



Stockholm
Resilience Centre



Workshop Report



Stories and Simulations:

Compliance and Periodic Octopus Closures in the WIO region

Online Workshop September 16th 2021

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This report provides a summary of our online workshop including an executive summary, presentations and detailed notes from the different sessions.

Organizers

The OctoPINTS research project (<https://octopints.wordpress.com/>), a transdisciplinary research project based at the Stockholm Resilience Centre, Stockholm University, Sweden and funded by the Swedish Research Council Dnr 2018-05862.

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Abbreviations

BV	Blue Ventures
CBNRM	Community-based Natural Resource Management
FFI	Fauna & Flora International
FPIC	Free, Prior and Informed Consent
SRC	Stockholm Resilience Centre
WIO	Western Indian Ocean



EXECUTIVE SUMMARY

A three hour online workshop was hosted by OctoPINTS with experts on temporal octopus closures in the WIO region. The **objectives** of this meeting were to:

1. **Reconnect** and build on the network established at Wiomsa 2019 and facilitate discussions between expert participants.
2. **Share** and discuss findings from our **empirical work** on perceptions of closures and compliance in Zanzibar.
3. **Share** and invite comments on the scope and behaviour of our **octopus closure agent-based model**.

The workshop demonstrated how a combined fieldwork, modelling and expert consultation process helps to develop systems understanding. The sharing of the fieldwork results through storytelling, painting a deep and rich description of how local fishery actors perceived the closure model's intricate dilemmas around compliance. The sharing of the agent based model's design, such as fishery actors and processes around compliance and patrolling, sparked discussions around interactions of the different components in the closure model. These two approaches of studying and presenting the issues around interventions herein the closure model in turn lead to deeper discussions around the social and ecological dynamics embedded in the closure model.

What experiences and knowledge was shared by participants?

Despite the variety of geographical, cultural and historical realities in which participants situated their work, the social mechanisms of compliance characteristics in Zanzibar were jointly experienced by workshop participants. They highlighted a plethora of factors shaping compliance in their local contexts, such as weather conditions, seasonality of closures and supporting livelihoods and food security. Social consensus was particularly regarded as a key attribute of compliance, the former being influenced by factors such as community consensus prior to starting a closure project, engaging actors such as commercial buyers, the presence of strong leaders and feelings of trust and pride towards closures. On the contrary, participants stated elements like intrusion of outsiders, and kinship relations impeding rule enforcement while blame towards other social groups' activities also damaged compliance. Participants shared their experiences concerning the technicalities of closures. Here, closure entering schemes (who could enter at what point in time), levies, and income distribution at openings were mentioned, and the importance of allowing for appropriate placement of closures e.g. avoiding coincidence with other protected areas. A learning-by-doing approach for conservation's success was emphasised, one considering the geography and history of usage in the chosen closure area. This approach was regarded as an important tool to ensure flexibility and facilitate the achievement of community consensus over closures.



What outstanding questions, concerns & ideas emerged?

On Biological Dynamics: The biological dynamics characteristic of octopus closures were deeply discussed during the workshop, in light of the current quite simple representation of the octopus population model. Depending on the purpose of the current OctoPINTS model (or the usefulness of other future models) the need for including biological and ecological mechanisms were mentioned as these aspects may contribute to a better understanding of these interventions. Notably these mechanisms are not yet fully investigated empirically.

Participants proposed a plethora of dynamics to potentially integrate into the OctoPINTS model, such as growth and replacement rates, spawning potential, habitat preferences, seasonal variability and age-dependent mobility. Climate change was also mentioned as a threat to reef health, leading to higher uncertainty of the above parameters. After considering the various biological factors adding complexity to the current OctoPINTS model, participants asked themselves how much of such complexity was needed if the purpose is looking at compliance and fishery actors' perceptions of the closure. As adding too much complexity might instead compromise the efficacy of the model.

