Reconstruction of total marine fisheries catches for St. Kitts and Nevis (1950 - 2010)[1]

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Abstract

Under-reporting of catches in fisheries is a global problem. This report presents the reconstruction of total marine fisheries catches for St. Kitts and Nevis for the period 1950-2010, which includes estimates of unreported catches of conch and lobster for the early time period, and under-reported artisanal and subsistence catches for the entire time period. Unreported catches from 1950-2010 were estimated to be 53% of the reconstructed total catch, with an average annual unreported catch of approximately 740 t·year^{-1} for both islands. Reconstructed total catches for St. Kitts and Nevis were estimated to be over 2 times the adjusted landings reported to FAO on behalf of St. Kitts and Nevis (adjusted for over reporting in a few years) for the same time period. This estimate, which more comprehensively accounts for total living marine resource extractions by St. Kitts and Nevis, reflects the importance of small-scale fisheries in providing seafood to locals and visitors, and livelihoods to fishers.

Introduction

St. Kitts and Nevis are islands in the Caribbean Sea located between latitude 17.3° north and longitude 62.7° west. St. Kitts and Nevis have a combined land area of 261 km^2 and a total population of 52,000. Both islands are of volcanic origin, with steep escarpments, and hills in the interior and gentle plains along the coasts. The islands are separated by a 3 km wide channel named 'The Narrows', and share an Exclusive Economic Zone (EEZ) of around 10,200 km^2 (www.seaaroundus.org) (Figure 1).

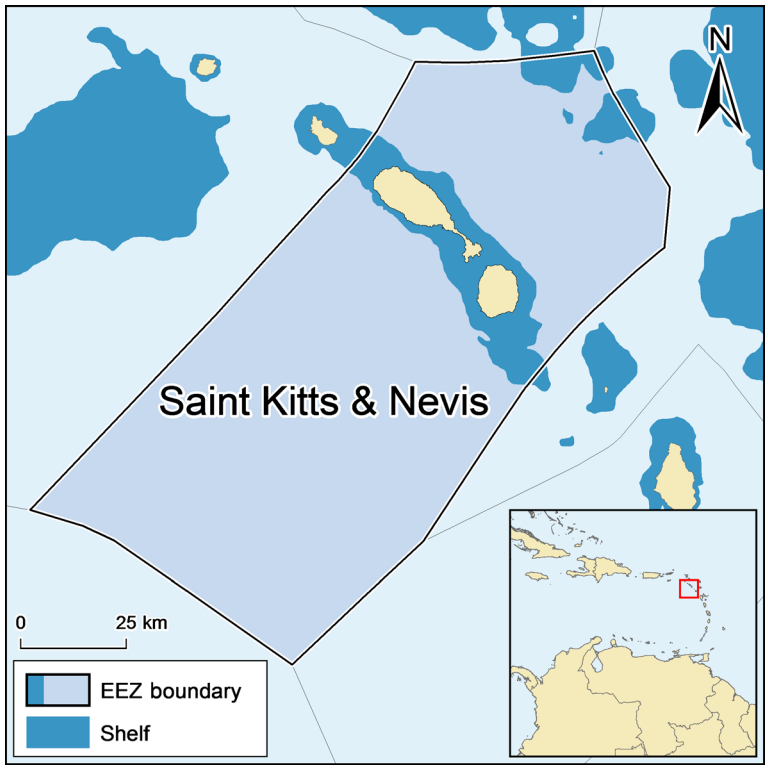

Figure 1. Map of St. Kitts and Nevis, showing it's Exclusive Economic Zone (EEZ) and shelf waters of 200m depth.

