

NOTES ON THE INCLUSION OF THE CARCHARHINIDAE SHARKS IN APPENDIX II OF CITES IN RELATION TO THE STOCK STATUS, SCIENTIFIC ADVICE PROVIDED TO THE COMMISSION, AND RELEVANT SHARK MANAGEMENT RECOMMENDATIONS

By

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Below we provide comments about the inclusion of the family Carcharhinidae on CITES Appendix II from the perspective of the scientific work conducted and advice provided by the Standing Committee of Research and Statistics (SCRS) on Atlantic stocks to the International Commission for the Conservation of Atlantic Tunas (ICCAT).

Background Information

- (1) ICCAT is the tuna-RFMO (Regional Fisheries Management Organization) that is responsible for the management and conservation of tuna and tuna-like species in the Atlantic Ocean and adjacent seas. Under the [new ICCAT Convention](#), not yet in force, the mandate of ICCAT will include migratory and oceanic shark species. Since 1994, ICCAT taken on this role to ensure the conservation and management shark species associated with its fisheries, given that no RFMO manages such species in the Atlantic Ocean. The ICCAT Contracting Parties undertake to collaborate with each other with a view to the adoption of suitable effective measures to ensure the application of the provisions of this Convention and in particular to set up a system of international enforcement to be applied to the Convention area. The ICCAT measures are considered the minimum; Contracting and Cooperating Parties may apply more stringent measures. ICCAT has 13 active binding management measures that are in effect specifically for shark species (see **Appendix A**), that include among other things catch limits for shark species (see Recs. [21-10](#) and [21-11](#)) and the requirement for CPCs to take the necessary measures for their fisheries to fully utilize their entire catches of sharks ([Rec. 04-10](#)). Full utilization is defined as retention by the fishing vessel of all parts of the shark excepting head, guts and skins, to the point of first landing.
- (2) Within ICCAT, the Standing Committee on Research and Statistics (SCRS) is the scientific body responsible for providing scientific advice to the Commission. ICCAT has a specific Species Group dedicated exclusively to sharks that regularly carries out stock assessments and provides advice for pelagic, oceanic and highly migratory shark species. ICCAT also has a Subcommittee on Ecosystems and Bycatch that deals with Ecosystem Based Fisheries Management and provides advice for mitigation of the impact of ICCAT fisheries on vulnerable taxa, including sharks. ICCAT established a dedicated Sharks Research and Data Collection Programme in 2014, which has since been funded annually. The Programme focuses on all pelagic shark species. Since its inception multiple research projects have been carried out, focusing on issues such as stock structure (using satellite tagging and population genetics), population dynamics (ageing and reproductive biology), movement patterns, habitat use, and post-release mortality (also using satellite telemetry). All these studies and results have contributed to improve understanding of the dynamics of shark species in the Atlantic, and to provide improved scientific advice to the Commission with regards to the status of shark stocks and management and conservation measures.

Data and Conservation Measures Enforced by ICCAT

- (3) In addition to the regularly conducted stock assessment for porbeagle shark (*Lamna nasus*), shortfin mako shark (*Isurus oxyrinchus*), and blue shark (*Prionace glauca*), in 2008 ICCAT conducted an Ecological Risk Assessment to define shark species at potential risks to sharks species in ICCAT waters, and ICCAT also developed an Identification Guide for *Carcharhinus* species, and other sharks so that its contracting parties could improve their shark statistics.

