

Massive Chinese Fleet Jeopardizes Threatened Shark Species around the Galápagos Marine Reserve and Waters off Ecuador: Implications for National and International Fisheries Policy

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Editorial

Being a UNESCO-World Heritage Site, the Galápagos harbors the largest global shark biomass in the world's oceans [1] and a unique marine biodiversity [2]. However, the waters around the Galapagos Islands have regularly been susceptible to fishing assaults by local and foreign industrial fleets, including Colombian, Costa Rican, Japanese, Taiwanese and Korean, which have illegally practiced shark finning, i.e. the wasteful practice of removing of dorsal, pelvic and pectoral fins from sharks [2-4]. In 2001, the Galápagos National Park seized a Costa Rican vessel with > 1000 shark fins, killing at least 200 sharks [3], while an Ecuadorian vessel containing a total of 379 sharks from seven shark species was seized by the Ecuadorian Navy and Galápagos National Park in 2011 [4]. This has now obviously become a persistent, problem within and around the Galápagos Marine Reserve (GMR) [2,3], evoking a classic case of the "Tragedy of the Commons" [5]. The removal of high tropic level fish and marine predators such as groupers, dolphin fish, marlins, tuna and sharks can cause severe trophic cascade effects in the Galápagos marine ecosystem [2] with serious consequences to the socio-economic welfare of Galápagos and Ecuador's coastal small-scale fishing communities [6].

On the morning of 19 July, 2017, a report alarming the presence of Chinese vessels near to the Galápagos Islands drew attention to the Galapagos National Park and Ecuadorian Navy who immediately deployed a coast guard vessel, from the operation center at San Cristobal Island (Galápagos), to the site where the fleet was observed. Once in the location, approximately 300 vessels under Chinese flag were identified as long liners, as factory ships, as cargo ships and as tanker boats, transporting fuel. Due to the serious legal violation within Ecuadorian waters jurisdiction by the Chinese fleet, the Ecuadorian Navy ordered to deploy a naval aircraft to explore and confirm the illegal activity by producing photographic evidence about the event.

On August 2017, a Chinese fishing fleet comprising about 300 boats (e.g., fishing, cargo and fuel boats and at least one factory ship) was detected in international waters (i.e. the high seas) and near the Economic Exclusive Zone (EEZ) of Galápagos Islands and waters off Ecuador's coast in the Southeastern Tropical Pacific. This Chinese industrial fishing fleet has thus far emerged as an immediate threat for regional marine species [6], mainly apex predators such as hammerhead sharks that migrate through a regional marine corridor in close connection to the Galápagos' sanctuary waters for breeding, feeding and refuging, located at the far north of the GMR and Galapagos Archipelago (i.e. Darwin and Wolf islands) [1,7,8].



Figure 1: The Chinese mother ship (Fu Yuan Yu Leng 999) containing 300 tons of fish that was seized by the Galápagos National Park and Ecuador's Navy in August 2017. The ship was anchored at Bahía Tijeretas (Darwin Cove), San Cristóbal Island, Galápagos. Photo credit: Judith Denkinger.

On 13 August, 2017, a Chinese factory-mother ship (Fu Yuan Yu Leng 999) (Figure 1) navigating within the GMR (i.e. at about 0°38'37"S-89°03'09"W) was caught carrying ≈ 300 tons of fish; and subsequently, the vessel and the illegal fish catch were confiscated by Ecuador's Armada and the Galápagos National Park [6,9-11]. The illegal marine catch was composed by tuna fish (*Thunnus* spp.), species which are currently undergoing a regional large-scale seasonal closure in the Southeastern Pacific, as per recommended by the Inter-American Tropical Tuna Commission (IATCC), of which Ecuador and China are both signatory countries (<https://www.iattc.org/HomeENG.htm>). The illegal catch also included 6000 finned sharks that fall within categories of threatened species under the International Union for Conservation of Nature (IUCN) status, as the Vulnerable (VU) pelagic thresher shark (*Alopias pelagicus*, [12]), the Near Threatened (NT) silky shark (*Carcharhinus falciformis*, [13]); and, of particular concern, the Endangered (EN) scalloped hammerhead sharks (*Sphyrna lewini*, [14]); [6,9,11], as shown in (Figure 2). From the total number of sharks (i.e. 6000 individuals) harvested by this fleet, and assuming that both the first grade fins (i.e. the first dorsal fin, pair of pectoral fins and lower lobe of the tail, as

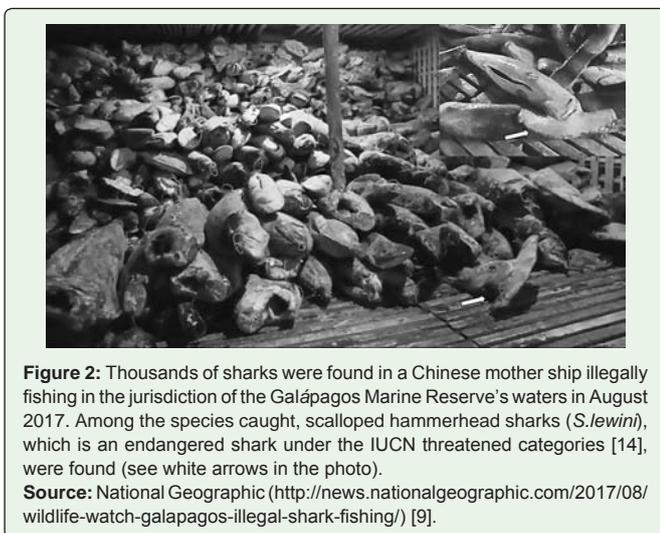


Figure 2: Thousands of sharks were found in a Chinese mother ship illegally fishing in the jurisdiction of the Galápagos Marine Reserve's waters in August 2017. Among the species caught, scalloped hammerhead sharks (*S.lewini*), which is an endangered shark under the IUCN threatened categories [14], were found (see white arrows in the photo).

