



**TO: Public Comments Processing,
Attn: FWS-R9- IA-2011-0087
Division of Policy and Directives Management;
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM, Arlington VA 22203**

DATE: June 10, 2012

RE: Comments on Taxa Being Considered for Amendments to the CITES Appendices

Shark Savers is an ocean conservation organization dedicated to improving protections for sharks and rays. In that capacity, we closely monitor and analyze reports and assessments on those elasmobranch species that are in greatest need of protection. We recently co-led and co-authored the most comprehensive study of threats now arrayed against manta and mobula rays as part of the global Manta Ray of Hope Project. Manta Ray of Hope, which is a collaborative project of Shark Savers, WildAid, The Manta Trust and the world's leading manta ray experts, recently completed in depth investigations of the primary markets and fisheries serving the international trade in manta and mobula rays. The new information related to the increasing exploitation of these species is significant and worthy of your urgent attention (see enclosed report "The Global Threat to Manta and Mobula Rays").

In response to the Fish and Wildlife Services' request for comments (Federal Register Vol. 77, No. 70, April 11, 2012: FWS-R9-IA-2011-0087; 96300-1671-0000 FY12-R4), this letter requests that the appropriate United States' government agencies and representatives propose and/or support amendments to the CITES Appendices to include several shark and manta species, at the up-coming Conference of the Parties to CITES (CoP16).

We strongly recommend that the following species be proposed for inclusion on CITES Appendix I or II:

Manta rays: (*Manta birostris*, *Manta alfredi*)

Sharks:

Bigeye thresher shark (*Alopias superciliosus*), **Common thresher shark** (*A. vulpinus*), **Pelagic thresher shark** (*A. pelagicus*), **Oceanic whitetip shark** (*Carcharhinus longimanus*), **Scalloped hammerhead shark** (*Sphyrna lewini*), **Great hammerhead shark** (*S. mokarran*), **Smooth hammerhead shark** (*S. zygaena*), **Silky Shark** (*Carcharhinus falciformis*), **Longfin mako shark** (*Isurus paucus*), **Shortfin mako shark** (*Isurus oxyrinchus*), **Gulper sharks** (*Centrophorus*), **Sandbar shark** (*Carcharhinus plumbeus*), **Dusky shark** (*Carcharhinus obscurus*), **Porbeagle shark** (*Lamna nasus*),

Justification for inclusion on CITES Appendix I or II:

Manta rays (*Manta birostris*, *Manta alfredi*)

1. Significant new information released after the CoP16 related notice in June 2011 indicate that *Manta spp.* clearly qualify for inclusion on Appendix II in accordance with Annex 2a (criteria A and B) Qualifying Criteria (Conf. 9.24 Rev. CoP15), and that some populations may meet the criteria for inclusion on Appendix I.

In December 2011, the Manta Ray of Hope project investigated and documented a substantial trade in manta ray gill rakers that appears to be increasing (Heinrichs et al. 2011). In turn, this trade is driving unsustainable, unregulated directed fisheries, resulting in substantial population declines that may threaten the survival of these species. Results contained in Heinrichs et al are being prepared for submission to a peer-reviewed journal and are also included in a draft proposal for listing of the genus *Manta*, which is under development and close to completion. Key points contained in this proposal include:

- **Fishery pressure on manta rays has increased significantly over the past ten years due to an emerging market for dried gill rakers used in Traditional Chinese Medicine** (Dewar 2002, White et al. 2006, Rajapackiam et al. 2007, White and Kyne 2010, Heinrichs et al. 2011). For example, fishermen in Lamakera, Indonesia, shifted from catching whales to targeting manta rays in response to the increased demand for gill rakers. Fishers in Sri Lanka, who used to avoid setting their nets in areas where manta rays were spotted and discarded them (alive or dead) when caught incidentally, have begun actively target manta rays over the past five years due to the market for their gill rakers. This increase in fishing pressure is driving regional *Manta spp.* populations toward commercial extinction (Heinrichs et al. 2011).
- **In recent years, fishers have begun targeting *Manta spp.* using modern fishing gear and expanding their fishing ranges and seasons.** This is in contrast to historical subsistence fishing for *Manta spp.* that occurred in isolated locations with simple gear, restricting the distance and time fishermen could travel to hunt and the resulting quantities of take.
- ***Manta spp.* are among the least fecund of all elasmobranchs, making them exceptionally vulnerable to exploitation** (Couturier et al. 2012). Mantas bear only one pup on average every two to three years, have a gestation period of 10 – 14 months (Homma et al. 1999; Andrea Marshall, unpublished data, Tofo, Mozambique; Mocava de Rosemont pers. comm. Bora Bora, French Polynesia) and reach maturity at about 10 years of age (IUCN Red List 2011). An extensively studied population in the Maldives indicates that female *M. alfredi* may not mate until 15 years of age or more and give birth on average to only one pup every five years (G. Stevens in prep.). For perspective, the great white shark (*Carcharodon carcharias*), which is listed on CITES Appendix II, may produce as many or more pups in a single litter as a manta ray does in its entire lifetime.

Other characteristics make *Manta spp.* especially vulnerable to fisheries including their large size, slow swimming speed, aggregating behavior, small population sizes, predictable habitat use, and lack of human avoidance (Marshall et al. 2011a).

- **Recent declines of 37.5% to 87% over 10 to 30 years have been documented in certain key range states** (Dewar 2002, Heinrichs et al. 2011; White et al. 2006; Alava et al. 2002; IUCN Red List 2011). For example, landings estimates from Lamakera, a directed manta fishery in Indonesia, were 660 *M. birostris* for 2010 (Heinrichs et al. 2011) compared with annual landings estimates of 1,050 to 2,400 reported ten years earlier (Dewar 2002). An ongoing observational study on *Manta spp.* abundance in Southern Mozambique reports an 87% decline in *M. alfredi* over the last nine years (Marshall et al. 2011b). Significant declines have also been observed in targeted fisheries and via diver surveys in aggregation areas where tourism operations exist (Heinrichs et al. 2011, IUCN Red List 2011). Commercial extinction and local extirpation is already suspected in certain areas (IUCN Red List 2011, Homma et al. 1999, Notarbartolo di Sciara 1995). Where protected, some sub-

populations appear to be stable (The Maldives, Yap, Palau, Hawaii). Annual landings of approximately 3,400 manta rays are estimated globally, with the largest manta ray fisheries located in Indonesia, Sri Lanka and India. (Heinrichs et al. 2011).

- **The primary markets identified for *Manta spp.* gill rakers are Guangzhou, China; Hong Kong; Macau; and Singapore**, with an estimated 99% of the market based in Guangzhou. Market surveys estimate the annual volume of *Manta spp.* gill raker trade at approximately 21,000 kg of dried gill rakers with an estimated annual trade value of USD \$5 million (Heinrichs et al. 2011).
- **Non-consumptive tourism activities with *Manta spp.* are threatened by continued unsustainable and unregulated fisheries. This tourism revenue greatly surpasses that of fisheries and can provide ongoing sustainable income to fishing communities.** Tourism revenues from *Manta spp.* diving operations at just seven surveyed locations resulted in estimated economic benefits of US\$50 million per year, with expected global tourism value of US\$100 million or more per year (Heinrichs et al. 2011). *Manta spp.* tourism relative to fisheries value in Indonesia, the world's largest fishery for manta rays, produces estimated tourism revenues in excess of US\$18 million per year compared with fishery revenues of only ~US\$550 thousand annually (O'Malley et al. *in prep.*).

2. Recent examples of the broad international consensus regarding the vulnerability of these species.

- New IUCN Red List assessments released late in 2011 now categorize *Manta birostris* and *Manta alfredi* as Vulnerable with declining population trends.
- In November 2011, Convention on the Conservation of Migratory Species (CMS) delegates voted overwhelmingly in favor of Ecuador's proposal to list *M. birostris* on its Appendices I and II.

Sharks:

The following species include those most prevalent within the shark fin trade. All are listed by the IUCN as Endangered, Vulnerable or Near Threatened and are faced with declining populations. Based on the marked recent population declines and continued international trade demand for these species' valuable fins, it is likely that all of the following shark species qualify for CITES Appendix I or II listing.

