



HAL
open science

Diagnosing ‘access’ matters in the governance of moored fishing aggregate devices (MFADs): A perspective for SDG14b from Malta and Guadeloupe

Alicia Bugeja Said, Olivier Guyader, Katia Frangoudes

► To cite this version:

Alicia Bugeja Said, Olivier Guyader, Katia Frangoudes. Diagnosing ‘access’ matters in the governance of moored fishing aggregate devices (MFADs): A perspective for SDG14b from Malta and Guadeloupe. *Ocean and Coastal Management*, 2021, 214, pp.105890. 10.1016/j.ocecoaman.2021.105890 . hal-04203308

HAL Id: hal-04203308

<https://hal.science/hal-04203308>

Submitted on 22 Jul 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial 4.0 International License

Title Page

Diagnosing ‘access’ matters in the governance of moored fishing aggregate devices (MFADs): a perspective for SDG14b from Malta and Guadeloupe

Authors :

Alicia Said (1, 2), Olivier Guyader (2), Katia Frangoudes (3)

(1) Ministry for Agriculture, Fisheries, Food and Animal Rights

(2) IFREMER, Centre for Law and Economics of the Sea, Plouzane, France

(3) University of Brest, Centre for Law and Economics of the Sea, Plouzane,
France

Corresponding Author : Alicia Said : alicia.bugeja-said@gov.mt;
alicia.said87@gmail.com

Diagnosing ‘access’ matters in the governance of moored fishing aggregate devices (MFADs): a perspective for SDG14b from Malta and Guadeloupe

Abstract

The United Nation Sustainable Development Goals (SDGs) has elevated the profile of small-scale fisheries through SDG14b calling for the provision of ‘*access of small-scale artisanal fishers to marine resources and markets*’. Together with the socio-ecological sustainability of the fishery, access to fishing grounds and territories is intrinsic to achieving SDG14b as the governance of these territories has a determinative role in the access to marine resources. This article seeks to contribute to the access debate by investigating the different elements of how moored fisheries aggregate devices (MFADs) fishing rights and territories are produced and maintained through processes of governance which determine harvesting, management and exclusionary rights. To do this, we examine legislative mechanisms and their socio-ecological access implications on small-scale fisheries in two distinct governance contexts, namely Malta, where MFAD access rights are determined through state-led procedures, and Guadeloupe where access is claimed through informal local arrangements. Both cases indicate concerns of justice and inequality emanating from governance gaps, with fishers owning relatively smaller boats and having less economic, social and political capital facing incremental marginalization to secure their access. In Guadeloupe this is resulting from informal territories established through de facto ownership patterns preceding both legitimacy and authority, while in Malta concerns surround the dominant concentration of fishing effort by large and powerful vessels. These patterns, owing to blind spots in policies, are fueling problems related to unjust access to MFAD resources, leading to illicit practices, tensions and ruptures within the fishing communities. Ultimately the article informs about governance responses, with the aim of showcasing what access mechanisms could be developed to enhance distributive opportunities of MFAD fisheries in a way that engenders both their ecological and socio-economic sustainability.

1) Introduction

The United Sustainable Development Goals (SDGs) has set a number of governance goals which ought to shape the policy trajectories for the next 20 years and beyond. Small-scale fisheries received specific attention through SDG14b which calls for provision of access to marine resources and markets (UN

2015), thereby positing the need for research on what access for small-scale fisheries means and how it ought to be achieved (Said and Chuenpagdee 2019). In this article, our focus is on the governance of ‘access’ in the context of territories of moored fishing aggregate devices (MFADs), and how this determines small-scale fisheries ability to benefit from MFADs fisheries. MFADs are a source of livelihood, food security and income for many small-scale and artisanal fishers all around the globe (Campbell and Hanich, 2016; Rey Valette et al., 2000; Taquet, 2013). As a fishery, MFAD is conducted through the use of a permanent, semi-permanent or temporary structure, made from floating material, such as palm fronds and leaves (Gatt et al., 2015), placed in the ocean using large stone slabs specifically to attract fish for capture (Dempster et al., 2006). MFADs could be deployed individually or in groups over a territory, or as a system of lines. The fish caught with MFADs, usually includes migratory pelagic species such as dolphinfish and/or tuna, and is harvested using trolling lines, long-lines, or nets (encircling or purse seine) (Taquet et al 2013).

Given the migratory and straddling nature of MFAD fish stocks, fisheries management policies are normatively defined at regional levels, through Regional Fisheries Management Organizations (RFMOs) with the agreement of Member States, who are then responsible to implement national policies for their fishing fleet (Aranda et al., 2012). These agreements also define how access is usually granted, such as through a ‘fishing right’ that allows fishers to participate in a fishery (Song and Soliman, 2019).

The process, of how the fishing right is allocated and maintained, is governed by a set of procedures which are implemented by state or non-state actors, who have control over how and what type of access measures are implemented (such as license, quota rights, territorial rights) and who has the right to ‘access’ and benefit from such fishing rights (Ribot and Peluso, 2003). The processes by which access to fishing rights for small-scale fishers is operationalized and governed, and their consequences on distributive justice and exclusion has drawn the attention of many social scientists, focusing on various fisheries governance topics including individual transferable quotas (Chambers and Carothers, 2016; Frangoudes and Bellanger, 2017; Guyader and Thebaud, 2001; Host, 2015; Kokorsch et al., 2015), territorial user rights systems (TURFs) (Viana et al., 2018), marine protected areas (Jones, 2009), and blue economy strategies (Cohen et al., 2019). However, the knowledge on access matters in the context of MFADs remains sparse, as the MFAD research remains mostly focused on the ecological and biological performance of fishery systems (Dempster et al., 2006; Taquet, 2013) with relatively less focus on the socio-economic and governance matters of MFADs (Bailey et al., 2016).

Hence new research is necessary to address such knowledge gap on access rights to territories and

resources, also in the context of informing policy insights and trajectories pertaining to SDG14b.

In this research we investigate the access rights as managed through MFAD governance systems in two EU islands Malta and Guadeloupe. Malta is a Mediterranean island-country, while Guadeloupe is a French-Caribbean outermost region, and both are EU member states signatories to the Common Fisheries Policy (CFP). Their MFAD fisheries, however, fall under different governance frameworks. Whereas the MFAD fishery in Malta is legally recognized and regionally-governed by the EC Mediterranean Regulation (EC1967/2006) and the General Fisheries Commission for the Mediterranean (GFCM), the one in Guadeloupe is defined by MFADs regulation (Rec /1994) at the island level, and falls under the regional governance of the Western Central Atlantic Fishery Commission (WECAFC) which has recently recommended the preparation (if relevant) of national level MFAD fisheries development and management plans (WECAFC/17/2019/21).

