Darkening Skies : A look at the Conservation capabilities of a post pandemic world

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A post pandemic world

- COVID-19 happened and as expected, the problem was a complex system, with multiple points for possible feedback
- Positive?
  - Initial decrease in emissions
  - Decreased human disturbance
  - Data to model green policies
- Negative?
  - Decreased conservation funding
  - More beneficial for invasive species than indigenous species
  - **Weakened enforcement of environmental regulations**

Weakened regulation on ecosystem health since COVID-19

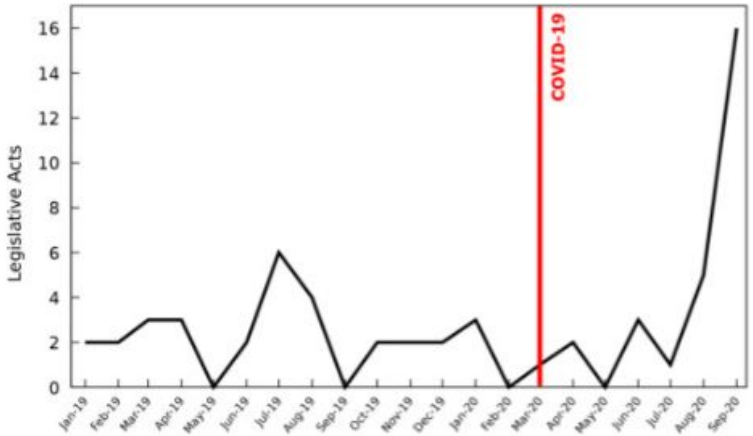
A societal shift in priorities

- Under the guise of providing relief during the pandemic, governments around the world have struck down and weakened environmental frameworks, passing legislation
- Climate protections were eased to provide economic relief with media attention being exclusively on COVID-19

→ Leading to unprecedented environmental damage

For example: The number of legislative acts concerning the environment have increased 4-fold since the pandemic.

- **Brazil:**



Our Aim

- **Find cases where we can provide evidence of the detrimental effects of changing regulations and advocate for reversal of protective measures to prevent further damage.**
- **Once we understand the effects of legislative changes on the ecosystem's health. This evidence will allow us to advocate for stronger environmental protections to prevent the depletion of this extremely important food source.**

The biological & economic effect of COVID-19 on fisheries

Why fisheries as a model system?

- Data is attainable at different levels of granularity
- Modelling work already exists in the literature and can be built upon (Coll et. al 2021)
- It’s a huge market & lots of money in the industry
- Marine organisms are of the most over-exploited

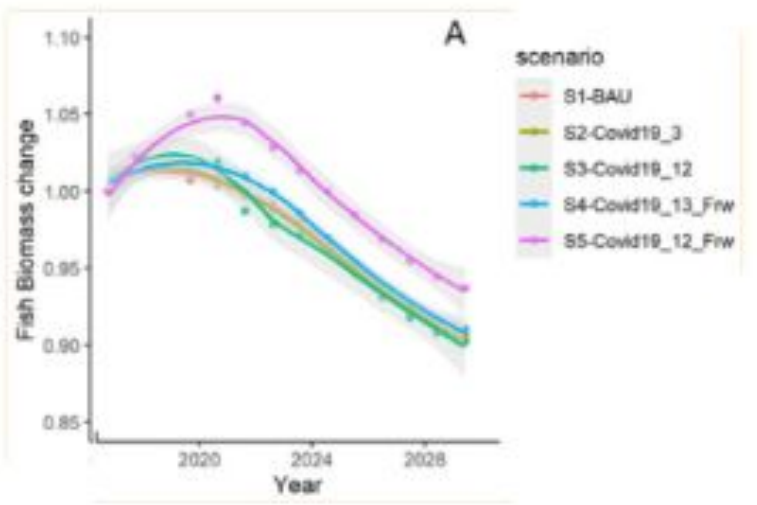
Plan of Action

- Examine how the post pandemic dynamics would be, assuming no degradation of protections.
- Any deviations from this behaviour would be evidence for the detrimental nature of the changes in regulation
- Variables of interest: landings, revenues & fishing effort (Coll et. al, 2021)

