

Fisheries Centre

The University of British Columbia



Working Paper Series

Working Paper #2015 - 04

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Year: 2015

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RECONSTRUCTING FISHERIES CATCHES FOR CAMEROON BETWEEN 1950 AND 2010

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ABSTRACT

Total catches for Cameroon, West Africa, are reconstructed to include sectors that were unaccounted or not properly accounted for, i.e., parts of the artisanal sector, the subsistence sector, bycatch and discards of the industrial sector, as well as illegal foreign fisheries. Reconstructed catches were estimated at 15,000 t in 1950 (compared to 12,000 t reported by the FAO on behalf of Cameroon), increased to a first peak of 89,300 t in 1977, declined to 61,900 t in 1986, then increased again to reach a peak of 115,000 t in 2003 (FAO: 62,800 t), before declining to 80,100 t in 2010 (around 15,100 t higher than the data supplied to the FAO). Overall, there are two main discrepancies between reconstructed data and the data supplied to the FAO: the former are 40% higher than the latter and the trend of the former is consistent with an over-exploitation status of marine fisheries resources of Cameroon, while the FAO data, which shows a pattern of increasing catches, are not. Artisanal fisheries, and thus fish species that are consumed locally, such as sardinellas and bonga shad make up for most catches. This further denotes the relatively important role fisheries play for food security in Cameroon.

INTRODUCTION

Cameroon is located in central West Africa, bordered by Nigeria from the north, the Central African Republic and Chad from the east, Gabon from the south and the Atlantic Ocean from the west (Figure 1). The geographic location of Cameroon, facing Bioko Island (Equatorial Guinea) from the West, makes its EEZ relatively small (14,693 km²), smaller than even the tiny EEZs of Benin and Togo. This, despite a relatively large continental shelf, limits economic maritime activities in the country.

Cameroon was colonized by Germany, then, following WWI, by both the U.K. and France. In 1960, 'French' Cameroon obtained its independence, later joined by British Cameroon. Thus, the Federal Republic of Cameroon was born, which, however, maintained strong political and economic ties with France. A civil war gave birth to a repressive dictatorship by the first president of Cameroon, which lasted 22 years, soon followed by a military coup in 1984. The first elections, marred by electoral fraud, were held in 1992 and 1997. Despite major apparent political improvements, there are disputes between the English-speaking southwest region of the country and the French speaking majority in the rest of Cameroon, a colonial legacy that continues to cause problems.

Cameroon economy relies heavily on extractive industries (oil) and agriculture (cocoa, coffee and cotton). Despite good agricultural conditions and abundant oil reserves, which make Cameroon one of the best primary-commodity economies of Sub-Saharan Africa, political conflicts have contributed to decreasing the GDP by 60% from the mid-1980s to the mid-1990s. Recent reforms, notably in the agriculture and some industrial sectors, have contributed to increasing the GDP. However, many issues still hobble the country, and affect both the general population and the economy, notably major electricity deficits and limited access to safe drinking water (OECD 2007). These issues are amplified by high corruption and rampant abuse of human rights (OECD 2007), which increase the food insecurity of Cameroon's population.

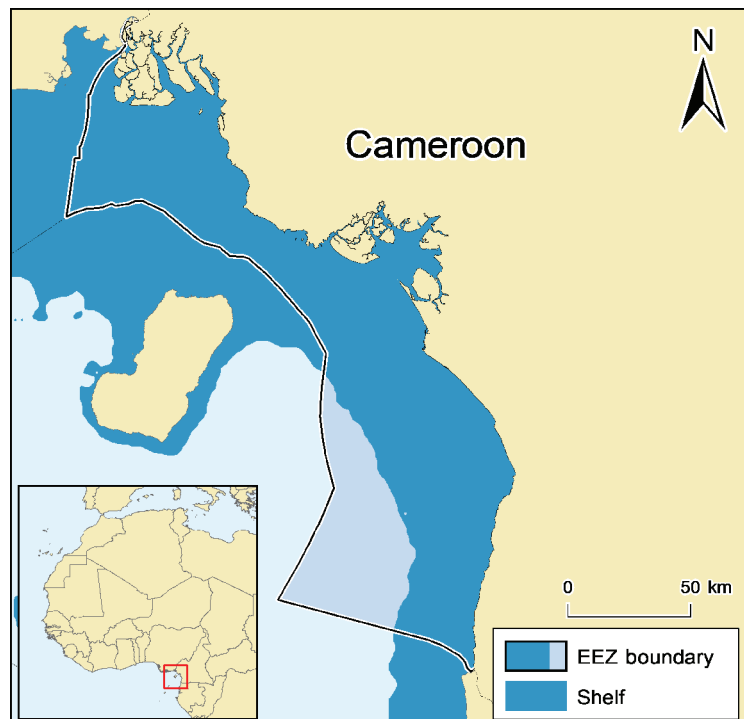


Figure 1. Map of Cameroon and its Exclusive Economic Zone (EEZ).

