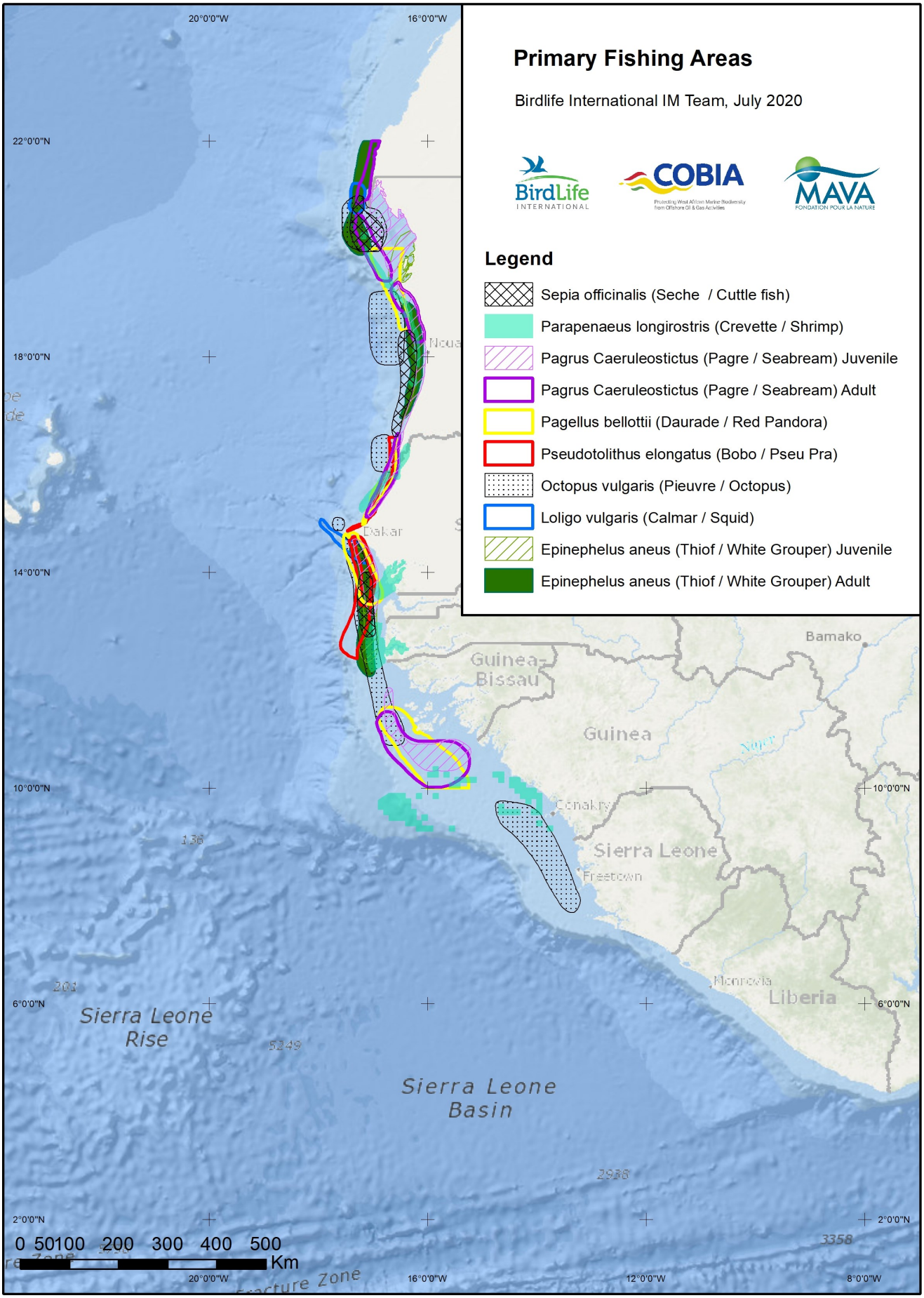


Principle nesting sites of Sea Turtles in West Africa as well as coastal species richness


Credit: IFPRI/Flickr

The WAME is a key area for fish productivity, supporting a wide range of species, many of which are of high commercial value and essential for local people, although there is also high pressure from international fleets. Many cartilaginous fish occur, several of which are threatened with extinction, such as Smalltooth Sawfish (CR), Great Hammerhead (CR), and Guitar Ray (EN). As long-lived species, sharks and rays do not reach sexual maturity until several years old and also have low fecundity, rendering them very vulnerable to threats. Already impacted by fisheries and widely in decline, any additional impacts from oil and gas could push some species to local extinction; oil has already been found to impact the survival of Atlantic Stingrays, and may well impact other species as well.