St. Kitts and Nevis is a federated state, which gained independence from British colonial rule in 1983. Historically, the competition for Caribbean supremacy between the British, French and Dutch, began in St. Kitts in the year 1623 when Sir Thomas Warner claimed the island for Britain. Just two years later, a French expedition arrived, and both groups agreed to share the island amicably. However the island's original native inhabitants, the Caribs (originating from South America), who had discovered St. Kitts long before the English or the French, were staking their claim. The Europeans and the Caribs signed an agreement to share the island peacefully. However, the Europeans wiped out the Caribs in a massacre at 'Bloody Point' in 1626 (Ferguson 1997). Apart from anthropogenic effects, the islands are also susceptible to natural disasters. Each year from June to November, hurricanes and tropical storms affect the islands. Most notable, Hurricane Hugo caused widespread damage to the islands' infrastructure in 1989, and Hurricane Georges left 3,000 people without homes in 1998.

The islands' economies are dependent on agriculture and tourism. In the past, major crops cultivated in St. Kitts included sugarcane, sea-island cotton and food crops (Colonial Office 1958). Today, the agriculture sector is defined in terms of sugar and cotton production on both St. Kitts and Nevis. Tourism is gradually replacing agriculture as a major economic contributor in St. Kitts (USAID 2008). Agriculture, tourism, fisheries, boat building, construction and a small manufacturing sector form the economic base on Nevis (USAID 2008).

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The fishing sector of each of these islands is primarily artisanal and subsistence oriented, with a small recreational sector. Furthermore, Japanese and other foreign fishing vessels have been observed fishing offshore the island's territorial waters (Wilkins 1984). The fishing fleet is comprised of wooden boats (4-7 m), usually powered by outboard engines, although some still use sails and oars (Goodwin *et al.* 1985). The fishing gears utilized include pots and boat seines, some hand-lining and beach seining, and skin-diving is also practiced. The species targeted include: reef and demersal species, such as snappers and groupers, lobster and conch. Starting in the 1960s, beach seines were used to capture small schooling pelagics such as gars, ballyhoo (Belonidae) and jacks (Carangidae). Today, trolling near Fish Aggregating Devices (FADs) is the fastest growing fishing technique in St. Kitts. Fishers concentrate their efforts on catching medium and large pelagics such as dolphinfish (Coryphaenidae) and tunas from January to June each year (Heyliger 2002).

Catches are landed at five major landings sites on St. Kitts: Basseterre East, Basseterre West, Old Road, Sandy Point and Dieppe Bay. On Nevis, there are eight important landing sites: Charlestown, Cane Bay, Indian Castle, Long Haul Bay, Newcastle, Jones Bay, Cotton Ground, and Jessups. There are two central markets on the islands: Bassetere fishing complex on St. Kitts, and a fisheries complex in Charlestown on Nevis. However, fishers also process and sell catches directly to customers at boat landing sites. If there is a surplus of fish, vendors will act as intermediaries. Seafood exports to Guadeloupe and Martinique include lobster, conch and finfish (Goodwin *et al.* 1985), though exact quantities are not published. Despite the importance of fish in exports and in the diet of the people on St. Kitts and Nevis, the islands are net importers of seafood since local landings are not sufficient to meet the local demand (Wilkins 1984; Goodwin *et al.* 1985). Indeed, colonial records state that approximately 545 t of fish (frozen, cured and canned) were imported to St. Kitts and Nevis in 1964.

Over time, there have been many changes in the reefs around the islands due to sediment runoff, hurricane damage and high fishing pressure. Fishers report declines in fish size, are spending longer periods of time at sea and are observing major declines in total catch (FORCE 2012a, 2012b). The Fisheries Departments on St. Kitts and Nevis are in charge of the management of coastal and marine resources on their respective islands. Both have the same method of data collection, which is based upon the CARICOM region data systems 'CARAFIS' (Heyliger 2011). Catch data on St. Kitts is collected from Monday to Saturday from main landing sites, while other sites are checked once a month. Raising factors are applied according to the number of fishing days and the gear type (Heyliger S., pers. comm., St. Kitts Fisheries Department). As for official reporting, it is unclear whether FAO contacts each island separately (Arthurton A., pers. comm., Nevis Fisheries Department) or if they report federal fisheries landings collectively (Helyiger S., pers. comm., St. Kitts Fisheries Department). Thus, the level of trust and collaboration between island administrations is obviously strained; therefore information may not be reliable.