- (4) Recommendation 19-01 defines 24 species that are the responsibility of ICCAT. **Appendix B** defines the list of species for which ICCAT keeps statistics. This includes the major shark species (Porbeagle shark, shortfin mako shark, blue shark), other species that are the responsibility of ICCAT, and associated species.
- (5) Of the specific species listed in the section A(i) and (ii) of the listing proposal, ICCAT has received reports of catches only for *Carcharhinus obscurus*, *C. plumbeus* and *C. signatus* (see **Appendix C**).
- (6) Once the species list is expanded to include all other species in the family Carcharhinidae (section A (iii) of the proposal) then all species from the genera: *Carcharhinus*, *Isogomphodon*, *Loxodon*, *Nasolamia*, *Lamiopsis*, *Negaprion*, *Prionace*, *Rhizoprionodon*, *Scoliodon*, *Triaenodon* are included. It is worth to mention that there are capture records in ICCAT of species of the Genus *Glyphis*, *Lamiopsis*, *Loxodon*, *Scoliodon* nor *Triaenodon* in the Atlantic Ocean. In this case, 16 species have been reported in ICCAT fisheries (**Table C1** and **Figure C1**). For *C. leucas*, *C. acronotus*, *C. altimus*, *C. brevipinna*, *C. isodon*, *Negaprion brevirostris*, *Rhizoprionodon terraenovae*, *C. brachyurus*, *C. galapagensis* in the last ten years there have been no catches in ICCAT fisheries (see **Appendix C**). Other than for *P. glauca*, for which there is a commercial fishery (see below), *C. falciformis* and *C. longimanus*, there have been no reported catches of other species in these genera in the last 5 years (**Table C1**).
- (7) ICCAT has commercial fisheries for the blue shark *P. glauca*. The **most-recent stock assessment** conducted by ICCAT for blue shark took place in 2015 using catch data up to 2013. The range of stock assessment scenarios explored using a Bayesian Surplus Production (BSP) model showed that the stock was not overfished ($B_{2013}/B_{MSY}=1.50$ to 1.96) and that overfishing was not occurring ($F_{2013}/F_{MSY}=0.04$ to 0.50). While age-structured assessment model scenarios varied more widely, they still predicted that the stock was not overfished ($SSF_{2013}/SSF_{MSY}=1.35$ to 3.45) and that overfishing was not occurring ($F_{2013}/F_{MSY}=0.15$ to 0.75). For the South Atlantic stock, scenarios with the BSP model estimated that the stock was not overfished ($B_{2013}/B_{MSY}=1.96$ to 2.03) and that overfishing was not occurring ($F_{2013}/F_{MSY}=0.01$ to 0.11). The status of the stocks showed that blue sharks are managed sustainably in ICCAT waters. The SCRS has scheduled a new assessment for the North and South Atlantic stocks in 2023.
- (8) With respect to the look-alike issue identified in section A (iii) of the listing proposal, ICCAT requires; i) CPCs take the necessary measures to require that their fishermen fully utilize their entire catches of sharks and fishing vessels are required to retain all parts of the shark including fins and carcasses to the point of first landing (**Rec. 04-10**) (similar measures are in place in other RFMOs) and ii) **Rec. 11-10** requires that CPCs collect data on dead and live discards in their domestic observer and logbook programs under the *Recommendation by ICCAT on Information Collection and Harmonization of Data on By-catch and Discards in ICCAT Fisheries*. **Rec. 04-10** reduces the problems of identifying sharks by their fins alone and ii) **Rec. 11-10** ensures that difficult-to-identify species are also monitored by trained observers thus allowing for the proper assessment and management of their catches. Moreover, according to the shark species identification tool **iSharkFin, developed by FAO**, fins of the 19 species do not morphologically resemble those of blue shark. Given the requirement to land whole sharks, the presence of onboard observers, and the ease of differentiating blue shark fins from other Carcharhinid shark fins, the 19 species are distinguishable even in a hypothetical case where they are caught together with blue shark.
- (9) Catch records show that in practice, there are small or non-existent bycatch for the species proposed in the CITES proposal in the ICCAT area. Furthermore, catches of target fishery for *P. glauca* are not positively correlated with catches of other Carcharhinid sharks (see **Figure C3**).
- (10) In summary, listing of blue shark (*P. glauca*) in CITES Appendix II will not contribute to the conservation of the 19 species for the following reasons:
 - (a) Most of the 19 species concerned are associated to coastal areas and the continental shelf, whose habitat does not overlap with that of blue shark. Blue shark is mainly harvested offshore in controlled fisheries. Therefore, it is unlikely that blue sharks are harvested and landed together with the 19 species (see the evidence for the absence of significant correlation above).
 - (b) Shark species can be identified when they are landed because in ICCAT, fishing vessels are required to retain all parts of the shark including fins and carcasses to the point of first landing. Blue shark and

its parts (carcasses, fins) are clearly distinguishable from other shark species, so they are not confused with other species. Moreover, there are onboard observers to accurately identify the catch, and finally, according to the shark species identification tool [iSharkFin](#) developed by FAO, fins of the 19 species do not morphologically resemble those of blue shark.

- (c) The 19 species are distinguishable from blue shark in trade because shark products (fins and meat) are internationally traded separately by species, portions, and products that have different prices.