Thresher sharks (3 species)

Bigeye thresher shark (*Alopias superciliosus*); Common thresher shark (*A. vulpinus*) and Pelagic thresher shark (*A. pelagicus*) as look-alike species

- IUCN listing: Vulnerable
- Bigeye thresher sharks caught as bycatch and targeted for their fins and meat.
- Thresher spp. make up approximately 2.3 percent of the shark-fin trade in Hong Kong (Clarke et al. 2006a).
- Up to four million thresher sharks caught for fin trade every year worldwide (Clarke et al. 2006b)
- Population declines
 - 83% decline in Bigeye Threshers in the Eastern Central Pacific from the 1950s to the 1990s (Pelagic Longline research surveys; Goldman et al. 2009)

SHARK SAVERS

- 70% decline in Common Threshers in the Eastern Central Pacific from the late 1970s to 1980s (Drift Gillnet Fishery landings from the US Pacific; Goldman et al. 2009)
- 50 to 80% decline in Common Threshers in the Northwest and Western Central Atlantic from 1986 to 2005 (US Pelagic Longline data; Baum et al. 2003)
- 60 to 75% decline in Common Threshers in the Northeast Atlantic from the 1990s to 2002 (Goldman et al. 2009)

Oceanic whitetip shark (*Carcharhinus longimanus*)

- IUCN Listing: Critically Endangered in the northwest and central Atlantic Oceans; Vulnerable globally.
- Frequently caught as bycatch in tuna and swordfish fisheries and kept or finned due to their large, distinctive, and sought after fins.
- Approximately 1.8 percent of the Hong Kong shark-fin trade (Clarke et al. 2006a)
- Estimated 250,000 to 1.3 million caught for fin trade every year worldwide (Clarke et al. 2006b)
- Population declines:
 - 70% decline from 1992 to 2000 in the Northwest and West Central Atlantic (US Pelagic Longline logbook data; Baum et al. 2003)
 - 99% decline in 40 years in the Gulf of Mexico (US Pelagic Longline logbook data; Baum and Myers 2004)
 - 90% percent decline in biomass in the Pacific (pelagic longline surveys and observer data; Ward and Myers, 2005)
 - Virtual extirpation in Eastern Pacific (Purse seine data; Román-Verdesoto and Orozco-Zöllner, 2005)

Hammerhead Sharks (3 species)

Scalloped hammerhead shark (*Sphyrna lewini*); Great hammerhead shark (*S. mokarran*) and Smooth hammerhead shark (*S. zygaena*) as look-alike species

As the United States proposed listing of these hammerhead species at CoP15 and just narrowly missed the 2/3's required vote despite overwhelming scientific evidentiary support, we urge another attempt at CoP16.

- IUCN listing: Scalloped and great hammerheads are Endangered; smooth hammerheads are Vulnerable
- Targeted for their high value fins; the meat is generally not consumed. Scalloped hammerheads frequently aggregate in large numbers, making them more vulnerable to fishing.
- These three hammerhead species combined make up approximately 6 percent of the Hong Kong shark-fin trade (Clarke et al, 2006a)
- Estimated 1.3 million to 2.7 scalloped and smooth hammerheads caught for fin trade every year (Clarke et al. 2006b)
- DNA testing of 62 fins obtained in Hong Kong market: 21 percent were from endangered scalloped hammerhead populations (Chapman et al. 2008)
- Population declines:
 - Northwest and Western Central Atlantic: 89% decline since 1986 (US pelagic longline logbook - Baum et al. 2003; Jiao et al. 2009)
 - Mediterranean Sea: >99% since the early 19th century (Ferretti et al. 2008)