Fisheries model explained

- Aim: what is the trajectory of the system if the easing of protections hadn't happened
- Statistical methods: Generalised linear models for four different scenarios of lockdown enforcement.
- Coll et. al projected biodiversity change for extended lockdowns under different time periods and for most projections they saw a substantial increase in biomass for many species.
- So, for recovering commercial species and ecosystem sustainability, the best approach is a large, sustained reduction in fishing activity.
- Ecosystem sustainability requires longer lockdowns and another major pandemic or disruption in our lives

Null Model VS what actually happened



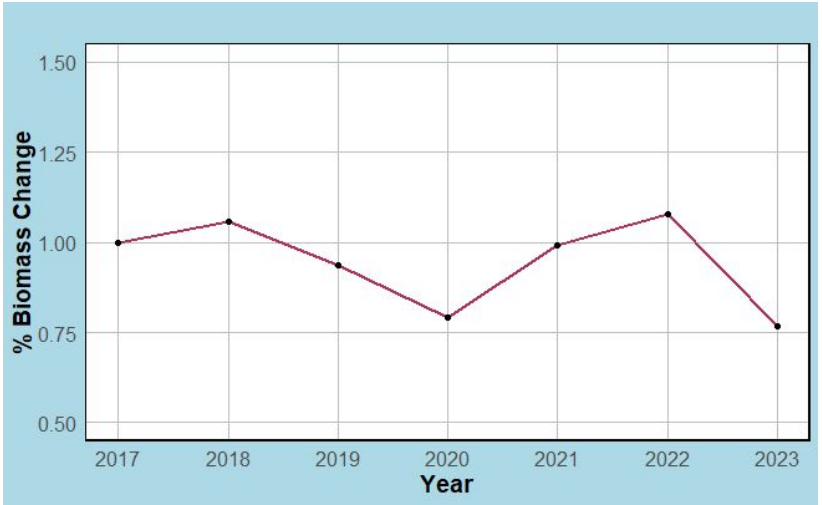
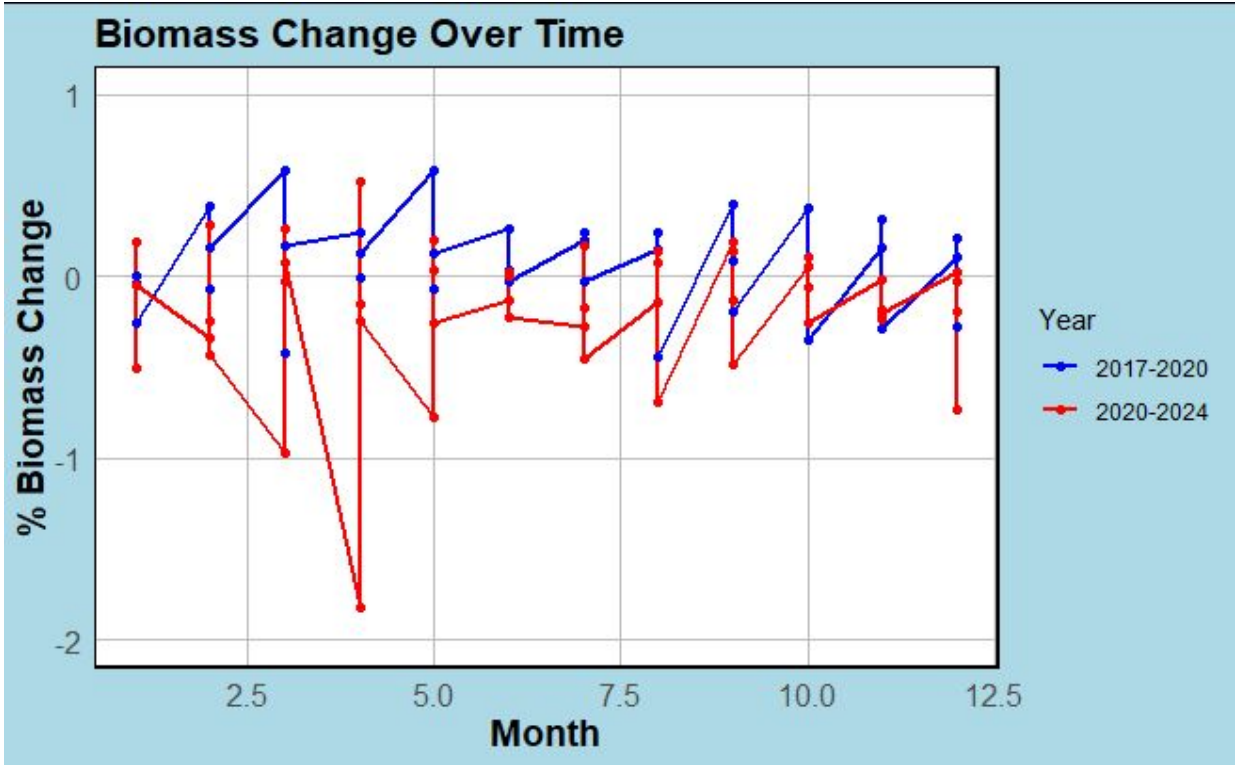


