CITIZEN SCIENTISTS OF THE SEA

The power of fisher inclusion in Ghana's closed season monitoring

A report by the Environmental Justice Foundation

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Norway

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Contents

Acronyms/Abbreviations

CaFGOAG	Canoe and Gear Owners Association of Ghana
CSOs	Civil Society Organisations
FC	Fisheries Commission
FDGs	Focus Group Discussions
FL	Fork Length
FSSD	Fisheries Scientific Survey Division
GIFA	Ghana Inshore Fishermen Association
GNCFC	Ghana National Canoe Fishermen Council
MoFA	Ministry of Fisheries and Aquaculture
NAFPTA	National Fish Processors and Traders Association
PRA	Participatory Rapid Appraisal
SPCC	Small Pelagic Co-management Committee
STWG	Scientific and Technical Working Group
TL	Total length
USAID	United States Agency for International Development


CRUSH
DESTROY
WIN.

Executive summary

Ghana's marine fisheries, particularly small pelagic species that sustain millions of people, face a critical decline. In response, closed fishing seasons have been implemented since 2016 to allow fish populations to recover. Although scientifically grounded, early compliance was largely driven by enforcement rather than understanding, as communities had limited involvement in monitoring and little access to results.

Since 2023, the Norway-funded Sustainable Oceans Project has partnered with the Fisheries Commission to address this challenge by actively involving artisanal fishers in biological monitoring of the closed seasons across eight coastal communities. Selected fishers were trained as citizen scientists, contributing to fish sampling, data collection, and peer education.

This report examined the impact of this support through structured interviews with 120 fishers across eight coastal sites. After the transition from passive observation to active participation, 80% of fishers reported improved understanding of the science behind closed seasons, which strengthened their sense of ownership and pride in contributing to the fish populations' recovery. Trained fishers became trusted voices within their communities, explaining the rationale of the closed seasons and encouraging compliance. Peer-to-peer communication proved more effective than external messaging in building trust and acceptance. A better understanding of the ecological benefits motivated fishers to comply with closed season directives even in the absence of enforcement.

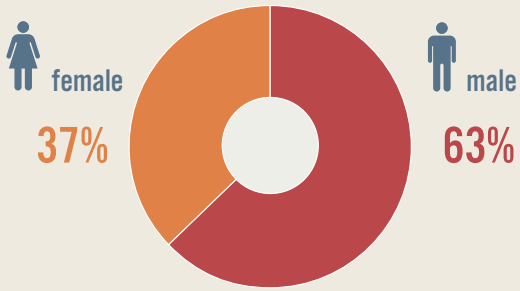
Finally, nearly half of the participants noted improved relationships with the Fisheries Commission, underscoring the value of participatory monitoring in building trust between regulators and communities. Both participating and non-participating fishers acknowledged that inclusion strengthens transparency, accountability, and ownership.

Fisher inclusion transforms closed seasons from a top-down directive into a community-driven conservation effort. Sustained engagement and recognition of fisher knowledge are essential to rebuilding Ghana's marine stocks and securing the livelihoods of coastal communities.

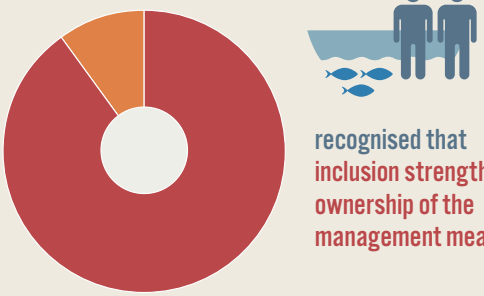
Key findings

- Fishers across the sample sites showed high awareness of closed seasons, largely due to sensitisation campaigns and peer involvement. 92% of participating fishers demonstrated strong scientific understanding compared to non-participants (78%).
- Participation in closed season monitoring significantly improved fishers' understanding (80%) and fostered peer influence that broadened community awareness and compliance.
- Fisher involvement in monitoring shifted compliance from enforcement-driven to voluntary, knowledge-based adherence. Participation fostered ownership and collaboration, with fishers themselves becoming advocates for compliance.
- Although some participating fishers faced accusations of financial gain or short-term income losses, they overwhelmingly valued the benefits of involvement. All respondents expressed willingness to participate again, with 85% eager to expand into other citizen science initiatives.
- Despite the time commitment, none viewed participation as a burden, underscoring a strong commitment to continued engagement and collective stewardship of fisheries resources.
- Both fishers and non-fishers strongly endorsed the inclusion of fishers in the design and implementation of management measures beyond closed seasons. Fishers highlighted the value of their traditional ecological knowledge in tailoring policies to real-world conditions, while leaders observed a significant shift in attitudes and understanding among participants.

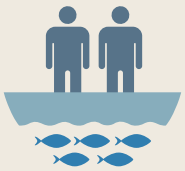
A total of 120 fishers from eight coastal sites took part in the study



90% of non-participating fishers



recognised that inclusion strengthened ownership of the management measure.



78% of participating fishers were invited by Fisheries Commission enumerators,

20% were nominated by fisher associations,

one joined independently, reflecting various entry points of the monitoring exercise.

