1. Madagascar and Southern Africa Regional

1. Review each summary table
2. Drag stars to the findings that resonate with your experience
3. Drag Xs to any findings that do not agree with your understanding
4. Use a sticky note to explain your Xs or provide references UBC should consider

MADAGASCAR

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data suggest that DWFs operate within 70% of the surface area of the Malagasy EEZ implying that there is a high competition between DWF and domestic fleets for fisheries resources. However, DWF catches about 2% of the total fish landings from Madagascar EEZ; about 91% of the catch by DWF is reported indicating that unreported fishing is low. Despite the marginal contribution of DWF catch to the fisheries of Madagascar, their fishing activities occurring in large area of the EEZ are partly contributing to overexploitation and declines of some key fish stocks such as narrow-barred Spanish mackerel (Scomberomorus commerson), Kawakawa (Euthynnus affinis) and skipjack tuna (Katsuwonus pelamis).	Medium	High

2. Overall threat to domestic fisheries from other fleets in the same region	Threat Ranking	Confidence in Threat Ranking
Spatial overlaps between regional and domestic fleets in the Malagasy EEZ are low as the fleet which contributes an average of 0.4% of the total fish landings operates within 0.5% of the surface area of the Malagasy EEZ. This indicates that the regional fleets pose a low threat to the domestic fisheries of Madagascar. While some illegal and unreported catches are recorded by the regional fleet in Malagasy waters, the levels are low (2.8%).	Low	High

3. Competition for focal/key species	Threat Ranking	Confidence in Threat Ranking
• Mackerel tuna or kawakawa (Euthynnus affinis) stock is overexploited. It is targeted by both the domestic fleet and DWF in Malagasy waters indicating the importance of the fish to the fisheries of Madagascar. Whereas domestic fleet contributes about 48%, DWF provides 52% indicating the high competition that exists between these two fleets for the fish.	High	High
• Longtail tuna is also exploited by both the domestic fleet and DWF. Sea Around Us data suggest that there is a high competition for longtail tuna between both fleets because whereas the domestic fleet generates 52% of the catch, DWF contributes 48%. The longtail tuna stock is also overexploited.	High	High

4. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
• Sea Around Us data suggest that DWFs operate within over 70% of the surface area of the Malagasy EEZ suggesting that there is a high competition between DWF and domestic fleets for fisheries resources, especially kawakawa and longtail tuna. Contrariwise, there is a negligible competition between regional and domestic fleets as regional fleets operate within about 0.5% of the Malagasy EEZ.	High	High

5. Impacts of regional and DWF activities on domestic fisheries and fisherfolk	Confidence in Impacts
Available data¹ show that domestic fisheries in Madagascar are experiencing overfishing and many of the fish are caught before they reach maturity. Against this background, intrusion of DWF into inshore exclusion zone (IEZ) reserved for artisanal fishers in Madagascar poses a significant threat to the food security and livelihoods of fishing communities within the coastal areas of Madagascar. Moreover, the intrusion undermines local fishery management efforts.	High

6. Priority management or policy needs	Confidence in Policy or Management Needs
• Create no-take zones and implement regular closed seasons in Malagasy waters to protect certain critical life stages of fish species to promote sustainable fisheries management	High
• Regulate mesh size of fishing gears to allow fish to spawn at least once in their life time before they are harvested	High
• Increase surveillance and monitoring of fishing activities of all fleets to ensure that fishers are strictly adhering to fisheries laws and regulations towards good fisheries governance	High

Duration of this staudy need to be clear and well framed

More focus should be paid at the the country level data

Were your data able to decipher between tuna species or are landings grouped as "tuna"?

National an regional regulation are needed to fight against IUU: Enforcement of PSMA and RFMO

Madagascar do not have appropriate means to enforce the law within the all EEZ

Notetaker Space

Is there a lot of regional cooperation that merits low threat ranking between regional and domestic fisheries?

Time frame of the study? This might help indicate the fishing agreements signed by the Malagasy authorities with foreign fleets. There are not many agreements and the 70% overlap is too high.

Catch data maybe reported to the species level. If so, catch data will show to the species level

Recommendation disproportionate to threat of DWF. They seem more for local fishery. For example being applied to no-take zones.

Maybe target management of domestic and regional fleet. Make the recommendation more specific.

Use of GSIs and monitoring by regional or domestic authorities

Regulation and law enforcement requires capacity. Setting up no-take zone with regular closures will make enforcement manageable.

SOUTHERN AFRICA REGIONAL AND COUNTRY SUMMARIES

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
The average annual catch (2014-2018) in the Southern Africa region is estimated at 2.6 million tonnes. The Regional (domestic and regional) fleet landed about 79% of the catch while DWF landed the remaining 21%. Again, these numbers show a significant level of competition between DWF and Regional fleet - for fishing space and fisheries resources in the region. About 320 taxa of fisheries resources have been recorded in the landings of the Southern Africa region. Among these taxa, cape horse mackerel (Trachurus capensis), hakes (Merluccius capensis) and Southern African anchovy (Engraulis capensis) constitute the bulk of the landings in the region, while marine fishes alone account for 23% of landings. The cape horse mackerel, which serves as food for and supports the livelihoods of fishers in the region, is unsustainably exploited through overfishing and poor management (SADC (2019)). Southern African fisheries employ about 3.3 million people, contributing approximately 3.5% to the region's gross domestic product (GDP), and the per capita consumption of fish in the region of about 11.3 kg. The fish landings have been declining in Southern Africa as a result of overfishing, and there is the fear that the unsustainable exploitation of the fish stock in the region can lead to the total collapse of the cape horse mackerel fishery. This is bound to have severe repercussions for livelihoods and food security among coastal fishing communities in the region.	Medium	High

based on the statement, the threat seems to be high

2. Competition for focal/key species	Threat Ranking	Confidence in Threat Ranking
The dominant fish species in the landings of both the Regional fleet and DWF in Southern Africa comprise marine fishes, tunas (skipjack, yellowfin, albacore, bigeye, longtail), kawakawa, blue shark, shortfin mako, West African Geryon, squids, striped red shrimp, and swordfish. The landings of these species vary between 14% and 86% for the Regional and DWF, according to the Sea Around Us data; this is suggestive of a high competition for fisheries resources that exists between the regional fleet and DWF in Southern Africa.	High	High

3. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
Similar to West Africa and East Africa, DWFs are competing with Regional fleets for fishing space and fisheries resources in the EEZs of Southern Africa. For instance, DWF operates in 70% of the surface area of the Malagasy EEZ suggesting that there is a high level of competition between DWF and Regional (domestic and regional) fleets for fisheries resources. Besides, the average annual catch of about 429 thousand tonnes by DWF goes unreported. On this basis, it can be deduced that IUU fishing is also occurring in the waters of Southern Africa. As a consequence, the livelihoods of the fisherfolk as well as food security in the region are under a serious threat (Sumaila et al. 2020).	High	High

