



## 2011 Runner-up: Turtle Lights for Gillnets

Design to Reduce Turtle Bycatch Wins \$10,000 Award

Coastal gillnet fisheries are one of the most common forms of fishing throughout the world and have been associated with significant sea turtle bycatch rates. In Baja California, Mexico, investigations have reported 800 loggerhead turtle interactions in coastal gillnets from one fishery in a year, while fisheries off the coast of Northern Peru have reported interactions with over 300 green sea turtles.

In response to this increasing challenge of bycatch, Shara Fisler, from the Ocean Discovery Institute in San Diego, and John Wang, from the University of Hawaii, examined the behavioral and physiological studies, that show found visual cues play important roles in sea turtle foraging and orientation. By investigating potential visual based strategies as a way to reduce sea turtle interactions with gillnet fisheries, the team developed the award winning design 'Turtle Lights for Gillnets'.

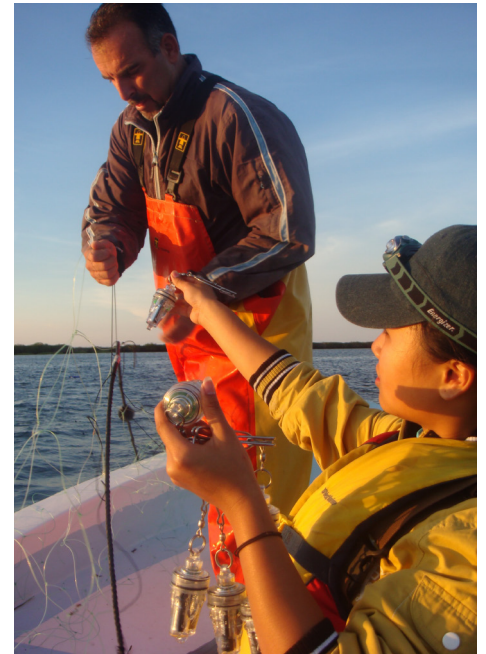
Using widely available fishing lights (LED or chemical lightsticks) to illuminate gillnets, the design creates enough of a warning signal to alert sea turtles to the presence of a barrier, allowing them to avoid it. Experiments with illuminated nets were conducted in Baja California, and the trials reduced green turtle bycatch by 60% without affecting the fishery target catch rates or catch value.



Lights attached to the nets create enough of a warning to alert sea turtles to a barrier

The long-standing innovative approach by this team has also resulted in the formation of the Bycatch Mitigation Research Program, helping to develop students as future leaders in fisheries management and marine conservation, while examining new bycatch reduction technologies.

Research into the turtle lights for gillnets design has continued to support opportunities for a science-focused education experience of students, to explore ocean conservation concepts, develop quantitative skills, and conduct critical marine research alongside fishermen, scientists, and fishery managers.



Attaching LED lightsticks to a bottomset gillnet

### Turtle Lights for Gillnets - Fast Facts

Innovative design uses widely available fishing lights (LED or chemical lightsticks) to illuminate gillnets.

Experiments were conducted in Baja California, but can be adapted in any coastal gillnet fishery.

During the trials several different lightsticks were tested, and placement along the floatline of the gillnet differed.

Results from trials in Baja California indicated a 60% reduction in green turtle bycatch.

The use of lightsticks to illuminate gillnets in order to reduce sea turtle bycatch has not been tested in gillnets fisheries prior to this research and is a creative use of a widely available product.

The Turtle Lights for Gillnets and their ability to reduce the bycatch of turtles has the potential to be an effective device for turtle conservation all over the world.



## Conservation Potential

Testing and analysis of the Turtle Lights for Gillnets design will continue, examining the effects of illuminated nets on additional sea turtle species such as the critically endangered leatherback and loggerhead sea turtles. This area of research will also examine different wavelengths of light that may make gillnet fisheries a more selective and ultimately a more sustainable form of fishing. The team will also continue to examine the effects on target species and catch value for each gillnet fishery.

The innovative collaboration between the Ocean Discovery Institute, the University of Hawaii, and other partners, has also resulted in the establishment of a unique research platform to develop and test sea turtle bycatch mitigation strategies. The team plans to continue to examine a variety of methods that may reduce sea turtle bycatch as well as determine their impacts on target fish catch when adopted into a gillnet fishery.

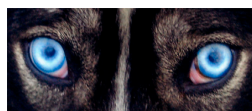


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