Accurate catch data are important as the most fundamental baseline for evaluation of the state of fisheries resources. A review of all available fisheries literature on St. Kitts and Nevis was undertaken, along with data accessed from the Fisheries Department in St. Kitts in order to (1) provide an improved estimate of total marine fisheries catches for St. Kitts and Nevis for the time period 1950-2010, and (2) improve the taxonomic detail of the reported and unreported catch.

Methods

The fisheries of St. Kitts and Nevis have been reported on by FAO (1969), George (1976), Goodwin *et al.* (1985), Barrett *et al.* (1988) and Heyliger (2011). It was difficult to accurately analyze the catch data gleaned from these reports; therefore, we also relied on seafood consumption rates (Jones 1985) derived from the neighboring island of Anguilla to guide us in our estimation. Assuming a similar consumption pattern as on Anguilla, we combined the household consumption rates from Jones (1985) with local population data, and reconstructed the likely local seafood demand on St. Kitts and Nevis. We also estimated consumption by visiting tourists and catches from the small recreational sector. Taking the average species composition from the national catch dataset (1995-2010), we were able to improve on the likely taxonomic composition of catches presented in the FAO data for the early time period (1950-1995).

Human population and tourists

Human population data for St. Kitts and Nevis were available from the World Bank[2] for most years. Using linear interpolation for years with missing data, we reconstructed the local population on the islands from 1950-2010 (Figure 2).

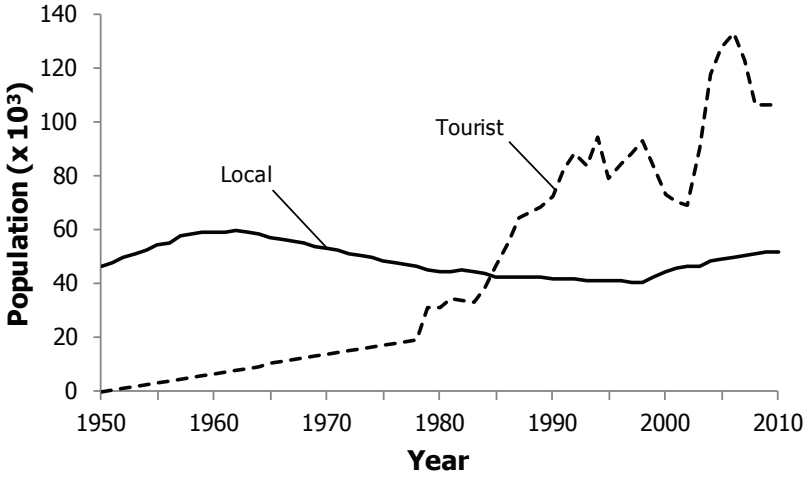

Figure 2. Human population data for St. Kitts and Nevis, showing total local population and stop-over tourists. Sources: World Bank, St. Kitts and Nevis Government Statistics Department, Caribbean Tourism Organization.

[2] http://data.worldbank.org/ [Accessed: February 2013]

Data on the number of stop-over tourists (travelers who stay on the island for more than a day), were available from the Government Statistics Department for 1978-2006 and from the Caribbean Tourism Organization[3] for 2000-2010. We assumed tourism began in 1950, and a linear interpolation was done to estimate the tourist population in years with missing data (Figure 2).

Catches satisfying local demand

According to a household consumption survey (Jones 1985) on the neighboring island of Anguilla, annual *per capita* fresh seafood consumption was 23.6 kg fish, 0.8 kg lobster and 1.8 kg conch. Assuming these rates remained constant over time, we combined these rates with the St. Kitts and Nevis population data, to reconstruct the catches that would satisfy local demand of these islands. To assign small-scale catches to artisanal (i.e., commercial) and subsistence (i.e., non-commercial) sectors, it was assumed that in 1950, 90% of small-scale catches were for subsistence purposes and 10% were for sale (artisanal). In 2010, 40% of small-scale catches were attributed to the subsistence sector and 60% to the artisanal sector. A linear interpolation was done between these two years to derive an assumed percentage assignment by sector for the entire 1950-2010 time period.