By analyzing the legislative mechanisms implemented, we decipher the sustainability of the fishery and its management, and the implications of these on the small-scale sector. Our focus is deployed specifically on MFAD territories and how these are defined, operationalized and governed to determine access to various players in the fishery. We provide empirical insights to showcase the access stories of MFAD fisheries in (i) Malta where MFAD access is regulated through a ‘formal’ permit-based territorial MFAD-line system, and in (ii) Guadeloupe where, in the absence of enforcement to implement formal MFADs, ‘informal’ territories have been designed by community members. Through the narratives we show how the different policy environments (dis)enable different actors from gaining access to the MFAD fishery and through fishers’ voices, illustrate how these are inflicting on the socio-ecological sustainability of the MFAD fishery. In the next section we explain the research methodology, followed by a detailed description of the governance of MFAD access systems in the two islands. We provide a comparative analysis of what seem to be governance gaps in allocation systems, and explicate how, in both islands, these are leading to concentration of resource benefits into the hands of few operators, triggering tensions within the sector, and jeopardizing the continued sustainability of coastal communities.

2) Methods

This article analyses the governance of access to MFAD territories to show how these interplay with the sustainability of fishing communities in Malta and Guadeloupe. It considers ‘access’ to MFAD fisheries from various dimensions, as defined by Schalger and Ostrom (1992), and build a typology to decipher the various legislative elements which determine access through harvesting, management and exclusionary rights as exercised by governance systems. We seek to operationalize this bundle of rights framework by classifying the various tools to describe how and when allocation is done, why, who, and for whom (see Table 1). To do this we use mixed methods, including an assessment of legal frameworks as well as fieldwork sessions in both case study areas (participatory observations and interviews) between 2014 and 2019, and an aerial surveillance of MFADs (specifically in Guadeloupe). Through this data we were able to contrast what is found in the legal framework, and what is actually happening in practice. Field data was obtained by observers on board and by semi-structured interviews with the fishing communities both in Malta (N=25) and Guadeloupe (N=30). The interviewees represent more than 20% of the fishing population in both sites, and the data collection process involved more than one interview, as participatory observations were also critical for collection of intangible, yet detailed data – such as conflicts at sea between owners of MFADs. The questions about the decision-making systems were constructed based on previous experience and the trust relationships with the fishermen (interview guide provided). The use of gatekeepers was essential for accessing different networks of fishers through purposeful snowballing. Ethical considerations in line with established Code of Ethics procedures were taken into account throughout the data collection process, especially during happenstance encounters for these elicited rather sensitive information. The primary data collected in the field was triangulated with other sources including Data Collection Framework information collected under EU obligation, as well as other sources of media (online forums, media articles) and national/regional regulations, to provide a detailed assessment of the situation as it unfolds on the ground.

3) MFAD Governance in Malta and Guadeloupe

3.1) Malta

MFADs in Malta have been used since the 1950s, with the main species targeted being the *Coryphaena hippurus* Linnaeus (Vella 1999), a migratory species that swims from the Mediterranean Sea to Atlantic regions in winter and return to spawn in spring (Ospina-Alvarez *et al.* 2019). It is considered as the second most important fishery for the Maltese islands both due to the traditional dependency on its supply during its season and due to the income it generates to fishers. The fishery in Malta is targeted

between 15th August and end of December as established in a GFCM Recommendation as a regional approach to sustainably manage the fishery (Morales-Nin et al 2000). At the national level, the fishery is monitored by a management plan through a system of fishing authorizations, a catch logbook, a vessel monitoring system, as well as designated ports for landing and weighing of fish (MSDEC 2013). In terms of stock status at the Mediterranean level, Molto et al (2020) indicate that even though there is not a clear understanding of the stock of the common dolphinfish, available data indicates that the fishery is not in a risk of overexploitation. Ongoing efforts have been in place for the past 20 years through various projects, notably the FAO project 'Coordination to Support Fisheries Management in the Western and Central Mediterranean (CopeMed) (FAO CopeMed 2005c; FAO CopeMed 2016). Plans are in place for a stock assessment to establish the maximum sustainable yield of the fishery at the Mediterranean level. At the national level, long-term datasets demonstrate that the annual catch has fluctuated around an annual average landed volume of 350 tonnes indicating relative stability of the stock biomass (Figure 1).

(Figure 1 here)

The fishery in Malta is targeted by commercial fishers using MFAD in a stretch of sea-outwards area known as course lines which they select through an annual government-organized lottery that has been practiced for tens of years (Farrugia Randon 1995). A total of 130 course-lines are available (Figure 2), and each fisher that is granted a course line is endowed with exclusive fishing rights to the area. Here, they are permitted to deploy MFADs and harvest the fish aggregated in such territories. More than half of the vessels engaged in MFAD fisheries are between 6 and less than 10 metres (63%), while the rest range from 10 to 16 metres.

(Figure 2 here)

The catches of the different vessels fluctuate according to the fishing effort deployed which is determined by the total number of MFADs, days at sea and vessel capacity. The larger the vessel, the bigger the number of MFADs and the harvesting rate. The large vessel cohorts deploy an average of 200186 FADs netting around 2605kg of dolphinfish per season, while smaller vessels average at 100 FADs and 298kg of fish seasonally (MSDEC 2013).

3.2) Guadeloupe

In Guadeloupe, MFADs were set up at the end of the 1980s to improve small-scale fishers' income and mainly to reduce fishing effort on the island's continental shelf (Diaz et al. 2002). The fishery expanded to 300 vessels in 2000 and stood at 205 vessels in 2017. Most of vessels are in the 6-10 metre cohorts, with marginal numbers in the <6 and 10-12 meters' ones. Unlike Malta, MFADs are

deployed and fished all around the year (Guyader et al. 2017). Fishing methods around MFADs include 115 trolling lines, drifting surface hand-lines and drifting vertical lines. The main target species are dolphinfish (*Coryphaena hippurus*) (61%), yellowfin tuna (*Thunnus albacares*) (18%), blue marlin (*Makaira nigricans*) (8%), triggerfish (*Canthidermis maculatus*) (7%) and other miscellaneous species (Reynal et al., 2015). In 2017, the total landings were estimated to 1372 tons for a landing value of €10.9 million. These commercial species are highly migratory and widely distributed in the Atlantic intertropical area, including the Caribbean Sea, for which Guadeloupe provides only a small proportion of the total catches, mostly through MFADs (Guyader et al. 2017).

(Figure 3 here)

MFADs are ‘privately-owned’ and placed by fishers along virtual lines, from 5 naut. miles from the anchor ports to offshore at distances up to 40-50 nautical miles from the coast (see Fig. 2). Fishers deploy between 1 and 40 MFADs, depending on the territory they occupy, the length as well as the number of lines claimed/owned by the fisher. In 2012, Guyader, Reynal & Bauer (2017) estimated that the number of MFADs anchored around Guadeloupe is 600, but since then, this number has probably increased. The governance of MFAD fishery falls under the regional Direction of the Sea (Guyader et al. 2013). Although there are various regulations in place to govern the fishery (Guyader et al. 2019) including an authorization system for MFAD setting, similar to the temporary occupation authorization granted to shellfish farming in continental France, and a total allowable catch framework for a number of species, there remains no regional scheme allocating to MFADs within territorial sea. Fishers interested to set up MFAD require an authorization of temporary occupation of Public maritime domain granted by Direction of the Sea of Guadeloupe (Article 47), and if authorized, they must inform the public authority about the exact MFAD coordinates and pay an annual fee. The rights to use the public maritime domain, with MFAD installation, is granted to fishers on an indefinite/ perpetuated basis and guarantees permanent and individual ‘access’. Despite this rule, only few MFADs fishers claimed an authorization of temporary occupation and a substantial number of MFAD lines remains unregistered and unreported . Those without an authorization i.e. non-MFAD owners are permitted to fish on existing MFADs , by keeping a 500-meter radius from MFADs when MFAD owners are not fishing.