**ICCAT CONSERVATION AND MANAGEMENT MEASURES ADOPTED IN RELATION TO
CARCHARHINIDAE AND SPHYRNIDAE**

Below is a list of current active Recommendations (binding) and Resolutions (non-binding) by ICCAT:

- [95-02] Resolution by ICCAT on cooperation with the Food and Agriculture Organization of the United Nations (FAO) with regard to study on the status of stocks and bycatches of shark species
- [03-10] Resolution by ICCAT on the shark fishery
- [04-10] Recommendation by ICCAT concerning the conservation of sharks caught in association with fisheries managed by ICCAT
- [07-06] Supplemental Recommendation by ICCAT concerning sharks
- [10-07] Recommendation by ICCAT on the conservation of oceanic whitetip sharks caught in association with fisheries in the ICCAT Convention area
- [10-08] Recommendation by ICCAT on hammerhead sharks (family *Sphyrnidae*) caught in association with fisheries managed by ICCAT
- [11-08] Recommendation by ICCAT on the conservation of silky sharks caught in association with ICCAT fisheries
- [13-10] Recommendation by ICCAT on biological sampling of prohibited shark species by scientific observers
- [18-06] Recommendation by ICCAT to replace Recommendation 16-13 on improvement of compliance review of conservation and management measures regarding sharks caught in association with ICCAT fisheries
- [19-01] Recommendation By ICCAT on Fishes Considered to be Tuna and Tuna-Like Species Or Oceanic, Pelagic, and Highly Migratory Elasmobranchs
- [19-07] Recommendation by ICCAT amending the Recommendation 16-12 on management measures by ICCAT amending the Recommendation 16-12 on management measures for the conservation of the North Atlantic blue shark caught in association with ICCAT fisheries
- [19-08] Recommendation by ICCAT on management measures for the conservation of South Atlantic blue shark caught in association with ICCAT fisheries
- [21-10] Recommendation by ICCAT amending Recommendation 19-07 amending the Recommendation 16-12 on management measures for the conservation of the North Atlantic blue shark caught in association with ICCAT fisheries
- [21-11] Recommendation by ICCAT amending Recommendation 19-08 on management measures for the conservation of South Atlantic blue shark caught in association with ICCAT fisheries

Appendix B

Table B1. Summary of shark species on ICCAT species list. Nei indicated non-identified.