Recreational

According to a global study of recreational fishing (Cisneros-Montemayor and Sumaila 2010), the proportion of recreational fishers in St. Kitts and Nevis in 2003 was 0.23%. Since sport fishing is an activity that is associated with tourism (Campos 1984), we assumed all of these fishers were tourists. We applied this rate constantly from 2000 to 2010. For the year 1950, we assumed a participation rate of 0.11% (half that of the later time period) of the tourist population. Linearly interpolating between these two rates, we derived recreational fishing participation rates of the tourist population for the time period 1950-2010. Assuming tourists are likely to participate in just one fishing trip during their stay, and assuming a conservative catch rate of 4.5 kg·tourist^{-1}·year^{-1}, we were able to estimate catches from this sector.

Catches satisfying tourist demand

In many parts of the world, fishers have so-called 'direct' customers, such as hoteliers and restaurateurs, whom they supply directly with fresh seafood catches, which often by-pass landings sites and monitoring procedures. Community reports from Jessups, Nevis and Dieppe Bay, St. Kitts, state that most fishers sell their catch to hotels (FORCE 2012a, 2012b). Thus, seafood supplying the tourist market, such as hotels and restaurants, were reconstructed separately. Annual tourist population data were combined with data on the average length of stay, i.e., approximately 10 days according to the Caribbean Tourism Organization. Taken together with inferences about the frequency of seafood consumption (i.e., one serving of seafood per day) and a typical serving proportion of 250 g (round weight), we applied the following equation to estimate tourist seafood demand annually. Using this calculation, we were able to reconstruct small-scale catches provided directly to the tourist market from 1950 to 2010, which we assumed did not enter the reporting system.

Table 1. Taxonomic breakdown used for fish catches from St. Kitts and Nevis (for both the reported 'marine fishes nei', as well as all unreported artisanal and subsistence fish catches) as derived for 1950 and as reported for 1995 based on FAO data. Intervening years were interpolated.

FAO common name	Scientific name	1950 (proportion)	1995 (proportion)
Bigeye scad	*Selar crumenophthalmus*	0.04	0.00
Flyingfishes nei	Exocoetidae	0.04	0.28
Needlefishes, etc. nei	Belonidae	0.04	0.16
Tuna-like fishes nei	Scombridae	0.00	0.01
Wahoo	*Acanthocybium solandri*	0.00	0.00
Common dolphinfish	*Coryphaena hippurus*	0.00	0.04
Grunts, sweetlips nei	Haemulidae	0.05	0.01
Goatfishes, red mullets nei	Mullidae	0.08	0.04
Parrotfishes nei	Scaridae	0.15	0.09
Squirrelfishes nei	Holocentridae	0.07	0.04
Surgeonfishes nei	Acanthuridae	0.08	0.07
Triggerfishes, durgons nei	Balistidae	0.05	0.04
Marine fishes nei	Miscellaneous marine fishes	0.05	0.05
Groupers nei	Serranidae	0.20	0.12
Snappers nei	Lutjanidae	0.15	0.05

Taxonomic breakdown

The dataset supplied to the FAO by St. Kitts and Nevis is dominated by the uninformative pooled group 'marine fishes nei', and marine invertebrates, such as Caribbean spiny lobster (*Panulirus argus*) and 'Stromboid conchs nei', that do not appear on record until 1970 and 1994, respectively. From 1995 onwards, a more detailed breakdown of catches was provided to the FAO. As mentioned previously, catches of lobster, conch and fish were reconstructed separately. To improve on the taxonomic breakdown for 'marine fishes nei', we created a new breakdown for 1950 based on ecological knowledge of Caribbean reefs and dominant fishing practices in the early time period (Table 1).

[3] http://www.onecaribbean.org/ [Accessed: August 2012]

Interpolating the percentage composition from 1950 to 1995, while leaving FAO breakdown from 1995 to 2010 as is, we provided species composition for fish catches in the following sectors: reported artisanal 'marine fishes nei', reported subsistence 'marine fishes nei' and all unreported fish catches (Table 1).