On Social Dynamics: Thoughts and questions on social dynamics flourished during the discussion, leaving us with various inspirations for future research and future models. Topics such as community's heterogeneity and inequality were analysed. Here, questions were raised on the potential for measuring community cohesion levels and their effects on compliance in reality but also how to formalize into the model. Furthermore, individuals' interaction to closures was examined as uniquely shaping compliance and acceptance. The example of women gleaners was proposed, describing the negative effects that the mismatching of tides and openings might have on their access, income, and ultimately on their acceptance of the closure model. Solutions to tackle intrinsic heterogeneity of communities were advanced away from blaming certain non-compliant groups of people, to promoting the distribution of "disproportional benefits" to those individuals who were the most "disproportionately disadvantaged" (e.g. fisherwomen or octopus dependent skin divers). The diversity of issues across communities was also mentioned. Examples include communities struggling with outsiders entering the fishery, but also positive examples where communities experienced successful projects, e.g. when combined with government funded alternative livelihoods, or previous experience of programmes or interventions helped communities better organize to implement the closure model. To have all different groups in a community involved and have consensus on a new project project, and the question of how to get there was also raised.

Ethical considerations on the contextual setting of non-compliance were raised, highlighting the need to consider global-to-local structures of power, ultimately shaping in some part illegal activities in closures. From here, there was a call for



NGOs to take sensitive action at the local scale, specifically the continuous consultations with communities from a project's start. The question of bottom-up was raised, are these interventions really so if it is often fishery managers and officers who drive and implement the project, in this way closures are still top down, however the top is closer to the bottom. Finally, the use of the OctoPINTS model was proposed as a way to allow managers to better understand and experiment with the complexities of adaptively managing fisheries

What will the OctoPINTS project do next with workshop results?

Model development

This workshop held two aims for the model, firstly to share the current model and get feedback on its current design with particular focus on key mechanisms and processes such as compliance and acceptance. Second, we are complexifying the biological and ecological components of the model, partly through a master's thesis within the OctoPINTS project, so we intentionally focused the workshop on getting input for that part of the model.

The current OctoPINTS model will be updated with smaller fishing grounds for the deep reefs and the divers. The growth model will likely be a choice of the Herwig et al. (2012) who worked with free octopus, rather than van Heukelem (1973) who had them in captivity. Include the individual economic benefits from one opening to another. Foot fishers fishing in the free area will be in relation to tides, however noting we are really only concerned with the closure dynamics so this is primarily to include some more realism. We will look into fishers moving to favourite areas versus moving random.

The scenarios we explore with the model, will be informed by the diversity of context that we have learned from this workshop. This means looking at different contexts that represent different community characteristics to see based on the included model processes, which community type has higher or lower probability to develop or maintain high acceptability of closures and make them successful.

Empirical investigations

As a result of our workshop we summarize questions that came up during the workshop as potential future investigations. Can we rethink and reevaluate what really contributes to increased or decreased acceptance? And the same for compliance. Is individual compliance more affected by a) individual acceptance, or b) the acceptance of the community as a whole (representing social pressure), or the c) acceptance in their peer groups (e.g., fellow skin divers). How does the issue of pride and identity contribute to compliance and acceptance? How does trust in compliance play a role? As an example - I trust my peers completely, but do I trust that others comply? What is the influence of that on acceptance of the closure model? What is



the role of market dynamics with regards to export of the octopus, and how does it link to compliance and the acceptance of the closure model? However, we are not sure to what degree we will be able to explore these questions within our project timeline.

Summary of future dream outputs

Just before closing the workshop we asked participants to dream away and Tim asked what they would like to see as next steps. Everyone had a go at this question! *"I would be interested to see how the model and/or fieldwork can represent _____"*.

- The model should take into consideration the biological, ecological, fishery related characteristics - to be able to propose management measures for the species.
- More biological influences in the model. How do we measure social cohesion and how does it affect the model?
- Interesting to have a model to ensure adaptive management. Is there potential for a real-time model that could be applied at the local community level? Interesting question that we'd love to discuss in a future conversation.
- The wider impacts on biodiversity that the octopus fishery has (e.g. the reef, bycatch, biological diversity)
- There is potentially so much that could be added to the model. Global warming and how it affects growth parameters. Although there is only so much to be added in order not to compromise the efficacy of the model.
- My lens now is responding to the critiques of community cohesion and homogeneity and learning to live with the disensus, discussing the critiques laid against Ostrom and CBNRM in failing to grapple with heterogeneity and conflict.
- How does the NGO consult with the community at the start of the project? There will be more emphasis in making sure that procedures such as FPIC (Free, Prior and Informed Consent) are used. Having a focus on compliance pre-conservation projects and wondering if that could be a factor that could be added to the model. How thorough was the consultation process?
Also, does it make a difference who breaks the rules? Is it a woman gleaner, a village leader, are they going to have different influences on the level of compliance? And then apply different fines to different people.
- Great, interesting model! a need or question: how to include additional biological components? And how much do biological components influence compliance beyond the financial benefits? Are we adding (unnecessary) complexity by adding all this detail?
- Fascinating to continue with the discussion and summarise complexity and agree on some objectives. The model could be used for discussion. Market dynamics are not considered much, but could be enriching the model.