5. Priority management or policy needs	Confidence in Policy or Management Needs
• Developing a clear-cut fisheries management plan for Southern Africa given that some fish stocks are shared among countries in the region. Recognizing that certain fish stocks are shared by countries within the region, it is essential to utilize inputs from all the countries in the region to collectively develop a regional fisheries management plan towards sustainable fisheries management. Co-management approach with strong legal backing should be implemented. • Improving registration and licensing of fishing vessels. Coordination of registration operations of fishing vessels at the regional level to develop a regional register of fishing vessels is highly important to facilitate effective monitoring and surveillance in the fisheries sector of Southern Africa. • Strengthening vessel monitoring and surveillance measures in the region. Countries in Southern Africa must endeavor to create a common communication system for national fisheries monitoring centers to share VMS data, intelligence and analysis to support coordinated efforts of surveillance, fisheries inspection at port and at sea to combat IUU fishing. • Improving fisheries data collection and analysis to support decision-making and policy formulation. Lack of information on the status of fish stocks hinders sustainable management of fisheries. Regular collection of data for fish stock assessment must be encouraged to improve decision-making and policy formulation so as to sustain the fisheries in Southern Africa. • Investing in fisheries law enforcement and streamlining governance structures to provide clear guidance on reporting and tracking of catch. Enforcement agencies must be empowered through training and logistical support to work effectively on curbing IUU fishing in the region. Governments can invest in at-sea patrols and provide technological solutions to improve regional monitoring and surveillance efforts towards good fisheries governance.	High

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threat was not marked high based on information from ground-truthing, i.e., although the spatial overlap is high, the catch taken by DWF is small.

Confidence levels are high across the board because Sea Around Us data was well analyzed

2. Somalia, Mozambique, and East Africa Regional

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Any data on Marine mammal by-catch by DWF or domestic fleets? Diba Wako

SOMALIA

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data suggest that DWFs operate in over 50% of the surface area of the Somali EEZ suggesting that DWF are greatly competing with domestic fleets for fisheries resources. DWF contributes about 34% of catch to the total landings. About 99 % of the catch by DWF goes unreported indicating a high level of unreported catches in Somali waters. This can potentially affect the quality of fisheries data for stock assessment, thereby producing flawed advice and policies for fisheries management.	High	High

2. Overall threat to domestic fisheries from other fleets in the same region	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data show that regional fleets operate in over 50% of the surface area of the Somali EEZ implying that regional fleets are highly competing with domestic fleets for fisheries resources. Meanwhile, over 95% of the catch by the regional fleets are unreported. This can also contribute to poor fisheries management in Somalia.	High	Medium

3. Focal species for competition	Threat Ranking	Confidence in Threat Ranking
• Narrow-barred Spanish mackerel (Scomberomorus commerson) is significantly exploited by both domestic and regional fleets. The regional fleet contributes 10,669 tonnes representing about 19% of the total catch whereas DWF contributes 45,735 tonnes accounting for 81% indicating resource competition and jurisdictional conflict between these two categories of fleets. The Spanish mackerel in Somali waters is overexploited and most of the catches by the regional fleets are unreported rendering the Spanish mackerel fishery in Somalia unsustainable.	High	High
• Bigeye scad (Selar crumenophthalmus): Over 50% of bigeye scad harvested from Somali waters is contributed by both DWF and regional fleet whose catches are mostly unreported indicating competition for fisheries resource and jurisdictional conflict between the fleets. The bigeye scad stock in Somali waters is also overexploited.	High	High

4. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data suggest that DWFs operate in over 50% of the surface area of the EEZ of Somalia indicating that there is a high degree of competition between DWF and the domestic fleet for fisheries resources. Similarly, regional fleets operate within over 50% of the surface area of the Somali EEZ suggesting that regional fleets are competing strongly with domestic fleets for fishing space. The high level of competition between DWF, regional fleet and domestic fleet could be due to poor governance engendered by the political instability in Somalia.	High	High

5. Impacts of regional and DWF activities on domestic fisheries and fisherfolk	Confidence in Impacts
Sea Around Us data suggest that DWF and regional fleets have high impacts on the fisheries in Somalia as they are competing with domestic fleets for fisheries resources. Meanwhile, over 95% of DWF catches are unreported. Sustainability analysis conducted by Glaser et al. (2019) shows that 10 groups of fish in Somali waters targeted by both foreign and domestic fishers are currently being fished at unsustainable levels. These fish include sharks, mackerels, emperors, groupers, snappers and goatfishes, grunts, marlin, swordfish, and tunas (yellowfin and longtail tunas). Glaser et al. (2019) further indicate that there is lack of long-term monitoring of Somali marine resources paving way for depletion of fish stocks, thereby exposing artisanal fishers to severe livelihood insecurity and seafood insecurity.	High

6. Priority management or policy needs	Confidence in Policy or Management Needs
• Somali fisheries should be regulated by stringently enforcing robust laws and regulations as enshrined in the Fisheries Act of Somalia.	High
• Regular closed seasons should be implemented in Somali waters towards sustainable management of fish stocks.	High
• Robust monitoring, control and surveillance systems should be installed to monitor the fishing activities of all kinds of fleets in the Somali waters.	High
• Build capacity for providing regular updates on the exploitation status of fish stocks in the Somali waters to feed into decision-making and policy formulation.	High

Could you please provide a break down of the DWF flag states involved and the fishing methods used. Big data effort? Max Schofield OceanMind

Any idea what proportion of DwF is illegal? Diba Wako

Dave E: Are there any data reflecting Iranian IUU in this area?

More detail about the DWF

Is this overlap in the inshore or offshore space? Max Schofield OceanMind

This is particularly important for coastal communities. Spanish mackerel often fetch a higher price than other species, so high competition means more conflict and less profit for local fishers. -Paige Roberts, Secure Fisheries

Dave E: Are these considered pelagic species?

what is the loss revenue

I suspect this number is higher for nearshore fisheries. We know that overlap between regional trawlers/gillnetters causes conflict with local communities fishing in the same areas. - Paige Roberts, Secure Fisheries

The fisheries act in its current form does not provide enough of a framework. More specific and local level regulations are necessary in consultation with coastal communities. -Paige Roberts

Closing to DWF and regional might be an option, but it's not an great option for domestic fishers that depend on fishing for their livelihoods. -Paige Roberts

MCS should be prioritised on DWF and be mandatory before DWF authorisations are provided

Notetaker Space

MOZAMBIQUE

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data suggest that DWFs operate in 30% of the surface area of the Mozambican EEZ suggesting that DWF are competing with domestic fleets for fisheries resources. DWF contributes about 1.2% of the total catch to marine fisheries of Mozambique. Further analysis shows low levels of illegal or unreported fishing by DWFs within Mozambique as less than 1% of their catch goes unreported. However, this could be the true beneficial ownership of trawlers operating within the EEZ may be masking the actual level of conflicts between domestic and DWF fleets. Fisheries laws of Mozambique allow multilateral or bilateral agreements with third states interested in obtaining fishing rights for the purpose of fishing in the jurisdictional waters of Mozambique, however little information about existing agreements is available.	Medium	Medium