Results

Due to continued emigration, the local population trend has been flat to slightly declining between the mid 1960s and late 1990s, but began increasing again in the 2000s (Figure 2). However, the population of visitors to the island has steadily increased over the years, doubling in two decades from around 64,000 tourists in 1987 to over 120,000 in 2007 (Figure 2).

From 1950 to 2010, reconstructed catches for St. Kitts and Nevis for the artisanal (i.e., small-scale, commercial) sector contributed 39% of the catch, the subsistence sector amounted to almost 61% of the catch and the recreational sector in St. Kitts and Nevis contributed less than 0.1% to the total reconstructed catch (Figure 3a).

From 1976 to 1982, there was a peak in reported landings of fish and lobster in the St. Kitts and Nevis data supplied to FAO. Since we found no information to explain this sudden and short-lived spike in reported landings, we did not accept the FAO record from 1976-1982. The total reconstructed catch was estimated to be 2.1 times the adjusted reported landings. Total unreported catches for the period 1950-2010 were estimated at slightly over 53% of the catch, with average annual unreported catches of 740 t·year^{-1} (Figure 3a).

Artisanal catches increase fairly steadily over the time period from an average of 200 t·year^{-1} in the 1950s, to over 1,000 t·year^{-1} in the late 2000s. Subsistence catches, in contrast, exhibited a fairly steady declining trend over the time period. Catches did increase for the first decade, climbing from just under 1,100 t·year^{-1} in 1950 to 1,260 t·year^{-1} in 1960. Catches declined from there to a low of 525 t·year^{-1} in 1998 and then leveled out, averaging 560 t·year^{-1} for the rest of the time period. Recreational catches have increased over the time period, for the most part. Catches increased slowly from just over 0.02 t·year^{-1} in 1950 to 0.17 t·year^{-1} in the late 1970s, and increased faster after that up to 0.86 t·year^{-1} in the mid- to late-1990s. After exhibiting a slight decline to 0.70 t·year^{-1} in 2001, catches rapidly increased to a peak of 1.36 t·year^{-1} in 2006, followed by a decline to just over 1.0 t·year^{-1} in 2010.