Fisheries in Cameroon play an important role as fish represents 25.5% of animal protein consumption (Anon. 2009). Moreover, artisanal fisheries alone generate over 119 Billion CFA (240 million USD) per year (Ngok *et al.* 2005). Surprisingly, despite this important role, the fisheries sector is neglected. Indeed, currently in Cameroon there is no data collection system for fisheries. “Existing statistics in the artisanal sector are just vague estimations and extrapolations and the actual volume of fish production in this sector is unknown” and “bycatch [...] is not taken into account in the national statistics, due to lack of log books on vessels.” (ENVIREP-CAM 2011). This low monitoring performance is illustrated by the fact that artisanal catches (marine, continental and aquaculture) were reportedly unchanged from 1999 to 2010 (Nnana Noah 2010). The lack of knowledge of the fisheries sector performance and removals has resulted in a severe over-exploitation, documented since the mid-1980s, yet fishing effort has increased drastically since then (Djama and NNa Abo’o 1999). Here, we attempt to address this lack of knowledge by reconstructing catch data for Cameroon, based on a detailed analysis of the existing literature on Cameroon’s fisheries.

METHODS

Total and coastal population

Total population of Cameroon was extracted from the World Bank database (www.worldbank.org) between 1960 and 2010 and completed using data from www.populstat.info. Coastal population data, i.e. rural population living within 5 km from the coast, for 1990, 2000 and 2010 were obtained from CIESIN (2012) which allowed estimating a percentage of 1.13% of Cameroon’s population as coastal. We assumed this percentage for 1950 and obtained the coastal population for the same year. We interpolated to fill in the gaps (Figure 2).

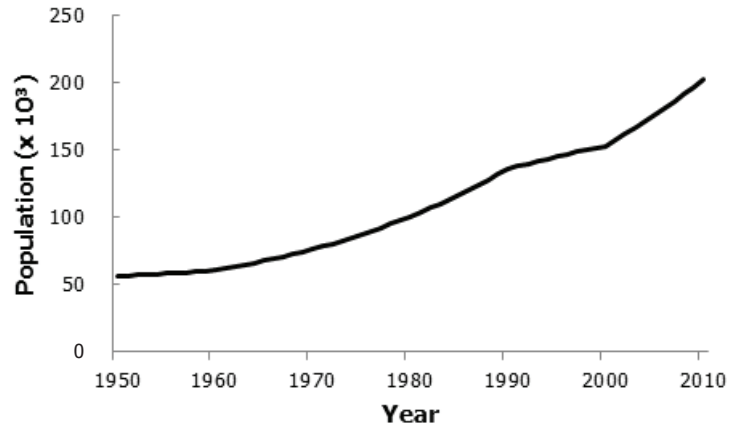


Figure 2. Cameroon’s rural population living within a range of 5 km from the coast, 1950-2010.

Subsistence catches

Lagoin and Salmon (1970) documented a survey-based estimate of fish consumption rate ranging between 30 and 48 kg·person⁻¹·year⁻¹, i.e. 39 kg·person⁻¹·year⁻¹ for 1961. In 1967, 3,048 t·year⁻¹ were caught and consumed by subsistence fishers. We assumed the consumption rate was constant between 1950 and 1961. We multiplied the consumption rate for 1950 by the coastal population estimated for 1950 and obtained a subsistence catch of 2,178 t·year⁻¹. Similarly, we assumed the previous consumption rate from subsistence fishing declined by 70% in 2010, i.e. 11.7 kg·person⁻¹·year⁻¹ due to increasing fish availability from artisanal fisheries, and we multiplied this rate by the coastal population for 2010. We then interpolated between the previous estimates to complete the time series between 1950 and 2010.

The catch composition of subsistence catches is given as a list with no further indication of the percentage (ENVIREP-CAM 2011): marbled swim crab (*Callinectes marginatus*), African ghost crab (*Ocyropa ippeus*), common cuttlefish (*Sepia officinalis*), sea snail (*Mytilus tenuistriatus*), oysters (*Crassostrea gasar*, *Cypraecassis rufa*), mudskipper (*Periophthalmus hoelferi*), African sicklefish (*Drepana africana*), groupers (*Epinephelus* spp.), Alexandria pompano (*Alectis alexandrina*), Blue runner (*Caranx crysos*), Atlantic bumper (*Chloroscombrus chrysurus*), round scad (*Decapterus punctatus*), bigeye scad (*Selar crumenophthalmus*), greater amberjack (*Seriola dumerili*), African moonfish (*Selene dorsalis*), Pompano (*Trachinotus ovatus*), barracudas (Sphyraenidae), bigeye tuna (*Thunnus obesus*), West African Spanish mackerel (*Scomberomorus tritor*), Dasyatidae, brown ray (*Raja miraletus*), and flathead grey mullet (*Mugil cephalus*). In the absence of detailed information, we allocated the same percentage to every taxon.