2. Overall threat to domestic fisheries from other fleets in the same region	Threat Ranking	Confidence in Threat Ranking
A critical analysis of the data indicates that there is no interaction between regional and domestic fleets in Mozambique; however, a lack of information on the true ownership of vessels may mask the actual level of conflict. Sea Around Us data further suggest low levels of unreported fishing by regional fleets as less than 0.1% of their catch goes unreported.	Low	Medium

3. Focal/key species for competition	Threat Ranking	Confidence in Threat Ranking
• Blue shark (Prionace glauca): Sharks are exploited for their fins which are mainly supplied to Chinese for high economic gains as a fin can cost about $120² in Mozambique. However, the meat which is reportedly poisonous is consumed by the locals after de-finning. This fishery which contributes about 51% of the total catch to the national fisheries is currently overexploited and targeted by both domestic and DWF. For the period 2014-2018 domestic fleets caught approximately 545 tonnes representing about 24% of the total blue shark catch; DWF contributes 76% of the total catch. Depletion of the blue sharks by DWF can deprive the domestic fishers of their livelihoods, although the data on contributions of sharks to the fisheries are scarce.	High	High
• Black marlin (Istiompax indica): Black marlin are overexploited and targeted by both DWF and domestic fleets. DWF take about 45% of the total Black marlin landings while the domestic fleet accounts for the remaining 55% of the total landings. This competition is driving overexploitation, making the fishery unsustainable in Mozambique, and gradually putting the livelihoods of the local fishers who are involved in the fishery at risk of depreciation.	High	High
• Shortfin mako shark (Isurus oxyrinchus): DWF generates about 65% of the total catch, whereas domestic fleet contributes about 35% indicating there is a competition for shortfin mako shark. This species is overexploited in Mozambique with continued overfishing likely depriving future fisher generations of a vibrant shortfin mako shark fishery.	High	High

4. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
• Sea Around Us data suggest that DWFs operate within 30% of the surface area of the EEZ of Mozambique indicating that DWF are competing with domestic fleets for fisheries resources (e.g. blue shark, black marlin and shortfin mako shark). However, none of the regional fleets operate within the EEZ of Mozambique suggesting that there is no conflict between the two fleets. However, anecdotal evidence suggests vessels superficially associated with Mozambican owners are actually owned by foreigners, in which case competition may be higher than official statistics suggests.	Low	Low-Medium

5. Impacts of regional and DWF activities on domestic fisheries and fisherfolk	Confidence in Impacts
DWF and regional fleets currently have low impacts on fisheries in Mozambique. Overall, the fishing industry contributes about 3% of GDP in Mozambique and generates about $526 million as revenue; the domestic artisanal sector of the Mozambican fisheries contributes about 90% of the total national fish production³. Unfortunately, almost all the key fish stocks in Mozambique are depleted as a result of high fishing pressure by the domestic fleets. The dwindling trend of fish catches in Mozambique is a great threat to food security and fisheries-related employment in the country.	High

6. Priority management or policy needs	Confidence in Policy or Management Needs
• Strengthen decentralized co-management of fisheries to address the current declines from overfishing by domestic fishers	High
• Increase transparency around vessel ownership and ensure compliance with the rules governing licensing and access as enshrined in the Fisheries Act of Mozambique	High
• Establish and enforce catch quotas for all fleets under stringent surveillance and monitoring to control yields and achieve sustainability	High
• Creation of no-take zones and regular closed seasons should be implemented in Mozambican waters to promote sustainable management of fish stocks	High

Any post-EMATUM scandal findings? - Peter

A prominent private sector commercial flag was on a DWF round table talking about challenges playing by the rules vs foreign DWFs in Mozambique taking adv of lack of surveillance/ enforcement. - Peter

All are apex pelagic species - any near shore commercial findings? - Peter

With sharks & marlin, knowing if the locals are catching and sourcing vs. being caught by the DWF vessels may provide an entry point for intervention. Nathan

Not sure every locality would agree, but distinction between domestic fleet and artisanal entities important - Peter

Pockets of sustainable artisanal practice exist, often overlapped with diving sites - Peter

These priority policy/mgmt needs are enshrined in USAID/Moz marine strategy - Nathan

The new REPMAR addressed the co-management and the process of devolution of power to local communities. Needs to be implemented and reinforced Alice

Notetaker Space

EAST AFRICA REGIONAL SUMMARY

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data suggest an average annual catch in East Africa at 209 thousand tonnes for the period 2014-2018; the Regional (domestic and regional) fleet generates about 75% of the catch while the DWF takes 25%, suggesting that DWF is competing with Regional fleet (domestic and regional) fleet for fishing space and fisheries resources in East Africa. Sea Around Us data shows that about 10 taxa, those which generally form the backbone of the artisanal fisheries in East Africa, are heavily exploited by DWF. The commonality of the landings of the two types of fleets confirm the competition between the fleets in East Africa. According to McClanahan (2019), fish landings in East Africa have been declining as a result of overfishing. The decline in fish landings which is tantamount to decline in fish stocks can be differentially attributed to the fishing activities of the DWF in the region given that there is serious competition between Regional (domestic and regional) fleet and DWF for fisheries resources in the EEZs of East Africa. Consequently, the decline in the fisheries resources of East Africa puts the livelihood and food security of about 660,000 fisherfolk in the region at risk (Mohammed & Failler, 2015).	High	High

2. Competition for focal/key species	Threat Ranking	Confidence in Threat Ranking
Species which are highly competed for by both Regional (domestic and regional) and DWF in East Africa include Indian mackerel, anchovies, sardinellas, lethrinids, sharks, rays, skates, jacks, pompanos, barracudas, sennets, common pencil squids, and snappers. According to SAU data, the Regional landings of these stocks vary between 27% and74% while the DWF catch ranges between 26% and 73% ,confirming the high level of competition and interaction that exist between the regional fleet and DWF in East Africa.	High	High

4. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
Competition between the domestic fleet and DWF for fish stocks is evidently occurring within the EEZs of East African countries. For instance, DWFs operate within 50% of the EEZ of Somalia. Sea Around Us data suggest an average annual catch of 75 thousand tonnes by DWF goes unreported in the region. This implies IUU fishing and illicit trade in the fisheries sector of East Africa are occurring. This in turn threatens the livelihoods of fisherfolk as well as food security in the region (Sumaila et al. 2020).	High	High

5. Priority management or policy needs	Confidence in Policy or Management Needs
• Developing a clear-cut fisheries management plan for East Africa given that some fish stocks. Recognizing that certain fish stocks are shared by countries within the region, it is essential to utilize inputs from all the countries in the region to collectively develop a regional fisheries management plan towards sustainable fisheries management. • Improving registration and licensing of fishing vessels. Coordination of registration operations of fishing vessels at the regional level to develop a regional register of fishing vessels is highly important to facilitate effective monitoring and surveillance in the fisheries sector of East Africa. • Strengthening vessel monitoring and surveillance measures in the region. Countries in East Africa must endeavor to create a common communication system for national fisheries monitoring centers to share VMS data, intelligence and analysis to support coordinated efforts of surveillance, fisheries inspection at port and at sea to combat IUU fishing. • Improving fisheries data collection and analysis to support decision-making and policy formulation. Lack of information on the status of fish stocks hinders sustainable management of fisheries. Regular collection of data for fish stock assessment must be encouraged to improve decision-making and policy formulation so as to sustain the fisheries in East Africa. • Investing in fisheries law enforcement and streamlining governance structures to provide clear guidance on reporting and tracking of catch. Enforcement agencies must be empowered through training and logistical support to work effectively on curbing IUU fishing in the region. Governments can invest in at-sea patrols and provide technological solutions to improve regional monitoring and surveillance efforts towards good fisheries governance.	High

Unclear what area to work in would make the most impact for biodiversity. DWF or all shore?