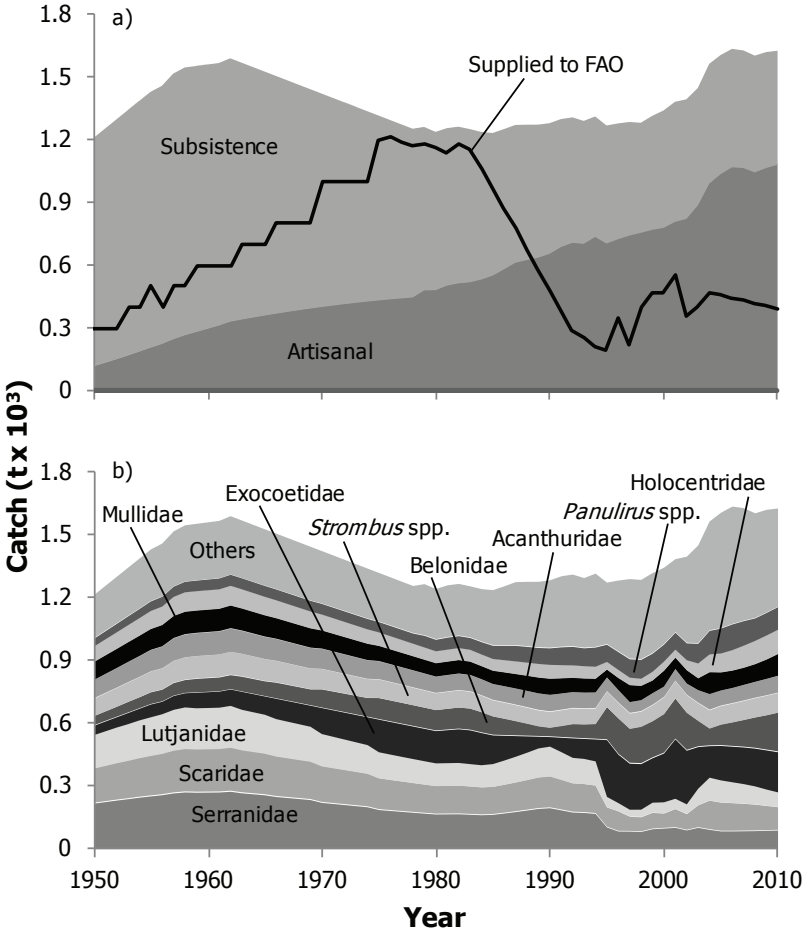

Figure 3. Reconstructed total catches for St. Kitts and Nevis by a) fisheries sector (recreational catches are included but are too small to be visible) with landings data as reported to FAO overlaid as line graph; and b) major taxa, with the 'others' category consisting of 9 additional taxa with smaller contributions.

Catches were dominated by major reef taxa (Figure 3b) such as groupers (Serranidae; 13.0%), parrotfishes (Scaridae; 10.5%) and snappers (Lutjanidae; 9.5%). Small pelagic taxa including flyingfishes (Exocoetidae; 9.4%) and needlefish (Belonidae; 6.9%) were very significant, also. Smaller reef taxa, such as surgeonfishes (Acanthuridae; 6.0%), goatfishes (Mullidae; 5.9%) and squirrelfish (Holocentridae; 5.3%) were also important components of the catch. Catches of marine invertebrates such as *Strombus gigas* (6.3%) and *Panulirus argus* (4.8%) were also common. The 'others' category made up the remaining 22% of catches and comprised 5 pelagic families including Coryphaenidae, Scombridae and Sphyraenidae and 2 reef families, Balistidae and Haemulidae (Figure 3b).

Discussion

St. Kitts and Nevis are small island developing states in the Caribbean Sea. They have a narrow resource base and depend heavily on tourism for their economy. Fishing plays a vital role in St. Kitts and Nevis, especially for local food security. When there is a decline in other sectors, such as the tourism sector, islanders turn to fishing to supplement their income. However, since the 1980s, over-fishing has been documented on the reefs of St. Kitts and Nevis (Goodwin *et al.* 1985). From 1950 to 2010, we estimated average annual unreported fisheries catches to be approximately 740 t·year^{-1}, or as much as 80% of total catches in some time periods. Unfortunately, under-reporting of catches can mask over-fishing, and lead to erroneous interpretations of fisheries trends.

Our estimates show average annual unreported lobster and conch catches from St. Kitts and Nevis to be approximately 40 t·year^{-1} and 70 t·year^{-1}, respectively. Today, lobster and conch populations are considered to be over-exploited in near-shore areas (Heyliger 2010). With growing tourist populations, demand for high value species is placing unsustainable pressure on the local marine resources. Unreported fishing and rising tourist populations are challenges to St. Kitts and Nevis small-scale fisheries. In addition, catches from an associated recreational sector are not being captured by the present data collection system. Reconstructed recreational catches amounted to approximately 26 t for the study period, and though small, should not be overlooked.

Fish is recognized as an important source of protein for the local people and many prefer it over alternatives such as chicken, pork or beef. Both the local population and visiting tourists rely on or prefer seafood nutrition. Despite the economic and cultural significance of marine fisheries to these islands, the contribution of the small-scale fisheries to food and nutritional security, poverty alleviation and economic development is undervalued (FAO 2013). Low priority is given to the fisheries sector in Caribbean islands and the institutions in charge of fisheries management suffer from limited financial support and staffing. Plans for a federal reporting system for St. Kitts and Nevis have been discussed but are not yet realized (S. Heyliger, pers. comm., St. Kitts Fisheries Department, February 2013). It is unclear at this time whether both islands report separately to the FAO. Evidently there is a lack of trust between the fisheries departments of St. Kitts and Nevis, and information sharing is strained. A key objective is recognizing that reliable data and information are imperative for developing appropriate guidance for small-scale fisheries development (FAO 2013) and has yet to be achieved in St. Kitts and Nevis.