We, the OctoPINTS team, are truly grateful for the deep engagement of the participants in the workshop and are keen to continue collaboration within this network to further develop the model, disseminate knowledge on closure dynamics and explore how the OctoPINTS project can contribute to sustainable collaborative fishery management in the region. Warm wishes, the OctoPINTS participants Emilie, Tim, Liz, Andrew, Benedetta, and Jineth and OctoPINTS members Rosemarie Mwaipopo and Maja Schlüter who were not able to participate.

WORKSHOP SESSIONS

We held 3 sessions with the first one on the fieldwork design and results, second and third on presenting and discussing the OctoPINTS agent-based model, and finally a closing round where people reflected on the next steps foremost of the OctoPINTS project's modeling component.

Session 1 - Compliance as a Key Mechanism

Liz's presentation: "Compliance, Complexity and Cephalopods: Contested Responses to Collaborative Marine Conservation"

Why focus on Compliance?

Firstly rule breaking and the outcomes of poaching or thieving, corruption or lack of enforcement was the most talked about subject during fieldwork by participants, this emerged from an open ended or grounded method. So in this way the problem was defined or framed by the participants involved in the study, so then I felt ok taking it up and exploring it further in a paper. Secondly compliance behaviour is critical for the organization and process of fisheries governance, MPAs often fail to fulfill their goals due to illegal activities. Thirdly I saw compliance as an entry point to be able to better understand the power relations taking place in the intervention, to get at those more sensitive topics like who is a rule breaker, why, who has the power to do what. The role of power and social relations in collaborative NRM is highlighted as needing a lot more attention, they determine who has a right to access and manage the marine resources. Finally, I am situated in a Resilience thinking- Social Ecological Systems community where I feel there has been more of an emphasis on collective action and consensus, collaboration and homogeneity, in analysing fishery governance. The topic of compliance helped me to reconceptualize the problem as one of contestation, inequality and disensus- dynamics innate and inescapable to the process of governing and managing interventions. MPAs are contested spaces in general because they have both positive and negative livelihood impacts. The Community Based Natural Resource Management school has also been critiqued for homogenizing or tending to group the social complexity of "community" like resilience scholars in the past. So using compliance to break out the messiness of the social arena addresses this criticism too.



The aim of the paper is not to critique fishery closures and marine conservation interventions nor contribute theory building to compliance scholarship but to show, by breaking apart the uniformity of coastal communities, the diverse understandings of rules, rule-breaking and rule breakers as major influences of protected areas or closure's longevity.

We do this by asking how different participants (including trading actors and fishers of different types and genders) in CB fishery closures experience, understand and interpret;

1. The rules and how they are used to enforce closure processes?
2. Non-compliance or rule-breaking by different people in different situations/contexts?
3. The outcomes/effects of rule-breaking on themselves, others and the overall process?

The research process was grounded in people's (around 70 participants including various types of traders, fishers, leaders) words and understandings of the closure, prioritising their voices and the meanings they gave to the process. This was done through story circles, photo elicitation tasks and discussion groups. I used a gender perspective because it is sensitive to the social differences we were looking to pull out, the diversity of people beyond fishermen that the closure impacts, and also this perspective is sensitive to the intersecting factors like power relations, wealth or identity that shape abilities to navigate changes caused by the closures. Results in the paper are presented as a narrative, rich with excerpts from the data collection methods. Data was analysed using narrative analysis in a qualitative coding software, MaxQDA.