THE CITATION HERE IS FOR NEARSHORE FISHERIES, LESS IS KNOWN ABOUT OFFSHORE FISHERIES BUT THER ARE SOME PAPERS Kaunda-Arara, B., Munga, C., Manyala, J., Kuguru, B., Igulu, M., Chande, M., ... Ruwa, R. (2016). Spatial variation in benthopelagic fish assemblage structure along coastal East Africa from recent bottom trawl surveys. Regional Studies in Marine Science, 8, 201-209. doi:10.1016/j.rsma.2016.04.001 Njiru, J., Omukoto, J. O., Kimani, E. N., Aura, C. M., & Van der Knaap, M. (2021). Kenya marine fisheries: The next frontier for economic growth? Aquatic Ecosystem Health & Management, 24(1), 97-104. doi:10.14321/aehm.024.01.14

Jason: which countries are included in E Africa analysis?

Dave E: Are these species considered pelagic?

Dave E: Has any analysis been conducted on how these species contribute to PRC fishmeal production?

Dave E: Are there corresponding studies of the foreign exchange losses by the PRC taking the stocks vice trading for them?

Dave E: What is the condition of regional civil society connection and engagement across affected communities?

Will DC give $$ to our Somalia colleagues?

I'm pretty sure WIOMSA is working on the workplan

Notetaker Space

3. Ghana, Senegal, and West Africa Regional

1. Review each summary table
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3. Drag Xs to any findings that do not agree with your understanding
4. Use a sticky note to explain your Xs or provide references UBC should consider

GHANA

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
The Sea Around Us data show that Distant Water Fleet (DWF) operates in 48% of the surface area of Ghana's Exclusive Economic Zone (EEZ) suggesting that DWF are competing with domestic fleets for fisheries resources. DWF whose by-catch levels should not be greater than 15% of their total landings per trip are illegally competing with artisanal Ghanaian fishers for small pelagic fish (e.g. sardinella and mackerel), leading to steep declines in a fishery that makes significant contributions to Ghana's food security. Although these DWF are flagged to Ghana, evidence suggests that the beneficial owners are from the People's Republic of China. In many cases, DWFs intentionally target small pelagic fish by using illegal gears (e.g. small mesh-sized nets) and unapproved fishing methods; mostly, the harvests are illegally transhipped into Ghanaian supply chains. In some cases, DWFs catch small pelagic fish beyond the allowable by-catch limit which constitutes an illegality. As a result, to avoid any penalties, the excess by-catches are illegally discarded at sea.	High	High

2. Overall threat to domestic fisheries from other fleets in the same region	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data suggest that regional fleets which are mainly from Cote d'Ivoire, Togo, Senegal and Cape Verde operate within 4% of the surface area of Ghana's Exclusive Economic Zone (EEZ). This suggests that there is some degree of interaction within Ghana's waters between fishing vessels from Ghana and other countries in the region. This also implies that the regional fleets are competing with the domestic fleets for the same fisheries resources. This is contributing to overfishing of some fish stocks and consequent declines in the catches of the domestic fisheries. The regional fleets contribute an annual average catch of 5,457 tonnes representing about 2% of the total average landings for all fleets in Ghana's marine fisheries. About 85% of the catch by the regional fleets are reported, implying that the remaining 15 % goes unreported. Fishing agreements between Ghana and neighboring countries are not made public, making it difficult to characterize the legality of this regional competition.	Low	High

3. Competition for focal/key species	Threat Ranking	Confidence in Threat Ranking
• Sardinella and mackerels are exploited by the various types of fleets in the marine fisheries of Ghana. For sardinella, about 77% of the catch is landed by DWF whereas 19% is contributed by the domestic fleets. For mackerels, regional fleets account for 53% of the catch whereas 46% is contributed by the domestic fleet. These conceivably suggest that there are high levels of competition between domestic fleets, regional fleets and DWF for sardinellas. A critical analysis of the SAU data indicates that these pelagic fish are being exploited unsustainably causing a serious threat to domestic livelihoods and food security.	High	High
• All the various categories of fleets in the marine fisheries of Ghana also exploit commercially valuable species such as big eye tuna, yellow fin tuna and Atlantic bonito. Among these species, domestic fleets catch about 64% of the big eye tuna, 70% of the yellow fin tuna and 95% of the Atlantic bonito. The percentages of catch of these species, which are less than 100%, suggest that DWF and regional fleets are competing with the domestic fleets for the fish stocks. Unfortunately, SAU data show that these species are all overexploited.	High	High

4. Competition within geographic areas	Threat Ranking	Confidence in Threat Ranking
• Illegal incursions by DWF and regional trawlers into inshore exclusion zones (IEZs) reserved for artisanal fishers are of particular concern. These incursions threaten the safety of artisanal fishers, create conflicts, damage inshore habitats, and drive overfishing of small pelagic fisheries that are important to the livelihoods of local fishers and the food security of Ghanaians as a whole.	High	High
• Outside the IEZ, DWFs destroy fishing gears owned by Ghanaian small-scale fishers in some cases.	Low	Low

5. Impacts of regional and DWF activities on domestic fisheries and fisherfolk	Confidence in Impacts
The marine fisheries of Ghana made up of artisanal, semi-industrial and industrial sectors provide approximately 80% of the fish that is locally consumed and the highest production is contributed by small pelagic fish, especially sardinella. Meanwhile, the small pelagic fish forms the backbone of the artisanal fisheries of Ghana as it contributes over 75% of the total landings. Unfortunately, catches of the small pelagic fish have been declining over the past two decades. When landings of domestic fleet, regional fleet and DWF are compared using Sea Around Us data, it is deduced that about 77% of the sardinella landings is contributed by DWF whereas regional fleets provide 53% of the mackerel landings. The high tons of sardinella harvested by DWF as well as high amount of mackerel landed by regional fleet greatly account for the declining trend of the pelagic fish catches in the waters of Ghana. As a consequence of the dwindling pelagic fish catches, fishermen sometimes return from their fishing expedition with low or negligible landings making it difficult for the fisherfolk to offset the cost of the expedition. These accounts highlight the great negative impacts regional fleets and DWF have on domestic fisheries and fisherfolk.	High

6. Priority management or policy needs	Confidence in Policy or Management Needs
• Increase enforcement and compliance with Ghanaian ownership requirements for industrial vessels by clarifying requirements and penalties within the Fisheries Act to deter Ghanaians from fronting acquisition of license for DWF.	High
• Mesh size of fishing nets by DWF and regional fleet should be properly regulated to reduce the by-catch levels of the small pelagic fish whereas that of domestic fleet should also be regulated to allow the juveniles to grow into an adult stage before they are exploited.	High

Callum: If time/capacity allows the beneficial ownership of the 'domestic' tuna fleet should be analysed as I understand the pole and line vessels are all Korean owned, likely linked to the Korean owned cannery in the country. I feel this would adjust the % of EEZ fished considerably.

