

SEA THE VALUE:

Quantifying the Value of Marine Life to Divers

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SCUBA DIVERS ARE VALUABLE PARTICIPANTS IN ECOTOURISM and provide coastal areas with economic incentives to protect and preserve local marine wildlife and habitats.¹ Similarly, non-coastal regions with large numbers of divers and dive shops also have a vested interest in protecting and restoring the health of marine wildlife. Divers often enjoy a deeper understanding and willingness to protect the oceans because they have experienced them firsthand.

Divers contribute to local economies by paying to dive and vacationing in areas near dive sites. As a group, scuba divers take an estimated 1.7 million dive vacations each year at an average cost of \$2,424 per trip, thus spending more than \$4.1 billion dollars in dive-related vacations annually.² In addition, divers obtain personal value from seeing marine life when they explore the underwater world. Quantifying this value is important, in part, because it provides economic justification for the protection of marine wildlife.

Oceana conducted a study, in collaboration with Duke University, to assess the value of seeing healthy corals, sea turtles and sharks to divers. To assess this economic value, scuba divers were asked the maximum amount of money they were willing to pay, in addition to their normal dive costs, for an increased likelihood of seeing a particular species. In addition, the survey examined the divers' views on their role in marine conservation. Information was obtained from 504 scuba divers from across the United States who responded to a 25 question, web-based survey.

The results of the study show that marine wildlife is of great value to scuba divers. In fact, most divers are willing to pay additional money for a chance to dive with sharks, sea turtles and healthy coral reefs.

Table 1. Average additional amount scuba divers are willing to pay per dive to view wildlife and the total annual value across all six million dives taken in the United States³

VALUE (U.S. \$)	SEA TURTLES	SHARKS	HEALTHY CORALS
Average Per Dive	\$ 29.63	\$ 35.36	\$ 55.35
Total Annual Value	\$ 177.8 million	\$ 212.2 million	\$ 332.1 million

¹ Arin, T. and R.A. Kramer. 2002. Divers' willingness to pay to visit marine sanctuaries: An exploratory study. *Ocean and Coastal Management* 45.

² Cline, 1997. Diving Industry Consumer Survey. <http://www.clinegroup.net/diving/diveintro2.html>

³ Estimated number of divers in the U.S. (1.2 million) and average number of dives they take annually (5) from Davison, B. 2007. How many divers are there?—and why you should care. *Undercurrent*, 22(5). <http://www.undercurrent.org/UCnow/articles/DiverPopulation200705.shtml>

SEA TURTLES

Many scuba divers enjoy viewing sea turtles in their natural habitat and seek out dive sites with healthy sea turtle populations. Of the scuba divers surveyed, 76 percent were willing to pay more for an increased likelihood of swimming with a sea turtle in the wild, with the average additional amount being \$29.63. Using a conservative estimate that the 1.2 million active U.S. scuba divers take an average of five dive trips per year, the annual value of seeing a sea turtle is \$177.8 million.

Less experienced divers were willing to pay more than experienced divers, presumably because they have had fewer opportunities to interact with sea turtles. Women were willing to pay an average of \$5.82 more than men to see sea turtles.

Sea turtles are protected in many parts of the world, and tourists are often willing to pay to view sea turtles both on land and in the water. As a point of comparison, viewing marine mammals, which are protected in all U.S. waters, has grown to a \$1 billion per year industry operating in 87 countries.⁴

SHARKS

Surveyed divers ranked sharks as the top species they would like to see on a dive. Seventy-one percent of divers were willing to pay more to see sharks, with the average amount being \$35.36 per dive. Again, using a conservative estimate that the 1.2 million active U.S. scuba divers take an average of five dive trips per year, the annual value of seeing a shark is \$212.2 million. The market for the U.S. shark fishery is currently valued at \$19 million.⁶ Clearly, sharks are worth more alive as part of the ecotourism industry than dead as part of the fishing industry.

In addition to their direct value to divers, as top predators sharks help maintain the structure and health of marine ecosystems – the very world divers are willing to pay to see.



SEA TURTLES ARE AT RISK OF EXTINCTION because of many human-caused threats, including commercial fishing gear, pollution and habitat loss. Although all six species of sea turtles in U.S. waters are listed under the Endangered Species Act, many populations continue to decline. For example, loggerhead sea turtle nesting in Florida has declined by nearly 50 percent over the past decade.⁵ The loss of key species, such as sea turtles, can make a dive location less desirable and, therefore, reduce its value as an ecotourism destination.



