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Recommended Citation

Willette DA, Navarrete-Forego G, Lizano AM, Sotil G (2018) RE: eDNA to identify rare species in fisheries by-catch. *eLetters Science* 9 July 2018.

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Science

RE: eDNA to identify rare species in fisheries by-catch

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(9 July 2018)

In the recent Perspective, "A tool for finding rare marine species" (15 June 2018, p. 1180-1182), Pikitch describes the potential of environmental DNA (eDNA) to find and study elusive and rare marine species in a non-invasive, rapid, and cost-effective way. We agree with Pikitch that eDNA has tremendous promise as a complementary tool to conventional detection methods in marine systems, including identification of species threatened by overfishing, and related, non-selective fishing methods. Unfortunately, the Perspective missed the opportunity to explicitly discuss how eDNA surveys may be applied to advance conservation efforts by extending the method beyond open water surveys. For example, eDNA methods could be used on fishing vessel wastewater to screen for rare species in fish landings (1). Indeed, some commonly used eDNA metabarcoding PCR primers for fish were originally developed in closed environments in a public aquarium (2). Traditional Monitoring, Control, and Surveillance (MCS) tools can be extremely time consuming and require expertise in fish identification (3). Thus, supplementing MCS instruments with eDNA may not only improve traceability efforts of key commodity species, but simultaneously be used to screen for rare and threatened species such as sharks, dolphins, and sea turtles un-intentionally corralled as fisheries by-catch (4). Furthermore, eDNA methods may aid in detecting the frequency and impact of species that escape from aquaculture farms into open water systems (5). Preliminary testing of eDNA as a monitoring tool for fisheries management is underway in collaborative efforts across the Pacific (6), and has the potential to transform fisheries management and conservation of rare marine species.

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