Callum - Although I agree the risk is high - These figures seem a bit off - much of the DWF (industrial trawlers) sardinella catch went unreported in the time period of this - and I believe the domestic canoe fleet is responsible for a much larger % regardless. Also, the % of regional fleet for mackerel seems very high, especially as the previous box says they are only 2% of landings for all fleets

Callum: https://www.graphic.com.gh/news/general-news/150m-spent-on-fish-imports-yearly-ghana-tuna-association.html - media articles from 2021 suggest that Ghana imports 60% of its fish needs, which queries the 80% statistics given

Notetaker Space

SENEGAL

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data (2014 – 2018) show that DWFs operate within 90% of the surface area of the Senegalese EEZ indicating that DWF is highly competing with domestic fleet for fishing space to exploit common fisheries resources. However, the data reveal that DWF contributes about 4% of the total catch to marine fisheries of Senegal. Further analysis of the data shows relatively low levels of illegal or unreported fishing by DWFs occur within Senegal as 23% of their catch goes unreported.	Medium	Medium

2. Overall threat to domestic fisheries from other fleets in the same region	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data suggest that regional fleets operate in about 90% of the EEZ in Senegal suggesting that there is a high interaction between regional and domestic fleets in Senegal. SAU data further suggest high levels of unreported catches by the regional fleets as about 96% of their catch goes unreported. This can negatively affect the quality of fish stock assessment data needed to formulate proper management measures towards sustainable fisheries management.	High	Medium

3. Focal species for competition	Threat Ranking	Confidence in Threat Ranking
• Atlantic bumper (Chloroscombrus chrysurus) is the first among 20 species which contributes the highest fish production (24%) to the marine fisheries of Senegal, according to SAU data (2014 -2018). It is exploited by both domestic fleet and DWF; domestic fleet provides about 99% of the Atlantic bumper landings whereas the remaining 1% is contributed by DWF. Given that DWF generates 1% of the Atlantic bumper landings, it indicates a limited competition between domestic fleet and DWF for the fish. Hence, the domestic fleet poses a great threat to the Atlantic bumper stock while the domestic fleet poses a negligible threat to the Atlantic bumper stock. The exploitation status of the fish is presently unknown.	Medium	Low
• African croakers (Pseudotolithus spp.) provide about 15% of the total fish landings. Similarly, it is exploited by both domestic fleet and DWF; about 99% of the catch is landed by the domestic fleet whereas DWF contributes 1%. From the foregoing, there is a limited competition between domestic fleet and DWF for the African croakers. It can also be deduced from the SAU data that the domestic fleet poses a great threat to the African croakers fishery in Senegal. The African croakers stock is not yet overexploited.	Low	Low
• Guinean tonguesole (Cynoglossus monodi) and common octopus (Octopus vulgaris) separately provide over 10% of the total fish landings. The two species are also exploited by the domestic fleet and DWF. Competition between the domestic fleet and DWF for the two fish species is also limited given that the domestic fleet harvests about 98% of each fish species. By implication, the domestic fleet poses a great threat to the Guinean tonguesole and the common octopus stocks in Senegal. These two fish species are overexploited, according to SAU data.	High	Low

4. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
• Sea Around Us data suggest that DWF operates within 90% of the surface area of the Senegalese EEZ indicating that there is a high competition between DWF and the domestic fleet for fishing space and fisheries resources. Similarly, regional fleets operate within 90% of the EEZ suggesting that regional fleets are highly competing with domestic fleets for fishing space. However, negligible catches of the key fish species recorded for the regional fleet suggest that there is an inconsequential competition between regional fleet and domestic fleet for fisheries resources.	Medium	Low

5. Impacts of regional and DWF activities on domestic fisheries and fisherfolk	Confidence in Impacts
Available data⁴ show that fisheries in Senegal contribute over 3% to the national GDP and provide around 53 000 direct jobs and over half a million indirect jobs. Fish and fishery products worth USD 353 million are exported from the country and this represents about 15% of total value of export earnings. Fish and seafood form part of the Senegalese diet, representing 43% of the country's animal protein intake; fish consumption per capita is estimated at 24kg per year. According to the World Bank (2018)⁵ fish production in Senegal is declining and the present statistics shows that the fish production is estimated at 485, 858 metric tons. Over 90% of the landings is provided by the domestic fleet as against less than 10% by both regional fleet and DWF implying that fishing activities of both regional fleet and DWF pose a minor threat to the fisheries of Senegal. Nevertheless, the marked amount of catches by the regional fleet that are unreported constitutes a potential threat to domestic fisheries in Senegal. Considering the dwindling trend of fish production and overexploitation of many of the fish stocks (e.g. sardinella, mackerel and cuttlefish) in Senegal, persistence of the present approach of fishing in the face of poor fisheries governance can lead to collapse of the domestic fisheries, thereby depriving over 553 000 people of their livelihoods.	High

6. Priority management or policy needs	Confidence in Policy or Management Needs
• Establish robust monitoring, control and surveillance systems to monitor the fishing activities of all the kinds of fleets in the waters of Senegal	High
• Build capacity for providing regular updates on the exploitation status of fish stocks in the waters of Senegal to feed into decision-making and policy formulation.	High

Look at Trg Mat Tracking report on the ownership of vessels and add that to the qualitative aspects of the analysis

This last sentence is unclear--i.e., how does 23% of the catch being unreported lead to the conclusion of low levels of unreported fishing by DWFs?

Which "regional fleets" were considered for SEN?

Regional fleets include fleets from Benin, Burkina Faso*, Cabo Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali*, Niger*, Nigeria, Sierra Leone, and Togo

Murray - Beneficial ownership needs increased effort, as many Senegalese FV's are believed to be foreign owned and controlled through front companies. Illegal and unreported at-sea transhipments, as documented in Greenpeace Choppy Waters led to increased exploitation not accounted for (e.g. Former Senegal flagged Lisboa taking on shark fins) FV has since moved to new idently and flag. Harvests by these foreign controlled FV do not support Senegal economy as profits are removed.