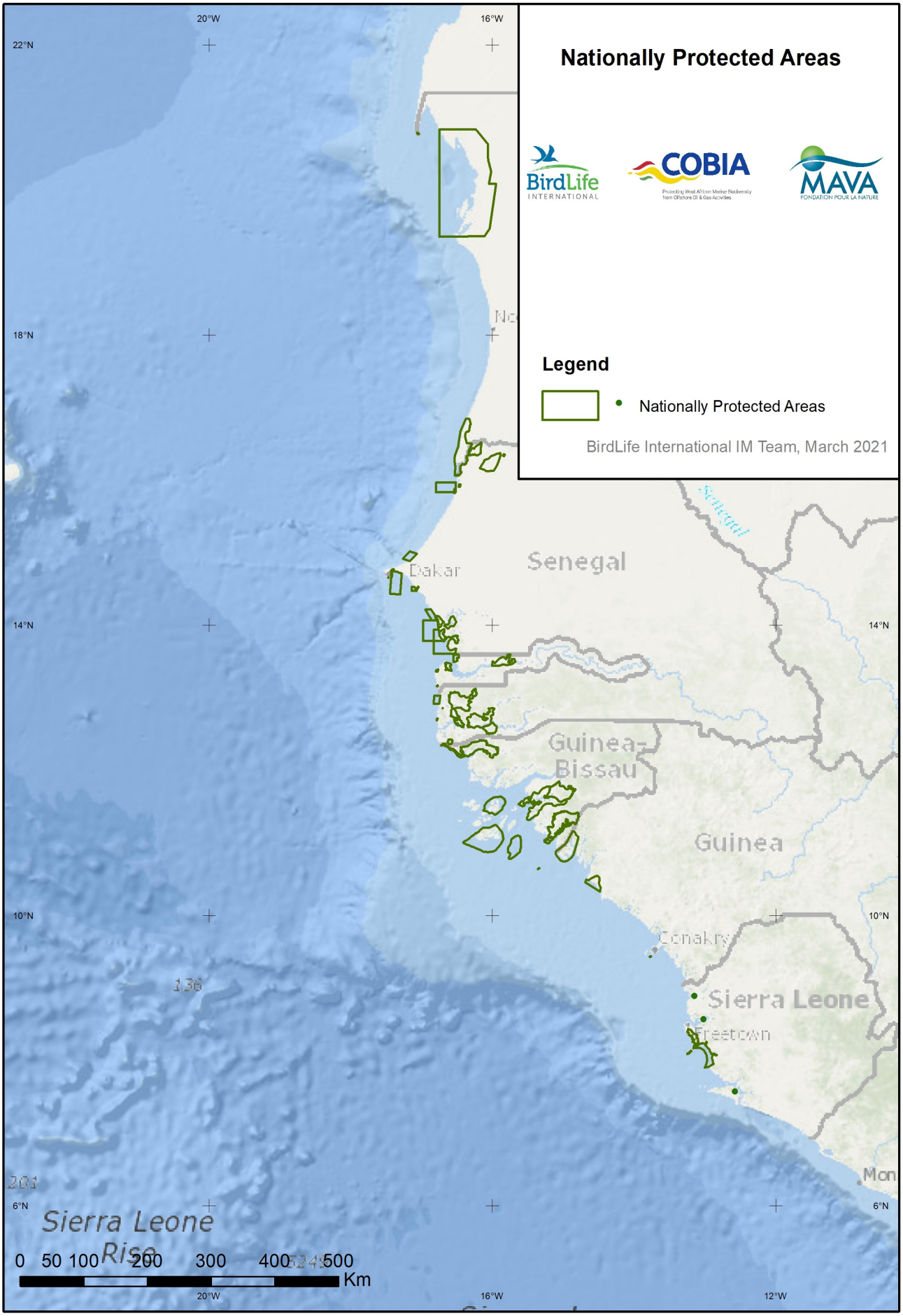
Over 1,000 fish species occur in the coastal zone of West Africa, both pelagic and demersal fish, whilst the area also abounds in marine molluscs. The high fish productivity is due to both deepwater and coastal features, including the permanent upwelling at sea and coastal spawning grounds. All countries have important fisheries, with both artisanal and industrial fisheries operating. The annual catch in Mauritania is around 900,000 tonnes. However, the regional fishery is heavily over-exploited, and the prospect for productive fisheries and sustainable catches in the future is slim unless significant control measures are adopted and effectively implemented. Against this backdrop, the oil and gas sector brings additional threats to fish and fisheries, including the potential for oil spills/pollution, disturbance of the seabed and discharges from drilling, underwater noise, and waste.