| CODE | Genus, species | Common Name (English) | Category | Taxon |
|------|--|---------------------------------|----------------------|-----------|
| SMA | <i>Isurus oxyrinchus</i> | Shortfin mako | 4-Sharks (major sp.) | 1-Species |
| POR | <i>Lamna nasus</i> | Porbeagle | 4-Sharks (major sp.) | 1-Species |
| BSH | <i>Prionace glauca</i> | Blue shark | 4-Sharks (major sp.) | 1-Species |
| ALV | <i>Alopias vulpinus</i> | Thresher | 5-Sharks (other sp.) | 1-Species |
| BSK | <i>Cetorhinus maximus</i> | Basking shark | 5-Sharks (other sp.) | 1-Species |
| BTH | <i>Alopias superciliosus</i> | Bigeye thresher | 5-Sharks (other sp.) | 1-Species |
| CCG | <i>Carcharhinus galapagensis</i> | Galapagos shark | 5-Sharks (other sp.) | 1-Species |
| CYW | <i>Centroscymnus owstonii</i> | Roughskin dogfish | 5-Sharks (other sp.) | 1-Species |
| ETU | <i>Etmopterus bullisi</i> | Lined lanternshark | 5-Sharks (other sp.) | 1-Species |
| EUP | <i>Euprotomicrus bispinatus</i> <i>Euprotomicroides</i> | pygmy shark | 5-Sharks (other sp.) | 1-Species |
| EUZ | <i>zantedeschia</i> | taillight shark | 5-Sharks (other sp.) | 1-Species |
| FAL | <i>Carcharhinus falciformis</i> | Silky shark | 5-Sharks (other sp.) | 1-Species |
| HXN | <i>Hexanchus nakamurai</i> | bigeye sixgill shark | 5-Sharks (other sp.) | 1-Species |
| ISB | <i>Isistius brasiliensis</i> | Cookie cutter shark | 5-Sharks (other sp.) | 1-Species |
| ISP | <i>Isistius plutodus</i> | largetooth cookiecutter shark | 5-Sharks (other sp.) | 1-Species |
| LMA | <i>Isurus paucus</i> | Longfin mako | 5-Sharks (other sp.) | 1-Species |
| LMO | <i>Mitsukurina owstoni</i> | goblin shark | 5-Sharks (other sp.) | 1-Species |
| LMP | <i>Megachasma pelagios</i> | Megamouth shark | 5-Sharks (other sp.) | 1-Species |
| OCS | <i>Carcharhinus longimanus</i> | Oceanic whitetip shark | 5-Sharks (other sp.) | 1-Species |
| PLS | <i>Pteroplatytrygon violacea</i> | Pelagic stingray | 5-Sharks (other sp.) | 1-Species |
| PSK | <i>Pseudocarcharias kamoharai</i> | Crocodile shark | 5-Sharks (other sp.) | 1-Species |
| QUL | <i>Squaliolus laticaudus</i> | Spined pygmy shark | 5-Sharks (other sp.) | 1-Species |
| RHN | <i>Rhincodon typus</i> | Whale shark | 5-Sharks (other sp.) | 1-Species |
| RMA | <i>Manta alfredi</i> | Inshore manta ray | 5-Sharks (other sp.) | 1-Species |
| RMB | <i>Manta birostris</i> | Giant manta | 5-Sharks (other sp.) | 1-Species |
| RMH | <i>Mobula hypostoma</i> | Lesser devil ray | 5-Sharks (other sp.) | 1-Species |
| RMJ | <i>Mobula japonica</i> | Spinetail mobula | 5-Sharks (other sp.) | 1-Species |
| RMM | <i>Mobula mobular</i> | Devil fish | 5-Sharks (other sp.) | 1-Species |
| RMN | <i>Mobula rochebrunei</i> | Lesser Guinean devil ray | 5-Sharks (other sp.) | 1-Species |
| RMO | <i>Mobula thurstoni</i> | Smoothtail mobula | 5-Sharks (other sp.) | 1-Species |
| RMT | <i>Mobula tarapacana</i> | Chilean devil ray | 5-Sharks (other sp.) | 1-Species |
| SDH | <i>Deania histricosa</i> | Rough longnose dogfish | 5-Sharks (other sp.) | 1-Species |
| SDU | <i>Deania profundorum</i> | Arrowhead dogfish | 5-Sharks (other sp.) | 1-Species |
| SPK | <i>Sphyrna mokarran</i> | Great hammerhead | 5-Sharks (other sp.) | 1-Species |
| SPL | <i>Sphyrna lewini</i> | Scalloped hammerhead | 5-Sharks (other sp.) | 1-Species |
| SPZ | <i>Sphyrna zygaena</i> | Smooth hammerhead | 5-Sharks (other sp.) | 1-Species |
| WSH | <i>Carcharodon carcharias</i> | Great white shark | 5-Sharks (other sp.) | 1-Species |
| SPN | <i>Sphyrna spp</i> | Hammerhead sharks nei | 5-Sharks (other sp.) | 2-Genus |
| THR | <i>Alopias spp</i> | Thresher sharks nei | 5-Sharks (other sp.) | 2-Genus |
| MAN | <i>Mobulidae</i> | Mantas, devil rays nei | 5-Sharks (other sp.) | 4-Family |
| MSK | <i>Lamnidae</i> | Mackerel sharks, porbeagles nei | 5-Sharks (other sp.) | 4-Family |
| RSK | <i>Carcharhinidae</i> | Requiem sharks nei | 5-Sharks (other sp.) | 4-Family |
| SPY | <i>Sphyrnidae</i> | Hammerhead sharks, etc. nei | 5-Sharks (other sp.) | 4-Family |
| STT | <i>Dasyatidae</i> | Stingrays, butterfly rays nei | 5-Sharks (other sp.) | 4-Family |

Appendix C

Table C1. Summary of Atlantic-wide shark catches (in tons) in ICCAT fisheries for species of the Genus *Carcharhinus*, *Negaprion*, *Prionace* and *Rhizoprionodon*.

