Commentary

Technology uses for fishing aquaculture

Kristin K Rungea[*]

Department of Aqua Science, Land-Grant University, Pennsylvania, USA

DESCRIPTION

Recreational anglers' interactions with fishery resources have changed dramatically as a result of technology created for or accepted by the recreational fishing industry. Technology is fundamentally transforming all areas of recreational fishing, from finding and capturing fish to replicating their natural prey and reaching previously inaccessible seas to anglers sharing their exploits with others. These advances may appear to be helpful from the standpoint of the consumer, but technology may generate unanticipated obstacles for fisheries managers and policymakers, leading to reactionary or even ill-defined methods as they try to keep up with these changes. The purpose of this study is to look at how recreational fishing technologies are changing the way anglers engage with fish and, as a result, how recreational fisheries management is done. We use a combination of structured reviews and expert analyses, as well as descriptive case studies, to highlight the many ways that technology is influencing recreational fishing practises, as well as what this means for changing how fisheries and/or these technologies must be managed—from changes in fish capture to fish handling to how anglers share information with each other and managers. We hope that the examples provided here lead to greater and better monitoring of technical developments and involvement by management and policy authorities with the recreational fishing sector, given that technology is always improving. As a result, management activities involving emerging and evolving recreational fishing technologies will be proactive rather than reactive. Natural resource management has had to adjust to technological advancements that have emphasized resource extraction. Often, technology has made it possible to collect trees, minerals, and fish more efficiently-at industrial scales and in previously inaccessible sea depths. Hooks and boats, multifilament nets, echolocation, and the diesel engine are only a few examples of important fisheries technologies. Vessel technology, navigational and echo-sounding equipment, and several fishing gear technological

breakthroughs, as well as advances in refrigeration technology, have made high-seas fishing viable. All of this has had a significant impact on not only stock evaluations but also fisheries management. In summary, evaluation and management must adapt as technological advancements sneak into a sector. Non-commercial resource extraction by hunters and fishermen, for example, has also been influenced by technology. Laser sights, precision scopes, innovative munitions, so-called assault-style rifles, and electronic trail cameras have replaced muzzle loaders and bows and arrows that were state-of-the-art less than a century ago. Similarly, what used to be done with bamboo rods and simple braided horsehair lines is now done with precision-machined reels, ultra-sensitive graphite composite rods, nearly invisible fishing line, battery-powered lures, underwater cameras, and angling apps that allow anglers to share their experiences with others. These recreational fishing inventions are similar to those in other "sport" worlds, where innovations have improved the sport while also causing some controversy. Sporting organisations frequently self-regulate by limiting the technology that can be used in competition, particularly when it comes to automation. Local angling communities may self-regulate the usage of specific technology, either to limit effectiveness, manage conflicts, or guide the fishery back to a "fair pursuit," obviously in line with locally established norms.

CONCLUSION

Anglers can use a variety of technology to identify, capture, and handle fish in the recreational fishing sector. There are several ethical difficulties that arise when it comes to "giving fish a sporting chance" and giving unfair advantages to some fishermen who use various technology. Given their potential to influence the sustainability of recreational fisheries, natural resource management authorities should pay particular attention to innovations, both those that have already been implemented

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[*]**Corresponding author.** Kristin K.Rungea, E-mail: Kristin25@gmail.com

and those that are on the horizon. There are numerous research requirements and very little empirical research on the effects of technology on recreational fishing outcomes in general. There is evidence of technology creep that improves fish capture success as well as tools that can alter a fishery's selectivity, something that has been observed in the commercial arena for decades. An essential point here is that resource management organisations should share their experiences, and scientists should research the impact of recreational fishing advances more thoroughly.