n sustentable

For a sustainable fishery industry

The increasing world population and incorporation of more nations into the Western economy have resulted in a growing need for greater food production. There is particular interest in taking advantage of marine and fishery resources. However, an indiscriminate exploitation of marine products, together with practices that disrespect biodiversity and ecosystem equilibriums, has led to the need for industry regulation.

On the forefront is Dr. Sebastián López Klarian, investigator of the Quintay Marine Research Center, Faculty of Ecology and Natural Resources at Universidad Andrés Bello. Dr. López Klarian is constructing a model for marine sustainability based on the trophic cascades of each ocean ecosystem. The main goal of this research project is to establish fishing quotas, such that this activity can be sustainable long-term for the environment and economy.

"Trophic ecology does not only encompass who eats who, but also aims to establish and understand complex biological interactions through food webs and energy flows. To achieve this, my group uses stable isotope analysis, one of the cutting-edge tools within fishery biology," explains Dr. López Klarian.

The study, entitled "Fishery biology and trophic ecology of commercially important fish," is supported by funding from the Chilean Undersecretary of Fishing and Aquaculture, Fondo de Investigación Pesquera, and Instituto de Fomento Pesquero.

This project has already determined that trophic paths of the Chilean ocean ecosystem are based on a species commonly called the butterfish. "This means that tuna, swordfish, and shark fishing are possible thanks to this little fish, which major ocean predators eat for subsistence."

"We have also discovered that the diet of Chilean sharks consists 45% on dolphins, representing a paradigm shift in diet," continues Dr. López Klarian, "These two findings highlight that the pyramidal structure for trophic cascades has changed. Indeed, we believe that ecosystems in the Southern Pacific follow a 'wasp-waist' trophic model, in which species in the middle of the cycle support fishing activities and trophic paths, making these species those most affected by overfishing."