Artisanal catches

There is no licensing system for artisanal fisheries in Cameroon despite the high percentage (85%) of foreign artisanal fishers (ENVIREP-CAM 2011). This also applies to monitoring of artisanal catches, which is virtually absent (Kamgaing 2009). Estimates of artisanal catch were available through different literature sources for 1967 and 1970 (Laure 1972), 1980 (Ssentongo and Njock 1987), 1987 (Seck 1987), 1990 (Bamou 1997), 2003 (Nnana Noah 2010), 2009 (ENVIREP-CAM 2011) and 2012 (Anon. 2013). We assumed artisanal catches in 1950 were 20% lower than the catch in 1967, given the documented increasing pattern of catches (Lagoin and Salmon 1970). We then interpolated to fill in the gaps between 1950 and 2010. We summed artisanal and industrial landings (see below for industrial landings), and adjusted artisanal landings upwards whenever FAO data were higher than the sum, based on the assumption that the difference is due to under-reporting of artisanal catches.

To disaggregate catches taxonomically, we assumed the same species composition as in the landing statistics presented by FAO on behalf of Cameroon, and disaggregated the “marine fishes nei” group using the species list provided above (see subsistence catches section).

Industrial catches

While industrial fishing in Cameroon began with a failed attempt by a German company in Douala in 1912, it was only in 1951 that first successful industrial fishing operation was conducted (Laure 1972). Industrial fishing in Cameroon is carried out by nationally flagged vessels, mostly targeting demersal resources (Anon. 2010). The main highlights of the industrial fisheries of Cameroon are the shrinking of fishing area when Gabon declared national waters in 1970 (Laure 1972), along with a significant increase in vessel efficiency and size since the 1950s (ENVIREP-CAM 2011) to counter the effects of over-exploitation. We assumed the contribution of catches from Gabon increased linearly from 30% in 1960 to 80% in 1970 before collapsing to zero in 1973. Industrial catch data are collected from Douala port by the National Institute of Statistics (Institut national de la statistique du Cameroun). These data presented on the website of the organization are incomplete.¹ Furthermore, they do not include catches that are exported at sea, landed in Nigeria or those landed in Cameroon's military port of Tiko (ENVIREP-CAM 2011).

We interpolated landings data provided by different literature sources between 1950 and 2010 (Laure 1972; Ssentongo and Njock 1987; Bamou 1997; Djama and NNa Abo'o 1999; Nnana Noah 2010; ENVIREP-CAM 2011). These data serve as a baseline for estimating the under-reported component.

For every kg of shrimp caught by shrimp trawlers there is around 8 kg of bycatch (46% of fish for 6% of shrimp) (ENVIREP-CAM 2011). Although shrimp fishery bycatch are not reported, we herein conservatively assume that only half of the fish bycatch is not reported, i.e., 4 kg of fish for every 1 kg of shrimp. This approach is very conservative since it assumes all shrimp catch by shrimp trawler is reported and all fish catch by demersal trawlers is reported. Similarly, crab catches represent 1.33 times the shrimp catch. We applied this rate to shrimp catches and estimated unreported crab catches.

The demersal fleet of Cameroon comprises Chinese reflagged vessels since the early 2000s, 11 vessels were licenced in 2003 and 8 vessels between 2006 and 2007, which we conservatively assumed constant between then and 2010 (Pauly *et al.* 2013). We estimated the CPUE of demersal boats operating in Cameroon between 2000 and 2010 based on the estimated catch (all trawlers together) and the number of fishing boats provided by the literature (Nnana Noah 2010; ENVIREP-CAM 2011), then we multiplied these by the interpolated number of Chinese vessels to estimate that part of the demersal catch which ownership could be allocated to China. We used data in Lagoin and Salmon (1970) to taxonomically disaggregate the unreported component of industrial catches (Table 1).

Discards

Around 25% of shrimp trawl catches are discarded (ENVIREP-CAM 2011), i.e. 33% of landings. Herein, we multiplied the estimated industrial shrimp catches by 33% to estimate discards from 1950 to 2010. For demersal trawl, Kelleher (2005) estimated that 0.6% of demersal trawl catches were discarded. Thus demersal trawl discards range between 0.6% and 33%, i.e. 16.8%. We applied this rate to the estimated demersal trawl landings between 1950 and 2010. We assumed the same species disaggregation than for bycatch above.

Illegal catches

Although Cameroon declared an EEZ as late as 2000, there were already "illegal" fishing vessels in 1989, when Cameroon arrested 9 vessels fishing illegally within their waters (ENVIREP-CAM 2011). We assumed that number corresponded to the number of vessels fishing illegally in Cameroon for that year and multiplied it by a CPUE of 258 t·boat⁻¹·year⁻¹ obtained by dividing the total legal industrial (demersal trawl) catch (9,020 t·year⁻¹) by the number of legal boats for the same year, i.e. 35 (Bamou 1997). Chinese illegal vessels caught an estimated 9,500 t·year⁻¹ in 2009 (Pauly *et al.* 2013). We interpolated to fill in the gaps.

As for the nationality of illegal fishing vessels, we relied upon the profile of illegal fleets from the country that is immediately adjacent to Cameroon, i.e., Equatorial Guinea Bioko Island. In Equatorial Guinea, illegal catches were taken by Russian fleets between 1980 and 1989 and Chinese fleet between 1985 and 2010 (Belhabib *et al.* 2014). We assumed proportionality and applied the disaggregation to illegal catches from Cameroon waters. We assumed the same species disaggregation than for domestic industrial fisheries above.