4 Governance Gaps fueling Access Concerns in MFAD fisheries

4.1) Malta

Whereas the national and regional efforts have focused on the sustainability of the fishery stock, access to the fishing opportunities remains rather contentious. It transpires that although the

access to fishing course lines is conducted through a transparent and fair process, securing access to fishing opportunities is a more complex factor due to the heterogeneity of the fleet. A common issue that has been mentioned by different fishers is the lack of spatial management of the MFAD territories which is leading to contestation between small (6 -8 meters) and large vessels, (10+ meters) as the latter tend to block the fish from entering the coastal areas (Table-Point 1.1). A fisher explained, *“Small-scale vessels normally venture out to around 25-60 miles deploying between 100 and 200 FADs, whilst larger vessels can go up to 120 miles deploying around 400 FADs”* (Fisher, 7-metre-vessel). This is mostly happening since owners of large vessels, legitimately through the lottery, are able to choose a MFAD course line next to small vessels (Table-Point 1.2), a management decision which was not allowed until a few years ago. A wife of a fisher explained that *“from MFAD course line 1 to 29, until some years ago, was considered as the district for the ‘smaller’ vessels. Now it is the district of everyone”* (Wife of fisher, 6-meter-vessel). The ‘blocking’ nature of large vessels is further exacerbated when their territories are extended in the offshore waters by *“deploying MFADs just in front of the course-line of smaller vessels”* to increase their fishing capacity, a practice which is noted to *“reduce the available resources for the smallest vessels fishing within the 25-mile-zone, the only grounds where small vessels can operate due to navigation rules”* (Fisher, 6-meter-vessel).

It could be argued that these ‘illegitimate’, yet not illegal, practices are triggered by the fact that MFAD territories are not defined as ‘areas’ but as imaginary course lines, which, to some extent give indirect flexibility to neighbors to extend ‘unused’ nearby territories in the offshore grounds which are not reachable by the smaller vessels operating next to them. Alongside the squeezing effect permitted by ambiguous spatiality policies which define the territories, are resource conflicts with recreational fleets which allegedly fish on the coastal commercial MFADs. This recreational activity has escalated in the past 6 years with a sudden policy change effected by the national administration in 2013⁵, stating that MFAD can only be deployed by commercial fleets (pers. comm).

Previously, recreational fishers were assigned a specific territory by the government, and through a joint venture, they would pool in for a group-owned set of MFADs which can only be fished using trolling lines, in line with the EC Mediterranean regulation (EC1967/2006). Without a specific territory to practice their recreation, leisure-seeking fishers have been trolling on commercial MFADs, affecting their catches and heightening conflict (Table-Point 1.3). Commercial fishers explain that *‘the problem of recreational fishers is not because they take a fish or two from our MFADs, but because by trolling and taking one fish, they disrupt the entire shoal, which would mean us not finding fish around that particular MFAD’* (Fisher, 8-metre-vessel). Such a practice is also illegal in line with Maltese legislation Cap 425, which prohibits non-MFAD owners from being within the 180-metre radius of the FAD. The sightings of recreational fishers on commercial

MFADs is reported by commercial fishers from time to time, however, enforcement to deter these practices has not been sufficient, and thus persists year after year “*When we call the authorities to report that a recreational vessel is on our MFAD course-line, they tell us to take the vessel’s registration number and file a report. This is impossible since the vessels would be far, and most of them are high speed boats which we cannot reach with our small engines* (Fisher, 6-metre-vessel).

This indicates that restriction in access for recreational fisheries to a MFAD fishing ground has led to what seem to be invisible access-to-resources problems to small-scale fishers who are now competing with illicit recreational fishing on their MFADs. Access concerns are also an issue for the relatively larger vessels from the small-scale sector (>10metres) who fish in the high seas and compete for space and resources with even larger vessels from foreign countries, especially Tunisia. Allegedly, the latter pilfer dolphinfish catches from Maltese MFADs (Vella 2019), triggering conflict between the different fishers, which at times even escalate to violent threats. Such tensions are heightened when catches are low, and fishers’ profitability is jeopardized by such ‘theft’ (Table-Point 1.8). The inability of Maltese large vessels to compete with what are even larger foreign vessels, forces them into becoming/ increasingly competitive in Malta’s territorial waters where they feel protected, but consequently, they. Following new directorship at the Department of Fisheries and Aquaculture (2013) intensify higher competition on the local smaller vessel operators who are only able to fish in the coastal areas.

The various intricate access matters seem to be resulting from governance gaps emanating from the different regulations which do not reflect the needs of the various actors, especially those of the ‘smallest’ nature. This comes along the alleged lack of representation of actors in the decision-making process, which also maintain existing exclusionary issues (Said 2017). Fishers from the smaller fleet segment have argued that a review of the MFAD rules through proper spatial management is needed. For the high seas conflict, regional discussions to resolve the ongoing tensions between Maltese large and foreign vessels have been pursued within the General Fisheries Commission for the Mediterranean (GFCM 43/2019/1). Moreover, in 2020, plans for a revision of the spatial management framework of the FADs has been tabled at the administration level to address access matters of MFADs. The extent to which such plans will materialize to resolve the access conundrums of the heterogeneous fleet is predominantly determined by the participation of the sector in the consultation processes, and the representation of the various needs therein.

4.2) Guadeloupe

Although Guadeloupe’s MFAD governance story reflects a contrast from Malta’s state-led

system, similar impacts are faced by a number of fishers due to unjust access to the fishery. The lack of management and enforcement of MFAD territories is the biggest problem, resulting mostly due to a lack of institutional direction and capacity to deploy effective monitoring and surveillance. This in turn is leading to overruling by powerful fishers who seem to have taken control over access arrangements of the MFAD fishery (Table-Point 1.2).

The existing lines have been established on a ‘first come first served’ basis and are now quasi-privatized permanent territories reinforced by informal local arrangements between a few fishers, but contested by others. Such local arrangements have created and maintained unmanaged territories, with increasing MFADs deployed by existing and new fishers from time to time. With no state-led management in place for a territorial allocation system (licensing and FAD numbers -Table 1), the first occupiers claim that their investment in MFADs gives them sole rights to the area. *“Who have not made the investment do not have the right to fish on my [M]FADs”* (Fisher Interview, 2013). By claiming that the areas are their own territories, fishers, locally referred to as ‘Barons’ or ‘Lords’, are propelling a situation of privatization of fishing grounds which are officially common property (Table-Point 1.2). In turn, those who came later and have not been able to benefit on an equal level playing field from the territories feel hard done by, and such situation incites constant struggle to access. Such confrontations have in some occasions escalated into ‘wars’. This is happening mostly due to intensified fishing effort by MFAD owners who are

increasing their MFAD numbers by enlarging their historical territories and extending their area of operation on each side of ‘their’ original line by 2 or 3 parallel course-lines. This extension, which is implemented to optimize MFAD operation and rate of catches, is leading to ‘overgrabbing’ of the limited fishing territories. Problems of overcapacity and the need to control the numbers of FADs have been highlighted by many fishers, with one explaining that *“In the beginning of the MFAD fishery [1980s], we caught similar or more catches with less MFADs, and thus the number of MFAD per fisher should be limited* (Fisher Interview 2019). This perception is echoed by newcomers who are unable to start-up in the MFAD fishery due to the heightened exclusivity of the territory by the pioneer fishers. Newcomers, especially young fishers, are forced to set their MFADs in the offshore areas, beyond 45 miles. This means higher setting and exploitation costs due to sea-depth and distance from the coast, creating more financial and operational pressure on the younger generations who need to spend longer time and more fuel to reach their MFAD territories (Table-Point 1.8). This has pushed the younger generation away from joining the MFAD fishery, as one explained *“it is almost impossible to become MFAD fisher as there is not any more space around La Désirade island, and this is why I am working on a netter [not MFAD] vessel”* (Young fisher, 2013).