Figure 1: Projected Biomass change (left) VS actual biomass change (right).

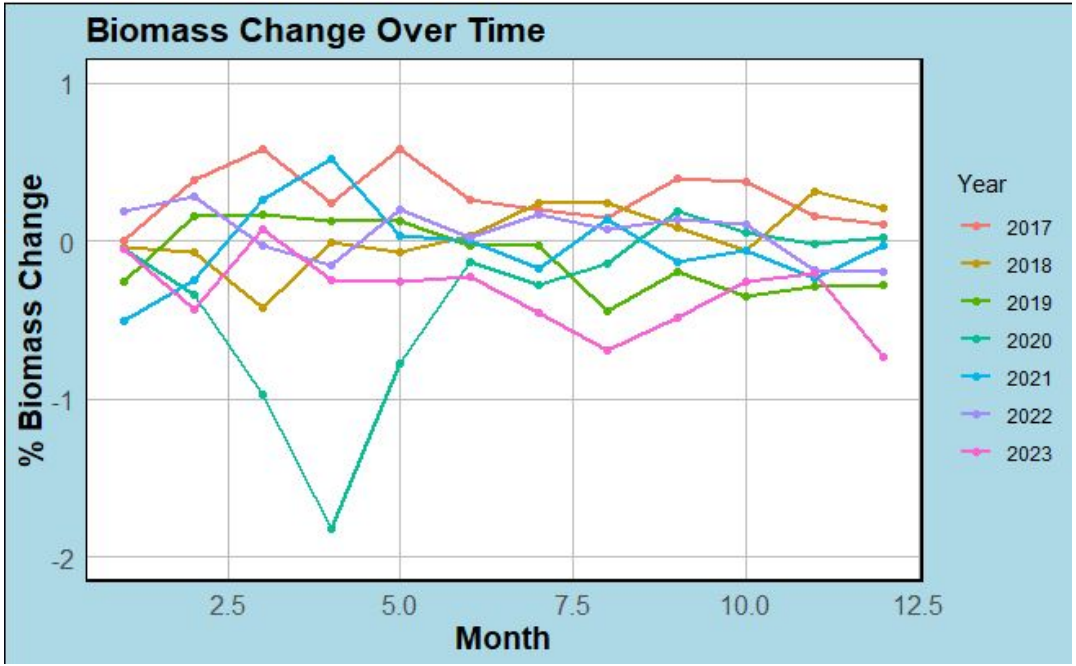
Monthly & seasonal fluctuations



We observe monthly and seasonal fluctuations:

- Post-COVID-19 have significant larger reductions than pre-COVID-19
- Feb-March-April the largest.

Yearly difference in % change of biomass



Yearly difference:

1. 2020 = disruption year
2. 2023 the largest negative % biomass change over the last 7 years
3. Clear trend going on as % biomass on average is lower in every subsequent year.

In conclusion

- Coll et. al only looked at use
- The ecosystem's health is way worse than even the most pessimistic forecasts, pointing to the issue being more than that of overuse
- Any predictions that are made for a post pandemic world will be naive to assume that the wildlife and conservation landscape is the same as it used to be before the pandemic.
- Expected due to reduced environmental protection legislation, allowing overfishing
- Human beings, using COVID-19 as cover, have done serious damage to our regulation apparatus to serve their own agendas.

Next steps

- It is key to share these stories with the wider community
- Using these models to detect degrading regulation apparatus will allow us to focus our attention on fisheries systems that are especially vulnerable.
- We would eventually like to incorporate regulation into the model, which will then allow us to use it as an interactive negotiation tool with all the stakeholders, showing them the effects the policies proposed would have on the ecosystem.
- In the bigger picture: develop a framework for analysis of the effects of changing regulation on ecosystem that we can eventually generalise to other fisheries systems across the world