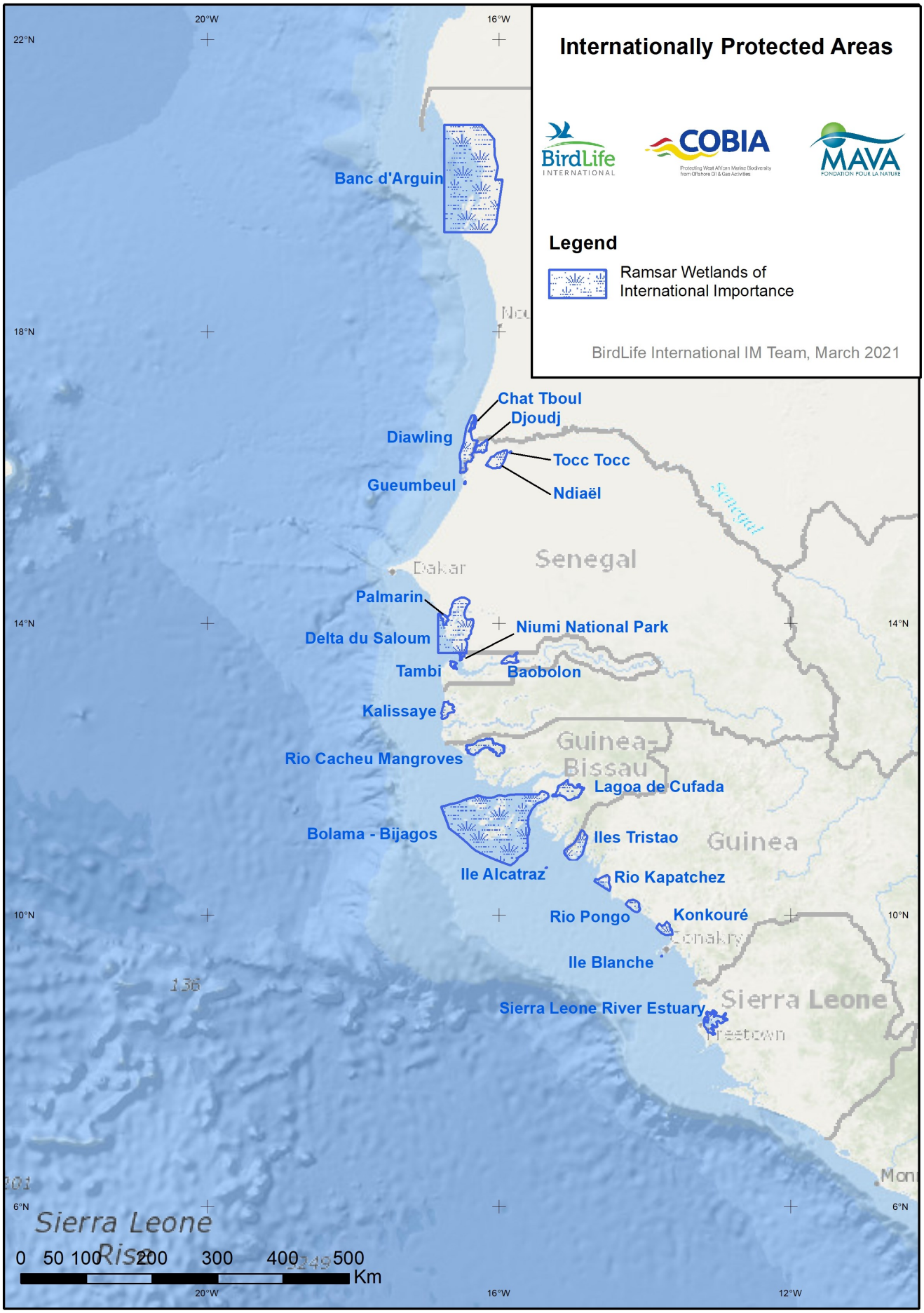
Fishing areas in coastal West Africa between Mauritania and Sierra Leone