- South Africa: 64% for scalloped hammerhead, 79% for great hammerhead from 1978-2003 (Dudley and Simpfendorfer 2006)
- Eastern Atlantic: 80% decline of great hammerhead (Anonymous 2002, Citation from Camhi et al. 2007 “The Conservation Status of Pelagic Sharks and Rays” Report of the IUCN Shark, Specialist Group)
- West Africa: landings of great hammerheads have collapsed (Anonymous 2002, Citation from Camhi et al. 2007 “The Conservation Status of Pelagic Sharks and Rays” Report of the IUCN Shark Specialist Group.)
- Off Queensland coast in Australia: 85% decline over 44 years (de Jong and Simpfendorfer, 2009 - CITES CoP15 Analysis)
- Southern Brazil:
 - 93% decline 1994 to 2008 (Kotas 2004; Kotas 2009).
 - More than an 80% decline in Sphyrnid catches 1995–2005 (Kotas et al., 2008 CITES CoP15 Analysis)
- Northwest Atlantic: 98% for scalloped hammerhead, 99% or more for smooth hammerhead 1972 to 2000 (Myers et al. 2007)
- Southern Mexico Pacific coast: 62% decline in landings of scalloped hammerheads reported (Soriana et al. 2006)
- US Atlantic: has shown a 90% decline of great hammerheads 1986 to 2000 (Pelagic fishery logbook data; Baum et al. 2003)
- Belize: dramatic declines leading to collapse of the fishery.
- Gulf of Mexico: >99% decline of scalloped hammerhead since 1834 (Baum and Myers, 2004)

Silky Shark (*Carcharhinus falciformis*)

- IUCN listing: Vulnerable in Eastern Central and Southeast Pacific; Near Threatened globally.
- Ranked as the most vulnerable species to Atlantic longline fisheries, due to their low rate of productivity and high likelihood of capture and mortality. (E. Cortés et al. 2010)
- Targeted and frequently caught as bycatch, including by longline and purse seines targeting tuna and swordfish, especially in the eastern Pacific Ocean where they are the most commonly caught shark by this fishery.
- Third most commonly traded species in the fin trade. (Clarke et al. 2006a)
- Estimated 500,000 to 1.5 million caught for fin trade every year worldwide (Clarke et al. 2006b)
- Population declines:
 - 63% decline from 2000 to 2004 worldwide (Bonfil et al. 2009)
 - 85% decline in 19 years in the Northwest Atlantic (Bonfil et al. 2009)
 - 91% decline in 40 years (3 generations) in the Gulf of Mexico (Baum and Myers 2004)
 - 65% decline from 1993 to 2004 in the East Central Pacific (Bonfil et al. 2009)
 - 65% decline from 1993 to 2004 in the Southeast Pacific (Bonfil et al. 2009)
 - 90% decline in the Tropical Central Pacific (Bonfil et al. 2009)
 - 60% decline in Costa Rica from 1991 to 2000 (Bonfil et al. 2009)

Mako shark (2 species)

Shortfin mako (*Isurus oxyrinchus*) and Longfin mako shark (*Isurus paucus*) as a look-alike species.

- IUCN Listing: Mediterranean Sea, shortfin mako are Critically Endangered; Globally, both species are listed as Vulnerable
- Shortfin mako sharks are valued for both their meat and fin as a recreational game fish.
- Approximately 2.7 percent of the Hong Kong shark-fin trade (Clarke et al. 2006a)
- Estimated 600,000-900,000 shortfin mako caught for fin trade every year worldwide (Clarke et al. 2006b)
- Population declines – Shortfin mako:
 - More than 99% decline in the Mediterranean Sea from the 1950s to 1970s (Boero and Carli 1979)
 - More than 99% decline in the Adriatic Sea from the late 19th century / early 20th century to 1972 (Soldo and Jardas 2002)
 - 40% decline in the Northwest Atlantic from 1986 to 2000 (Baum et al. 2003)
 - 48% decline from 1992 to 2005 in the Northwest Atlantic (Cortes et al. In prep)
 - More than 50% decline in Catch per Unit Effort in the Northwest Atlantic (2004 ICCAT Stock Assessment; Cailliet et al. 2009)

Sandbar shark (*Carcharhinus plumbeus*)

- IUCN Listing: Vulnerable
- Population declines:
 - 65% decline in Australia (McAuley et al. 2005)
 - 97% decline in the Northwest Pacific from 1992 to 2004 (Japan Fisheries Agency 2006; Musick et al. 2009b)
 - 84 to 97% decline in the Northwest Atlantic in 13 to 41 years (Myers et al. In prep)
 - 85 to 90% decline in 10 years in the South Atlantic United States (IUCN 2010)

