New England Fishermen Welcome Aboard Artificial Intelligence

Tools developed in data competition will help groundfish monitoring and better protect fish populations

More than 300 teams and individuals have joined a two-month competition to use artificial intelligence and machine learning to help New England fishermen provide accurate catch information in a cost-effective manner on groundfishing trips.

The technologies developed in the competition will be applied to video coming from commercial fishermen in Rhode Island, Massachusetts, Maine and New Hampshire who are using video cameras to meet their federal fisheries monitoring requirements. The fishermen are collaborating with The Nature Conservancy, the Gulf of Maine Research Institute, the Cape Cod Commercial Fishermen's Alliance and the Maine Coast Fishermen's Association to develop and test the video systems.

Participants in the "N+1 fish, N+2 fish" competition, hosted by DrivenData, will develop tools to analyze video footage to count, identify and measure discards of undersized groundfish, such species as cod and haddock, as the fish are returned to the sea. Participants represent a global community of data experts, from professional data scientists to academic researchers to students and engineers looking to hone their algorithmic skills. The competition is only the second-ever fish image recognition competition worldwide and the first to use video and focus on U.S. fisheries. Entries are due Oct. 30.

"This competition is a great combination of a sophisticated technical challenge and a real-world problem," said Kate Wing, project lead and founder of the databranch. "The open-source tools developed here can be applied beyond New England, helping pave the way for faster, more accurate fisheries data systems."

Competition organizers seek to spark advances in data science and image processing — innovative tools that are just beginning to be applied in the ocean. The goal is to make it possible to tackle fisheries management and conservation challenges that a decade ago would have required a prohibitive amount of staff time and computer analysis.

Video-monitoring systems are now being tested on about 15 New England groundfish boats by participating fishermen interested in improving fisheries science with better catch data. Currently, the collected video is reviewed by trained observers, which takes hours per fishing day to complete. Automating the video review can make it faster to get catch estimates and reduce costs so that every boat that needs to carry a camera system can afford one.

For boats that don't use video, catch monitoring requires human observers to ride onboard during 16 percent of fishing trips — an approach that is costly for fishermen and taxpayers.

"Video collected at sea can be used to verify fishermen's observations, and improve conservation and sustainable fisheries management," said Chris McGuire, marine director for The Nature Conservancy in Massachusetts and part of the project team. "Applying machine learning to extract these data efficiently could be a game changer."

The Nature Conservancy is a leader in conservation technology, and this project builds on the organization's groundbreaking data science competition to bring artificial intelligence (AI) to Pacific tuna fisheries, which closed this past spring.

Bringing cutting-edge AI to fisheries requires new partnerships that foster innovation. The four-person project team includes experts in machine learning and in fisheries who joined together for the first time to take on this project.

The project is supported by grants from the National Fish and Wildlife Foundation, the Kingfisher Foundation, the Walton Family Foundation, and The Nature Conservancy.

(courtesy ecoRI News ecori.org)

Scientists gave fish marijuana to see if it would make them relax

by Jason Bittel, Coastal Science

You've probably heard of edibles—tasty treats fortified with marijuana oil for medicinal or recreational use in humans. But what if there was an edible designed for animals?

According to a paper published last month, scientists in Lebanon fed Nile tilapia fish pellets laced with cannabis oil to test whether the drugs could make the fish chill the heck out and maybe even grow faster.

But what does a tilapia have to be stressed about? It's not like it has a mortgage, deadlines, or a Twitter feed full of Trump news. But life can be tough for a fish in a barrel. Tilapia is farmed intensively, and in a bid to maximize the amount of product fish farmers can bring to market, some fish pens have become incredibly congested.

Living in such close quarters can lead to all kinds of nastiness for the fish, including reduced water quality, more incidences of disease, and "increasing intraspecific interactions"—translation: fish bullying.

All of which is why it would be nice if there were something we could feed the tilapia to take the edge off. Unfortunately, the pot pellets didn't quite have the mood-altering effect the scientists had hoped for.