¹ <http://www.statistics-cameroon.org/manager.php?id=9&id2=53&link=6>

Table 1. Composition of the catch of Cameroon's industrial fisheries (Lagoin and Salmon 1970).

| Common name | Scientific name | % |
|-------------------------|---------------------------------|------|
| Bigeye grunt | <i>Brachydeuterus auritus</i> | 40.5 |
| Croaker | <i>Pseudolithus</i> spp.* | 31.9 |
| Claroteid catfishes | <i>Chrysichthys</i> spp. | 6.0 |
| Giant African threadfin | <i>Polydactylus quadrifilis</i> | 5.1 |
| Tongue soles | <i>Cynoglossus</i> spp. | 4.6 |
| Rays | <i>Raja</i> and other genera | 2.7 |
| African sicklefish | <i>Drepane africana</i> | 2.3 |
| Shrimps | Peneidae | 1.8 |
| Canary drum | <i>Umbrina canariensis</i> | 1.1 |
| Marine fishes nei | - | 4.0 |

* including *P. senegalensis* and *P. typos* (see Djama 1988; Djama and Pitcher 1989)

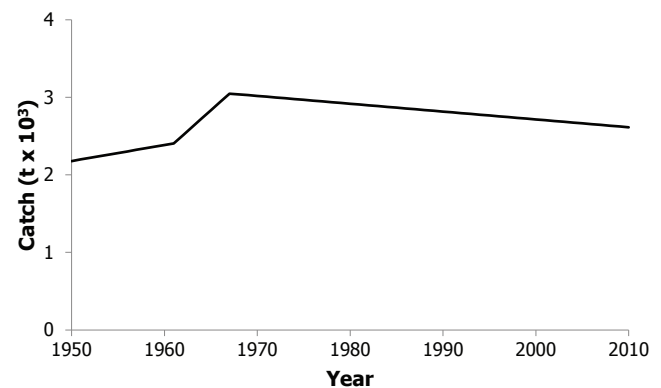


Figure 3. Reconstructed subsistence catches from Cameroon, 1950-2010.

We assumed proportionality and applied the disaggregation to illegal catches from Cameroon waters. We assumed the same species disaggregation than for domestic industrial fisheries above.

RESULTS

Small scale catches

Subsistence catches increased from around 2,200 t in 1950 to 3,000 t in 1967 and then decreased to 2,600 t in 2010 (Figure 3).

Estimated artisanal catches varied between 1950 and 2010, however with a distinct increasing pattern until the mid-2000s. Artisanal catches increased from 12,300 t in 1950 to a peak of 93,200 t in 2003, passing by periods of decline notably between 1958 and 1966 and between 1980 and 1987 dominated by political instability within the country (Figure 4). Catches declined to less than 59,300 t in 2010 (Figure 4).

Industrial catches

Estimated industrial catches increased from 70 t in 1951 to a peak of around 39,000 t in 1971, declined rapidly between then and the early 1980s when the offshore fleet stopped operating in Gabon. Catches kept on declining, although less rapidly, to around 18,000 t in 2010. Chinese reflagged vessels caught less than 600 t in 2001, around 1,000 t in 2008 and less than 1,000 t in 2010 (Figure 5).

Discards

Estimated discards increased from around 10 t in 1951 to a peak of 7,900 t in 1977 following increasing industrial catches from Cameroon, then declined rapidly to 1,500 t in 2010 (Figure 6).

Illegal catches

Estimated illegal catches (considered unregulated until 2000) increased from low levels in the mid-1980s to 2,300 t in 1989 to 9,500 t·year⁻¹ in the late 2000s. Illegal catches, as reconstructed here, were overwhelmingly taken by Chinese vessels, with the remainder taken by Russian vessels.

Total catches

Total domestic (and reflagged) catches were estimated at 14,500 t in 1950 compared to 12,000 t reported to the FAO. Catches increased to a first peak of 89,300 t in 1977, following agriculture development policy in Cameroon, and then declined to 61,900 t in 1986 marking a period of political instability in the country. Catches increased later to reach a peak of 115,000 t in 2003 compared to 62,800 t reported to the FAO, before declining to 80,000 t in 2010, around 15,000 t higher than the data supplied to the FAO (Figure 8a). There is also a net discrepancy in trends between the reconstructed data and the data supplied to the FAO. The reconstructed catches shown a steady declining pattern compared to the FAO data, which were relatively constant since the mid-2000s (Figure 8a).

Overall, 68 taxa are caught within Cameroon waters (and caught in Gabon's EEZ but landed in Cameroon). The artisanal sector dominates with over 71% of total catches and industrial contributing 21% (Figure 8a). Catches include mainly bonga shad (25%) and a declining catch of sardinella (19%), which were previously the prime focus of the little attention Cameroonian fisheries biologists could afford to give to their marine resources (Djama *et al.* 1989a; 1989b; 1990).

