

Five Sawfish Species: the narrow sawfish (*Anoxypristis cuspidate*); dwarf sawfish (*Pristis clavata*); largetooth sawfish (collectively *Pristis pristis*; formerly *Pristis microdon* and *Pristis perotteti*); green sawfish (*Pristis zijsron*); and all non-listed population(s) of smalltooth sawfish (*Pristis pectinata*).

Proposed Rule – Peer Review Report

Peer Reviewers:

Barbara E. Wueringer, Ph.D.
Adjunct Senior Research Fellow
James Cook University
School of Tropical and Marine Biology
1 James Cook Drive
Townsville, Queensland, Australia, 4811
b.wueringer@gmail.com

Lucy R. Harrison
Program Officer
International Union for Conservation of Nature
8888 University Drive
Burnaby, BC, B5A 1S6, Canada
IUCNshark@gmail.com

Peter Matthew Kyne, Ph.D.
Research Fellow
Research Institute for Environmental and Livelihoods
Charles Darwin University
Darwin, Northern Territory, Australia, 0909
peter.kyne@cdu.edu.au

Peer Review Directive:

1. Please provide comments on the scientific information and data contained within the proposed rule. We are interested in any information that you may have on monitoring programs within S. America that may encounter the species and any records of the species occurrence.
2. If you believe that justification is lacking or specific information was applied incorrectly in reaching specific conclusions, please specify.
3. Please provide your comments by August 8, 2013.

Comments:

- Comment “In the last paragraph of the middle column on p. 33301 I would include Australia in the sentence starting with “Some sawfish are found in freshwater, with established populations in ..., Africa, Southeast Asia and Australia.”
- Comment “In the second paragraph in the first column of page 33302 I would replace “second pair of lateral canals in its rostrum” with “second pair of hollow cartilage tubes in the rostrum” as otherwise this could be in the last paragraph of the middle column on p. 33301 I would include Australia in the sentence starting with “Some sawfish are found in freshwater, with established populations in ..., Africa, Southeast Asia and Australia.”
- Comment “In the second paragraph in the first column of page 33302 I would replace “second pair of lateral canals in its rostrum” with “second pair of hollow cartilage tubes in the rostrum” as otherwise this could be confused with the sensory lateral line canals.
- Comment “On page 33306 first column last paragraph I would replace “species appears to be extirpated from Eastern Australia” with “species appears to be extirpated from the east coast of Australia” as the Gulf of Carpentaria is part of eastern Australia and contains strongholds for various sawfish populations (as mentioned in your review).”
- Comment “The "Protective Measures" section omits any detail on the Sawfish Conservation Strategy developed by the IUCN Shark Specialist Group, even though this activity seems to fit within the remit of Protective Measures as described in Paragraphs 1 and 2 of this section on page 33321: "...there are two basic criteria to use in evaluating efforts identified in conservations plans, conservation agreements, management plans or similar documents: (1) the certainty that the conservation efforts will be implemented; and (2) the certainty that the efforts will be effective. We evaluated conservation efforts to protect and recover sawfish that are either underway but not yet fully implemented, or are only planned." We have drafted some suggested text that could be included in this Proposed Rule to list the 5 sawfish species to highlight the work that the IUCN SSG and our collaborators are doing and the fact that actions to improve the conservation status of sawfish have been determined and, based on the availability of funding, these actions would be effective. SUGGESTED TEXT: The IUCN Shark Specialist Group, in collaboration with a large number of the national and international stakeholders in sawfish conservation, has developed a Global Sawfish Conservation Strategy that details the actions required to achieve the Strategy's Vision of: "a world where all sawfishes are restored – through understanding, respect and conservation – to robust populations within thriving aquatic ecosystems." This extensive document highlights the most imperative actions that must be implemented in order to achieve this Vision under the following Objectives:

1. Fisheries management
2. Species Protection

3. Habitat conservation
4. Trade Limitation
5. Strategic research
6. Education and communication
7. Responsible husbandry

This conservation strategy will be published later this year. While the actions highlighted in this Conservation Strategy have not yet been implemented, this document paves the way for work to improve the conservation status of sawfishes worldwide. A concerted effort is being made to ensure that these actions will be implemented (though this is reliant on available funding) but given the collaborative nature of the development of this document there is a medium to high certainty that these actions, when implemented, would be effective.”