Julien: Transparency on licences granted, registry (incl. ownership)

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Need to rephrase the last sentence to make it clearer

Murray: Trg mat tracking: employ senegalaese but run by foreign companies

WEST AFRICA REGIONAL AND COUNTRY SUMMARIES

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data suggest that annual average catch from West Africa's EEZ is at 2.3 million tonnes (2014-2018). Regional (domestic and regional) fleets contribute 75% and DWF 25%, indicating a competition between the two types of fleet for fishing space and fisheries resources in West Africa. The data further reveal that the key fish species exploited in the domestic fisheries are common in the landings of DWF, confirming the high competition between the two fleets in West Africa. The fisheries of West Africa provide ex-vessel fish valued at US$ 3.5 billion per year; the fisheries support about 6.7 million people whose livelihood and food security depend on fishing activities (Belhabib et al., 2015). From the West Africa Regional Fisheries Program, fish stocks in the coastal waters of West Africa are declining as a result of overexploitation by both Regional (domestic and regional) fleet and DWF; unfortunately, the lion's share of the catch is exported to foreign countries where jobs are created in an attempt to add extra value to fisheries products. Although exportation of fish generates much needed income in the region, the increasing fishing pressure on the fish stocks renders domestic fisheries unsustainable with consequent gradual disruption of livelihoods and food security in West Africa (WWF, 2020).	High	High

2. Competition for focal/key species	Threat Ranking	Confidence in Threat Ranking
The key fish species targeted by both Regional (domestic and regional) fleet and DWF in West Africa include jacks, horse mackerels, West African goatfish, sardinella, blue shark, leerfish, octopus, wahoo and parrotfishes. The landings of these species for the regional fleet vary between 49% and 74% whereas those for the DWF vary between 26% and 51% confirming the high competition and interaction that exist between the two kinds of fleet in West Africa.	High	High

3. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data suggest that regional fleets and DWFs are competing for fishing space and fisheries resources within the EEZs of West Africa. This is more evident in Ghana and Senegal where DWF operates in 48% and 90% of the EEZ, respectively. A large proportion (on average, about 1.1 million tonnes annually) of fish catch go unreported in the region. Conceivably, IUU fishing is rampant in the waters of West Africa and this has a dire consequence for domestic fisheries (Sumaila 2018).	High	High

5. Priority management or policy needs	Confidence in Policy or Management Needs
• Developing a clear-cut fisheries management plan for West Africa given that some fish stocks, especially migratory species are shared among countries in the region. The review of fisheries policies and legal frameworks shows that countries are not at the same level or in convergence with respect to the formulation of fisheries management policies and measures. For example, while some countries (e.g., Liberia) have enshrined the principle of co-management in their basic regulations, other countries have not yet done so (e.g., Ghana). Similarly, while some countries (e.g., Ghana) have species-size regulations, this is not the case in other countries (e.g., Liberia). It is therefore important to bring all the relevant representatives from the country of West Africa to co-develop a regional fisheries management plan for implementation under robust enforcement to collectively and adequately manage the fish resources in the region. • Improving registration and licensing of fishing vessels. Coordination of registration operations of fishing vessels at the regional level to develop a regional register of fishing vessels is highly important to effectively manage. • Strengthening vessel monitoring and surveillance measures in the region. West African countries need to create a common communication system for national fisheries monitoring centers to share VMS data, intelligence and analysis to support coordinated efforts of surveillance, fisheries inspection at port and at sea to combat IUU fishing. • Improving fisheries data collection and analysis to support decision-making and policy formulation. Lack of information on the status of fish stocks presents a challenge to sustainable management of fisheries. Regular gathering of data for fish stock assessment can adequately improve decision-making and policy formulation towards sustainable fisheries management in West Africa. • Investing in fisheries law enforcement, and streamlining governance structures to provide clear guidance on reporting and tracking of catch. Enforcement agencies must be empowered to work effectively on clamping down on IUU fishing in the region. Governments can invest in at-sea patrols and provide technological solutions to improve regional monitoring and surveillance efforts. Developing a common standard operating procedures and best practice guidelines within a legal framework for the region will level up capacity towards good fisheries governance.	High

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4. Peru and South America Regional

1. Review each summary table
2. Drag stars to the findings that resonate with your experience
3. Drag Xs to any findings that do not agree with your understanding
4. Use a sticky note to explain your Xs or provide references UBC should consider

PERU

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
Historically, Peru granted fishing permits to explore fishing resources, such as jack mackerel (Trachurus murphyi) and jumbo flying squid (Dosidicus gigas), to numerous countries. Yet, nowadays, Peru only grants fishing permits to foreign vessels for tuna fishing. DWF activity within the EEZ is relatively low (with the DWF representing <4% of reconstructed catches between 2014-2018). Therefore, conflicts between domestic and DWF remain scarce. Extensive conflicts in the jumbo squid fishery due to harvests by DWF being taken on the border of the Peruvian EEZ. Experts furthermore emphasized that there is IUU activity of DWF crossing into the Peruvian EEZ.	Medium	High

2. Overall threat to domestic fisheries from other fleets in the same region	Threat Ranking	Confidence in Threat Ranking
On average, the average annual catch of the regional fleet for the period 2014-2018 represents less than 10% of the total catches in the Peruvian EEZ. Besides, the data show an important decrease of the catches from 17% in 2014 to 2% of the total catches in 2018. If this trend continues, the number of interactions between domestic and regional fleets is expected to remain low.	Low	High

3. Focal species for competition	Threat Ranking	Confidence in Threat Ranking
Yellowfin tuna, bigeye tuna: target species for domestic and regional fleets. There is significant overlap between regional and domestic fleets. However, the conservation status of these species is healthy. As long as this is the case, this overlap is unlikely to have important economic consequences. Pacific chub mackerel: target species for domestic, regional, and DWF. There is significant overlap with negative economic consequences for domestic fleets. The conservation status of the species is not known- data deficient according to FishSource 2022. Marine fishes not identified: high interaction between artisanal domestic and regional fleets. More detailed information on the species and their exploitation status is needed. Sharks, rays, and skates: target species for artisanal fleets and bycatch species for industrial, regional and DWF. Medium interaction between fleets. Jumbo squid: high competition between DWF trawlers outside the EEZ (legal harvest) and artisanal catch inside the EEZ is reducing domestic catch, fisher incomes, and export revenue. Unreported illegal incursions of DWF into Peru's EEZ take place.	Medium	Medium

4. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
Sea Around Us and ground truthing information confirm significant spatial overlap between fishing by domestic and DWF. Recurrent conflict between Ecuadorian vessels and the Peruvian artisanal fleet. Most of these are reported by artisanal longliners (targeting common dolphinfish) and jiggers (targeting jumbo flying squid) at ~30-60 nm offshore. Further analysis of indirect and beneficial ownership interests is highly recommended. Overlapping between domestic, regional, and DWF in northern and southern Peru (north of 5° Lat. S, and south of 15° Lat. S., respectively) beginning at around 30 nm offshore.	High	Medium

5. Impacts of regional and DWF activities on domestic fisheries and fisherfolk	Threat Ranking	Confidence in Impacts
Sea Around Us data and ground truthing information confirm that there is strong species competition confirmed, but low activity of regional and DWF within the Peruvian EEZ. Depletion of stocks that are jointly targeted by regional and/or DWF and national fisheries. Stock reduction of those species that are bycatch species for regional and/or DWF but target species for domestic fleets. Decrease in fishing grounds available to domestic fleets when they compete spatially with regional and DWF.	Medium	High

Although DWF represent less 4% of the overall catch (all species) - the topic of how much they take relative to their tuna access agreements would be good to understand

The overall threat to domestic fisheries is linked to the socio-economic aspects, rather than the total catches. Absolutely DFW outcompete the domestic fleets.