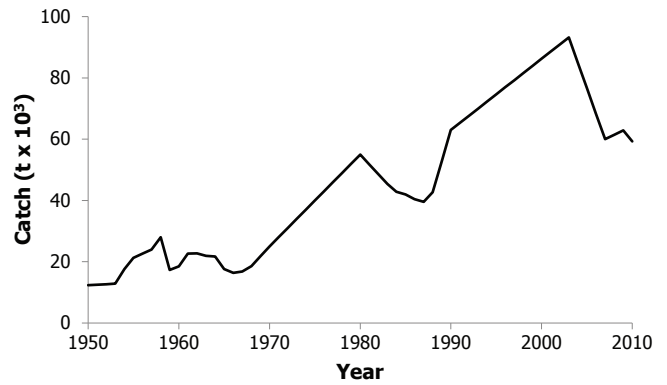


Figure 4. Reconstructed artisanal catches from Cameroon, 1950-2010.

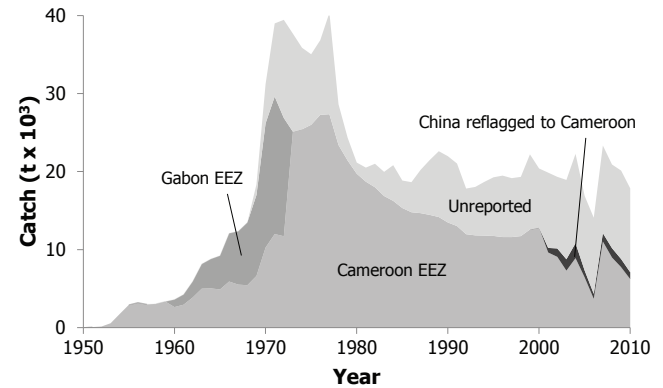


Figure 5. Cameroon reconstructed industrial landings from Cameroon and Gabon EEZs by the domestic and reflagged fleets, 1950-2010. Catches from the Gabonese EEZ were taken by the real domestic fleet of Cameroon and landed in Cameroon.

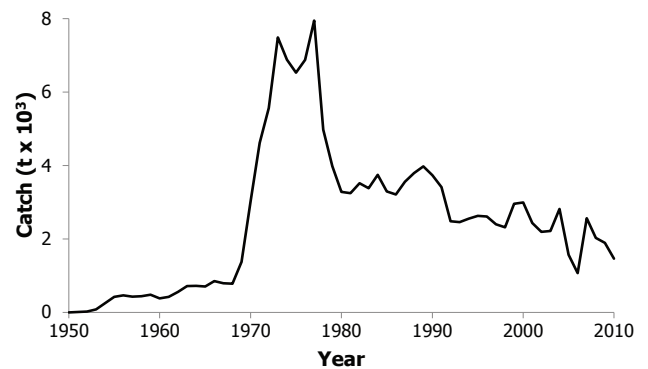


Figure 6. Reconstructed discards from Cameroon, 1950-2010.

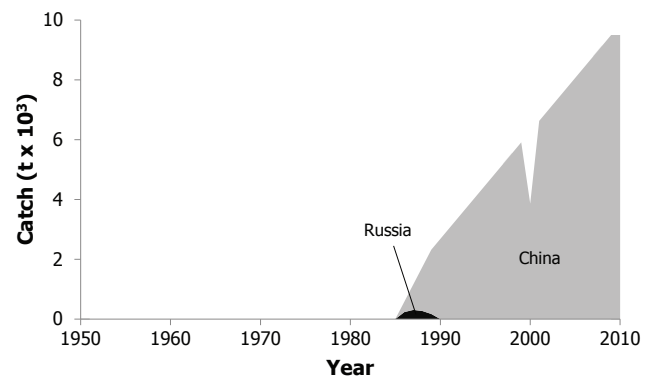


Figure 7. Reconstructed (unregulated and) illegal catches from the waters off Cameroon, 1950-2010.

DISCUSSION

Total catches from the EEZ of Cameroon were marked by two main cycles; catches increased to a first peak in the 1970s following main agricultural reforms and development projects focusing on the primary sector industry, before decreasing rapidly following a period of instability; the second cycle was marked by the highest peak of catches which reached over 109,000 t·year⁻¹ in the early 2000s, which were highly divergent with the data supplied to the FAO in amount and trend. Overall, reconstructed total catches were about 50% higher than the data supplied to the FAO. Although this discrepancy is not negligible, it is much smaller than the West African average.

The taxonomic separation between the industrial and small-scale fisheries suggested by the catch composition data presented above probably does not occur in reality, as the over-exploitation of the small EEZ of Cameroon forces small-scale fishers to shift to estuarine species (such as estuarine shrimps) to maintain their catches. Thus, the decline in under-reporting, rather than being a sign of improvement, probably reflects decreasing catches. This is masked by a false increasing trend in the official data, likely due to improved monitoring.