Dusky shark (*Carcharhinus obscurus*)

- IUCN Listing: Vulnerable
- Population declines:
 - More than 75% decline in Catch per Unit Effort from the early 1970s to 2004 in Southwest Australia (Musick et al. 2009a)
 - 62 to 92% decline from 1974 to 2003 in the Northwest and West Central Atlantic (NMFS Stock Assessment 2006; Musick et al. 2009)
 - 70% decline from 1992 to 2005 in the Northwest and West Central Atlantic (US Atlantic Pelagic longline observer data analysis; Musick et al. 2009)
 - 79% decline in the Gulf of Mexico from the mid 1950s to the late 1990's (US Pelagic longline research surveys and observer data; Baum and Myers 2004)

The following species are not a significant component of the shark fin trade. Porbeagle is targeted primarily for its meat (but also its fins) and the deep sea shark species included here are being over-exploited primarily for their highly valuable liver oil for use in squalene. These species are highly vulnerable to exploitation and we strongly urge that the US propose them for inclusion on CITES Appendix I or II.

Porbeagle shark (*Lamna nasus*)

- IUCN listing: Critically Endangered in the northeast Atlantic and Mediterranean; Endangered in the northwest Atlantic; Vulnerable globally
- While all the shark species listed here are slow to reproduce, Porbeagles are especially vulnerable, reaching maturity only after 18 to 26 years and producing on average 4 pups per litter.
- Heavily exploited as bycatch and targeted fisheries for their large fins and high-value meat.
- Population declines:
 - Northwest Atlantic: decrease of female spawning stock to between 12 and 16% percent of former levels (ICCAT/ICES 2009;)
 - Northeast Atlantic: 90 percent depletion of biomass (ICCAT/ICES 2009)
 - Southwest Atlantic spawning stock indicates biomass is down to 18 percent of previous levels (ICCAT/ICES 2009; Kell et al. 2009).
 - Mediterranean Sea, collapse of fishery (Megalofonou et al. 2000)

Portuguese shark (*Centroscymnus coelolepis*)

- A deep sea shark species extremely vulnerable to overexploitation both targeted and caught by bycatch by trawl, hook and gillnet fisheries for its liver oil and flesh. Also the victim of much unregulated and illegal fishing.
- IUCN Listing: Endangered in the Northeast Atlantic; Vulnerable globally
- Population declines: This species has been rapidly depleted wherever it has been commercially exploited (OSPAR. 2010. OSPAR Commission. Background Document for Portuguese dogfish).

Leafscale gulper (Deepwater Spiny Dogfish) (*Centrophorus squamosus*) and Gulper sharks in general (*Centrophorus*)

- Species of Centrophoridae are believed to have the lowest reproductive potential of all elasmobranch species, reaching maturity only after 35 years.
- IUCN Listing: Leafscale gulper is Endangered in the Northeast Atlantic; Vulnerable globally
- Leafscale gulper is highly sought after primarily for its highly valued liver oil, although its meat, and to a lesser degree, its fins, are also marketed.
- Population declines:
 - Intensive fishing has led to the rapid collapse of *Centrophorus* species.
 - South-east Australia, the upper slope shark fishery collapsed, with 98-99 percent declines for *Centrophorus* species over a 20 year period (Kyne and Simpfendorfer 2007).
 - A gulper shark liver oil fishery in the Maldives collapsed (Kyne and Simpfendorfer 2007).
 - Northeast Atlantic, deep sea shark fishing collapsed (Kyne and Simpfendorfer 2007).


SHARK SAVERS

Thank you for your time and consideration of these important issues. Should you have any questions or if we can provide you with any additional information, please feel free to contact us.