- Comment “Although it was concluded that populations of *P. pristis* do not meet the DPS criteria of discreteness (page 33315), it is highly likely that the four widely-separated geographic populations (Eastern Atlantic, Western Atlantic, Eastern Pacific and Indo-West Pacific) are distinct. Exchange between them is unlikely, and the IUCN has treated them as distinct subpopulations for Red List assessment purposes. I understand though that there is not conclusive genetic proof of this, so your current conclusion is defensible.
- Comment “The Protective Efforts section (page 33321) does not report any national protective efforts, only CITES. Sawfish are protected in Australia (effective), India (probably non-effective) etc.”
- Comment “There is a frequently cited reference in the Proposed Rule (IUCN, 2012) which does not appear in the Proposed Rule Reference List.”
- Comment “Courtney et al. (2006) is cited as a study that did not capture Narrow Sawfish or Dwarf Sawfish. This study was conducted in southeast Queensland, outside the range of both species.”
- Comment “33301. C2. The Class Chondrichthyes are not commonly known as elasmobranchs, rather the elasmobranchs are a subclass within Chondrichthyes, the other being the holocephalans.”
- Comment “33301. C2. Australia should be listed amongst the locations of established populations in major rivers and lakes.”
- Comment “33302. C3. The statement ‘Although sexually mature, mating may not occur until the rainy season in March-May (Raje and Joshi, 2003).’ may be geographically specific and should be pointed out as such.”
- Comment “33302. C3. Narrow Sawfish actively foraging on amphipods seems doubtful.”
- 33303. C3. The Narrow Sawfish account (pp. 94–95) in Pogonoski et al. (2002) does not refer to a museum record from Sydney. Indeed, Sydney (NSW) is well south of the tropical occurrence of Narrow Sawfish.”
- Comment “33304. C2. *P. clavata* is not small, but is ‘relatively small’.”

- Comment “33304. C2. The method of distinguishing *P. clavata* from *P. pristis* on the basis of rostral tooth morphology is unreliable.”
- Comment “33304. C3. In relation to the depth range of *P. clavata*: Thorburn et al. (2008) documented Dwarf Sawfish in 0.7–7 m depth, while Stevens et al. (2008) recorded an individual reaching a maximum depth of 20 m.”
- Comment “33304. C3. During surveys this year of tidal reaches of the South Alligator River in Kakadu National Park in the Northern Territory of northern Australia, we have recorded 2 juvenile *P. clavata* about 50km upstream from the river mouth, 1 at a salinity of 0.12 and one at 7.64 (salinity varies seasonally in this river).”
- Comment “33305. Regarding the occurrence of *P. clavata* outside of Australian waters, the most up to date analysis comes from Kyne et al. (2013), available at <http://www.iucnredlist.org/details/full/39390/0>.”
- Comment “This section of the Proposed Rule needs rewriting. To clarify, this following text comes directly from that source:

‘There has been a long suspicion that the Dwarf Sawfish could have had a more widespread distribution in the Indo-West Pacific (Last and Stevens 1994, 2009; Compagno and Last 1999), but this has just been confirmed by the recovery of historical museum records (from the 1800s) from scattered Indo-West Pacific locations. Verifiable historic records are restricted to: Papua New Guinea (specimen held in the Nationaal Natuurhistorisch Museum – Naturalis, Leiden, collected in 1828); Calcutta, Bay of Bengal, India (The Natural History Museum, London, collected in the 1840s); and, Indonesian Borneo (Zoologisches Museum der Humboldt Universität Berlin, Germany, collected in 1894) (Faria et al. 2013). Other museum records include Réunion, non-specific locations such as the ‘West Pacific’ and the ‘Indian Ocean’, and rostra from Malaysian Borneo and Java, Indonesia (Faria et al. 2013). There are no recent records from outside of Australian waters

A possible Dwarf Sawfish (poor photographs preclude accurate identification) landed at a port on the Musandam Peninsula of eastern Arabia (possibly Khasab, Oman; photographs posted 26 January 2006) could have been caught in the easternmost Persian (Arabian) Gulf, the Gulf of Oman, or even the northwestern Arabian Sea (A. Moore pers. comm. 2012).

