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Marine Policy Editorial Board
Elsevier

The Board of Directors,
Elsevier B.V. (Corporate Office)
Radarweg 29,
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Netherlands

Dear Sir or Madam,

Re: Response to “A United States shark fin ban would undermine sustainable shark fisheries” D.S. Shiffman & R.E. Hueter, Marine Policy 85 (2017) 138–140

Abstract: We provide strong evidence that the paper “*A United States shark fin ban would undermine sustainable shark fisheries*” D.S. Shiffman & R.E. Hueter, **Marine Policy 85 (2017) 138–140** is misleading, at times outright false, and contradicted by the information in the literature. The absence of scientific basis and empirical evidence to support the authors' allegations, along with its unacceptable obfuscation, reveal the true meaning of this paper to be but an effort to give the ring of scientific credibility to shark finning for commercial purposes only. We therefore formally request that this paper be retracted and withdrawn from Elsevier's database.

The paper “*A United States shark fin ban would undermine sustainable shark fisheries*” is overtly political in that it has as its target the Shark Fin Elimination Act, a piece of legislation now before Congress in the United States of America. It states that the proposed law is “misguided”, and its publication and message have been echoed widely by the press in ways suggesting that banning the shark fin trade in this key country is

“bad for sharks”, thus generating doubt about the wisdom of the Act. Yet other shark researchers consider the proposed law to be a vital step that will weaken the global fin trade and improve enforcement of the current shark finning ban.

Given the assumed importance of this bill, one would expect that an argument against it, particularly one made by individuals claiming to be experts ‘on sharks’, would have some compelling, logical, and scientific reasons to offer but, instead, the points made by the authors are superficial, selectively chosen, and at times demonstrably untrue. The paper appears to be an effort to give the ring of scientific credibility to shark finning.

Beginning with the title, a statement which includes a double negative, it smacks of spin and deliberate obfuscation of a sort that is more typical of commercial and political statements. Applying the rules of logics to de-obfuscate the title results in the statement “*Supporting sustainable shark fisheries implies allowing the United States shark fin market*” (Cf. note below for the formal proof). Science by tradition is stated directly and this title is but a rhetorical trick, a deliberate act to mislead readers by putting information in a deceitful form.

The authors, David Shiffman and Robert Hueter, claim that a policy banning shark fins in the United States would be “*misguided because it would A) under-mine decades of progress made towards ensuring sustainable shark fisheries in the United States and around the world, B) likely have a negligible direct effect on global shark mortality, and C) contribute to the misconception that demand for shark fin soup is the only threat facing shark populations worldwide.*”

In the case of reason A, the statement, “*decades of progress made towards ensuring sustainable shark fisheries ... around the world*” is not supported by any reference indicating how this point has been scientifically established. Yet it implies that sustainable shark fisheries are in place “*around the world*” and that there is no doubt about their existence and value. But the reference provided, “*Bright spots of sustainable shark fishing*” (Simpfendorfer & Dulvy, 2017), identifies no shark fishery that serves the shark fin market that is managed and sustainable. Their reason A is highly misleading, if not outright false.

A different reference, “*State of the Global Market for Shark Products*” (Dent & Clarke, 2015), establishes that the global markets for shark meat and shark fins are essentially separated from each other, and those considered to be sustainably managed are those supplying meat, most of them in the US and Australia.

Hammerhead, oceanic whitetip, and blue sharks are preferred for shark fin soup whereas dogfish, mako, and tope sharks are preferred for meat. Most sharks taken to supply the fin market are from nations with a high fraction of threatened shark species that are neither regulated nor managed, and the systematic hunt for sharks for their fins has been identified as the main force behind the current levels of global shark depletion (Fields *et*

al., 2017, Dulvy et al., 2008, 2014; Worm et al., 2013 Bradley & Gaines, 2008).

Sustainability is defined as:

Current biomass being greater than that required to achieve Maximum Sustainable Yield ($B_{current} > B_{MSY}$), or current fishing mortality being less than that which will yield MSY ($F_{current} < F_{MSY}$) if current biomass is not available (Simpfendorfer & Dulvy, 2017).

Species listed by IUCN as being of Least Concern and Near Threatened are considered sustainable but not managed, a definition that does not take into account the current degree of depletion of the species, or whether the numbers of sharks that remain are sufficient to fulfil their ecological functions.