Some results. Though the process was largely perceived as top down and owned by leaders and others, most people responded to the rules in relation to us with commitment in an agreement context. There was a large diversity of perceived rules however clear consensus on the key ones seen as necessary for steering humans, keeping the peace and accessing benefits. Lack of proper enforcement undermined the recognized need for some type of consensus on rules, everyone needs to be in an agreement for things to happen. Men" were subsequently called out as the most common rule breakers across sites and participant groups, in particular young male skin divers, and were painted with certain basic propensities towards following the rules- in relation to women who were more likely to follow the rules. Inequality in access to octopus, appeared as an important perspective that grounded many understandings of rule breaking- based on intersecting factors like skill, gender and age. Breaking of rules was down to four main and sometimes connected narratives, which were fluid depending on actor and situation, the justifications for rule breaking included:



- 1) **Human nature**, that humans are so, we break rules, we are selfish.
- 2) **Need**, one might need to break the rules based on their socio-economic situation
- 3) **Difficulties in enforcement** encourages people to break the rules, or not to report relatives and
- 4) **Ignorance/education**, people might not understand the process.

Liz read us a story titled “The End” that she wrote through combining the voices of the participants of the fieldwork. You can listen to it on spotify here [The End](#), and/or read it here <https://octopints.wordpress.com/2021/10/02/the-end/> on our blog .

Breakout Discussions

Questions to participants

We asked participants to reflect on the following questions in the breakout rooms

- 1) Does your experience correspond to the understanding of compliance from our results and draft paper?
- 2) How would people justify/condemn/judge/accept rule breaking and rule breaking in your cases? Why?
- 3) What types of contestations, injustices, inequalities or dissensus do you see in your own cases?

The summary of the breakout discussions are interwoven in the executive summary.

Detailed notes

Group 1

- (E&F) Context and culture are very similar to one another in terms of compliance.
- (E&F) Learning-by-doing was emphasised during discussion.
- (A) Feeling of discomfort when pointing at potentially non-compliant social groups. Highlighting the need to consider the contextual setting of individual actions, to be spectators and sensitive to the context we are studying
- (R) If openings do not match with tides then this might have a disproportionate negative effect on women gleaners. How do we promote women’s gleaning during opening?

Group 2

- The Rodrigues and Malagasy cases were described by participants with really interesting accounts of how they functioned in each case, however similarities to the dynamics Liz described E.g. the Rodrigues closures are now ten years old and functioning well, a good “success case”, they close for 1 month in Jan/Feb to allow recruiting juveniles and also between Aug and Oct in the



winter allowing for migrating females. They are supported by the Government who employs the fishers during the closed seasons in various types of activities e.g. litter picking, planting.

- The idea of blaming particular social groups was challenged by the proposition to identify disproportionately disadvantaged groups before the start of the closure, in order to allow for disproportional benefit gains of those groups once the closure is set. Everyone should not necessarily have a fair share of closure outputs, equality is not equity.
- Different perception in the understanding of governance. What we refer to as bottom-up community governance can be viewed as top-down decision-making by individuals within the community and often ultimately works in this more top-down way (where a group is designated enforcers).
- It's easy to identify upfront the tendency for individuals to blame other social groups (e.g. men divers, incoming fishers)- sense of otherness.
- Lack of compliance is justified by need for income and food and by the idea that 'closures will not work' because they are too short, too long or set in the wrong place.

Group 3

- Familiarity of closure experiences expressed by participants TN recognised the story from KP
- Issues of outsiders in managing compliance and need for village leadership (within equitable makeup) to address that.
- Importance of the commercial buyers in incentivising compliant/non-compliant behaviour (i.e. in Madagascar and KP)

Answers to Q1

- A process of social consensus is key in building compliance.
- Strong and respected leaders are important for the maintenance of compliance and should follow the enforcement of rules (as in the case of incoming fishers in Mada).
- The geography and the history of usage of the areas where closures need to be considered, because particularly affecting compliance and enforcement abilities (e.g. remote closures)

Answers to Q2

- Social relations impede the enforcement of rules.
- Food security as a reason not to comply. Bad weather conditions become a "stopgap" (?) for fishers.

