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Editorial: Fishing in the time of COVID-19: Effects on fishing activities, resources, and marine ecosystems

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Editorial on the Research Topic

[Fishing in the time of COVID-19: Effects on fishing activities, resources, and marine ecosystems](#)

The COVID-19 pandemic represented an unplanned global shock with serious impacts on the worldwide economy and human health that affected the fisheries sector with social, economic, and ecological consequences that have yet to be fully assessed. How COVID-19 impacted the activity of fishing fleets and how it reverberated on the behavior of fishers emerged as questions for fisheries and social scientists, national governments, the fisheries sector and international agencies (e.g. FAO, World Bank, etc.). The dynamics of global fisheries occurring in this exceptional situation included a series of reactions and adaptations that involved the whole sector, from fishers at sea to the whole supply chain and represent a baseline source of knowledge on fisher's behavior. The analysis of such reactions and adaptations can provide insights both for the set-up of more effective management strategies and for future social-ecological crises. The objective of this Research Topic was to collect a series of contributions documenting, analyzing, and quantifying the effects of COVID-19 on the fisheries sector. Overall, the Research Topic grouped nine original articles that provide an overview of the effects of the pandemic (and associated restrictions) worldwide.

This Research Topic includes scientific contributions which document the effects of the pandemic and associated restrictions on the activity of fleets in different areas of the world, both during the lockdown period (January-March 2020) and in the months thereafter, encompassing both small-scale and recreational fisheries. Effects were documented through the analysis of different data sources including satellite data

(VMS, AIS, SAR), landings (catch) and market data, economic indicators, questionnaires as well as state-of-the-art approach based on Synthetic-Aperture Radar (SAR) images.

With regard to small-scale/recreational fisheries, the four studies carried out in different parts of the world (Macusi et al., Pita et al., Hook et al. and Bolognini et al.) have shown a widespread and general decrease in activities, with great economic but also psychological consequences for the communities concerned. In the first contribution of the Research Topic, Macusi et al., assessed the impact of COVID-19 restrictions on the catch per unit effort (CPUE) of small-scale fishers in the Philippines. The authors found that the impacts of COVID-19 restrictions on fishers and their families were high due to the lockdown policy imposed in the fishing villages during the earlier phases of restrictions by the government. The study also evidenced a lack of mobility, food inadequacy, travel restrictions and their children's education for the fishers and their families. Pita et al. presented the result of an international research effort to understand the main impacts of the COVID-19 pandemic on marine recreational fishing, based on consultations with experts from 16 countries and documented a worldwide reduction in marine recreational fishing activity. Hook et al. documented the impacts of COVID-19 on sea anglers in the United Kingdom, reporting negative effects for marine recreational fisheries and, consequently, negative effects for participation, effort, physical activity and well-being. Bolognini

et al. provided a preliminary assessment of the consistency of marine recreational fishing in a case study from the Mediterranean Sea (Italy), using the COVID-19 pandemic as one of the most unique opportunities to better understand the social phenomenon of this fishing sector and its repercussions on the environment.

With regard to the professional fisheries, the five studies included in this Research Topic have shown both a reduction in activity during the lockdown period, but also a rapid and strong recovery in the summer of 2020, with consequences for resources yet to be assessed. Russo et al. analyzed how the COVID-19 pandemic affected the fishing activities in the Northern Adriatic Sea (Central Mediterranean Sea), documenting a strong reduction in fishing effort, landings, and profits for several fleets. Declines ranged from -36% of landings for the pelagic trawling fishery, to an -85% decline in profit for the small bottom otter trawl fishery during the lockdown period. Plagányi et al. summarized the impacts of COVID-19 on a tropical lobster fishery's harvest strategy and related supply chain to inform on potential adaptation strategies. Villasante et al. developed a rapid assessment of the COVID-19 impact on the Galician (NW Spain) seafood sector, one of the most important fishing regions in the world. Their results demonstrated that the impacts were diverse. While the seafood sectors (fisheries and aquaculture) and trade were disrupted by abrupt shifts in demand, supply, and limitations on the