Take the example of the blue shark. It is listed by “Bright spots of sustainable shark fishing” as being among the sustainable fisheries that is not managed for sustainability but could be. However, the paper, “You can swim but you can’t hide: Status and conservation of Oceanic Pelagic sharks and rays” (Dulvy et al., 2008) states:

“Blue shark fins comprise at least 17% of the overall market, and an estimated 10.7 million individuals (0.36 million tonnes) are killed for the global fin trade each year (Clarke et al., 2006a, b). Despite being one of the best-studied of the world’s elasmobranchs, assessment of the global status of the blue shark was hindered by its wide geographic range throughout the world’s oceans and by the paucity and/or poor quality of demographic and catch data (ICCAT, 2005; Aires-Da-Silva & Gallucci, 2007; Hareide et al., 2007; Pilling et al., 2008). Official FAO statistics underestimate the true magnitude of catches: landings estimated from blue shark fin exports from the Atlantic Ocean alone are known to greatly exceed the reported catches from this area (ICCAT, 2005; Campana et al., 2006; Pilling et al., 2008). Demographic models, catch-rate analysis, age-structured models, food web and ecosystem models have been applied or attempted for blue sharks, mainly in the North Atlantic and North and Central Pacific, and these yield a conflicting picture of blue shark sustainability (West et al., 2004).”

Thus great uncertainty exists. The global studies done on shark depletion in recent years have emphasized the problems inherent in assessing the true situation, providing detailed descriptions of the difficulties on every level (Worm et al., 2013; Dulvy et al., 2014; Dent & Clarke, 2015). Not only are the rates of depletion thought to be three or four times those reported (Dent & Clarke 2015), but the inconsistent recording of shark catches, and the products rendered, make the situation impossible to accurately analyse.

As reported in “Extinction risk and conservation of the world’s sharks and rays,” a global study done for the IUCN SSG in 2014, “The predicted level of chondrichthyan threat (>24%) is distinctly greater than that provided by global fisheries risk assessments [...] we caution that analyses of biased geographic and taxonomic samples may be underestimating risk of collapse in global fisheries, particularly for species with less-resilient life histories” (Dulvy et al., 2014). This

study found that no progress has been made in halting the global depletion of sharks from overfishing, and that fisheries management has failed this line of animals.

While the inflated price of shark fins has resulted in sharks from a wide variety of habitats being targeted during past decades, now they are increasingly being taken for meat because *teleost* fisheries are failing. This dangerous development should surely bring with it some concern for the ecological wisdom of continuing to use large wild animals which reproduce so slowly, to supply the bloated human population with food, lest *elasmobranchs* go the way of *teleosts*. Landings of sharks and rays have fallen in recent years, and this has been found to be due to overfishing rather than conservation practices (Davidson *et al.*, 2016). Sharks were once common and are now thought to be at about 10% of their former levels, just 1% over large areas. No one knows whether this level is satisfactory for top and mid-level predators in terms of ecological function.

The second reason the authors give for blocking The Shark Fin Elimination Act is that it would “likely have a negligible direct effect on global shark mortality.” They state: “...while the United States does import some shark fins, the total quantity is only approximately 0.2% of the global trade in shark fins”. Later, they state that the United States exports 1% of shark fins traded globally.

But their reference (Dent & Clarke, 2015) also states:

- “The United States of America is an important producer of sharks, a relatively large exporter and a minor importer of shark fins.” [emphasis supplied]
- “It exports mainly unprocessed raw material to China, Hong Kong SAR and China.”
- “It ranks as the seventh-largest shark producer in the world, with the composition of captures shifting to smaller species, rays and skates in recent years.”
- “From 2000 to 2011, it recorded average annual shark fin exports of 171 tonnes, worth USD3.4 million.”
- “It records trade in dried shark fins only, but trade records of major importers show non-trivial quantities of imports of frozen shark fins originating from the country.”

Shiffman and Hueter have quoted different figures, stating that while the total value of shark meat sales is approximately \$3.3 million USD, the total value of shark fin sales is only about \$1 million USD. They do not mention the surprising fact that the United States records only dried shark fins while raw and frozen fins are classified as meat (Dent & Clarke, 2015).

The report “State of the Global Market for Shark Products” (Dent & Clarke, 2015) also states:

“Even in the case of meat and fins – as this publication demonstrates – the available data cover only a proportion of what is actually caught and traded. Capture statistics, although improving, are

often aggregated, i.e. do not distinguish between species, while the majority of existing trade records do not allow consistent identification of product forms or reliable tracking of values or volumes traded over time. In addition, the species of shark being traded is only rarely identified in trade records for shark meat and never for shark fins. Knowledge of the specific characteristics of domestic markets is also very limited, and there is little concrete information on such things as the types of products being marketed, the prices of these products at different points in the supply chain, the profile of the typical consumer, and the major demand drivers."