Answers to Q3

- The WWF Songo Song Case: Communities grouped up to set closures. At their openings, the 1st day was for host communities, while in the next days other communities were also allowed.
- Closures are perceived by men divers as 'good fishing'



Session 2 - Introduction to the OctoPINTS agent-based model

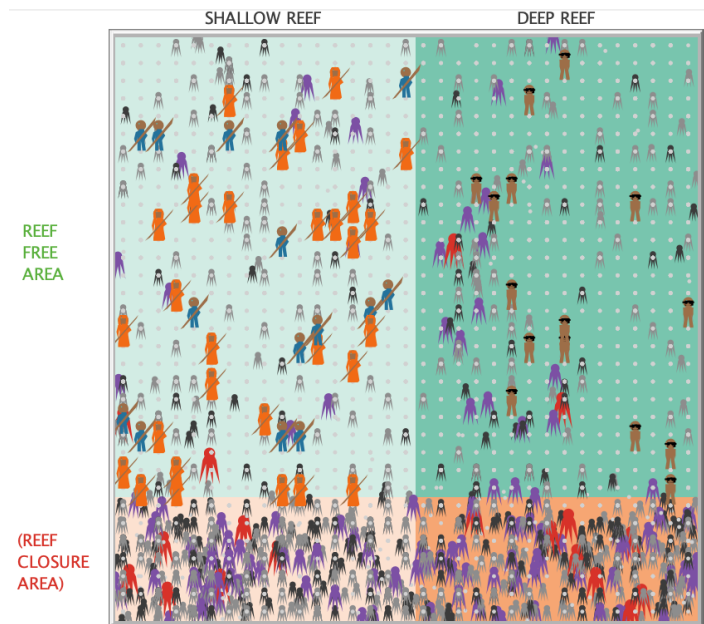
In this session Emilie presented the basics of the model. The agent-based model is designed primarily on the [fieldwork](#) Liz performed, and thus our three case studies. The objective is to understand dynamics that occur over time through interactions between people as well as between people and their fishing environment. The model is to be used as a way to synthesize and analyze qualitative data that Liz collected. Notably this is not a traditional quantitative modeling exercise aimed at specific decision-making processes for managers but rather for exploring, explaining, and understanding.

The aims are to:

- understand better why and when sometimes closures stop and sometimes continue
- Investigate behaviors, limitations, and outcomes between different social groups, with respect to e.g., catches, access, and initial and emerging inequities.
- Explore interactions between factors and processes/activities such as patrolling, poaching, octopus behavior, and catches, in relation to peoples' acceptance of the closure intervention