In recognition of the high importance of the WAME for biodiversity and conservation, there is a strong network of coastal and marine sites with various national and international designations for protection and management. These include over 50 nationally protected sites in the coastal zone between Mauritania and Sierra Leone, as well as 24 Ramsar Sites, 3 World Heritage Sites, and 4 Biosphere Reserves. Some sites have both national and international designations. Mauritania's Banc d'Arguin, for instance, is a Ramsar Site, World Heritage Site, and National Park (NP). There is also a significant marine area designated within 10 EBSAs (Ecologically or Biologically Significant Marine Areas) under the Convention of Biological Diversity (CBD). Many of these marine and coastal protected areas and a few additional sites are also listed as IBAs.

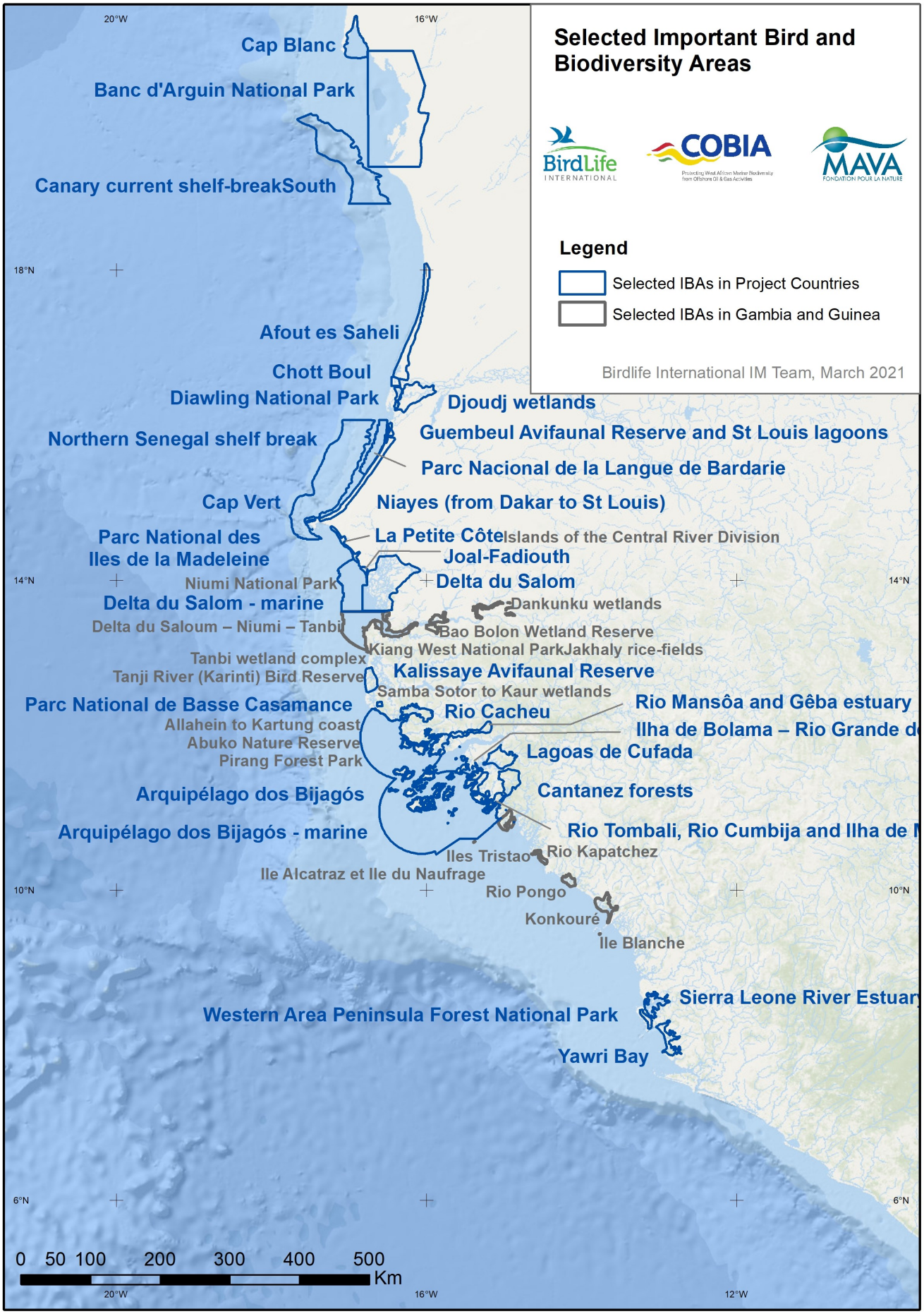
Credit: Joëlle/Flickr



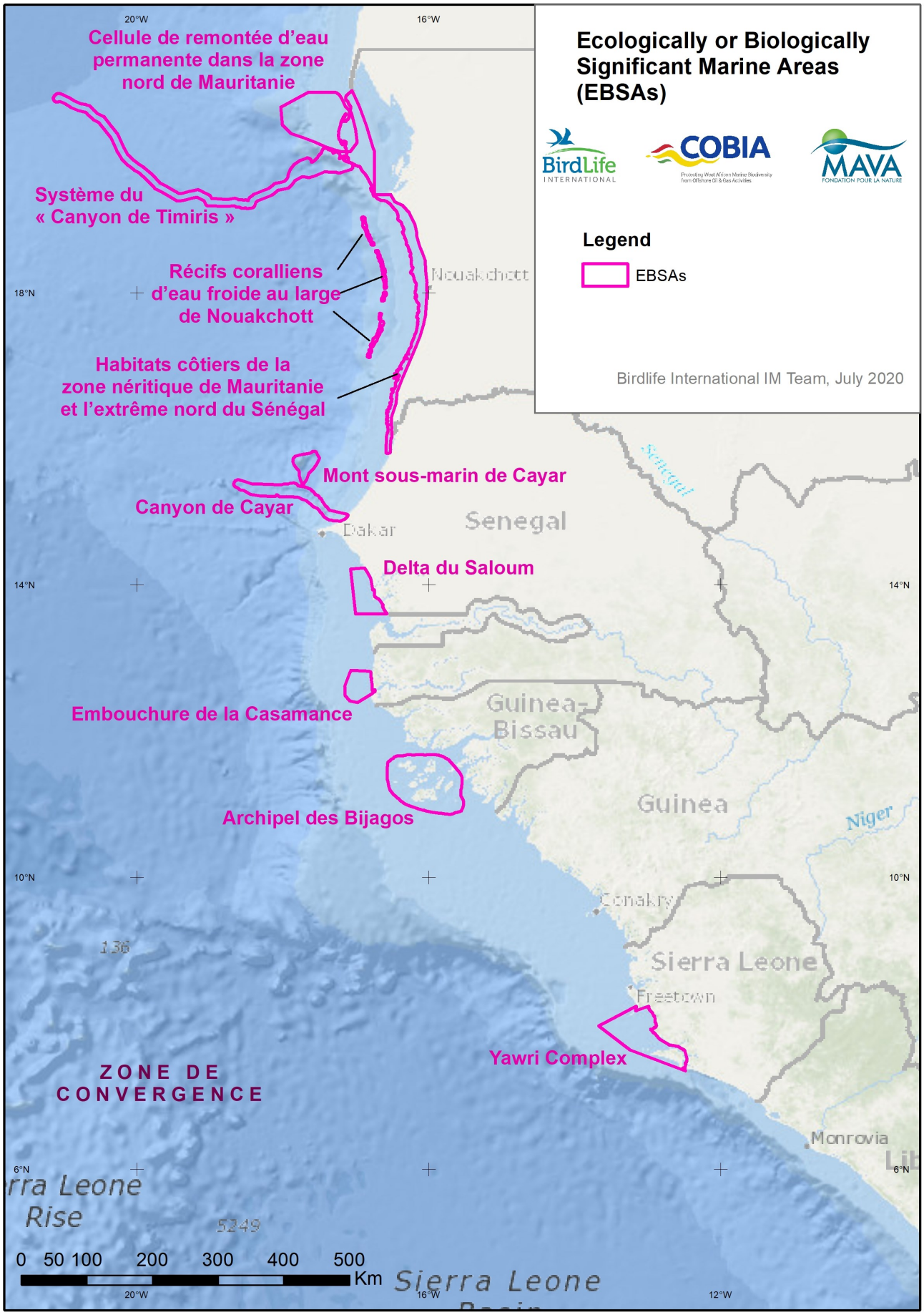
Nationally Protected Areas from Mauritania to Sierra Leone