There are also important discrepancies in the data supplied by the National Oceanic and Atmospheric Administration, US Department of Commerce (NOAA) and the Food and Agriculture Organization of the United Nations (FAO).

According to the FAO, other countries reported exporting 1,012 metric tons of shark fins to the United States in 2007 whereas NOAA reported just 28.8 metric tons of shark fin imports for that year. Similar discrepancies appear in U.S.-reported exports. In 2011, NOAA reported 38 metric tons of shark fin exports from the United States, yet according to the FAO, other countries reported importing 295 metric tons of shark fins from the United States.

Shiffman and Hueter do not mention these uncertainties and their selective reporting of the facts regarding the degree to which the United States is involved in the shark fin market alone is another indication of bias in their paper. It is not a balanced account.

Intense shark fishing spans all oceans, and the future consequences are largely unknown (Dulvy, *et al.* 2008, 2014). No matter what the direct effect will be on shark mortality, by weakening the trade and setting a strong example for other countries, the exit of the United States from the shark fin market is expected to have a significant effect indirectly. This American initiative is part of a planet-wide response to an acknowledged threat to sharks, animals with incalculable ecological importance.

The authors' third reason for opposing The Shark Fin Elimination Act is that it will *"(C) contribute to the misconception that demand for shark fin soup is the only threat facing shark populations worldwide."*

It is difficult to see how *"contributing to a misconception"* could be a reason to oppose the proposed Act. Certainly no one who is informed about these issues is unaware of other threats to sharks, and what others believe is irrelevant. Erroneous beliefs and misconceptions do not provide reasons to fail to act on important issues. The only apparent purpose of such a statement is to weaken the idea that the shark fin market is dangerous.

There follows a rambling discussion of related ideas, in which an earlier paper (their ref. [6]) *"Preferred conservation policies of shark researchers"*, is cited. In it, Shiffman claims that

90% of shark scientists prefer the idea of sustainable shark fishing rather than outright bans, including bans on shark finning. Yet he fails to distinguish between shark scientists and shark fisheries' scientists. For several reasons, shark science has been dominated by fisheries scientists, to the degree that it is virtually inseparable from fisheries (Castro, 2017). Now, in citing this paper, Shiffman and Hueter suggest that a great majority of shark scientists agree with them, whereas their results should have been interpreted, instead, as an indication of the degree to which shark science is dominated by fisheries, a plainly vested interest.

This is just one in a series of articles Shiffman has published that are pro-shark fishing (Shiffman & Hammerschlag 2014, 2016a, 2016b) and though the one in question now does not list the source of financing, others do declare that they were financed by fishing interests.

When an industry finances academic research papers, the conclusions drawn will always favour their interests. Once they are published, those ideas are accepted as being scientific. Thus, paying for 'science' provides the fishing industry with a way to launder biased, non-scientific ideas into a form that will have the same credibility as pure research, just as criminals launder money. For this reason, all funding sources should be listed in scientific papers.

A letter signed by one hundred and fifty shark scientists was sent to members of Congress asking for support for the bill, which suggests that a ban on shark fins in the United States is actually widely supported amongst those who understand the true nature of the subject.

Though Shiffman & Hueter refer to shark fin soup as a respectable delicacy (which it is not, as has long been argued effectively elsewhere), the picture painted of the shark fin racket in the literature is one of outrageous disregard for natural resources. Intimidation and criminality are known to characterize the trade. Considered objectively, it could be viewed as a worrying statement on the priorities of humanity that just one recipe, in just one of the world's cultures, could have such a grave effect, globally, on the status of large animals as important as sharks. Participation in such a market is plainly an ethical question, as well as a commercial one, and many countries that have had their sharks slaughtered to serve the fin trade have responded by declaring their territories to be shark sanctuaries.

Shiffman & Hueter state:

"A ban on the trade of shark parts from a sustainable fishery would not only eliminate a model of successful management from the global marketplace, but would also remove an important incentive for other nations to adopt that model. A nationwide ban on buying or selling fins would tell international trading partners that the United States will not support their shark conservation efforts regardless of future improvements to their fisheries sustainability."

This, again, is a blatant exaggeration, an unsupported assumption and an outright untruth: there is no evidence of a “*model of successful management*”. When Disney faced an international boycott over serving shark fin soup, it tried and failed to find any sustainable source of fins (Wild Aid, 2005), so was obliged to stop serving the soup.

The evidence suggests that banning the trade in shark fins in the United States would give the opposite message to international trading partners—that the country is taking a position of good leadership instead.