| YearC | Carcharhinus falciformis | Carcharhinus limbatus | Carcharhinus longimanus | Carcharhinus obscurus | Carcharhinus plumbeus | Carcharhinus signatus | Prionace glauca | Carcharhinus leucas | Carcharhinus acronotus | Carcharhinus altimus | Carcharhinus brevipinna | Carcharhinus isodon | Negaprion brevirostris | Rhizoprionodon terraenovae | Carcharhinus brachyurus | Carcharhinus galapagensis |
|-------|--------------------------|-----------------------|-------------------------|-----------------------|-----------------------|-----------------------|-----------------|---------------------|------------------------|----------------------|-------------------------|---------------------|------------------------|----------------------------|-------------------------|---------------------------|
| 2000 | 93.5 | 18.5 | 4.1 | 48.3 | 174.3 | 91.0 | 36201 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2001 | 39.8 | 9.5 | 9.3 | 1.1 | 180.9 | 30.2 | 30458 | 0.4 | NA | NA | NA | NA | NA | NA | NA | NA |
| 2002 | 30.0 | 21.0 | 2.5 | 2.4 | 106.6 | 9.1 | 26419 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2003 | 6.2 | 14.4 | 3.7 | 0.1 | 119.9 | 0.2 | 31030 | 0.4 | NA | NA | NA | NA | NA | NA | NA | NA |
| 2004 | 8.2 | 201.5 | 1.6 | 0.0 | 49.0 | 0.1 | 29885 | 137.3 | 49.3 | 42.5 | 18.6 | 0.1 | 51.3 | 143.5 | NA | NA |
| 2005 | 13.5 | 6.2 | 3.4 | NA | 60.1 | NA | 30661 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA |
| 2006 | 1.6 | 9.2 | 0.7 | NA | 36.8 | NA | 33283 | 0.1 | NA | NA | NA | NA | NA | NA | NA | NA |
| 2007 | 214.5 | 1.1 | 21.8 | 19.2 | 11.0 | 12.7 | 38628 | NA | NA | 0.0 | NA | NA | NA | NA | 0.0 | 0.0 |
| 2008 | 26.4 | 0.0 | 5.9 | 1.8 | 2.5 | 41.9 | 45895 | 0.5 | NA | 0.1 | NA | NA | NA | NA | 0.6 | NA |
| 2009 | 67.4 | 0.3 | 49.8 | 12.8 | 22.2 | 35.2 | 52270 | 0.2 | NA | 0.0 | NA | NA | 0.1 | NA | 0.4 | 1.2 |
| 2010 | 1.1 | 6.6 | 117.0 | 0.0 | 5.2 | 47.3 | 57807 | NA | NA | 0.2 | NA | NA | NA | NA | 0.0 | 0.0 |
| 2011 | 103.8 | 0.8 | 4.0 | 8.2 | 8.4 | 11.9 | 62107 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2012 | 39.6 | 0.0 | 3.0 | 6.9 | 4.2 | 31.1 | 54869 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2013 | 18.8 | 0.0 | 1.0 | 2.5 | 5.8 | 21.3 | 48599 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2014 | 24.6 | 0.0 | 0.0 | 3.7 | 0.0 | 0.0 | 51854 | NA | NA | 0.0 | NA | NA | NA | NA | 0.0 | 0.0 |
| 2015 | 22.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 52894 | NA | NA | 0.0 | NA | NA | NA | NA | 0.0 | 0.0 |
| 2016 | 11.3 | NA | 1.4 | NA | NA | NA | 58973 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2017 | 90.0 | NA | 1.9 | NA | NA | NA | 58753 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2018 | 23.0 | 0.0 | 1.4 | 0.0 | 0.0 | 0.0 | 56047 | NA | NA | 0.0 | NA | NA | NA | NA | 0.0 | 0.0 |
| 2019 | 7.1 | 0.0 | 1.3 | 0.0 | 0.0 | 0.0 | 52470 | NA | NA | 0.0 | NA | NA | NA | NA | 0.0 | 0.0 |
| 2020 | 15.4 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 42690 | NA | NA | 0.0 | NA | NA | NA | NA | 0.0 | 0.0 |

The annual catch of blue shark by ICCAT CPCs is shown in the **Tables C2** and **C3**.

