fishRman: A Shiny R Dashboard improving Global Fishing Watch data availability

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Summary

One of the burdens of fisheries scientists is the scarcity or lack of consistent, extensive data on the subject. When such data do exist, they are often only available:

- To universities or other research institutions;
- Through bureaucratic ordeals;
- For a fee.

This issue has been tackled by Global Fishing Watch, an independent, international non-profit organization promoting ocean sustainability through greater transparency, visualizing, tracking and sharing data about global fishing activity for free(Global Fishing Watch, 2021).

While the datasets are indeed publicly available, they are also rather large and quite difficult to manage, since they require proficiency in the programming language R (R Core Team, 2013), in the SQL query language, or both.

Statement of need

Overcoming these major barriers, `fishRman` sets itself as a web-based solution that provides an intuitive user interface for querying, downloading, analyzing, and visualizing Global Fishing Watch data on fishing effort.

The user-friendly interface (Attali, 2020; Bailey, 2015; Chang et al., 2021; Perrier et al., 2021) allows users to easily interact with the SQL query constructor, seamlessly building (Arel-Bundock et al., 2018; Gagolewski, 2020; Hester, 2020) and running queries (R Special Interest Group on Databases (R-SIG-DB) et al., 2021; Wickham & Bryan, 2020). In a few clicks, users are able to analyze retrieved data in several different ways, such as visualizing the top n-th percentile of the dataframe for any percentage (Garnier et al., 2021; Pebesma, 2018; Richard A. Becker et al., 2018; Wickham, 2016), calculating the fishing effort exerted by specific countries via certain geartypes, and producing time series of fishing effort with a daily, monthly, or yearly frequency (Wickham et al., 2019, 2021).

Designed with ease of use in mind, `fishRman` is intended for a public of researchers, students, managers, and stakeholders in the field of fisheries management with little to no proficiency in programming, data analysis, or both. More experienced users may also benefit from the software to avoid writing lines of code for what has already been implemented in the dashboard, in order to focus on other aspects of their research, or even customize the source code to better meet their specific needs.

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