Ramsar and UNESCO sites from Mauritania to Sierra Leone



Important Bird and Biodiversity Areas from Mauritania to Sierra Leone.



The EBSAs of Mauritania, Senegal, Guinea-Bissau and Sierra Leone

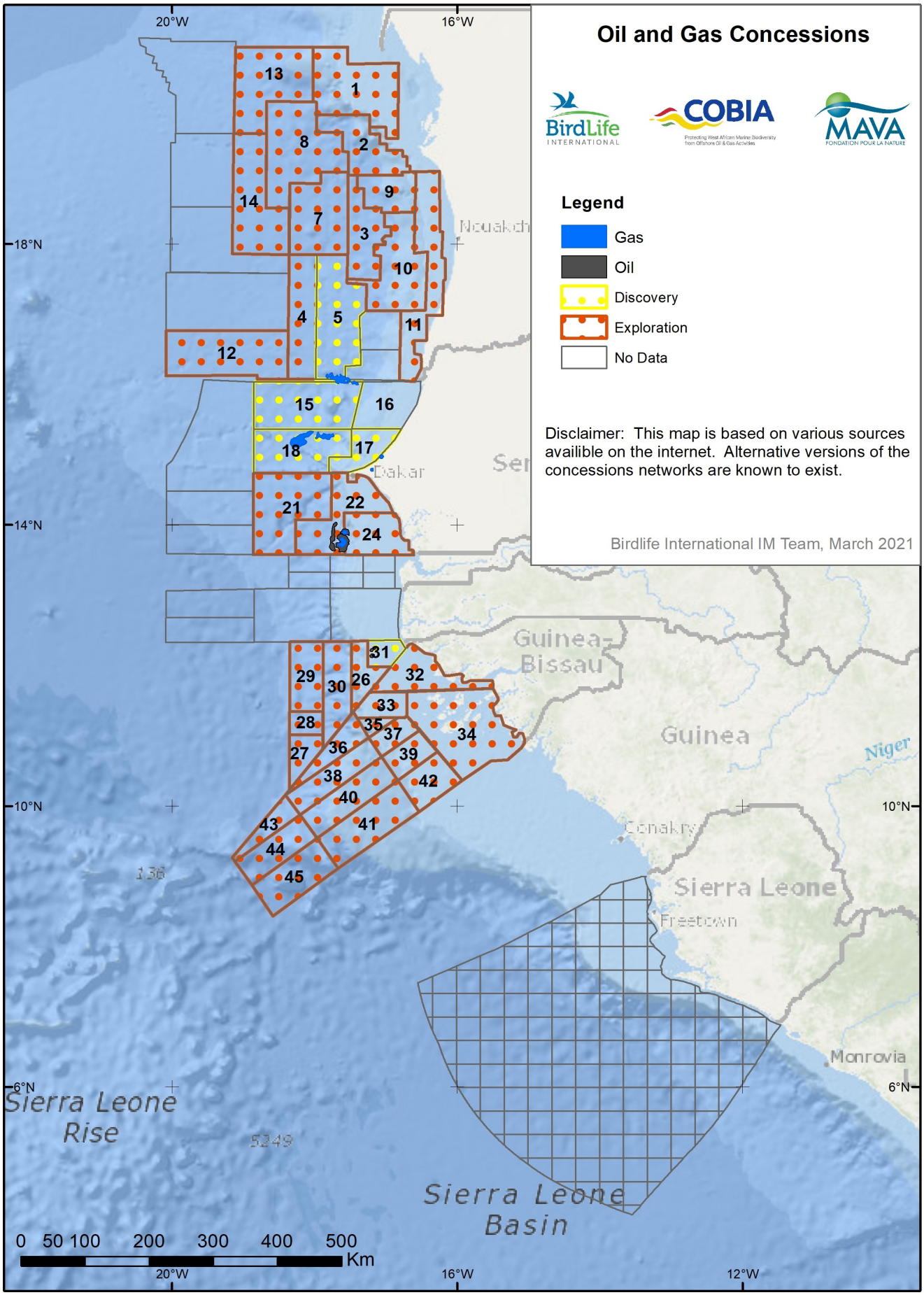
There have been significant planning developments in the offshore oil and gas sector in the region since the 1990s, with the discovery of petrol and gas in 2001. By 2018, a wide range of activities of exploration, discovery, and exploitation was already underway. Whilst development remains at a relatively early stage, there is high potential for production into the future. All stages of the industry must adopt strict environmental controls, given the major importance of this region for fisheries, biodiversity, and traditional livelihoods. All six countries from Mauritania south to Sierra Leone have signed various international conventions relating to offshore oil and gas management and to biodiversity conservation. However, several of these have not been widely ratified, whilst implementation measures are broadly lacking. A key step, for instance, is the elaboration of national Emergency Response Plans to encourage efficient planning in the case of an emergency, such as a major oil spill. Some measures are currently underway to strengthen oil spill preparedness and response capabilities, which will need long-term support given the anticipated pace of development of the sector. For instance, a shoreline clean-up policy has only been developed for two out of six countries of the region.