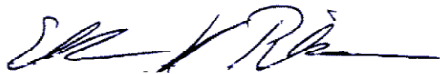
Sincerely,



Michael Skoletsky
Executive Director, Shark Savers
michael.skoletsky@sharksavers.org



Guy Stevens
Director, The Manta Trust
guy@mantatrust.org



Ellen K. Pikitch, Ph.D.
Professor and Executive Director, Institute for Ocean Conservation Science
Stony Brook University, and
Board Member, Shark Savers
Ellen.pikitch@stonybrook.edu



Shawn Heinrichs
Director, Manta Ray of Hope Project
Board Member, Shark Savers
Shawn.heinrichs@bluespheremedia.com

References:

- Alava, E.R.Z., Dolumbaló, E.R., Yaptinchay, A.A., and Trono, R.B. 2002. Fishery and trade of whale sharks and manta rays in the Bohol Sea, Philippines. In: Fowler, S.L., Reed, T.M., Dipper, F.A. (eds) Elasmobranch Biodiversity, Conservation and Management: Proceedings of the International Seminar and Workshop. Sabah, Malaysia, July 1997, pp 132–148
- Anonymous. 2002. Conservation et la Gestion des populations de Requins. Commission Sous-Régionale des Pêches, Secrétariat Permanent. Saly-Portuda, du 27–29 mai 2002. 14 pp. In: Camhi, M. D., S. V. Valenti, Fordham, S.V., Fowler, S.L., and Gibson, C. 2009. The Conservation Status of Pelagic Sharks and Rays: Report of the IUCN Shark Specialist Group Pelagic Shark Red List Workshop. Newbury, UK, IUCN Species Survival Commission Shark Specialist Group.
- Baum, J. K., R. A. Myers, Kehler, D.G., Worm, B., Harley, S.J., and Doherty, P.A. 2003. Collapse and conservation of shark populations in the northwest Atlantic. *Science*, 299: 4.
- Baum, J. K., Myers, R.A., Kehler, D.G., Worm, B., Harley, S.J., and Dhoerty, P.A. 2003. Collapse and conservation of shark populations in the northwest Atlantic. *Science*, 299: 4.
- Baum, J. K. and Myers, R.A. 2004. Shifting baselines and the decline of pelagic sharks in the Gulf of Mexico. *Ecology Letters*, 7: 11.
- Beerkircher, L.R., Brown, C.J. and Lee, D. 2002. SEFSC pelagic observer program data summary for 1992-2000. NOAA Technical Memorandum. National Marine Fisheries Service.
- Bonfil, R., Amorim, A., Anderson, C., Arauz, R., Baum, J., Clarke, S.C., Graham, R.T., Gonzalez, M., Jolón, M., Kyne, P.M., Mancini, P., Márquez, F., Ruíz, C. & Smith, W. 2009. *Carcharhinus falciformis*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>.
- Cailliet, G.M., Cavanagh, R.D., Kulka, D.W., Stevens, J.D., Soldo, A., Clo, S., Macias, D., Baum, J., Kohin, S., Duarte, A., Holtzhausen, J.A., Acuña, E., Amorim, A. & Domingo, A. 2009. *Isurus oxyrinchus*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>. Downloaded on 08 June 2012.
- Chapman, D.D., Pinhal, D., and Shivji, M.S. 2009. Tracking the fin trade: genetic stock identification in western Atlantic scalloped hammerhead sharks *Sphyrna lewini*. *Endangered Species Research*, 9: 221-228.
- Clarke, S.C., Magnussen, J.E., Abercrombie, D.L., McAllister, M.K., Shivji, M.S.a_2006a. Identification of shark species composition and proportion in the Hong Kong shark fin market based on molecular genetics and trade records. *Conservation Biology*, 20(1): 201-211.
- Clarke, S. C., M. K. McAllister, Milner-Gulland, E.J., Kirkwood, G.P., Michielsens, C.G.J., Agnew, D.J., Pikitch, E.K., Nakano, H., and Shivji, M.S.b. 2006b. Global estimates of shark catches using trade records from commercial markets. *Ecology Letters* 9: 12.
- Cortes, E., Arocha, F., Beerkircher, L., Carvalho, F., Domingo, A., Heupel, M., Holtzhausen, H., Santos, M.N., Ribera, M., and Simpfendorfer, C. Ecological risk assessment of pelagic sharks caught in Atlantic pelagic longline fisheries. *Aquatic Living Resources*, 23: 25-34.
- Cortes et al. in prep. In: Cailliet, G.M., Cavanagh, R.D., Kulka, D.W., Stevens, J.D., Soldo, A., Clo, S., Macias, D., Baum, J., Kohin, S., Duarte, A., Holtzhausen, J.A., Acuña, E., Amorim, A. & Domingo, A. 2009. *Isurus oxyrinchus*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>. Downloaded on 08 June 2012.