Resistance to the informal access arrangements have been sought through poaching by both commercial and recreational fleets. To reduce the conflict between owners and non-owners of MFADs new regulations have been implemented including a 3-species-per-day bag limit for large pelagic species for recreational fisheries, and controlled commercial and recreational fishing in areas which are at a 500m distance from the MFADs, however, both policies remain unenforced. As a result of overcapacity of non-regulated MFADs, and induced fishing effort from owners, non-owners and recreational fishers contesting the same fishing grounds, the catches have been high, with the result that market prices have been affected. The problems in Guadeloupe are likely to intensify given that the upcoming fisheries development plan for EU outermost regions foresees the development of the 10-12 meters segment to operate in the MFADs fishery in line with (2018/C 422/01) (Laisné et Viel 2018). It appears that plans are underway to increase the number of vessels in the MFAD fishery, which will probably intensify the existing access disputes affecting fishers. In this development plan, there seems to be a lack of consideration of the territorial problems and access realities that exist across the MFAD fishery. Instead, the focus is mostly on strengthening the economic pillar without carefully recognizing the existing governance gaps. Such missing links will deter any plausible investment unless present policies are adjourned and enforced to settle the MFAD territory matters.

Deciphering access in MFADs	Malta			Guadeloupe		
	Law / Policy / Regulation	Governance Gaps	Implications on SSF	Law / Policy / Regulation	Governance Gaps	Implications on SSF
1.1 Definition of authorized areas	<p>(i) In line with the EU Mediterranean Regulation, the Maltese authorities shall establish a total of 130 MFAD course lines and allocate each MFAD course line to fishing vessels at the latest by that 30 June each year.</p> <p>(ii) The government governs the MFAD course lines through 11 districts linked to fishing ports.</p>	<p>(i) The regulation does not define how the distribution of MFAD course lines is done, allowing small and large vessels to deploy MFADs next to each other.</p> <p>(ii) In the past, MFAD course lines were split into districts for large vessels, and districts for small vessels.</p>	<p>Large vessels are allowed to fish in larger territories, extending their fishing activity in offshore areas, and by doing so, blocking fish from entering coastal zones (where SSF can fish).</p> <p>(ii) In the past, smaller vessels benefitted from specific MFAD districts.</p>	<p>In line with French law, MFADs require a temporary occupation authorization (AOT), to use the public domain. The AOT is issued by the fisheries administration after assessing potential interaction with other activities (shipping, sub marine cables, etc) When accepted, MFAD applicants provide the exact position of their concession and pay an annual fee to the state for the use of the MFAD territory.</p>	<p>(i) In Guadeloupe the AOT rule for MFAD territories was applied during the first period of MFADs deployment initiated by the fisheries committee in 1987. Since this rule is not enforced, no formal territories are established.</p> <p>(ii) Most of the territories are informal created by individual fishers, and 'accepted' by community members. The AOT is not applicable for fixed installations outside of territorial waters;</p>	<p>(i) These informal de facto territories gain semi-permanent 'tolerance' at communities' level, with existing users claiming exclusive right of use and exclusion of others.</p> <p>(ii) New fishers cannot practice this fishing.</p>
1.2 Allocation rules (historical use-criteria, lottery,)	<p>In line with national policy, MFAD course lines are assigned through an annual lottery in different districts, following application by commercial vessel owners.</p>	<p>The lottery does not distinguish between small and large vessels in the process, giving equal chance to all contestants, despite the fact that larger</p>	<p>During the lottery, large vessels tend to choose MFAD course-lines as this will provide them with higher opportunity to</p>	<p>Each fisher has an equal chance to obtain an AOT following application, and to deploy MFAD in government-approved territories.</p>	<p>(i) There is no capacity to enforce the law and thus fishers are not applying for MFAD through the formal system.</p>	<p>(i) In practice good fishing grounds are occupied by historic ownership (first comers),</p>

		vessels inherently pose competition on smaller vessels.	have larger space where to operate.		(ii) Fishers are taking a private decision without authorization, and engaging in an informal system of MFAD deployment.	creating competition between MFAD fishers and other fishers. (ii) Current territories are based on the rule first come first served. An 'ocean grabbing' is observed.
1.3 Licenses/Authorizations to regulate the number and type of users (authorization, duration)	(i) A commercial license and authorization is required for a fisher to apply for a MFAD Authorizations (ii) Since 2012, recreational vessels have been declined MFAD authorizations to practice leisure fishing through collective MFAD setting.	(i) Since not all the 130 MFAD course lines are taken up by commercial vessels, there is space for a recreational collective MFAD. (ii) The recreational vessels are not equipped with monitoring systems and are engaging in illicit fishing on commercial MFAD.	Recreational vessels are now fishing on MFADs of vessels in coastal areas, creating further competition for the inshore catches.	(i) The MFAD fishery has no authorization in place to regulate the number and type of users. (ii) Recreational MFAD setting is forbidden, however recreational vessels can operate on the MFADs of commercial fishers if they respect the legal distance.	(i) The lack of formal authorization led to an informal system of licenses. The informal system as is currently applied does not define any rules in relation to number of professional fishers allowed to deploy MFAD's and operate around them. (ii) MFAD owners forbid fishing by other commercial or recreational vessels around their MFAD.	The lack of formal arrangement to regulate the activity through authorizations is leading to conflict and Contestation both between owners of MFADs, and with non-MFAD owners.
1.4 Rules on Transferability of MFAD territories	Following the lottery, vessel owners are allowed to swap MFAD territories with others	Informal non-legalized transfers of MFAD course lines has been	Informal transferability allows large vessels to shift to more opportunistic	According to the French Law, fishing right are not transferable but concessions	MFAD informal territories are not legally recognized, and	Within the informal system the selling or transfer of MFAD lines

