

Overfishing to
briedahl, "they are
the most diverse



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Overfishing of Skates and rays Introduction/Background Skates and rays are part of the class Chondrichthyes. According to Briedahl, "they are the most diverse cartilaginous fishes and there are around 600 documented species worldwide". Skates and rays are characterized by flattened body with large pectoral fin that forms a disc body shape.

Skates and rays have a wide distribution and diversity throughout the oceans due to their important role in the marine ecosystems. The majority of skates and rays feed on benthic organisms such as oyster, clams and other invertebrates. The importance of skates and rays to the marine ecosystems is that they are top predators in the food chain. If they are removed from the marine ecosystem it decreases the diversity of the marine invertebrates and the community structure of the benthic area. The competition for space in the benthic zone of the community will increase if skates and rays are removed from the ecosystems. One of the main threats to skates and rays is overfishing. According to Earthsky (2014), "systematic study of world-wide skate and ray populations reveals that about 25 percent could go extinct in the next few decades".

According to United Nations Food and Agriculture Organization, "the peak of the landings of skates and rays peaked in 2003 with being the highest catch landings recorded." According to Conant (2015), skates and rays are fished for consumption, educational and scientific purposes. Most of the landings of skates and rays are bycatches or unintended catches from recreational and commercial fishing. The main threat among the purposes of fishing for skates and rays are the unintended catches from recreational and commercial fishings and the catches for consumption. According to the

Convention on International in Endangered species CITES, it says that skates and ray fishing is legal but only the species that are listed as endangered species are not allowed to be fished. According to the Dulvy et.

al (2014) about one quarter of chondrichthyan fishes that includes sharks, skates, rays and chimeras are estimated to be threatened. According to Beans (2014), " skates and rays are worse than the sharks because five out of the seven most threatened families are made up of rays." As stated before skates and rays are important to the marine ecosystems because they help shape the structure of the benthic habitats in which most skates and rays feed on. If they are overfished the population will have a hard time to rebound or bounce back because according to Beans (2014) skates and rays tend to grow slowly and produce few young individuals which leaves them vulnerable to overfishing. Case Study A recent case study done by Brendan Newell working under the National Marine Fisheries service to survey the population and study the main causes of population decline. The two species that was surveyed in the research are *Rhinobatos rhinobatos* and *Rhinobatos cemiculus*. According to Newell (2017), these two species are historically abundant along all of the shores of the Mediterranean and along the coast of eastern Atlantic.

According to Newell (2017), " there is no threat of these two species from overutilization for scientific or educational purposes." According to Newell (2017), the overutilization from recreational fishing and human consumption does not affect these two species on a large scale. According to Newell (2017), the primary threat to these two species are commercial overutilization.

In this case study the commercial overutilization in the Mediterranean and in the Atlantic are surveyed. According to Newell (2017), there is only few reports of the landings of the family Rhinobatidae. According to Newell (2017), “ only three countries (Albania, Palestine, and Greece) reported landings of these species.” According to Newell (2017), the reported landings of guitarfish species Greece peaked in the 1970’s and since 2003 to 2008 landings reported have been drastically dropped shown on page 30 (Figure.

14). According to Newell (2017), the reports of the landings from Tunisia shows a decrease on the species *Rhinobatos rhinobatos* while the reports shows that the species *Rhinobatos cemiculus* are underfished in Tunisia. According to Newell (2017), for the commercial overutilization in the Atlantic there were no information on the the two spaces found. According to Newell (2017), the landing reports on elasmobranch catches (sharks, skates and rays) have been increases since the early 1990’s to 2007 but these reports were not reported on the species level.

In this case study done by Brendan Newell working under the National Marine Fisheries service, the overall data shows that there has been a decline of these two species due to overutilization mainly from commercial fishing. Still the data studied are underreported and it is best to study more about these two species and conduct a population survey on these two species because the data used are not underreported. Current status on the Populations of Skates and rays According to IUCN (2014), “ a quarter of the world’s rays are threatened with extinction.” According to Earth Sky (2014), the International Union for Conservation of Nature red list of endangered species states that about 107 species of rays are listed as endangered. As

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stated before according to Briedahl, there are about 600 species of skates and rays have been described worldwide.

Nowadays most of the public's focus is on the alarming threat to sharks but according to Beans (2014), "rays species found to be at higher risks than sharks." According to Dulvy et al. (2014), the overall chondrichthyan extinction risk which includes sharks, skates and rays higher than most other vertebrates. Due to my research the overall trend of the landings of skates and rays shows that there is been a decline in the total landings of skates and rays around the world. Current conservation progress of Skates and rays Throughout my research I have found that the current conservation progress of skates and rays have not been successful.

According to Davidson et al. (2016), they did a case study where they studied if the global ray landings are a cause of improved management or overfishing. According to Davidson et al. (2016), they found that there is no recent improvement in international and national fisheries management to account for the recent decline in chondrichthyan landings.

Most of the efforts that is being done today to save and conserve the current populations of skates and rays are raising awareness, raising funds to study more about skate and ray endangered species and pass down laws that generally states that endangered species are illegal to fish and if they are caught. It should be released and put back into the water. According to Newell (2017), the regulatory mechanisms that is being done in the Mediterranean and in the Atlantic are passing down laws that the endangered species are illegal to fish. If the endangered species are caught

they should be released back into the ocean. According to Newell (2017), these regulatory mechanisms are not working and they are inadequate.

According to Newell (2017), the underreporting of the two species studied (*Rhinobatos rhinobatos* and *Rhinobatos cemiculus*) shows the problem is that the laws passed down are not enforced well. Other conservation actions has been done such as raising awareness and raising funds to study the biology and ecology to better understand the population of skates and rays in order to take the appropriate action to help save and conserve the current population of skates and rays. According to the Sharks and rays Conservation Research program website, they have been raising awareness to the public and raising funds to study and help conserve the populations of Spotted Eagle rays in Mexico and in Cuba. Conclusions Due to my research it shows that the total landings of skates and rays have been declining due to overfishing. For me i think that the best way to help fight or conserve the current populations of skates and rays is that we should improve the enforcement of the laws that has been passed down to protect skates and rays. As stated in the current conservation progress of skates and rays section most of the conservation actions that is being done nowadays are raising awareness, passing down laws to help protect endangered species and raising funds to help study these animals in order to take the necessary action to help conserve and limit the bad consequences of our actions.

For me i think the best way to fight against overfishing of skates and rays is to put more law enforcers on commercial shipping vessels. According to Newell (2017), the passing down of laws to help protect endangered skate and ray species are not working due to not enough effort in enforcing the

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laws passed down. Also i think that it is important for nations to enforce commercial shipping vessels in their area to report on the landings on these animals. According to Newell (2017), most of the landings reports from the Mediterranean and in the Atlantic were underreported. Only some nations reported their total landings of skates and rays.

If nations enforce these commercial shipping vessels to report the landings on skates and rays. It will help in determining the current demography of skates and rays. It is important to determine size and structure of the current populations of skates and rays because if we know the size and structure of the population of skates and rays. It will help us in determining if the species or population of skates and rays in that is endangered or not. If we are able to report the landings and determine the population dynamics of skates and rays along with better enforcement of enforcing the laws passed down to protect endangered species of skates and rays. I think it would help conserve the current population of skates and rays.