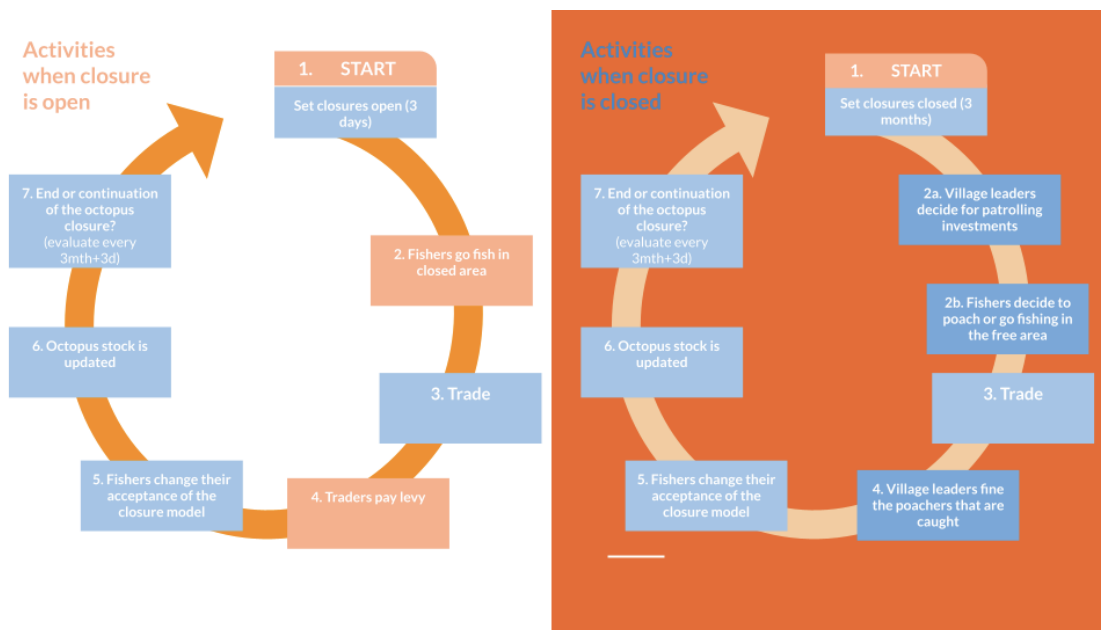
The agent-based model environment

The agent-based model is situated in a grid based environment with a free non-closure area (green), a closure area (orange), shallow reefs (foot fishermen and foot fisher women) and deep reefs (divers) (Figure 1). The octopus are randomly spread on the grid and given a random age in days, and their initial weight is calculated based on van Heukelem (1973) exponential growth equation. Outside fishers and traders are also active in the model but not represented in this interface.



Closure activities

Each time step in the model corresponds to one day. Each of the following activities takes place (figure 2), unless otherwise specified.



Next the model was shown live and a couple of scenarios were explored to study if a closure was repeated over time or if it was stopped. SCENARIO 1 looked at initial settings where we had positive fishers towards the intervention, low probability of poaching, and no outsiders coming at the opening. Here the closure was successful. In SCENARIO 2 we had reluctant fishers, medium probability of poaching, and many



outsiders at opening. Here the intervention failed due to the foot fishers catching very few octopus on opening day, and the heavy poaching making people not satisfied with the intervention - leading to even more poaching. After this we discussed in 3 breakout rooms, the questions:

1. What is missing from the scope of the model? i.e. are the key 'mechanisms' that determine the story of a closure captured?
2. Does the model behave in a way that reflects your real life experience? (what is different/missing)?
3. How well do the model outputs capture important outcomes?

Summary of session 2 discussions

Many positive reactions but clarifications and differences compared to other cases were then discussed. Questions arose around the dynamics of octopus biology. Currently it is modeled as initially one chooses to simulate x number of octopus, and where if one is caught another one comes back at a random young age. So the point in the current model is that the octopus has to be left alone to grow, and no other details are included at this point, notably octopus biology related dynamics are going to be investigated in the next steps by a Master Student based at SRC. Linked to the biology of octopus, several important issues around when and where to have the closure are not captured, but are key to Madagascar cases (and probably beyond). Different closure entering schemes were mentioned (where women can be let in first to harvest for instance), and the importance of the levy for the acceptance of the closure model. In general, pride in the octopus fishery could be important and can also influence people's incentives to have a closure.

Notes from Session 2 discussions

NB. Here we aimed to put post-its aligned with the questions even though it is not always a perfect match.

Question 1 - What is missing?

- a deep area should have less density - not only for octopus fishing, they would fish alongside other fisheries.
- acceptance is due to many factors: weather, seasons, food security,
- Is there spillover from closure during the closure period?? v. fascinating to look into that (jineth)
- looking at the model from the Mada situation -what is missing is the health of the reef. Often, closures are chosen in unproductive sites. This helps acceptance.
- Shallow is usually much larger than deeper areas.
- less density of people fishing in deep areas because also fishing other spp and harder to fish.
- Madagascar has yearly closures but we model tri-monthly (BV)



- Important to have different timings for closure and openings in really close areas (BV)
- Difficult to know when and where to have the closures so BV does a bit planned mixed with trial and error
- Everyday fishing? but it's often based on spring tides etc so can have week breaks even during closed time- is it relevant to include?
- Trust and pride - do I trust there is compliance within the other groups, pride, is there pride over the octopus fisheries to start with
- How could we link the model to the important interactions with “perception of development- the number of other projects is attractive, if you do one, what other ones will come, NGO, compliance and other projects”
- If acceptance is important for compliance it is worth considering how it will be objectively measured and included in the model. One way to do this would be for closures to follow an FPIC process. If this is done then consent granted by the community could represent broad community acceptance. Theoretically and empirically - an FPIC process could identify and look to overcome barriers to compliance.

Question 2 - Does the model behave in a way that reflects your real life experience?