Almost half of the participants reported strengthened trust and collaboration with regulators.

Peer-to-peer communication emerged as a vital driver of compliance, with three-quarters of non-participants learning through fellow fishers.

1. Introduction

Effective management of fisheries resources often demands an array of measures to ensure fish populations can support the livelihoods and food security of current and future generations. Globally, many marine fisheries have collapsed or are on the verge of collapse as a result of overfishing.[1] A key measure to address overfishing is the use of seasonal restrictions on fishing effort, which prohibit fishing activities – either in a specific area or across an entire fishery – for a particular period of time. Also referred to as a seasonal closure or closed season, they are often imposed during the spawning period to give fish a chance to reproduce and replenish the population.[2] Such restrictions, when based on robust science and properly implemented, have the potential to provide conservation benefits and help make the fishery more economically sustainable.

Ghana's marine fisheries resources are a source of livelihoods for around 10% of the country's population.[3] They provide 80% of the country's gross fish production and are a direct source of food and income for over 200 coastal communities. National fisheries resources are dominated by small pelagic species such as round sardinella, flat sardinella, anchovy, chub mackerel, and horse mackerel.

These species are a critical resource, sustaining artisanal canoe fisheries, coastal economies, local and national food security, and nutrition.[4]

However, the small pelagic fishery has declined significantly over the past two decades.[5] Landings of round and flat sardinella (*Sardinella aurita* and *Sardinella maderensis*), which historically have formed the backbone of Ghana's marine fisheries, have reached a point of near collapse, declining to less than 20% of the historical highest catch of almost 140,000 metric tonnes in 1996.[6] In 2018, Ghana's erstwhile Scientific and Technical Working Group (STWG) predicted the collapse of the small pelagic fishery if measures were not put in place to reverse population declines.[7]

As part of measures proposed to rebuild and recover the fishery, the working group recommended the introduction of a one-month closure for all fishing fleets, except for tuna. August was recommended as the optimal period for the closure to maximise population gains, coinciding with the peak spawning period for the target small pelagic species (**Box 1**).[8]

Fishers readying their nets in Apam.

Box 1: The timing of closed seasons

The timing of the closed season in Ghana has, from the outset, been a contentious matter. While closed seasons are generally best implemented during the spawning period, [9] there are also socio-economic and cultural considerations that need to be factored into decision-making. In 2018, following a failed attempt at closing the fishery for the small-scale sector,[10] the then Scientific and Technical Working Group (STWG) approved a revised date of 1-31 July for 2019. This timing considered the biological, socio-economic impacts, and cultural concerns of fishers.

However, the 2019 closed season was implemented from 15 May to 15 June, following a policy directive from the Ministry of Fisheries and Aquaculture Development, to ease the perceived economic burden of artisanal fishers, should the closure occur within the bumper season (July – August).[11] Biological monitoring carried out following the 2019 closure showed that it did not produce the desired effects, and it was recommended that subsequent closed seasons be timed during the peak spawning period of July to August.[12] Although artisanal fishers in particular resisted the closure in July, after extensive discussions, they ultimately agreed.[13] It is important to note that some fishers remain unhappy with July as the month for the closed season and have consistently called for a review of the timing of future closures.

Nana Kow Payin collecting fish for biological monitoring in Apam.

1.1. Recent experience of closed season implementation in Ghana

Section 47 of Ghana's Fisheries Act 2025 (Act 1146) sets out the legal basis for the Fisheries Commission to declare closed seasons for fishing in specified areas of Ghana's marine waters, inland waters, or riverine system, based on verifiable scientific information. Under this provision, the Fisheries Commission must declare a closed season by notice in the Gazette, setting out the duration of the restriction.

Closed seasons were first introduced in Ghana for the industrial marine fishery (trawl) sector in 2016.[14] In 2019, the measure was extended to all fishing fleets (i.e., including the semi-industrial and artisanal sectors), in close consultation with diverse stakeholders, including fishing communities, non-governmental organisations, and fisheries associations.[15] Since 2019, five closed seasons have been implemented for all fleets (except tuna), with the first taking place between 15 May and 15 June 2019. The following closures were implemented in July 2021, 2022, and 2023, and most recently in 2024. The closed season was not implemented in 2020 due to the COVID -19 pandemic.[16]

In 2025, the Ministry of Fisheries and Aquaculture announced a closed season exemption for marine canoe artisanal fishers, asking that they comply with other traditional and statutory management measures, such as observing designated fishing holidays and refraining from engaging in illegal, unreported, and unregulated fishing practices such as light fishing.[17] The 2025 closed season was implemented for the semi-industrial fishery in July and for the industrial trawl fishery from July to August. All closed seasons since 2016 have been implemented as a fish stock recovery strategy with the objectives of reducing overfishing and fishing pressure and rebuilding over-exploited and depleted fish populations.[18]

1.2. Monitoring of closed seasons

Effective monitoring of the impacts of closed seasons on target fish populations, as well as the fisherfolk that depend on them, is critical to their success as a management intervention. The inclusion and active participation of fishing communities are also vital, with a recent study highlighting the importance of stakeholder participation in improving compliance with the closed season in Ghana.[19]

In Ghana, the impacts of the closed fishing season have been monitored since 2019 through biological monitoring carried out by the Fisheries Commission's Fisheries Scientific Survey Division (FSSD), alongside socio-economic impact monitoring carried out by various bodies such as the USAID Sustainable Fisheries Management Project.