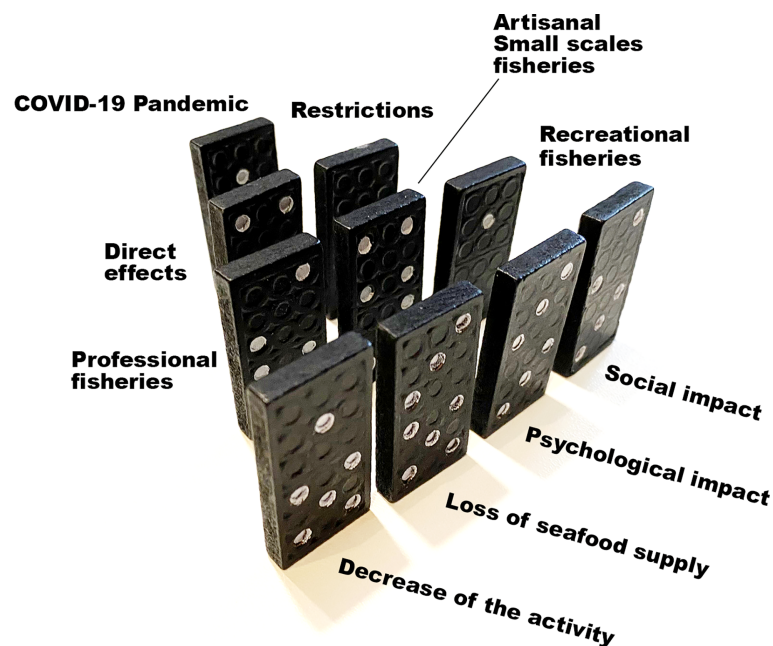


FIGURE 1

Representation of the domino effect triggered by the COVID-19 pandemic and affecting first all fisheries sectors and then, progressively, the food chain and the economic and social communities associated with fisheries.

movement of people and goods, the canned production sector and the imports and exports of prepared and preserved seafood products followed an increasing trend during the COVID-19 pandemic. Furthermore, Russo et al. quantified the effects of the COVID-19 shock on the large fishery operated by the Italian fleet of bottom otter trawlers in the Mediterranean Sea, demonstrating that the consequences of the pandemic have been highly varied. Despite a marked overall reduction in activity in the first semester of 2020, in some cases the strategies adopted by Italian fishers and the commercial network linked to their activity have significantly reduced the impact of the pandemic emergency measures and taken back catch and effort to levels similar to those of previous years. In addition, they suggested that when fishing activities restarted the effort increased on coastal regions characterized by a greater abundance of resources and longer effective fishing times. Pita et al. used SAR images, a state-of-the-art approach, to assess human activities at sea and reveal the impact of the Covid-19 crisis on fishing activities in French Mediterranean waters. The analysis documented that ship frequentation remained at the same level during the most severe lockdown period whereas, similarly to what described by Russo et al., fishing activity increased later in the pandemic similar to the summer peak experienced in previous years. The five papers documenting the impact of the COVID -19 pandemic on commercial fisheries examined not only the direct impact on fleets, but also how that impact affected the entire supply chain. Several positive adaptive strategies emerged to deal with the Covid-19 impacts: Proximity to markets, investment in domestic or nearby supply chains and the development of new technological innovations to help avoid food shortages and mitigated the economic consequences for the sector in different areas, especially in the Mediterranean Sea (Villasante et al., Russo et al.).

In summary, the papers in this Research Topic document quite diverse impacts on the fisheries sector related to the pandemic. Most papers document that the pandemic had a massive domino effect on all categories of fishers, from amateurs to professional fishers, through its direct and indirect

(restriction-related) impacts, resulting in various negative consequences in terms of psychological, social, production, and nutritional impacts (Figure 1). The negative domino effect was mitigated in very specific cases where the pandemic brought benefits. For example, the close relationship between fishers and the market chain facilitated the adaptation and adoption of local countermeasures to a generally negative situation in Italy. In addition, the negative impact of the pandemic on the production sector boosted the canned fish industry. Overall, given the complexity of the environment-fishery-market system, it is an aspect that short-term shocks such as the pandemic can lead to a general negative impact, but it does not affect all parts of the system: some well-structured parts (from production to market) can better withstand the short-term shock.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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