Table C2. Blue shark (north Atlantic) annual catches (unit: tons).

| | 2016 | 2017 | 2018 | 2019 | 2020 |
|---------|--------|--------|--------|--------|--------|
| EU | 37,269 | 33,209 | 27,014 | 20,956 | 16,282 |
| Japan | 4,217 | 4,444 | 4,111 | 3,855 | 2,328 |
| Morocco | 1,623 | 1,475 | 1,644 | 1,524 | 1,498 |
| Total | 44,797 | 39,766 | 34,052 | 27,271 | 20,899 |

Table C3. Blue shark (south Atlantic) annual catches (unit: tons).

| | 2016 | 2017 | 2018 | 2019 | 2020 |
|----------------|--------|--------|--------|--------|--------|
| EU | 15,716 | 18,151 | 21,530 | 25,250 | 22,067 |
| Namibia | 2,775 | 1,357 | 3,290 | 0 | 4,120 |
| Brazil | 1,334 | 2,177 | 3,011 | 3,784 | 3,435 |
| Japan | 2,127 | 3,112 | 3,495 | 2,507 | 2,102 |
| Chinese-Taipei | 1,992 | 2,053 | 1,373 | 862 | 1,338 |
| Total | 25,415 | 28,374 | 34,382 | 34,732 | 33,652 |

Table C4. Status of blue shark *Prionace glauca* at ICCAT and other tRMFOs.

| Management area | Year | Stock status* | Assessment institution | Reference |
|----------------------|--------------------------|---|--------------------------------|---|
| North/South Pacific | North:2022 South:2021 | Not overfished, overfishing not occurring | North: ISC South: SPC/WCPFC | North: Finalizing a report South: https://meetings.wcpfc.int/node/12552 |
| Indian Ocean | 2021 | Not overfished, overfishing not occurring | IOTC | https://www.iotc.org/documents/stock-assessment-blue-shark-indian-ocean |
| North/South Atlantic | 2015 | Not overfished, overfishing not occurring | ICCAT | https://www.iccat.int/Documents/SCRS/DetRep/BSH_SA_ENG.PDF |