Couturier, L.I.E., Marshall, A.D., Jaine, F.R.A., Kashiwagi, T., Pierce, S.J., Townsend, K.A., Weeks, S.J., Bennett, M.B., and Richardson, A.J. 2012. The Biology and Ecology of the Mobulidae. In: Journal of Fish Biology.

de Jong S, and Simpfendorfer C. 2009. The Queensland Shark Control Program: a fisheries-independent assessment of shark stocks in far north Queensland. 8th Indo Pacific Fish Conference and 2009 Australian Society for Fish Biology Workshop and Conference, 31 May – 5 June 2009, Freemantle, Western Australia

Dewar, H. (2002). Preliminary report: Manta harvest in Lamakera. p. 3 p. Oceanside, USA: Report from the Pflieger Institute of Environmental Research and the Nature Conservancy.

Dudley, S. and Simpfendorfer, C. 2006. Population status of 14 shark species caught in the protective gillnets off KwaZulu-Natal beaches, South Africa, 1978-2003. Marine and Freshwater Research 57: 225-240.

Ferretti, F. Myers, R.A., Serena, F., and Lotze, H.K. 2008. Loss of large predatory sharks from the Mediterranean Sea. Conservation Biology, 22(4): 952-964.

Goldman, K.J., Baum, J., Cailliet, G.M., Cortés, E., Kohin, S., Macías, D., Megalofonou, P., Perez, M., Soldo, A. & Trejo, T. 2009. *Alopias vulpinus*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>.

Homma, K., Maruyama, T., Itoh, T., Ishihara, H., and Uchida, S. 1999. Biology of the manta ray, *Manta birostris* Walbaum, in the Indo-Pacific. In: Seret, B. and Sire, J.Y. (eds) Indo-Pacific fish biology: Proc 5th Int Conf Indo-Pacific Fishes, Noumea, 1997. Ichthyological Society of France, Paris, p 209–216

Jiao, Y., C. Hayes and E. Cortes. 2009. Hierarchical Bayesian approach for population dynamics modeling of fish complexes without species-specific data. ICES Journal of Marine Science 66:367-387

Kell, L., Campana, S., McCully, S., Fowler, S., Cortes, E., Babcock, E., Scott, G., Ellis, J., Domingo, A., and Restrepo. 2010. Report of the 2009 Porbeagle stock assessment meeting. Collective Volume of Scientific Papers – ICCAT, 65(6): 1909-2005.

Kotas, J.E., 2004. Dinâmica de populações e pesca do tubarão-martelo *Sphyrnalewini* (Griffith & Smith, 1834), capturado no mar territorial e zona econômica exclusiva do sudeste-sul do Brasil. São Carlos: Universidade de São Paulo. 377 p. Tese de Doutorado em Ciências da Engenharia Ambiental.

Kotas, J.E., Petrere, M. Jr., Fielder, F., Mastrochirico, V. and Sales, G. (2008). A pesca de emalhe-de-superfície de Santa Catarina direcionada à captura dos tubarões-martelo, *Sphyrna lewini* (Griffith & Smith 1834) e *Sphyrna zygaena* (Linnaeus 1758). Atlântica, Rio Grande, 30(2) 113–128.

Kotas, J. 2009. in litt. to IUCN/TRAFFIC Analyses Team, Cambridge, UK.

Kyne, P.M., and Simpfendorfer, C.A. 2007. A collation and summarization of available data on deepwater chondrichthyans: biodiversity, life history and fisheries. A report prepared by the IUCN SSC Shark Specialist Group for the Marine Conservation Biology Institute.

Marshall, A.D., Dudgeon, C.L. and Bennett, M.B. 2011a. Size and structure of a photographically identified population of manta rays *Manta alfredi* in southern Mozambique. Marine Biology, 158 (5): 1111-1124.

Marshall, A., Kashiwagi, T., Bennett, M.B., Deakos, M., Stevens, G., McGregor, F., Clark, T., Ishihara, H. & Sato, K. 2011b. *Manta alfredi*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>.