- in Madagascar - have tried many different systems with revenue distribution. Now I will try to work with the gleaners who have ownership of the closure. so during opening choose and pay someone to glean. then landings sold for a higher price and benefit to common benefits.
- Other opening scenarios - only allow 10-20 fishers to go in. income is differently collected and distributed-In Kuku
- In Madagascar we leave the shallow areas for the women during the closure. During the 1st 2 days only women go to shallow areas then men after the 3rd day.

Question 3 - How well do the model outputs capture important outcomes?

- In past in Mada, collected levee to fund activities in the community
- Common in Pemba that levy goes towards a community project that increases acceptance.
- division of levy between community project and patrolling. variable but in Kuku 1/2 goes to patrol costs (stipends for patrollers, plus fuel or rent for vessels), sometimes allowance for police. fund for contingencies 1/4. 1/4 to community funds. Fines go into the emergency fund. Patrol members are paid at end of a closure cycle

Questions related to things needing clarification

- What are the reproduction rates of octopus?
- Movement of the octopus to deeper areas?
- Home reefs for octopus?



Session 3 - Key processes of the Agent-based model

After a break, Emilie presented some of the key uncertain aspects and mechanisms of the OctoPINTS beta model. These aspects were explained from different perspectives within the model, for instance, how poaching and acceptance of the closures is modeled from the fishers position, patrolling according to the administrative unit (SFC) and the explanations of growth of the octopus. Some additional questions about how the model works were addressed and discussed.



Poaching: Factors influencing the decision to poach

- individual_poaching_probability is a fixed value of each fisher reflecting the innate “human nature”
 - Divers - twice as likely as foot fishing men
 - Women half as likely as foot fishing men
- Divers poach in both shallow and deep reefs
- Poaching probability is also influenced by dynamic variables
 - OPTIONAL - A fishers acceptance of the closure model
 - OPTIONAL - The level of patrolling of the reef (scares off poachers, and increases likelihood to catch poachers)



Acceptance: How acceptance changes over time

- Acceptance - how people perceive the closure model
 - Acceptance always *increases* at openings because of the associated **festivities**
 - Acceptance *increases* if fishers catch **big octopus**
 - Acceptance *decreases* if poachers and are not **adequately fined**
 - OPTIONAL - Acceptance *increases or decreases* based on the incomes that fishers get compared to the previous opening.
-



Patrolling: Decide on investments

- At the start the administrative unit **invests** e.g. 20% of what a “full patrolling” would cost.
 - “Full patrolling” will scare most poachers away and catch most those that still try
 - If the investment is 20% then also the likelihood to catch a poacher is 20%.
 - Investment dynamics
 - If poaching is decreasing - the funds for patrolling are reduced
 - If poaching is increasing - the funds for patrolling increase
 - If a fisher is caught it will, with a likelihood of 0.5, pay a fixed fine to the administrative unit funds (if he/she has the capital to do so)
 - Fines are reinvested in to patrolling (together with $\frac{1}{3}$ of levy)
-



Octopus: update octopus

- Each octopus grows according to an exponential growth function based on van Heukelem 1973 (and also Oliver et al 2015)
 - Octopus stay in the same area (patch)
 - If an octopus gets caught , a new octopus ‘respawns’ with an age random 1-90 days old.
-

The participants were asked to write in the chat their topic preferences for further discussion in order to arrange different breakout groups constituted by four or five participants with one or two facilitators. There were two groups: 1) biological aspects of the model and 2) compliance and acceptance aspects of the model.

Summary of the breakout group discussions below are interwoven into the executive summary.

Breakout group 1 Biological aspects

Main question discussed: What are some biological dynamics to consider?



The OctoPINTS model led to fruitful discussions about how key ecological and biological elements might influence the success of octopus closures:

- Growth rates and movement between different areas (deep and shallow reefs)
- Habitat needs and others aspects such as feeding and shelter
- Habitat preferences and impacts on catchability
- Challenges associated with the species identity
- Mobility and ranges of movement at different life stages
- Life cycle and habitat requirements
- Age based movement and effect of tidal fishing
- Interactions with seasonal variability in tides
- Larval dispersal, spawning potential and replacement rate at different scales (local and global)
- Interactions between mobility and types of gears/fishing

Some recent references on octopus biology were suggested, particularly those that address reproductive aspects.