This study demonstrates that there is much room for improvement in Cameroon's statistical system. For example, the registration system for artisanal fisheries is virtually inexistent. Thus, accounting for catches is merely occasional, and occurs mainly when fisheries scientist require data for their research. Also, landing operations and reporting by industrial fleets are hardly controlled. Ironically, a part of the (unreported) industrial catches are landed in the only military port of the country. Moreover, management of Cameroon fisheries is a recent initiative, as the first fishery policy document for Cameroon was formulated in 2011 (ENVIREP-CAM 2011).

ACKNOWLEDGEMENTS

This is a contribution from the *Sea Around Us*, a collaboration supported by The Pew Charitable Trusts and the Paul G. Allen Family Foundation.

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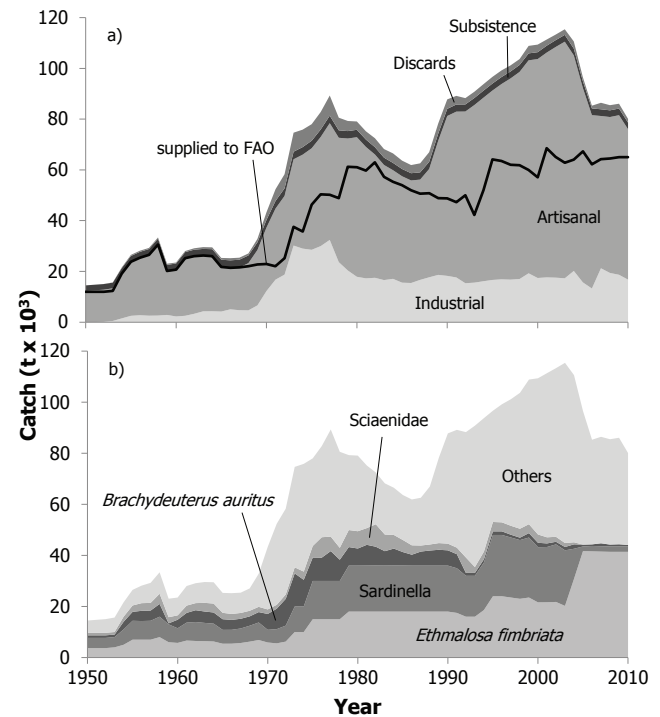


Figure 8. Reconstructed total catches by a) sector as compared to FAO with solid line indicating data supplied to FAO, and b) taxonomic group from Cameroon's EEZ, 1950-2010.

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Appendix Table A1. FAO landings vs. reconstructed total catch (in tonnes), and catch by sector with discards shown separately, for Cameroon, 1950-2010.