Our reconstructed catches were over 2 times the adjusted landings reported by the FAO on behalf of St. Kitts and Nevis over the 1950-2010 time period. There is also a small export market which was not addressed in the reconstruction. Our reconstructed catch used the reported FAO breakdown as a starting point, as such, only minor improvements to the reported taxonomic breakdown was achieved. Given that no quantitative catch composition data were available, our reconstruction is the best representation of total catches made by St. Kitts and Nevis at present.

Acknowledgements

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Appendix Table A1. FAO landings vs. reconstructed total catch (in tonnes), and catch by sector, for St. Kitts and Nevis, 1950-2010.

Year	FAO landings	Reconstructed total catch	Artisanal	Subsistence	Recreational
1950	300	1,210	121	1,090	0.000
1951	300	1,260	138	1,118	0.004
1952	300	1,300	155	1,145	0.007
1953	400	1,340	172	1,171	0.011
1954	400	1,390	191	1,197	0.015
1955	500	1,430	210	1,222	0.019
1956	400	1,460	228	1,233	0.023
1957	500	1,520	250	1,269	0.028
1958	500	1,550	269	1,279	0.032
1959	600	1,560	285	1,271	0.037
1960	600	1,560	300	1,262	0.041
1961	600	1,570	316	1,254	0.046
1962	600	1,590	335	1,258	0.051
1963	700	1,570	345	1,227	0.057
1964	700	1,550	354	1,196	0.062
1965	700	1,530	364	1,166	0.067
1966	800	1,510	373	1,136	0.073
1967	800	1,490	381	1,106	0.079
1968	800	1,470	389	1,077	0.085
1969	800	1,450	397	1,048	0.091
1970	1,000	1,420	404	1,020	0.097
1971	1,000	1,400	411	992	0.103
1972	1,000	1,380	418	964	0.109
1973	1,000	1,360	424	937	0.116
1974	1,000	1,340	430	910	0.123
1975	1,200	1,320	436	883	0.130
1976	1,212	1,300	441	857	0.136
1977	1,192	1,280	446	831	0.144
1978	1,173	1,260	450	806	0.151
1979	1,183	1,260	484	781	0.255
1980	1,161	1,240	485	756	0.255
1981	1,141	1,260	506	752	0.286
1982	1,177	1,270	517	748	0.283
1983	1,157	1,250	522	732	0.283
1984	1,059	1,240	535	706	0.333
1985	963	1,240	554	681	0.402
1986	869	1,250	584	670	0.486
1987	774	1,270	616	658	0.577
1988	675	1,280	628	647	0.601
1989	576	1,280	640	635	0.623
1990	479	1,280	658	624	0.669
1991	385	1,300	690	611	0.772
1992	288	1,310	711	599	0.833
1993	250	1,290	706	587	0.798
1994	212	1,320	739	575	0.908
1995	192	1,270	707	564	0.768
1996	352	1,280	728	553	0.829
1997	216	1,290	746	543	0.878
1998	398	1,290	759	526	0.937
1999	471	1,320	773	544	0.853
2000	470	1,340	782	561	0.750
2001	556	1,390	811	574	0.724
2002	355	1,400	825	571	0.708
2003	400	1,450	889	561	0.929
2004	470	1,570	993	572	1.205
2005	459	1,610	1,039	569	1.310
2006	446	1,640	1,072	566	1.363
2007	433	1,630	1,068	562	1.263
2008	420	1,610	1,047	558	1.091
2009	407	1,620	1,068	554	1.091
2010	392	1,630	1,083	545	1.091

Appendix Table A2. Reconstructed total catch (in tonnes) by major taxa, for St. Kitts and Nevis, 1950-2010. 'Others' represents 9 additional taxonomic categories.