	if both neighboring fishers agree. Territories are not transferable through a market, and MFADs territories are not divisible in sub-parts.	documented. These happen without the agreement of both neighboring vessels. Although government intervention took place, some cases remain unresolved.	territories, especially those neighboring smaller vessels.	having legal recognition can be sold following the rules established by the fisheries administration. (eg. Shellfish farms).	thus they cannot be considered as transferable concessions. However, Guadeloupe fishers practice transferability and sell rights to MFAD territories (fishing grounds and installed MFAD devices).	mostly happen between family members. New fishers without the right contacts/ familial links are not able to buy existing rights to MFADs territories.
1.5 Cohabitation rules (min. distances between users, ...)	Vessels are assigned territories parallel to each other with a minimum distance from 0.5 miles to 4 miles. (in that case, it is more rules of placement)	The minimum distance between users is not equal across the different vessels.	Vessels in the 0.5-mile co-habitation areas have less territory than those who venture in 4 mile-territories.	According to French law, non-MFAD owners (commercial and recreational) are allowed to fish around MFADs keeping a distance of 500m radius.	MFAD operators have developed territorial defense and/or cohabitation rules which only allow specific individuals to fish within their territorial distances.	Those without contact/friendship with existing MFAD operators and with a wish to fish, are unable to do so.
1.6 Rules on Spatial planning of MFADS territories (parks)	MFADs are recognized as a spatial activity in Maltese waters together with trawling zones which exist in the same areas. (ii) Swordfish Corridors have been established to allow swordfish fishing with no MFADs allowed in these corridors. Trawling zones and	(i) There is a lack of spatial management for co-existing trawling and MFAD course lines. (ii) Swordfish fishing is allowed to take place both outside and inside the swordfish corridor, leading to spatial conflict	MFAD Fishers find damage in their MFADs due to interaction with swordfish long-lines or trawling, with cases of MFAD devices lost.	There is no spatial planning regulation including other activities especially shipping, recreational sailing.	Lack of holistic spatial planning defining authorized and non-authorized areas for MFAD deployment	Interactions with other activities like marine traffic (commercial and leisure) and sub-marine cables leading to MFAD devices lost

	MFAD intersect, using the same grounds.	between MFAD and swordfish long-lining.				
1.7 Harvesting rules (vessel quotas or effort limitations)	In line with the Mediterranean regulation, MFADs are allowed only between 15 th August and 31 st December.	No effort allocation within the sector leads to larger vessels having the capacity to deploy higher effort affecting the catches of those with smaller vessels.	The lack of fencing between different vessels leads to resource concentration into the larger vessels, and decreased catches by smaller vessels.	(i) WECAFC recommends MFAD national management plan in relation with ICCAT and CRFM stock assessment (/17/2019/21). (ii) Regional TAC & quota for blue marlin are set up but this species is a bycatch system is implemented for a number of species.	(i) The recommendation of WECAFC is not always transposed into national laws, leaving major governance gaps. (ii) Lack of quota system for dolphinfish is leading to bottleneck on dolphinfish markets	(i) The lack of holistic management on the fisheries is likely to maintain adverse effects on fisheries (ii) For fishers without MFADS and powerful vessels is difficult to catch these pelagic species. Old and young fishers cannot benefit from MFAD, leading to income inequalities.

<p>1.8</p> <p>Rules on Maximum number and placement of MFADs</p>	<p>Neither the EU nor the existing national management plan specify rules on the maximum number and placement of MFADs. However a derogation for vessels larger than 12 meters is in place such that they can place MFADs in coastal areas.</p>	<p>(i) The derogation supports large-scale vessels for inshore placement of MFADs, with little regard to impact on smaller operators.</p> <p>(ii) Placement of MFADs in high seas are not protected by any law, leading to wars between Maltese and foreign fleets especially Tunisian.</p>	<p>(i) The large number of MFADs deployed by the larger vessels affect catch rates of smaller vessels. Also smaller vessels are disadvantaged on bad weather days</p> <p>(ii) In high seas, poaching by foreign fleets on Maltese MFADs leading to declining catches.</p>	<p>No specific rules at national and regional levels to specify the maximum of surface or numbers of MFADs.</p>	<p>(i) Lack of monitoring and MFAD's density remain ungoverned, with overcapacity likely to occur.</p> <p>(ii) Fishers tends to set their MFADs in more and more distant and deeper areas often out of the EEZ.</p>	<p>(i) The excessive investment cost in MFADs prevent fishers without economic capacity to invest in such fishing.</p> <p>(ii) If new fishers want to fish with MFADs, they need to have high financial capacity to invest in costly MFADs in deeper fishing grounds</p>
--	---	---	---	---	---	--

						(ii) The high cost of operation to offshore MFADs reduces the value added (wealth) for MFAD fishers.
Table 1. Investigating the governance of MFADs access rights				Source: Authors; Methodology adopted from Schlager and Ostrom 1992		

4) Discussion

This article adds to the increasing literature about access concerns faced by small-scale fishers around the world (Said and Chuenpagdee 2019; Said et al 2020), with a specific focus on MFAD fishery. . By deploying an access theory lens in Malta and Guadeloupe, the article highlights that fisheries which involve territorial access through MFADs require specific governance attention if countries are to fulfil the goal of access to small-scale and artisanal fishers in line with SDG14b. Common access challenges emanating from gaps in the governance regimes in both islands include (i) overcapacity - excess number of MFADs and the concomitant blocking/barrier effects of resources; and (ii) over-grabbing by users occupying large fishing territories at the expense of others. Both issues seem to be underpinned by (un)intentional institutional drawbacks resulting from lack of political and/or administrative foresight to anticipate measures of ensuring fair access across the fishing segments. These include policy blind spots and lack of enforcement that enable fishers with a higher political and/or economic capital in the sector to claim or occupy bigger fishing territories and improve their catch rates at the expense of existing smaller operators, or potential newcomers.

The Maltese and Caribbean case studies indicate that the governance of MFADs requires specific attention in the access discussion as the allocation process be it 'formal', decided through governments and recognized through legislation; or 'informal', determined by communities through customary practices (Christy, 2000), brings forth an array of 'winners and losers' depending on how the allocation is defined and determined, especially in heterogeneous communities where allocation of MFAD territories has been proved to cause severe problems of distribution (e.g. in Malaysia, Yahaya, 1983).

Although the Maltese case might be perceived as more democratic and inclusive as access is based on a lottery that gives fishers an equal chance to choose their preferred course line in the fishing grounds, an in-depth analysis shows that the co-existence of large and smaller vessels suffocates the latter's activity and reduces their access to fish. Similarly, although the fishery in Guadeloupe could be defined as community-based and thus reflecting the needs of the fishing people, data shows that the system is perforated by exclusionary realities. In both scenarios, conflicts and tensions are inevitable, predominantly due to a consciousness of inequality that is shared by those on the 'losing end' (Fabinyi et al., 2014). We contend that governance gaps are creating and maintaining the disadvantages faced by a number of fishers, as they do not provide the different players with sufficient shielding to remain competitive against the 'giants' in the same fleet. It could be argued that this results from the fact that the realities, extent and frequency of access issues faced by fishers remain understudied, and also not catered for in the national management frameworks. This is especially given the fact that the lack of representation of fishers in community organizations including political

associations or cooperatives which have power to influence policies has been also registered in other parts of the Caribbean (Montes et al., 2019), and in Malta (Said, 2017).