Also giant squid is impacted by environmental changes, that might be something to consider in the changes of the landings. So, something that is not a red flag now, does not necessarily remain that way.

So, that is a large gap on non target species caught by domestic, regional and dwf. This is of particular interest for threatened species. For that might be interested to reach out international agreements like CMS, IAC, that might have some information on that, or groups that might have any kind of datasets

DFW bycatch is not being measured but should be considered in the overall impact

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Rachel- do threat ranking take into account whether total catches are above or below MSY? - Yes

Oscar- switching of licenses between tuna and jumbo squid as unreported catch is much higher. There is only one market Asia for squid- alot of catch comes from DWF and it outcompetes catch from Peruvian artisanal fleets. Bad for socioeconomics e of Peruvian fishers

Rachel- what data used to quantify DWF incursions? - Global fishing watch

Monica- additional GFW VMS data available for tracking some artisanal fishing. For ownership data there is this NGO https://c4ads.org/

Joanna - validate non-target species with local groups, universities. -validate target species optionis international agreements e.g. of turtles, may have catch data

SOUTH AMERICAN REGION

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
The average annual catch in the EEZs of South American nations between 2014-2018 is 6.7 million tonnes. Sea Around Us data suggest that 3% were caught by DWFs. Both, regional (domestic and regional) and distant water fleets, have as target species four of the top five taxa caught in the EEZs of South American Regional nations, with exception of anchoveta (Engraulis ringens), which is targeted by the domestic and regional fleets. The fact that all the fleets target almost the same species increases the competition between regional (domestic and regional) and distant water fleets.	High	Medium

2. Competition for focal/key species	Threat Ranking	Confidence in Threat Ranking
The principal source of competition lies in the jumbo flying squid (Dosidicus gigas), Pacific chub mackerel (Scomber japonicus), Chilean jack mackerel (Trachurus murphyi) and skipjack tuna (Katsuwonus pelamis). These species make up 17% of the average annual catch in the EEZs of South American nations and are targeted by all fleets with DWFs taking over 15% of the average annual catch of 1.1 million tonnes of these four species.	High	Medium

3. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
The Sea Around Us data suggest that 3.5% of the mean annual reported catch (2014-2018) in the South American region was from DWF. China is the top country fishing in this geographic region, followed by Panama, Spain and 13 more countries. It is important to emphasize that in the South American nations, there are country-level restrictions regarding vessel registrations as nationals. However, several of these restrictions and fishing agreements act as loopholes for foreign control of national flagged vessels. To better understand the true composition of the fleets, further spatial analysis and analysis of ownership interests are needed.	Medium	Medium

4. Priority management or policy needs	Confidence in Policy or Management Needs
• Investing in fisheries law updates and enforcement to put in place appropriate legislation in support of sustainable fisheries. Outdated laws together with poor enforcement and monitoring, are the main barriers in the South American nations to fostering sustainable fishing practices. In this regard, Ecuador has recently approved the "Ley Orgánica para el Desarrollo de la Acuicultura y Pesca" that promotes the sustainable development of fishing and aquaculture, considering aspects of food security, species protection, local traditions, and ownership. • Fostering data access and sharing policies. Ensuring that fisheries landing and catch data collected at the national level are shared among coastal states, DWF fishing nations, and relevant regional bodies is essential to minimize misreporting of catch. • Building capacity for relevant and periodic stock assessment and bioeconomic analysis of priority fisheries, e.g., those prone to conflicts. Limited knowledge and resources needed to monitor the fisheries of priority species is an important barrier to assessing the conservation status of the fisheries stocks and conflicts between fleets. • Developing arrangements between South American countries for designing an effective system for surveillance of IUU fishing. Joining forces to fight against IUU fishing through transboundary agreements that focus on preventing, deterring, and eliminating IUU fishing to safeguard the fisheries resources. In this sense, whereas Peru and Ecuador have already accessed the Port State Measure Agreement, Brazil and Colombia remain reluctant.	Medium

Are numbers provided for S.A. including or excluding those from Ecuador (which was clustered with the Caribbean)?

For ownership data there is this NGO https://c4ads.org/

Shark fisheries remain an issue in S.A. Some countries allow fishing sharks, while others don't. However, the uncontrolled fishing is very high.

Encouraging transparency and tracking of vessel ownership

There is a need for signing/enforcing PSA for diminishing the incursion of DFW into EEZs.

Re: characterizing Colombia as reluctant to join the PSMA, they have signed on to a 5year agreement to support PSMA workshops in larger context of fighting IUUF

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5. Ecuador and South-eastern Caribbean

1. Review each summary table
2. Drag stars to the findings that resonate with your experience
3. Drag Xs to any findings that do not agree with your understanding
4. Use a sticky note to explain your Xs or provide references UBC should consider

ECUADOR

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data and ground truthing confirm the significance of the Ecuadorian domestic offshore fleet. The Ecuadorian offshore fishing fleet is highly significant in terms of the number of vessels and catches. This national fishing capacity, together with well-established rules of access for DWF fleets (i.e., only through joint ventures registered in Ecuador), are important buffers for conflict and economic dependence on DWF nations. Ecuador has a well-established national fleet, thus potentially reducing its vulnerability to conditions imposed by DWF nations. Because Ecuador does not allow bilateral fishing agreements, DWF activity within the EEZ is relatively low (with the DWF representing <2% of reconstructed catches). Therefore, conflicts between domestic and DWF remain anecdotal. Sea Around Us data and ground truthing confirm limited conflicts. Possible future conflicts might arise from the recent expansion of the Galapagos Marine Reserve, as domestic industrial fleets will need to find new fishing grounds with the risk of competing with DWF fleets for the same fisheries resources. Given the data available, it is yet possible to predict future threats associated with the recent expansion of the Galapagos Marine Reserve.	Medium	Medium