| Year | FAO landing | Reconstructed total catch | Industrial | Artisanal | Subsistence | Discards |
|------|-------------|---------------------------|------------|-----------|-------------|----------|
| 1950 | 12,000 | 14,500 | - | 12,300 | 2,180 | - |
| 1951 | 12,000 | 14,800 | 60 | 12,500 | 2,200 | 10 |
| 1952 | 12,000 | 15,000 | 120 | 12,700 | 2,220 | 20 |
| 1953 | 12,300 | 15,700 | 480 | 12,900 | 2,240 | 81 |
| 1954 | 19,100 | 21,600 | 1,500 | 17,600 | 2,260 | 252 |
| 1955 | 23,800 | 26,500 | 2,500 | 21,300 | 2,280 | 420 |
| 1956 | 25,400 | 28,200 | 2,750 | 22,700 | 2,300 | 462 |
| 1957 | 26,500 | 29,300 | 2,553 | 23,900 | 2,320 | 429 |
| 1958 | 30,600 | 33,400 | 2,610 | 28,000 | 2,340 | 438 |
| 1959 | 20,200 | 23,000 | 2,860 | 17,300 | 2,360 | 480 |
| 1960 | 20,734 | 23,500 | 2,254 | 18,500 | 2,390 | 379 |
| 1961 | 25,195 | 28,000 | 2,514 | 22,700 | 2,410 | 422 |
| 1962 | 26,047 | 29,100 | 3,302 | 22,700 | 2,510 | 555 |
| 1963 | 26,240 | 29,600 | 4,276 | 22,000 | 2,620 | 718 |
| 1964 | 26,031 | 29,500 | 4,308 | 21,700 | 2,730 | 724 |
| 1965 | 21,772 | 25,300 | 4,187 | 17,600 | 2,830 | 703 |
| 1966 | 21,419 | 25,200 | 5,058 | 16,400 | 2,940 | 850 |
| 1967 | 21,562 | 25,400 | 4,720 | 16,800 | 3,050 | 793 |
| 1968 | 22,063 | 27,100 | 4,653 | 18,600 | 3,040 | 782 |
| 1969 | 22,728 | 32,800 | 6,621 | 21,800 | 3,030 | 1,376 |
| 1970 | 22,876 | 43,300 | 12,259 | 25,000 | 3,020 | 3,026 |
| 1971 | 22,076 | 52,400 | 16,751 | 28,000 | 3,010 | 4,618 |
| 1972 | 25,242 | 58,300 | 18,728 | 31,000 | 3,000 | 5,566 |
| 1973 | 37,600 | 74,700 | 30,184 | 34,000 | 2,990 | 7,489 |
| 1974 | 35,736 | 75,800 | 28,991 | 37,000 | 2,980 | 6,880 |
| 1975 | 46,280 | 78,000 | 28,512 | 40,000 | 2,970 | 6,529 |
| 1976 | 50,397 | 82,800 | 29,973 | 43,000 | 2,960 | 6,877 |
| 1977 | 50,167 | 89,300 | 32,407 | 46,000 | 2,950 | 7,944 |
| 1978 | 48,867 | 80,600 | 23,648 | 49,000 | 2,940 | 4,978 |
| 1979 | 61,214 | 79,300 | 20,358 | 52,000 | 2,930 | 3,982 |
| 1980 | 61,045 | 79,100 | 17,878 | 55,000 | 2,920 | 3,278 |
| 1981 | 59,761 | 75,200 | 17,264 | 51,800 | 2,910 | 3,247 |
| 1982 | 63,012 | 72,500 | 17,486 | 48,600 | 2,900 | 3,517 |
| 1983 | 57,277 | 68,200 | 16,584 | 45,400 | 2,890 | 3,382 |
| 1984 | 55,299 | 66,500 | 17,073 | 42,800 | 2,880 | 3,748 |
| 1985 | 53,969 | 63,700 | 15,563 | 41,900 | 2,870 | 3,292 |
| 1986 | 51,981 | 61,900 | 15,434 | 40,400 | 2,860 | 3,209 |
| 1987 | 50,637 | 62,600 | 16,659 | 39,500 | 2,850 | 3,557 |
| 1988 | 50,800 | 67,000 | 17,683 | 42,700 | 2,840 | 3,792 |
| 1989 | 48,830 | 78,300 | 18,633 | 52,800 | 2,830 | 3,978 |
| 1990 | 48,743 | 87,800 | 18,238 | 63,000 | 2,820 | 3,734 |
| 1991 | 47,319 | 89,200 | 17,626 | 65,300 | 2,810 | 3,408 |
| 1992 | 49,975 | 88,300 | 15,346 | 67,600 | 2,800 | 2,480 |
| 1993 | 42,258 | 90,800 | 15,577 | 70,000 | 2,790 | 2,458 |
| 1994 | 52,021 | 93,800 | 16,133 | 72,300 | 2,780 | 2,552 |
| 1995 | 64,132 | 96,700 | 16,640 | 74,600 | 2,770 | 2,630 |
| 1996 | 63,530 | 99,200 | 16,876 | 76,900 | 2,760 | 2,609 |
| 1997 | 62,001 | 101,200 | 16,760 | 79,300 | 2,750 | 2,398 |
| 1998 | 61,801 | 103,700 | 17,007 | 81,600 | 2,740 | 2,317 |
| 1999 | 60,001 | 108,900 | 19,252 | 83,900 | 2,730 | 2,957 |
| 2000 | 57,110 | 109,400 | 17,408 | 86,200 | 2,720 | 2,992 |
| 2001 | 68,531 | 111,400 | 17,649 | 88,600 | 2,710 | 2,433 |
| 2002 | 65,135 | 113,300 | 17,541 | 90,900 | 2,700 | 2,195 |
| 2003 | 62,802 | 115,400 | 17,288 | 93,200 | 2,690 | 2,214 |
| 2004 | 64,001 | 110,600 | 20,192 | 84,900 | 2,680 | 2,819 |
| 2005 | 67,346 | 96,500 | 15,681 | 76,600 | 2,660 | 1,568 |
| 2006 | 62,233 | 85,300 | 13,263 | 68,300 | 2,650 | 1,070 |
| 2007 | 64,233 | 86,400 | 21,234 | 60,000 | 2,640 | 2,564 |
| 2008 | 64,501 | 85,500 | 19,391 | 61,400 | 2,630 | 2,027 |
| 2009 | 65,001 | 86,100 | 18,672 | 62,900 | 2,620 | 1,895 |
| 2010 | 65,001 | 80,100 | 16,758 | 59,300 | 2,610 | 1,461 |

Appendix Table A1. Reconstructed total catch (in tonnes) by major taxonomic groups for Cameroon, 1950-2010. "Others" contain 64 additional taxonomic categories.