Moving forward in governing these fisheries requires context-oriented policies which recognize fishing communities as a heterogeneous and complex system embedded in politically and economically larger complex systems (Berkes 2006). This includes deciphering the various sub-elements of access rights that determine how resources are exploited, and by whom, along with explicit factors determining the rights of use, as well as implicit factors that although not known, are also driven by policy (or lack of it). Measures in Guadeloupe can include a management plan that addresses territorial governance of MFADs, by re-organizing the existing informal arrangements in a way that gives a level playing field to existing and new fishers and improve the role of the regional fisheries committees. In practice this could be through a fixed number of permitted MFADs and specific areas/course lines as is implemented in Malta. Access matters in Malta would require improved monitoring of territorial use, and of activity happening in offshore areas, especially the deployment of MFADs in front of the territories of smaller vessels. The management of recreational fisheries on MFAD could be resolved through the establishment of collective recreational MFADs in order to reduce the disturbance of fish shoals of coastal commercial MFADs.

At the national level, in both cases, the process requires an inclusive approach with the participation of the various actors such that the spatial arrangements, and fishing effort technical measures are constructed following constructive deliberations. The process could be formidable given the potentially opposing views between those benefitting and those 'losing out' from the existing system. Transparency in the decision-making system is key to ascertain the commitment and involvement of the array of users. If already marginalized individuals, such as the younger generations, are not incorporated in the decision-making of how to devise access measures for MFAD systems, and how to make them operational for the years to come, it is likely that any access system created will only be halfway new. The biggest governance challenge here is not only to implement a new plan for co-management of MFADs through improved equity and access, but to effectively incorporate the participation of marginalized fishers in the discussion process, a deeply-entrenched problem which is not always solved by practitioners of fisheries governance (Fabinyi et al., 2014). At the regional level, and mirroring the national processes could be reached through research efforts targeted at investigating access matters of MFADs in different contexts, and identifying ways of how to improve access in line with SDG14b. The regional conversation could also be brought into policy advice at the national level in parallel with ongoing biological stock assessments of the MFAD fisheries. In other

words, the CopeMed project in the Mediterranean could deploy an equal focus on the social element to bring forth access-related scientific advice of socio-ecological nature. In Guadeloupe, this could form part of similar projects such as the MAGDELESA, and also recognized in the RFMOs work. This would also necessitate specific data collection schemes, in line with the social indicators developed for the EU Data Collection Framework, which could focus exclusively on access to fishing opportunities, including MFADs. From the governance perspective, access to MFADs would benefit from direct attention at CFP level as are other forms of fishing opportunities Article 17 of the CFP obliges Member States to assign fishing opportunities in line with social criteria. Extending the scope of fishing opportunities to cover territorial fishing rights and distribution of space could be explored to enable acquisition of SDG14b.

5) Conclusion

With the UN SDGs paving the research and policy trajectories for the next decade and beyond, a discussion on the sustainability of small-scale fisheries engaged in MFAD fisheries is timely. In this article we focus on two case studies in Malta and Guadeloupe to present what are access concerns in MFAD fisheries. We highlight how investigating small-scale fisheries access to fisheries goes beyond what is defined as user-right, to showcase the interconnected invisible processes that have a role to play in determining access. We argue that access analysis for MFADs require in-depth evaluation of the policy environments and how they (dis)enable different actors from gaining, maintaining and controlling access to the MFAD fishery, and how these inflict on the access for small-scale fisheries. The article underlines the importance of diagnosing economic and individualistic behaviors in MFAD fisheries including fishers' incentive to increase their territorial space and fishing effort, to bring out what are overcapacity and overgrabbing issues that restrict the flow of benefits from reaching other fishing players. We argue that both Guadeloupe and Malta would benefit from shifts in how MFADs are governed, not only to improve the access to different fishers disadvantaged by the current systems, but also to manage the socio-ecological sustainability of the fishery through monitoring of potential overcapacity. In principle, these measures could (i) manage the existing overcapacity issues that are increasing pressures on fishing stocks, (ii) minimize the existing conflicts fragmenting the fishing communities, and (iii) cater for the continued sustainability of the fishery through the recruitment of younger generations. This article signals the need for more focus on access research to understand how policies are interplaying with providing small-scale fisheries with opportunities to engage in fishing activities and earn their livelihoods from such fisheries. It is evidential that the research on the governance of MFADs still lags behind the focus deployed on other fisheries systems, such as quotas, which are regulated by access mechanism, and this study defines both a conceptual and empirical need for future research on this topic. Such knowledge could provide guidance for context-oriented governance regimes to be adopted for MFAD fisheries management, both

at national and regional levels.

References

- Aranda, M., Murua, H., de Bruyn, P., 2012. Managing fishing capacity in tuna regional fisheries management organisations (RFMOs): Development and state of the art. *Mar. Policy* 36, 985–992. <https://doi.org/10.1016/j.marpol.2012.01.006>
- Bailey, M., Flores, J., Pokajam, S., Sumaila, U.R., 2016. Towards better management of Coral Triangle tuna. *Ocean Coast. Manag.* 63, 30–42. <https://doi.org/10.1016/j.ocecoaman.2012.03.010>
- Bavinck, M., Svein, J., Joeri, S., 2018. Fisheries as social struggle : A reinvigorated social science research agenda. *Mar. Policy* 94, 46–52. <https://doi.org/10.1016/j.marpol.2018.04.026>
- Bennett, N.J., Cisneros-Montemayor, A.M., Blythe, J., Silver, J.J., Singh, G., Andrews, N., Calò, A., Christie, P., Di Franco, A., Finkbeiner, E.M., Gelcich, S., Guidetti, P., Harper, S., Hotte, N., Kittinger, J.N., Le Billon, P., Lister, J., López de la Lama, R., McKinley, E., Scholtens, J., Solàs, A.-M., Sowman, M., Talloni-Álvarez, N., Teh, L.C.L., Voyer, M., Sumaila, U.R., 2019. Towards a sustainable and equitable blue economy. *Nat. Sustain.* <https://doi.org/10.1038/s41893-019-507>
- Campbell, B., Hanich, Q., 2016. Not just a passing FAD : Insights from the use of artisanal fishing aggregating devices for food security in Kiribati. *Ocean Coast. Manag.* 119, 38–44. <https://doi.org/10.1016/j.ocecoaman.2015.09.007>
- Chambers, C., Carothers, C., 2016. Thirty years after privatization: A survey of Icelandic small-boat fishermen. *Mar. Policy.* <https://doi.org/10.1016/j.marpol.2016.02.02>
- Christy, F., 2000. Common Property Rights: An Alternative to ITQs [WWW Document]. FAO Use Prop. Rights Fish. Manag. - Gen. Perspect. URL <http://www.fao.org/3/x7579e00.htm> (accessed 1.13.20).
- Cohen, P.J., Allison, E.H., Andrew, N.L., Cinner, J., Evans, L.S., Fabinyi, M., Garces, L.R., Hall, S.J., Hicks, C.C., Hughes, T.P., Jentoft, S., Mills, D.J., Masu, R., Mbaru, E.K., Ratner, B.D., 2019. Securing a Just Space for Small-Scale Fisheries in the Blue Economy. *Front. Mar. Sci.* 6, 1–8. <https://doi.org/10.1097/FTD.0000000000000208>
- Dempster, T., Taquet, M., Bertho, B.P., Cedex, L.P., De, I., Pratique, E., 2006. Fish aggregation device (FAD) research : gaps in current knowledge and future directions for ecological studies. *Rev. Fish Biol. Fish.* 21–42.
- Dimech, M., Darmanin, M., Philip Smith, I., Kaiser, M.J., Schembri, P.J., 2009. Fishers' perception of a 35-year old exclusive Fisheries Management Zone. *Biol. Conserv.* 142, 2691–2702. <https://doi.org/10.1016/j.biocon.2009.06.019>