Indeed, the effect of shark finning on shark populations has already moved China to ban shark fin soup at its official events (FT, 2012), and the fact that shark finning is not only unsustainable, but is driving sharks to the point of extinction, has already been acknowledged by nations around the world. As long as the fins retain their inflated value due to the fin market, they will be at heightened risk. Taking a longer view of the situation indicates that the final goal, of which the proposed American legislation represents but one step, is that shark fins have no higher value than any other part. The authors’ ideas depend on shark fins retaining their inflated value.

Another contradiction :

“In addition, the elimination of United States-supplied fins in world markets would open the door to increased market share for IUU (illegal, unreported, and unregulated fishing) nations not practicing sustainable shark fishing, including those that have not yet prohibited finning.”

Yet earlier in their paper they stated that United States-supplied fins are practically negligible on the world market :

“...while the United States does import some shark fins, the total quantity is only approximately 0.2% of the global trade in shark fins. These few imports include fins from nations where finning is already banned, as well as fins legally taken by United States fishermen...”

Though these imports might include fins from nations where finning is already banned, as we have already seen due to the uncertainties in the trade, they could include imports from other sources, including criminal ones. Much of the fin trade is in criminal hands, another point that Shiffman & Hueter have not disclosed, and it is not possible to track the source of a specific shark fin in a market.

This is one of their concluding statements: *“...the conservation objectives of a shark fin ban in the United States are questionable, as the reduction of fishing mortality associated with a non-overfished stock that is not experiencing over-fishing is not normally considered a conservation priority.”*

But all data indicates that sharks are overfished, so this statement is simply untrue, as has been known for thirty years. There are several other similar statements in the paper which minimize the degree to which sharks are vulnerable, and exaggerate the protection

afforded by CITES listings of the most threatened.

Given the uncertainties involved in understanding shark depletion, surely scientists should err on the side of caution. Due to an unusual combination of factors, sharks are in a special category, and those who are entrusted with their objective study—shark scientists—are those who should be trying to learn what the truth is and determine the best solutions for their conservation.

The article in question is plainly a biased political lobbying exercise on behalf of a commercial vested interest, relying on spin, misrepresentation, cherry-picking and untruth to make a case against an important step in the conservation of sharks.

The fact that it is so easily contradicted in all major respects, using published information, underlines the weakness and inappropriateness of the piece. It does not uphold the expected standards of propriety, honesty, accuracy, and rationality that one would expect of a scientific article.

We therefore formally request that this paper be retracted and withdrawn from the Elsevier database.

Respectfully,

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Note

Propositional calculus, also known as zero-order logics, provides a formal system to analyse the logical value of statements called *propositions*. These are built using:

- *statement letters* (i.e. P , Q), which are interpreted as variables representing statements
- a set of *logical connectives* (eg. the unary *logical negation*, written " \neg ", as in " $\neg P$ ", the binary *logical implication*, written " \rightarrow ", as in " $P \rightarrow Q$ ", and the binary *logical equivalence*, written " \equiv ", as in " $P \equiv Q$ ")
- a set of *axioms* (statements that are taken to be true to serve as premises or starting points for reasoning and the derivation of a formal proof)
- *inference rules* (purely syntactic functions that take premises and return conclusions while preserving the truth).

A *derived formula*, or *proof*, is called a *theorem* if it can be interpreted as a true proposition.

In this note, we will use propositional calculus to formally prove that the obfuscated title: "*A United States shark fin ban would undermine sustainable shark fisheries*" (the initial axiom), actually means: "*Protecting sustainable shark fisheries implies allowing the United States shark fin market*" (the theorem).

To that end :

- Let **A** represent the proposition: "*United States shark fin ban*"
- Let **B** represent the proposition: "*undermine sustainable shark fisheries*"

As such, interpreting “*would*” as a clear indication of the existence of a logical implication between A and B, the initial title can therefore be formally written as the initial axiom (true proposition) :

$$A \rightarrow B \text{ (initial axiom)}$$

Let us now introduce :

- C to represent the proposition : “*allowing US shark fin market*”
- D to represent the proposition : “*supporting sustainable shark fisheries*”

Then:

- $C = \neg A$
- $D = \neg B$

By applying the inference rule “ $(P \rightarrow Q) \equiv (\neg P \rightarrow \neg Q)$ ”, we derive the theorem :

- $(A \rightarrow B) \equiv (\neg B \rightarrow \neg A)$
- $\equiv (D \rightarrow C) \blacksquare$

Thus, from our initial axiom “ $A \rightarrow B$ ”, we derived the theorem “ $D \rightarrow C$ ”, meaning that the initial title was deliberately obfuscated through a double negation, a scientifically unacceptable attempt to hide its commercial-oriented meaning:

“Supporting sustainable shark fisheries implies allowing the United States shark fin market.”

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