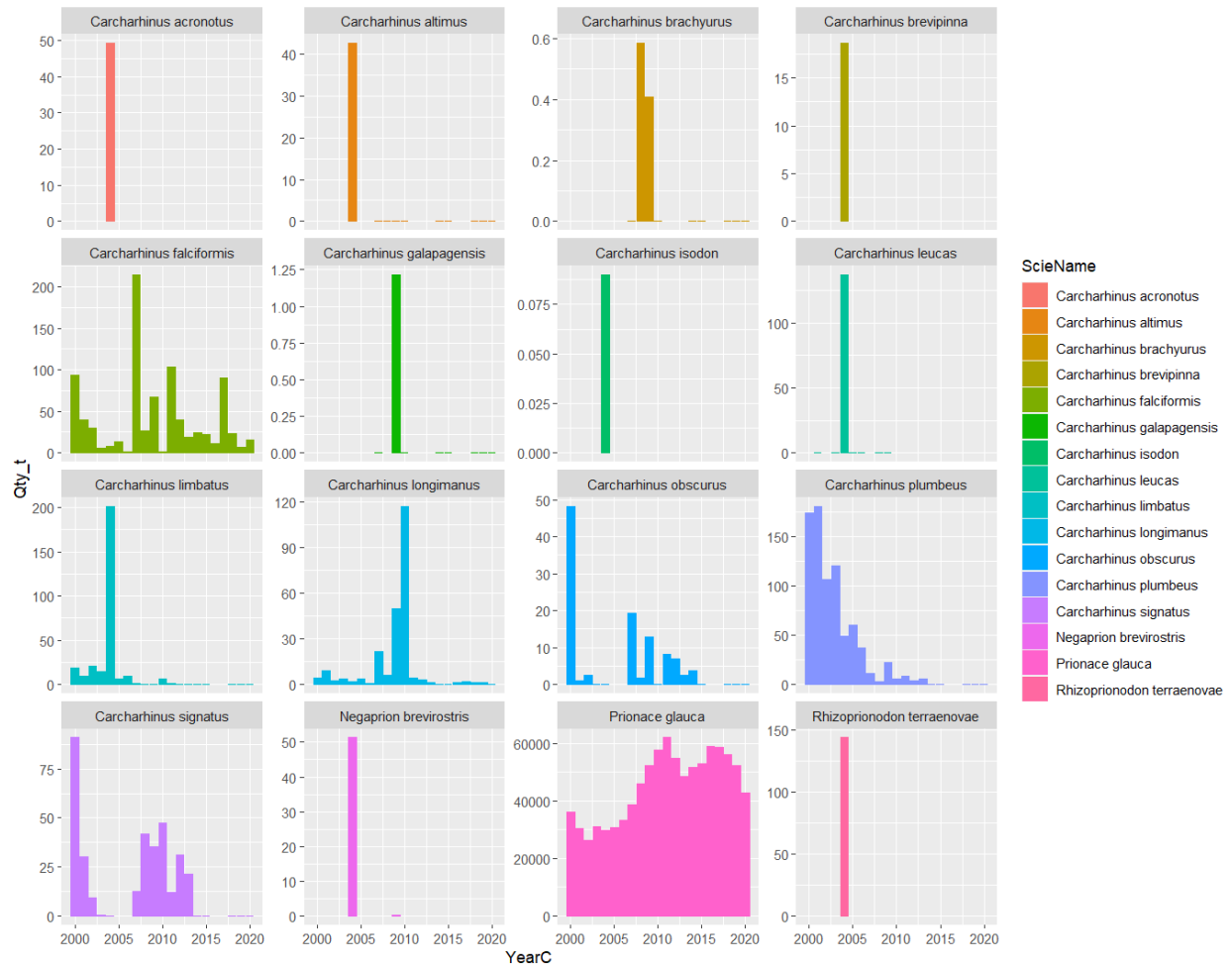


Figure C1. ICCAT Task 1 catches (in tonnes, y axis) by year (x axis) for shark species of the Genus *Carcharhinus*, *Negapriion*, *Prionace*, and *Rhizoprionodon*.

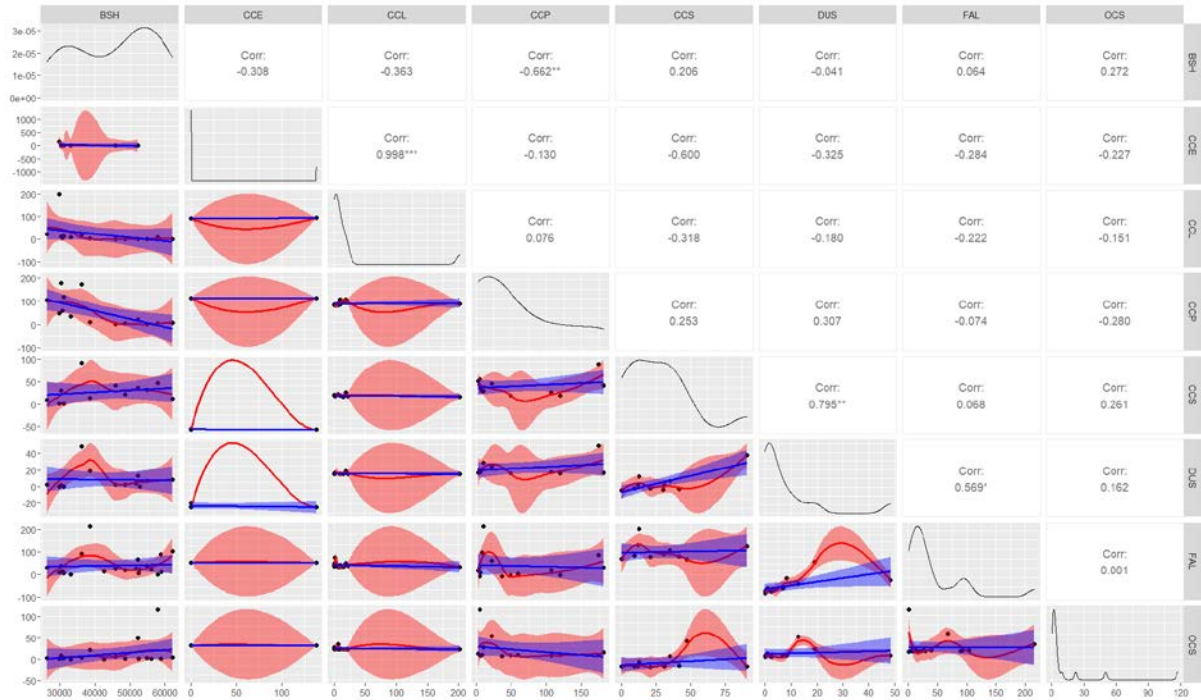


Figure C2. Correlation plot for Task 1 shark species of the Genus *Carcharhinus*, the Genus *Negaprion*, the Genus *Prionace*, and the Genus *Rhizoprionodon*. Species codes are listed in **Table 1**. The lower left triangle shows plots of Loess smoothed fit in red, and linear fits in blue. The upper right triangle represents the correlation coefficients for each species pair. The statistical significance of the correlations are marked as: *** if the p-value is < 0.001, ** if the p-value is < 0.01, *if the p-value is < 0.05, "." if the p-value is < 0.10.