Year	Serranidae	Scaridae	Lutjanidae	Exocoetidae	Belonidae	*Strombus* spp.	Acanthuridae	Mullidae	Holocentridae	*Panulirus* spp.	Others
1950	218	163	163	45	44	83	87	87	76	37	207
1951	225	169	169	47	46	86	90	90	79	39	216
1952	233	175	174	49	48	89	93	93	81	40	224
1953	239	180	179	54	51	92	96	96	84	42	232
1954	246	185	184	56	53	95	99	98	86	44	241
1955	252	190	188	62	56	98	102	101	88	46	248
1956	258	194	193	60	56	100	104	103	91	47	255
1957	267	201	199	67	60	104	108	107	94	49	265
1958	271	204	202	68	62	105	110	108	95	50	271
1959	270	204	200	75	65	106	110	108	95	51	272
1960	271	204	201	76	66	106	110	108	95	51	274
1961	271	205	201	77	67	107	111	108	95	52	276
1962	275	207	204	79	68	108	112	110	96	53	281
1963	267	202	197	87	71	106	110	107	94	53	277
1964	263	199	193	87	71	105	108	105	92	53	274
1965	258	195	190	88	71	103	107	103	91	52	272
1966	250	190	182	98	76	102	104	99	88	52	267
1967	245	186	178	99	76	100	103	97	86	52	264
1968	240	183	175	100	76	99	101	95	85	51	262
1969	235	179	171	101	76	97	99	93	83	51	259
1970	222	170	158	125	88	96	96	88	78	51	253
1971	216	167	154	127	88	94	94	86	77	51	250
1972	211	163	149	130	89	92	93	84	75	50	246
1973	206	159	145	132	90	91	91	81	73	50	243
1974	201	155	141	134	90	89	89	79	71	50	240
1975	187	147	128	157	102	88	86	74	67	50	234
1976	183	143	125	157	101	86	84	72	65	49	232
1977	179	140	121	157	101	85	83	70	64	49	229
1978	174	137	118	157	100	83	81	68	62	49	226
1979	170	134	115	156	99	81	79	67	61	56	246
1980	166	131	112	155	99	80	78	65	59	55	241
1981	167	131	112	159	100	81	78	65	60	57	249
1982	167	132	112	162	102	81	79	65	60	57	249
1983	165	130	110	163	102	80	78	65	59	57	246
1984	162	128	109	155	98	79	76	64	58	59	252
1985	164	129	112	138	89	77	75	65	59	63	265
1986	171	132	119	119	80	77	76	67	61	69	284
1987	178	137	127	99	70	76	77	70	63	74	304
1988	185	141	134	78	59	76	78	74	65	75	310
1989	193	145	143	56	48	76	79	77	68	76	315
1990	196	147	146	46	43	76	79	78	69	79	324
1991	186	141	136	69	54	75	77	74	65	85	339
1992	175	135	125	94	67	75	76	70	62	88	345
1993	173	133	124	96	68	74	75	69	61	85	335
1994	169	130	119	105	72	74	74	67	60	92	353
1995	104	91	52	273	156	74	65	39	39	82	296
1996	85	92	41	233	172	74	59	59	41	85	341
1997	84	67	34	222	166	73	52	82	38	88	383
1998	82	66	38	219	178	72	52	70	36	90	382
1999	95	74	50	214	176	76	55	62	44	86	385
2000	99	67	55	235	187	80	49	77	46	81	367
2001	102	85	51	286	194	83	55	56	40	81	351
2002	90	74	48	258	181	84	52	65	50	80	414
2003	102	103	82	200	124	84	60	58	73	94	471
2004	92	135	113	152	83	87	75	106	88	112	525
2005	85	133	109	166	101	89	72	88	93	119	555
2006	85	130	102	171	115	90	72	84	100	123	565
2007	86	127	97	176	130	91	74	83	108	117	542
2008	86	122	89	182	148	92	76	86	114	107	504
2009	88	114	80	188	167	93	78	94	117	108	495
2010	89	107	73	193	188	94	80	105	118	108	473