Marshall, A., Bennett, M.B., Kodja, G., Hinojosa-Alvarez, S., Galvan-Magana, F., Harding, M., Stevens, G. & Kashiwagi, T. 2011c. *Manta birostris*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>.

McAuley, R., Lenanton, R., Chidlow, J., Allison, R. and Heist, E. 2005. Biology and stock assessment of the thickskin (sandbar) shark, *Carcharhinus plumbeus*, in Western Australia and further refinement of the dusky shark, *Carcharhinus obscurus*, stock assessment. Final Fisheries Research and Development Corporation Report - Project 2000/134, Fisheries Research Report No. 151, Department of Fisheries, Western Australia, 132pp.

Megalofonou, P., D. Damalas, C. Yannopoulos, G. De Metrio, M. Deflorio, J. M. de la Serna, and D. Macias. 2000. Bycatches and discards of sharks in the large pelagic fisheries in the Mediterranean Sea. European Union Project 97/50 Directorate General XIV/C1, 336 p. Directorate-General for Fisheries and Maritime Affairs, European Commission, Rue Joseph II, 99, B-1049 Brussels.

Musick, J.A., Grubbs, R.D., Baum, J. & Cortés, E. 2009a. *Carcharhinus obscurus*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>.

Musick, J.A., Stevens, J.D., Baum, J.K., Bradai, M., Clò, S., Fergusson, I., Grubbs, R.D., Soldo, A., Vacchi, M. & Vooren, C.M. 2009b. *Carcharhinus plumbeus*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>.

Myers, R.A., Baum, J.K., Shepherd, T. D., Powers, S.P., and Peterson, C.H. 2007 Cascading Effects of the Loss of Apex Predatory Sharks from a Coastal Ocean. *Science*, 315: 1846-1850

Notarbartolo di Sciara, G. 1995. What future for manta rays? *Shark News*, 5: 1.

OSPAR. 2010. Background Document for Portuguese dogfish *Centroscymnus coelolepis*. OSPAR Commission, 19 pp.

Rajapackiam, S. Mohan, S. and Rudramurthy, N. 2007b. Utilization of gill rakers of lesser devil ray *Mobula diabolus* – a new fish byproduct. *Marine Fisheries Information Service, Technical and Extension Series*, 191: 22-23.

Román-Verdesoto, M. and Orozco-Zöller, M. 2005. Bycatches of sharks in the tuna purse-seine fishery of the eastern Pacific Ocean reported by observers of the Inter-American Tropical Tuna Commission, 1993-2004. *Inter-American Tropical Tuna Commission Data Report 11*, La Jolla, CA, 2005.

Solda, A. and Jardas, I., 2002a. Large sharks in the Eastern Adriatic. In: Proc. 4th Elasm. Assoc. Meet., Livorno (Italy) (Vacchi M., La Mesa G., Serena F. & B. Séret, eds), pp. 141- 155. ICRAM, ARPAT & SFI.

Soriana-Velásquez, S.R., Acal-Sánchez, D.E., Castillo-Géniz, J.L., Vázquez-Gómez, N.Y. and Ramírez-Santiago, C.E. (2006). Tiburón del Golfo de Tehuantepec, Pp.323–360. In: Arreguín-Sánchez, F., Beléndez-Moreno, L.F., Méndez Gómez-Humarán, I., Solana Sansores, R., and Rangel-Dávalos (Eds). *Sustentabilidad y Pesca Responsable en México*. Instituto Nacional de la Pesca, SAGARPA, Mexico.

Ward, P. and R. A. Myers. 2005. Shifts in open-ocean fish communities coinciding with the commencement of commercial fishing. *Ecology*, 86(4): 835-847.

White, W., and Kyne, P. 2010. The status of chondrichthyan conservation in the Indo-Australasian region. *Journal of fish biology*, 76(9), 2090-2117

White, W. T., Giles, J., Dharmadi, and Potter, I. C. 2006 b. Data on the bycatch fishery and reproductive biology of mobulid rays (Myliobatiformes) in Indonesia. *Fisheries Research*, 82(1-3), 65-73.