| Year | <i>Ethmalosa fimbriata</i> | <i>Sardinella</i> | <i>Brachydeuterus auritus</i> | <i>Sciaenidae</i> | Others |
|------|----------------------------|-------------------|-------------------------------|-------------------|--------|
| 1950 | 3,700 | 4,000 | 1,000 | 1,000 | 4,800 |
| 1951 | 3,700 | 4,000 | 1,000 | 1,000 | 5,070 |
| 1952 | 3,700 | 4,000 | 1,000 | 1,000 | 5,340 |
| 1953 | 4,000 | 4,000 | 1,000 | 1,000 | 5,660 |
| 1954 | 5,000 | 6,000 | 3,000 | 2,000 | 5,610 |
| 1955 | 7,000 | 7,400 | 3,500 | 2,500 | 6,100 |
| 1956 | 7,000 | 7,300 | 4,000 | 3,000 | 6,860 |
| 1957 | 7,000 | 7,400 | 4,000 | 3,000 | 7,850 |
| 1958 | 8,000 | 8,000 | 5,000 | 4,000 | 8,380 |
| 1959 | 6,000 | 7,000 | 400 | 2,400 | 7,250 |
| 1960 | 5,730 | 5,730 | 3,340 | 1,720 | 6,970 |
| 1961 | 6,660 | 7,040 | 3,800 | 2,850 | 7,680 |
| 1962 | 6,490 | 7,420 | 4,630 | 2,780 | 7,800 |
| 1963 | 6,430 | 7,140 | 4,460 | 3,390 | 8,160 |
| 1964 | 6,290 | 6,990 | 4,370 | 3,490 | 8,340 |
| 1965 | 5,420 | 5,420 | 4,170 | 2,500 | 7,790 |
| 1966 | 5,430 | 5,430 | 3,880 | 2,330 | 8,140 |
| 1967 | 5,690 | 5,690 | 3,800 | 2,280 | 7,940 |
| 1968 | 6,230 | 6,230 | 3,660 | 2,200 | 8,750 |
| 1969 | 6,870 | 6,870 | 4,070 | 2,060 | 12,960 |
| 1970 | 5,900 | 4,960 | 6,210 | 1,770 | 24,460 |
| 1971 | 5,560 | 5,560 | 8,010 | 1,520 | 31,720 |
| 1972 | 6,250 | 6,250 | 10,490 | 1,730 | 33,580 |
| 1973 | 10,000 | 10,000 | 12,950 | 2,370 | 39,340 |
| 1974 | 10,000 | 10,000 | 10,440 | 3,220 | 42,190 |
| 1975 | 15,000 | 15,000 | 9,170 | 4,540 | 34,310 |
| 1976 | 15,000 | 15,000 | 9,120 | 8,000 | 35,690 |
| 1977 | 15,000 | 15,000 | 11,690 | 5,660 | 41,940 |
| 1978 | 15,000 | 15,000 | 8,310 | 4,650 | 37,600 |
| 1979 | 18,000 | 18,000 | 7,260 | 6,670 | 29,330 |
| 1980 | 18,000 | 18,000 | 6,700 | 6,770 | 29,600 |
| 1981 | 18,000 | 18,030 | 8,120 | 6,540 | 24,520 |
| 1982 | 18,000 | 18,060 | 7,340 | 8,800 | 20,270 |
| 1983 | 18,000 | 18,030 | 5,620 | 6,520 | 20,030 |
| 1984 | 18,000 | 18,070 | 6,610 | 5,330 | 18,490 |
| 1985 | 18,000 | 18,050 | 5,260 | 4,740 | 17,600 |
| 1986 | 18,000 | 18,000 | 4,280 | 3,670 | 17,950 |
| 1987 | 18,000 | 18,000 | 5,510 | 2,360 | 18,710 |
| 1988 | 18,000 | 18,000 | 5,910 | 2,360 | 22,700 |
| 1989 | 18,000 | 18,000 | 6,200 | 2,620 | 33,450 |
| 1990 | 18,000 | 18,000 | 5,980 | 2,620 | 43,180 |
| 1991 | 17,480 | 17,490 | 5,500 | 2,560 | 46,130 |
| 1992 | 16,000 | 16,010 | 1,140 | 6,050 | 49,080 |
| 1993 | 16,000 | 16,010 | 1,130 | 2,300 | 55,350 |
| 1994 | 18,600 | 18,600 | 1,280 | 3,000 | 52,280 |
| 1995 | 24,000 | 24,000 | 1,410 | 3,680 | 43,570 |
| 1996 | 24,000 | 24,000 | 1,410 | 3,540 | 46,240 |
| 1997 | 23,500 | 23,500 | 1,090 | 3,500 | 49,580 |
| 1998 | 23,000 | 23,000 | 940 | 3,500 | 53,210 |
| 1999 | 23,500 | 23,500 | 1,720 | 3,500 | 56,630 |
| 2000 | 21,610 | 21,610 | 1,720 | 3,260 | 61,160 |
| 2001 | 21,640 | 21,640 | 1,400 | 2,400 | 64,270 |
| 2002 | 21,780 | 22,540 | 1,010 | 1,950 | 66,040 |
| 2003 | 20,230 | 21,760 | 1,310 | 1,560 | 70,550 |
| 2004 | 30,800 | 11,800 | 1,730 | 800 | 65,460 |
| 2005 | 41,700 | 1,810 | 690 | 40 | 52,290 |
| 2006 | 41,590 | 2,100 | 620 | 20 | 40,950 |
| 2007 | 41,490 | 2,100 | 1,130 | 20 | 41,690 |
| 2008 | 41,400 | 2,100 | 730 | 20 | 41,230 |
| 2009 | 41,400 | 2,100 | 850 | 20 | 41,690 |
| 2010 | 41,400 | 2,100 | 580 | 20 | 35,980 |