2. Overall threat to domestic fisheries from other fleets in the same region	Threat Ranking	Confidence in Threat Ranking
Average annual total catch of the regional fleet represents almost 25% of the total catches in the Ecuadorian EEZ. Given Ecuador's prohibition on bilateral fishing agreements, regional catches (by foreign-flagged vessels) may be the result of joint ventures or IUU fishing. A detailed analysis of ownership structure is essential for identifying possible IUU practices within the EEZ. Moderate levels of regional fleet activity observed, but possibly indicating illegal fishing activity. SAU data and ground truthing confirm the activity of regional fleets within the EEZ, yet information about IUU fishing and joint ventures is lacking (Low). There is a considerable spatial overlap between domestic and regional fleets in the EEZ of Galapagos. Likelihood for conflicts in the future. SAU data and ground truthing confirm spatial overlap with limited conflicts.	Medium	Medium

3. Focal species for competition	Threat Ranking	Confidence in Threat Ranking
Skipjack tuna, yellowfin tuna, bigeye tuna are target species for domestic artisanal, domestic industrial, regional and DWF fleets, leading to high interaction among them. Bans on bilateral fishing agreements and fishing restrictions within the Galapagos Marine Reserve means that competition within the EEZ is relatively low. All target species are currently overexploited. Despite different fleets targeting the same overexploited species, interaction between fleets is limited, and direct competition is relatively low. SAU data and ground truthing confirm limited interaction between fleets and exploitation status of the targeted species.	High	Medium

4. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data and ground truthing confirm the presence of IUU fishing and that there is illegal incursions by foreign and Ecuadorian mainland fleets into the Galapagos Marine Reserve are depleting stocks that are important for biodiversity and fishers' livelihoods in Galapagos, e.g., fishing for sharks, rays, and skates. Despite expert input, further analysis of ownership structure and more detailed information on IUU fishing are needed. Illegal incursions by DWF into the Ecuadorian EEZ are threatening protected species, such as sharks and rays, highly important for the biodiversity and economy of Ecuador. Bycatch from foreign fleets fishing in the limits or into the Ecuadorian EEZs is composed mainly of target species of domestic fleets, negatively affecting domestic fishers' livelihoods.	High	Medium

5. Priority management or policy needs: Based on the nature of the threat, these might include:	Confidence in Policy or Management Needs
• Strengthen enforcement of illegal harvesting by domestic and foreign fleets mainly surrounding and/or inside marine reserves. This is very relevant for the Galapagos Marine Reserve and its surroundings, where most of the illegal fishing from Ecuadorian waters is concentrated. As noted by Cavole et al., 2020, Fisher's perception of species biomass may lead to bycatch and illegal catches of high-value species such as sharks. Increasing transparency in bycatch reports of foreign and domestic fleets, with a special focus on shark, ray, and chimera species, would provide objective and high-value data for fisheries management. Prioritize ownership analysis of vessels and fishing endowments to understand the actual structure of the fleet operating in the EEZ.	High

How to best leverage fisher insights on IUUF/DWF

I was going to point out the importance (in the policy needs section) to strengthen internal control mechanism to avoid possible overlapping competition between competent authorities. Fabien

There is no expansion of the Galapagos Marine Reserve. It's a new reserve with different rules and higher levels of protection.

I wonder how the new WTO subsidies measure will deter this including agreement to not subsidize DWF operating outside areas operated by RFMOs? (Laura USDOL)

What regional tools are available to identify financial ownership? (Laura, USDOL)

Ecuador was identified as a priority partner in NSM on IUU F and associated labor abuses signed by Biden recently. What tools are available through this? (Laura, USDOL)

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SOUTH-EASTERN CARIBBEAN REGION

1. Overall threat to domestic fisheries from distant water fleets	Threat Ranking	Confidence in Threat Ranking
An average annual catch of 128 thousand tonnes were caught in the EEZs of Caribbean nations between 2014-2018. Sea Around Us data highlights that only 4% were caught by DWFs, which suggests low competition between regional (domestic and regional) and DWFs. However, these fleets target different species, with exception of the southern red snapper (Lutjanus purpureus) with an annual average catch of 3,560 tonnes (69.3% regional fleets and 30.7% DWFs) within the EEZs of Caribbean nations.	Medium	Medium

2. Competition for focal/key species	Threat Ranking	Confidence in Threat Ranking
The principal source of competition lies in the southern red snapper (Lutjanus purpureus) fishery in Suriname. This species is in the top ten of the species caught in the EEZ of Suriname, targeted by domestic fleets and heavily fished by DWFs, which catch almost 67% of the total annual average catch. One of the main difficulties in understanding the extent of fleets' competition is the lack of information. Most of the production registered in the EEZs of southern Caribbean nations corresponds to marine fishes not identified. Sea Around Us data suggest that 10.5% of the total catches of the marine fishes not identified are taken by DWF. This percentage may not be too high, yet a lack of specific information on the species may be hindering the understanding of fleets' competition. Since the fishing sector is highly relevant for food security in the region (FAO, 2022), little information about the species targeted may also hide food security problems.	Medium	Medium

3. Geographic areas of competition	Threat Ranking	Confidence in Threat Ranking
Sea Around Us data suggest that 4% of the average annual reported catch (2014-2018) in the southeast Caribbean region was from DWF. Likely because of proximity, Venezuela is the top country fishing in this geographic region, followed by Japan, Korea (South), Taiwan, and China. It is important to emphasize that in the southern Caribbean nations, there are country-level restrictions regarding vessel registrations as nationals. However, several of these restrictions act as loopholes for foreign control of national flagged vessels. To better understand the true composition of the fleets, further spatial analysis and analysis of ownership interests are needed.	Medium	Medium

4. Priority management or policy needs	Confidence in Policy or Management Needs
• Investing in fisheries law updates and enforcement to put in place appropriate legislation in support of sustainable fisheries. Outdated laws together with poor enforcement and monitoring, are the main barriers to fostering sustainable fishing practices in the southeast Caribbean nations. In this sense, Trinidad and Tobago has recently presented its new Fisheries Management Bill that will support sustainable fisheries as well as the regulation of fishing and fishing-related activities in the fishery waters and areas beyond national jurisdiction. • Fostering data access and sharing policies. Ensuring that fisheries landing and catch data collected at the national level are shared among coastal states, DWF fishing nations, and relevant regional bodies are essential to minimize misreporting of catch. Since bycatch is sometimes the source of food for local communities, e.g., finfish in Guyana and IUU catches are closely related to shrimp and seabob fisheries, these reports should include exhaustive information about bycatch and IUU fishing. • Building capacity for fish species identification, stock assessment and economic assessments. Lack of information about the species caught under the umbrella of "marine fish not identified" is an important barrier to assessing the conservation status of the fish stocks. It also makes it difficult to identify conflicts between fleets. Ensuring that the data collected covers all species fished and taken as bycatch is the first step in effectively assessing fish stocks and their sustainability. • Developing arrangements between Caribbean countries for designing an effective system for surveillance of IUU fishing. Joining forces to fight against IUU fishing through transboundary agreements that focus on preventing, deterring, and eliminating IUU fishing to safeguard the fisheries resources. In this sense, whereas Guyana and Trinidad and Tobago have already acceded to the Port State Measure Agreement, Suriname remains reluctant.	High

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