It is possible that the species persists outside of northern Australia, but its wider status is unknown. As currently known, Dwarf Sawfish may now have the smallest known range of any sawfish species.’

In summary, there are no records indicating the current presence outside of Australia (cf. 33305 C2/C3) and Australia does (33305. C3.) represent the center of the range of this species.

Furthermore, there is nothing to support the occurrence of the species, historically or current on the east coast of Australia. From Kyne et al. (2013):

‘Historically it may also have occurred on the northeastern coast of Queensland as far south as Cairns, but there are no verified records, either recent or historic, to confirm this (S. Peverell pers. comm. 2010, DSEWPac 2011).’

- Comment “33305. C3. What are the origins of the 1996 Mekong River Basin, Laos record?”
- Comment “33305. C3. The reporting of specimens from Tasmanian waters by Deynat (2005) is an error and should not be perpetuated here. Tasmania is surrounded by cold temperate waters and does not support sawfish. The error arises from the fact that Deynat used the fish collection housing location (CSIRO, Hobart, Tasmania) as the provenance of the fish.”
- Comment “33306. C1. When discussing fisheries catches of *P. clavata*, reference should be made to Field et al. (2008) detailing Northern Territory fisheries.”
- Comment “33306. C3. Largetooth Sawfish is *not* ‘commonly’ found anywhere now.”
- Comment “33307. C1. Chidlow (2007) is not the reference for Largetooth Sawfish being found 400km upstream. Chidlow (2007) cites Morgan et al. (2004) but that paper does not state that the species was found at that distance upstream, but rather that they ‘were captured well upstream of the estuary’.”
- Comment “33308. C1. The sentence ‘Genetic diversity was greater in the Gulf of Carpentaria than in rivers in Australia’ seems to be missing something before ‘Australia’ (should this be ‘specific Australian rivers’?).”
- Comment “33309. C1. Regarding Indonesia market surveys, the following text is from Kyne et al (2013) (the new Red List Assessment), and highlights that the fish may not have come from Indonesian waters. ‘During some eleven years of market surveys (over 160 visits to 11 market sites) in various parts of Indonesia only two individual sawfish (both Largetooth Sawfish) were recorded which were caught in the Arafura/Banda Sea region (W. White pers. comm. 2012) and possibly came from illegal fishing in Australian waters.’”
- Comment “33309. C1. Regarding stating that no sawfish have recently been caught in the Adelaide River. We have caught a number of juvenile (0+) animals this year (2013) in the Adelaide River.”

- Comment “33313. C2. South Africa ‘smalltooth sawfish’ records are not *P. pectinata*. Only *P. pristis* and *P. zizsron* occurred in South Africa (*P. pectinata* was mistaken locally for *P. zizsron*) (references can be provided if required).”
- Comment “33316. C3. First paragraph. The (non-species specific) decline time-series from the Queensland (Australia) Shark Control Program is a good dataset to cite here (see Stevens et al. 2005).”
- Comment “33318. C2. States ‘trawling gear is of particular concern...’. It is really trawling and gillnets which are equally of concern.”
- Comment “33318. C2. In the list of products at the end of this column, it should be ‘rostral teeth’ and not just ‘teeth’.
- Comment “33318. C3. There are no international rules on ‘take’ of sawfish.”
- Comment “33319.C1. The Queensland (Australia) Shark Control Program is a good dataset to cite here under ‘Protective Coastal Nets’ (see Stevens et al. 2005).”
- Comment “33319. C2. Regarding ‘The animals removed from the wild could be adult females...’, adults are not generally collected for aquariums, as they are too large. For example, collection of *P. pristis* in Australia was/were all juveniles.”
- Comment “33322. Refers to ‘six sawfishes’.”
- Comment “33301. C3. Note that the correct spelling is Müller (and not Muller).”
- Comment “33314. C1. ‘980’ should be ‘1980’.”
- Comment “33314. C1. ‘outside of U.S. waters’ should be replaced with ‘in the Eastern Atlantic Ocean’.”
- Comment “Note that Papua New Guinea is not hyphenated.”
- Comment “The Kimberley is not a territory, but a region. ‘the’ always pre-fixes ‘Kimberley’ (‘the Kimberley’)”