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Self-Powered Fishing Net Lighting Modules for Bycatch Reduction

Background

Small-scale fisheries cumulatively account for about half of the production of the fishing industry. These coastal fisheries commonly use gillnets, which are low cost, high yield, and easy to maintain. Unfortunately, gillnets result in considerable non-target species (bycatch) mortality which can negatively impact local ecology and fishing production. As fishing is a crucial aspect of coastal communities, it is important to mitigate the prevalence of bycatch while maintaining a cost-effective solution for these coastal fisheries. Studies have shown that reducing bycatch can be achieved by net illumination, with practical and effective implementation being critical.

Invention Description

Researchers at Arizona State University have developed controlled lighting modules for gillnets to reduce the bycatch of marine life, such as sea turtles and sharks. Emphasis has been placed on waste reduction and longevity—use of a charge circuit, rechargeable battery, and flexible solar panels enable the continuous use of the device without need for manual replacement or recharging. The self-powered nature of the device simplifies the implementation of the technology and allows for deployment in remote areas with little to no training. Operation for long periods of time in sun-free areas can be conveniently accommodated by remote adjustment of energy discharge rate.

An introductory video can be viewed [here](#).

Potential Applications

- Commercial gillnet fishing

Benefits and Advantages

- Self-Powered: Recharged by solar cells

- Environmentally Focused: Reduces bycatch while using no disposable parts
- Hassle Free: Operation requires no user intervention
- Tunable: Illumination can be adjusted to adapt to target and bycatch catch composition as well as specific fishery region