MORE THAN 100 MILLION SHARKS ARE KILLED annually by fisheries. This has caused some shark populations to decline by as much as 99 percent.⁷ The biggest threat to shark survival is the strong economic incentive to fin sharks for the Asian delicacy of shark fin soup.

⁴ Hoyt, E. 2001. Whale Watching 2001: Worldwide tourism numbers, expenditures, and expanding socioeconomic benefits. International Fund for Animal Welfare, Yarmouth Port, MA, USA, pp. i-vi; 1-158.

⁵ Florida Fish and Wildlife Conservation Commission. 2008. Long-term monitoring program reveals a continuing loggerhead decline, increases in green turtle and leatherback nesting. http://research.myfwc.com/features/view_article.asp?id=27537

⁶ 2006 shark landings values from National Marine Fisheries Service. 2006 Annual Commercial Landing Statistics. http://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html. This value was then multiplied by 2.27 (Kirkley, J.E., et al. 2006. Reducing capacity in U.S. managed fisheries. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-76, 45p.) to assess the total value to the market.

⁷ Myers, Ransom A., Baum, Julia K., Shepherd, Travis D., Powers, Sean P., and Peterson, Charles H. (2007). Cascading effects of the loss of apex predatory sharks from a coastal ocean. *Science* 315:1846-1850.

HEALTHY CORAL REEFS

Scuba divers are generally willing to spend more to help protect dive sites.⁸ More than 95 percent of the respondents said they would be willing to donate an entrance fee to dive in a protected healthy coral reef ecosystem. While scuba divers ranked corals lower on their list of desired species, they were willing to pay more money to see a healthy coral reef, with the average amount being \$55.35. Healthy coral reefs received the highest value of all the species polled, with the annual value of seeing healthy coral being \$332.1 million. By recognizing the need to conserve coral reefs, scuba divers are acknowledging the importance of a healthy reef ecosystem to all other types of marine wildlife.

Of the 467 respondents willing to pay more to see healthy reefs, nearly three-quarters viewed coral reefs as an essential component of the marine ecosystem. The most common reason given by divers that were not willing to pay to protect coral reefs was that they could not afford to donate (90.5 percent),



indicating they still believe reef conservation is important. Less experienced divers were once again willing to pay more than experienced divers. Women were willing to pay more on average (\$65.08) than men (\$45.64). Higher income respondents also were willing to pay higher entrance fees to dive in protected areas.



DIVERS' ROLE IN CONSERVATION

Since most divers believe that the quality of a dive is affected by the amount and variety of species available, scuba divers have a vested interest in conserving the oceans. More than 82 percent of the survey respondents agreed or strongly agreed that divers play an active role in ocean conservation.

When asked if the U.S. government sufficiently protects its dive sites, most divers said no. Scuba

divers saw pollution as the most damaging threat to ocean health, followed by unsustainable fishing, loss of habitat, loss of biodiversity and, finally, climate change. These are all areas where divers feel the U.S. should improve ocean conservation and management to help better protect marine habitats.

⁸ Depondt, F. and E. Green. 2006. Diving user fees and the financial sustainability of marine protected areas: Opportunities and impediments. *Ocean and Coastal Management* 49:188-202.

CONCLUSION

Healthy marine ecosystems are of great value to divers around the world. In fact, most scuba divers are willing to pay more for a chance to see healthy ocean wildlife, such as sharks, sea turtles and healthy coral reefs. This proves that there is an economic incentive for protecting ocean resources, for the economies of both coastal and non-coastal communities. Unfortunately, our oceans face serious threats and urgently need increased protections. Divers and others who value healthy oceans need to speak up on the oceans' behalf.

For more information on what you can do to help and a full copy of the report, please visit www.oceana.org/dive.

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Oceana campaigns to protect and restore the world's oceans. Our teams of marine scientists, economists, lawyers and advocates win specific and concrete policy changes to reduce pollution and to prevent the irreversible collapse of fish populations, marine mammals and other sea life. Global in scope and dedicated to conservation, Oceana has campaigners based in North America (Washington, DC; New York, NY; Juneau, AK; Anchorage, AK; Monterey, CA; Portland, OR; St. Petersburg, FL and Boston, MA), Europe (Madrid, Spain; Brussels, Belgium) and South America (Santiago, Chile). More than 300,000 members and e-activists in over 150 countries have already joined Oceana. For more information, please visit www.Oceana.org.