- EC 1967/2006, E., n.d. Council Regulation (EC) No 1967/2006 [WWW Document]. URL <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:409:0011:0085:EN:PDF> (accessed 7.16.14).
- EC 2018/C 422/01 Communication from the Commission amending the Guidelines for the examination of State aid to the fishery and aquaculture sector (2018/C 422/01)
- Fabinyi, M., Foale, S., Macintyre, M., 2014. Managing inequality or managing stocks? An ethnographic perspective on the governance of small-scale fisheries. *Fish Fish.* 16, 471–485. <https://doi.org/10.1111/faf.12069>
- FAO, 2012. Advisory note: Anchored Fish Aggregating Devices (FADs) for Artisanal Fisheries.
- FAO-CopeMed (2005c) Pilot Study on Dolphin fish in Malta. Report 2004, 21 pp. http://webco.faoCopeMed.org/old_CopeMed/vldocs/0001063/final_malta.pdf
- FAO-CopeMed (2016) Report of the CopeMed II-MedSudMed Technical Workshop on *Coryphaena hippurus* Fisheries in the Western-Central Mediterranean. Malta 16- 18 March 2016. CopeMed II Technical document n. 42, 31pp. http://www.faoCopeMed.org/pdf/publications/CopeMedII_TD42.pdf
- Farrugia Randon S (1995) The fishing industry in Malta: past, present, future. Pieta (Malta) Independence Print
- Frangouides, K., Bellanger, M., 2017. Fishers' opinions on marketization of property rights and the quota system in France. *Mar. Policy* 80, 107–112. <https://doi.org/10.1016/j.marpol.2017.01.010>.
- Gatt, M., Dimech, M., Schembri, P.J., 2015. Age , Growth and Reproduction of *Coryphaena hippurus* (Linnaeus , 1758) in Maltese Waters , Central Mediterranean. *Mediterr. Mar. Sci.* 334–345.
- Guyader, O., Bellanger, M., Reynal, L., Demanèche, S., Berthou, P., 2013. Fishing strategies, economic performance and management of moored fishing aggregating devices in Guadeloupe. *Aquat. Living Resour.* 26, 97–105. <https://doi.org/10.1051/alr/20013044>
- Guyader, O., Frangouides, K., Kleiber, D., 2018. Existing Territories and Formalization of Territorial Use Rights for Moored Fish Aggregating Devices: The Case of Small-Scale Fisheries in the La Désirade Island (France). *Soc. Nat. Resour.* 31, 822–836. <https://doi.org/10.1080/08941920.2018.1443235>
- Guyader, O., Beugin, B., Lebechnech, L. González, Y. P., Sieyro, A. B., Pavon, M. N., Costa, D., Lucas J. 2019. A review of fisheries governance & regulation in EU Outermost regions: lessons and perspectives for the future. ORFISH project report, 202 p.
- Guyader, O., Thebaud, O., 2001. Distributional issues in the operation of rights-based fisheries management systems. *Mar. Policy* 25, 103–112.
- Host, J., 2015. Governing Through Markets: Societal Objectives, Private Property Rights and Small- Scale Fisheries in Denmark, in: Jentoft, S., Chuenpagdee, R. (Eds.), *Interactive Governance for Fisheries*. pp. 319–336. <https://doi.org/10.1007/978-3-319-17034-3>

- Jones, P.J.S., 2009. Equity, justice and power issues raised by no-take marine protected area proposals. *Mar. Policy* 33, 759–765. <https://doi.org/10.1016/j.marpol.2009.02.009>
- Kokorsch, M., Karlsdóttir, A., Benediktsson, K., 2015. Improving or overturning the ITQ system? Views of stakeholders in Icelandic fisheries. *Marit. Stud.* 14, 15. <https://doi.org/10.1186/s40152-015-0033-x>
- Laisné, L., Viel, F. 2018. Renouveau de la flotte dans les départements d'Outre-mer (DOM), <https://agriculture.gouv.fr/renouveau-de-la-flotte-dans-les-departements-doutre-mer-dom>
- Dimech, M., Schembri, P.J., 2015. Age, Growth and Reproduction of *Coryphaena hippurus* (Linnaeus, 1758) in Maltese Waters, Central Mediterranean. *Mediterr. Mar. Sci.* 16, 334–345. <https://doi.org/10.12681/mms.1683>
- Montes, N., Sidman, C., Lorenzen, K., Tamura, M., Ishida, M., 2019. Influence of fish aggregating devices on the livelihood assets of artisanal fishers in the Caribbean. *Ocean Coast. Manag.* 179. <https://doi.org/10.1016/j.ocecoaman.2019.104823>
- Morales-Nin B, Cannizzaro L, Massutí E, et al (2000) An overview of the FADs fishery in the Mediterranean Sea. *Proc Tuna Fish Fish Aggregating Devices Symp* 184-207.
- Morales-nin, B., Grau, A.M., Palmer, M., 2010. Managing coastal zone fisheries : A Mediterranean case study. *Ocean Coast. Manag.* 53, 99–106. <https://doi.org/10.1016/j.ocecoaman.2010.01.003>
- Prefectural Order of 2002 N°2002/1249 of 19th August regulating the coastal marine fisheries in the waters of the Guadeloupe department, Section III article 47.
- Rey Valette, H., Gillaurren, E., David, G., 2000. Multidisciplinary assessment of the sustainability of small-scale fishery around anchored FADs. *Aquat. Resour. Fr.* 241–252.
- Reynal, L., Guyader, O., Meur, C. Le, Lespagnol, P., 2014. DONNEES STATISTIQUES DE LA PECHE DU MARLIN BLEU AUX ANTILLES FRANCAISES (GUADELOUPE ET MARTINIQUE) Description des flottilles de pêche et de leur activité. ICCAT.
- Ribot, J.C., Peluso, N.L., 2003. A theory of Access. *Rural Sociol.* 68, 153–181.
- Said, A., 2017. Are the Small-Scale Fisheries Guidelines Sufficient to Halt the Fisheries Decline in Malta ?, in: Jentoft, S., Franz, N., Barragan Pallidines, J., Chuenpagdee, R. (Eds.), *The Small-Scale Fisheries Guidelines Global Implementation*. Springer.
- Said, A., Chuenpagdee, R., 2019. Aligning the sustainable development goals to the small-scale fisheries guidelines: a case for EU governance. *Mar. Policy*.
- Said, A., MacMillan, D., 2020. 'Re-grabbing' marine resources: a blue degrowth agenda for the resurgence of small-scale fisheries in Malta. *Sustain. Sci.* 15, 91–102. <https://doi.org/10.1007/s11625-019-00769-7>
- Said, A., Tzanopoulos, J., MacMillan, D., 2016. Bluefin tuna fishery policy in Malta: The plight of artisanal

fishermen caught in the capitalist net. *Mar. Policy* 73. <https://doi.org/10.1016/j.marpol.2016.07.025>

Song, A.M., Soliman, A., 2019. Situating human rights in the context of fishing rights – Contributions and contradictions. *Mar. Policy* 103, 19–26. <https://doi.org/10.1016/j.marpol.2019.02.017>

Taquet, M., 2013. Fish aggregating devices (FADs): good or bad fishing tools? A question of scale and knowledge. *Aquat. Living Resour.* 26, 25–35. <https://doi.org/10.1051/alr/2013043>

Vella A (1999) Dolphinfish fishery around the Maltese Islands*. *Sci Mar* 63:465-467.