Credit: Emmaus Studio/Unsplash

Mauritania was the first country in the region to exploit its oil and gas reserves; the Grand Tortue Ahmeyim LNG well between Senegal and Mauritania is a substantial development expected to generate its first gas in 2023. The Timiris Canyon EBSA, cold-water coral reefs, and key upwelling features, as well as parts of the Senegal-Mauritania Transboundary Biosphere Reserve, all fall within areas dedicated to offshore oil and gas activity. The coastal protected areas of the Banc d'Arguin and of the Senegal River Delta in both Mauritania and Senegal are also in close proximity to concessions, especially Grande Tortue-Ahmeyim. In Senegal's marine waters, the Cayar MPA, the Cayar EBSA, and the Cayar Seamount EBSA are included within the Cayar Offshore Block. In addition, Iles de la Madeleine NP, Gorée MPA, Somone MPA, and some coastal sites are all included within the Rufisque offshore block, while the Joal-Fadiouth MPA, the Palmarin Community Reserve, the Sangomar MPA, the Saloum Delta NP, and the Saloum Delta EBSA are all within the Diffère Offshore block. Further south, the Senegal Offshore South Block encompasses the Abéné MPA, part of Kalissaye Ornithological Reserve and the Embouchure Casamance EBSA. Guinea-Bissau's coastal zone protected areas are either close to or within oil blocks, notably Rio Cacheu NP and the Bolama-Bijagós Biosphere Reserve and Ramsar Site. All areas are threatened by a potential gas or oil discovery, as is a part of Cantanhez and Cufada National Parks. Sierra Leone could become a major oil producer in the future and would need to put in place policy tools and strategies to protect the marine environment. The risk that oil exploration will result in a blowout or a major oil spill or cause catchment disturbance has been assessed as significant in a 5-year perspective and high in a 50-year perspective.

The principal risks to marine and coastal ecosystems from offshore oil and gas activities are from noise, damage to the seabed, spills of oil and other chemicals, gas flaring, infrastructure, waste, and transport. Mitigation measures are urgently required to minimise these risks throughout this region, which is of high global importance for biodiversity and of high value to all countries of the region and their populations.

Credit: Louisiana GOHSEP/Flickr



Oil and gas concessions between Mauritania and Sierra Leone