Source: National Geographic (<http://news.nationalgeographic.com/2017/08/wildlife-watch-galapagos-illegal-shark-fishing/>) [9].

most desirable fins) and lower grade fins (i.e. the second dorsal fin, pair of ventral fins and anal fin) were removed it is estimated that at least 48,000 fins were illegally extracted from these sharks to be traded in the Asian illegal market [3] where shark fin soup is still considered a delicacy and a status-symbol for Asian countries [3].

Similar to the shark species illegally harvested some stocks of tuna, including the yellow fin tuna (*Thunnus albacares*) and big eye tuna (*Thunnus obesus*) from the eastern Pacific Ocean, are considered as declining and categorized as Near Threatened (NT) and Vulnerable (VU), respectively, by the IUCN [15,16]. In 2004, The IATCC [17] imposed conservation measures (i.e. fishing closure) to maintain sustainable tuna stocks in this region of the Pacific [18]. Thus, the illegal harvest of tuna by the Chinese fleet is a looming threat for the recovery of both species that the entire region is trying to achieve through the IATTC agreement.

The material evidence of the illegal catch showed that the fishing system used by this fleet was long lines (1000 hooks/line) deployed near or within the jurisdiction of GMR's waters [9]. It was reported that these long lines were deployed to create a kind of "fishing wall", in which not only sharks were caught, but also sea turtles, manta rays and tuna. Because most of these species are highly migratory and move beyond the 200 miles of Ecuador's EEZ, through the high seas and within the GMR (i.e. leaving and entering the GMR), it seems fair to claim that these species were illegally caught or by caught by this fleet hooks.

As aforementioned, China is a signatory member of the IATTC and also is part of the 1982 United Nations Convention on Law of the Sea (UNCLOS) [19]. As the actual fishing activity was conducted during an obligatory seasonal closure for the large-scale tuna fishing fleet (purse seiners) imposed by the IATTC to reduce fishing effort for tuna fisheries throughout the Southeastern Tropical Pacific, the Chinese fleet openly violated, first, their legal obligation to fulfill the IATTC regulations; second, the legal protection of the GMR provided by the Special Law of the Galapagos Archipelago; and, finally, the "Rights of Nature" represented by the fisheries and marine resources in the GMR, granted by the 2008 National Ecuadorian Constitution, which recognizes natural resources as subjects of legal recognition and juridical protection.

The encounter of the massive Chinese fleet around the Galapagos region is not an isolated event. China is currently fishing in international waters (i.e. the high seas) of numerous countries because this nation has already depleted local fish stocks and marine living resources from their own national waters [18]. The fisheries subsidies implemented by the Chinese government to enhance the expansion of fishing vessels to harvest in distant-water fisheries have increased the fishing effort of China's fleet operation in many nations, including Asia, Africa, Central and South America [19]. In Senegal and other Africa's western countries, marine resources have been seriously depleted due to corrupt government practices and fishing access agreements granted to China and other nations to exploit and profit from fishing resources within their national jurisdictions [19-21].

We claim that international, regional, and national legal instruments should be used in order to legally sanction China for its repeated and systematic violation of international regulations and sustainable fisheries practices. Controversies arise, however,

concerning the role of China in the current Ecuador's economy. In fact, China has provided about 60 percent of Ecuador's government budget [22], and there has been portrayed that Ecuador has had an indulgent attitude with China, when other resources (e.g., protection of timber) have been affected in the Amazon rain forest [22].

While the Ecuador's Armada and the Galápagos National Park have continued deploying substantial efforts (e.g., air, water and underwater control and surveillance systems by launching boats, helicopters, airplanes and even a submarine) to overcome illegal fisheries and control marine/maritime traffic, these government institutions still lack of sufficient and long-term funding to cover all the associated costs derived by the economic and logistic resources needed to successfully continue monitoring and implement concerted surveillance efforts (i.e. the combination of the Automatic Identification System (AIS) and satellite tracking technology with the globalfishingwatch.org initiative may well be a step in the right direction to combat illegal fishing) to safeguard and protect the marine ecosystems in the GMR and within the adjacent waters and high seas against assaults perpetrated by foreign industrial fishing fleets.

Ecuador, a country currently undergoing political challenges is in need of support from the international community to prevent and mitigate illegal fisheries and other anthropogenic impacts affecting the conservation of biodiversity in marine areas beyond national jurisdiction (ABNJ). Many exploited species of sharks are globally declining [23] and several of them have been protected by national laws and international treaties because of their precarious conservation status [24,25]. Moreover, the need of shark conservation and sustainable use should be part of Ecuador's national and international fisheries policy, using the case of shark fining and the multimillion dollar business of illegal international trafficking of shark fins as a strong rationale for preventing the continued depredation of sharks [26]. The international community is thus called to act accordingly to the mandates of UNESCO, UNCLOS, FAO's Code of Conduct for Sustainable Fisheries, and the Voluntary Guidelines for Fisheries Sustainability. Meanwhile, the Ecuadorian government must be vigilant and support any decisions and action with proactive measures to prevent foreign fleets to illegally harvest our fishing resources, and also demand China and other countries to refrain from exploiting marine resources in Ecuador and to repair the ecological damages for their illegal activity.

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