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<div align="center">Rhetorical Analysis of a Research Paper on Fishing Hook

Modifications and Their Effects on the Sustainability of Commercial Fishing</div>

Sustainable fishing practices become more and more important each day as numerous sea animal populations in the world's oceans decrease at a rates that are far more drastic than they should be. In the world of commercial fishing, there are target species; the species intended to be caught, and there is bycatch; any unintentionally caught species. One study highlights commercial swordfishing operations in the Mediterranean Sea, which are facing issues when it comes to their bycatch. The study was published by Wiley-Blackwell in 2017 in their peer-reviewed journal, *Aquatic Conservation: Marine and Freshwater Ecosystems*. The authors of this article are Susanna Piovano, who works in the Department of Life Sciences and Systems Biology at The University of Turin in Turin, Italy, and Yonat Swimmer, a United States Federal Agent of the National Marine Fisheries Service, informally known as NOAA Fisheries. Piovano and Swimmer present a problem with one fishery's bycatch species, which is that they include species of the threatened, near-threatened, and endangered conservation statuses. The purpose of this rhetorical analysis is to thoroughly understand the information and findings of this study as well as recognize their meanings, importance, and application to the world.

The goal of Piovano and Swimmer's study is to highlight the effects that two slightly different fishing hook attachments can have on target catch and bycatch, and bring awareness to

this very changeable factor. Through their article, the authors hoped to educate their intended audience; commercial fishery managers and employees, about how they can change their practices in order to fish more sustainably and responsibly. They did so by identifying the effects and flaws of the fishery's then-current practices, and then not only presenting a solution, but also emphasizing how simple implementing the solution actually would be. Examining a factor as minute as a hook's attachment to a fishing line and showing its effect also demonstrates to commercial fishing workers how a seemingly small thing can have a big impact. This study would and should interest anyone in the commercial fishing business. Other possible audiences are conservationists, marine biologists, and environmental scientists.

To begin, the article is first introduced by a brief, yet meaningful and concise abstract, which follows the IMRAD format. In the formal introduction, the CARS model is clearly used, and a clear research space is defined. In their first move, Piovano and Swimmer specify the central area of study, which is the relationship between fishing gear modifications and the catch and bycatch (Pennington). They summarize previous research and study results that identify an ideal hook-shape for sustainable fishing. What this means is that the hook effectively catches the target species, but that it also has a lower bycatch-rate, and that it causes less harm to any bycatch. This ideal hook is called a circle hook.

Carrying on to the second move, the authors begin to reveal a gap in previous studies (Pennington). They explain that when it comes to the actual modifications of the circle hook, there are two attachment variations. One variation is attaching the loop on the fishing line directly through the eye of the hook. The second variation is adding a ring to the eye of the hook, so the order of attachment becomes attaching the loop on the fishing line to the ring, which is

looped through the hook's eye. This modification is called a ringed circle hook. The authors discovered that a common perception among fisherman was that the mobility of a ringed circle hook resulted in a higher catch rate of target fish. When trying to find out why and how a ringed circle hook effects catchability, they discovered there was no scientific fact or study that proved or disproved the fishermans' preference. It is through this lack of information that the authors realized they needed to conduct a scientific study.

In their third move, the authors begin to dive into their methods (Pennington). They explain how they tested catch rates on six different commercial fishing vessels belonging to the same swordfishing operation. Catch rates of target species and bycatch on non-ringed circle hooks and ringed circle hooks were compared on an equal scale during the months of July through September of 2009, 2010, 2012, and 2013 (Piovano & Swimmer, 2017).

Through their study, Piovano and Swimmer gathered a great quantity of compelling data about the relationship between circle hook attachment modifications and catch and bycatch rates. Their methodical research and study practices strongly exhibit logos. The results shared in the discussion portion of their article show that although ringed circle hooks have a higher catch rate of swordfish, the swordfish caught by the ringed circle hooks had a very high rate of smaller-sized swordfish, which directly correlates to the swordfish being premature and underdeveloped. It was found that non-ringed circle hooks had a lower overall catch rate of swordfish, yet had a very high rate of larger-swordfish that were more mature and developed, and therefore a more ideal catch. Lastly six loggerhead sea turtles, and four blue sharks were caught (Piovano & Swimmer). These were bycatch species that caused the most concern because loggerhead sea turtles are classified as an endangered species, and blue sharks are classified as

near-threatened. This detail especially appeals to the readers' pathos. All six of the loggerhead sea turtles, and three out of the four blue sharks were caught on the ringed circle hooks (Piovano & Swimmer). While these numbers are small, the authors make it known that they should still be considered. It should be noted that other species of bycatch were also caught. Lastly, the authors exhibit ethos through each of their unique statuses and affiliations with their particular institutions.

What the results ultimately mean is that although the ringed circle hook has a higher catch rate of its target species, the actual yield of the catch could be much lower because of the size of the fish caught. Therefore, using non-ringed circle hooks prove to be more beneficial because even though the actual number of fish caught is lower, many less fish are returned to the sea due to being undersized, resulting in a higher actual yield. A bonus of this is that it seems non-ringed circle hooks have a lower chance of catching unwanted bycatch.

By writing this rhetorical analysis of a scientific peer-reviewed article, I was able to better understand what exactly the study what trying to accomplish. The CARS model was an extremely helpful tool for Piovano and Swimmer as authors, and for me as an analyzer. It made for a good organization and flow of information throughout the report. I also gained an example of how to properly specify my audience without it seeming out of place within the context of the paper. I enjoyed learning about this incredibly niche issue because it is interesting to me to see how much one can truly focus a subject.

References

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