Viana, D.F., Gelcich, S., Twohey, B., Aceves-Bueno, E., Gaines, S.D., 2018. Design trade-offs in rights-based management of small-scale fisheries. *Conserv. Biol.* 33, 361–368. <https://doi.org/10.1111/cobi.13208>

WECAFC/17/2019/21 amendment to Recommendation WECAFC/15/2014/2 “on the sustainability of fisheries using moored fish aggregating devices in the WECAFC area (<http://www.fao.org/fi/static/media/MeetingDocuments/WECAFC/WECAFC2019/17/RecWECAFC%20XVII-2019-21.pdf>).

Wilson, D.C., 2009. *The Paradoxes of Transparency*, MARE Publi. ed. Amsterdam University Press.

Wolf, R.S., Rathjen, W., 1974. Exploratory fishing in the Caribbean. *Mar. Fish. Rev.* 36, 1–7

Yahaya, J., 1983. *Fish Aggregating Devices (FADs) and Community-Based Fisheries Management in Malaysia*. FAO - Socio-economic Issues Coast. Fish.

WEIGHT (KG000)

VALUE PER KG (€000)

Figure 1: Dolphinfish catches in (kg) and monetary value (in €) between 2015 and 2019 in Malta. Data indicates increased catches and fluctuating price/kg over the years. (Source of Data: Department of Fisheries and Aquaculture, Malta 2020)

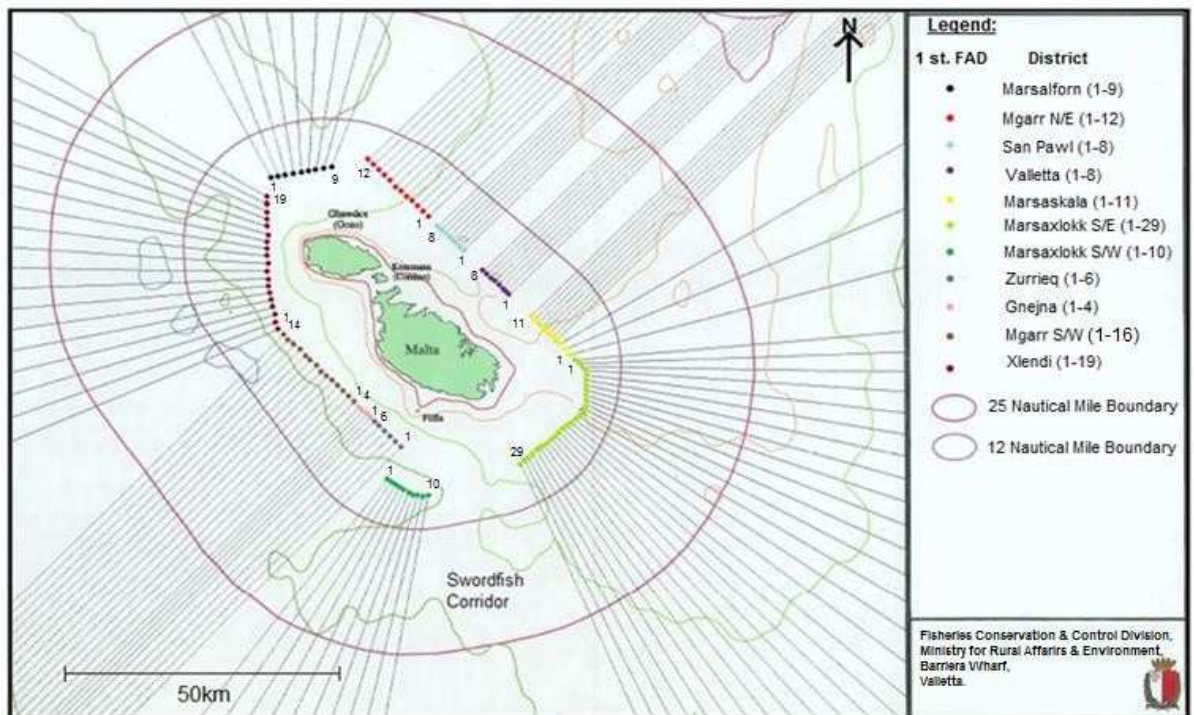


Figure 2 Distribution of course-lines around the Maltese archipelago. Each course-line is allocated a specific number within each district. (Modified from map supplied by the Department of Fisheries and Aquaculture, Malta)

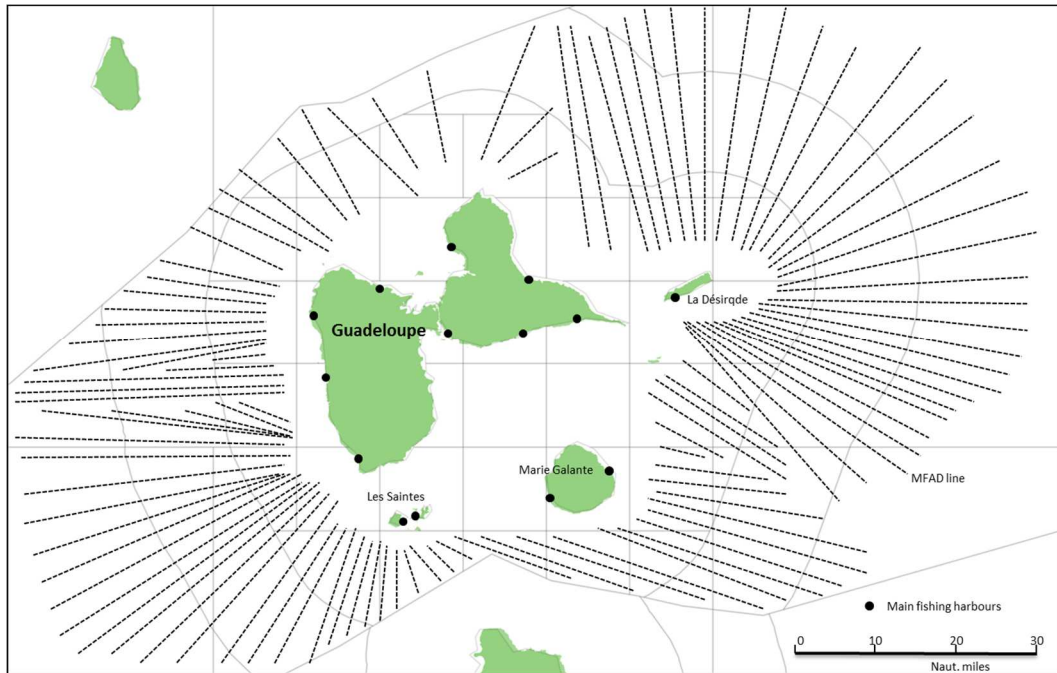


Figure 3 Distribution of course-lines from representative harbors around Guadeloupe (Source: Guyader 2016, non published)

Graphical Abstracts

n/a