Breakout group 2 Compliance/acceptance aspects

Questions discussed: What affects compliance? How? What is the link to acceptance of the closure model? How does it link to community cohesion?

- Fascination for seeing the running model, understand you can't include it all, the way you explain the model is good. Sure it can be enriched with nuances, but what is feasible?
- Different communities have different issues (neighbors vs no neighbors) - (model as scenarios /EL)
- COVID - ssf we see that many coastal communities go back to fishing because of tourism, so impacted by COVID - the density of fishing is important
- More complex when you look at outcomes (how useful is it/EL)
- Potentially a useful tool for communicating with local authorities to see what determined success or failure
- how fines are set. Need to be realistic for people, and they need to be able to pay them. Fines need to be set in line with severity. E.g. repetition of breaking rules or one time? How severe needs to be linked to the punishment. Gradual and payable fines are important?
- Looking at the finances as a trigger for compliance is fair enough because it cross cuts all sites. NB. If the community is defined too broadly it may not be relevant. The 'community' in question should be the relevant fisher groups, government officials, NGOs i.e. include a range of stakeholders with direct interests in the fishery /WS participant
- Arrests and fines paid - so lots arrested then acceptance goes down (The change in acceptance is sigmoidal /EL)

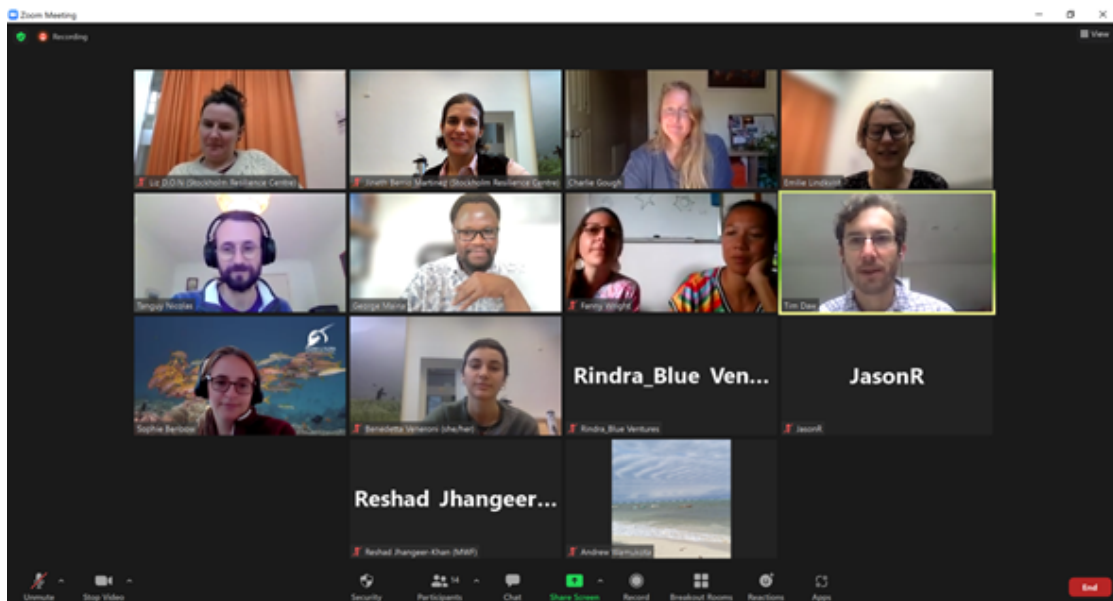


- Community cohesion - Emilie asks how do you measure community cohesion? big question how to measure it? A participant suggests to start with Olsen's work from 1965 that presents 5 (?) main components to look for. Note: it might be for geographical communities, need to check.

Closing

In the closing session, we asked the participants to answer Tims question on dream outputs that we decided to put in the executive summary (see final section in executive summary). After the workshop we shared with the participants a link to a feedback form, where further thoughts and reflections on today's workshop session might be added. Overall, the online workshop led to very interesting discussions about our methodological approach and the preliminary results presented during the session. There were many positive comments and relevant reflections on the scope and key parameters of the octopus closure agent-based model as well as key aspects such as compliance and acceptance of the closures.

At 12.00 - Thanks and close.



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