Biological monitoring involves assessing key parameters, such as length, weight, sex and maturity, for the three major small pelagic species - Sardinella aurita (Round sardinella), Sardinella maderensis (Flat sardinella), and Engraulis encrasicolus (Anchovy).[20] This data is collected at selected locations in all four coastal regions, usually between four and eight locations, depending on the budget available. Data is recorded by hand before being entered into the Kobo toolbox application and subsequently processed and analysed in R.

Socio-economic impact monitoring is undertaken routinely by the Fisheries Commission and the Ministry of Fisheries and Aquaculture, with past assessments also carried out under the now-defunct USAID Feed the Future initiatives (see, for example, for 2019[21] and 2022[22]).

Using the Participatory Rapid Appraisal (PRA) methodology, the Norway-funded Sustainable Oceans Project (SOP) provided support for the inclusion of artisanal fishers in the socio-economic monitoring of the 2023 and 2024 fishing closed seasons. This was carried out by the Small Pelagic Co-management Committees and the Fisheries Commission (see **Box 2**). The PRA, primarily conducted through focus group discussions, placed fishers at the centre of the discussions and analyses, encouraging open conversations about the impacts of the one-month closure.

While the findings of these impact assessments are sometimes disseminated at high-level meetings and events, in most instances, the reports are not made publicly available or are only published after a significant delay. At the time of writing in December 2025, the report covering the biological assessment for the previous year's closed season in 2024 had not yet been published on the Fisheries Commission website.[23] Fishers have repeatedly called for these reports to be made more readily accessible. In a statement issued in June 2023,[24] the president of the Canoe and Fishing Gear Owners Association of Ghana (CaFGOAG), an organisation that represents artisanal fishing interests, expressed concerns that fishers lack access to the results of closed season monitoring, leaving them doubtful about the benefits of the closed season as a management intervention. This can have a significant negative impact on compliance with the measure. A study published in 2023 found that fishers' perceptions of a lack of ecological effectiveness were key to non-compliance, alongside inadequate enforcement and absence of compensation for lost income.[25] The President of CaFGOAG has called for fishers to be actively involved in scientific data collection and analysis, with a view to improving confidence in the data that informs the implementation of management measures.[26]

1.3. Inclusion of fishers in the monitoring of closed seasons

Since biological monitoring of the closed season began in 2019, fishers have been engaged on an informal, ad hoc basis by the Fisheries Commission to observe the collection of scientific data as part of the biological monitoring of closed season impacts. In response to calls to improve fisher involvement in fisheries decision-making and co-management, since 2023, the SOP has been supporting the Fisheries Commission to carry out biological monitoring at eight fish landing sites across the four coastal regions of Ghana, with fishers carefully selected from all landing sites to be active participants in the monitoring exercise.

Fishers have been selected from all of the small-scale fishing associations – the Ghana National Canoe Fishermen Council (GNCFC), National Fish Processors and Traders Association (NAFPTA), Ghana Inshore Fisheries Association (GIFA), and Canoe and Fishing Gear Owners Association of Ghana (CAFGOAG) – and include other active fishers in the respective communities. Fishers take on the role of community citizen scientists. They are trained by Fisheries Commission enumerators to actively take part in the data collection process, including assisting in obtaining fish samples, fish measurement, degutting, and assessment of sexual maturity.

The inclusion of fishers in biological monitoring aims to improve understanding of the science behind the closed season, with the hope that fishers will go on to champion the management measure – and sustainable practices more generally – in their communities, in turn improving compliance. It is also hoped that fishers who may have hitherto viewed the closed season as a threat to their income may become more supportive of the management measure.

Fishers have a wealth of traditional in-depth knowledge of the marine environment, fish behaviour, and fishing practices. Involving them in the implementation of management measures allows their expertise to be acknowledged and incorporated, resulting in more realistic management outcomes. They are more likely to feel a sense of ownership and accountability for the implemented management measure, which leads to higher compliance with regulations. Trust between authorities and the fishing community is also fostered when fishers are actively involved in the implementation processes, as it promotes collaboration and builds an atmosphere in which both sides work towards improving the industry. This engagement further allows fishers to express their concerns about the industry and resources directly to the regulators, which otherwise would not have been available.

Against this background, this study sought to assess the impacts of fisher inclusion in the monitoring of closed seasons in Ghana, and whether (and, if so, how) this has influenced compliance with, and ownership of, fisheries management measures.

Biological monitoring program participants in Apam.

2. Methodology

The findings of this report are based on a mixed-methods approach to assessing the impacts and benefits of fisher inclusion in the monitoring of closed fishing seasons in Ghana since 2023.

Primary data collection involved regular visits to directly observe and interact with fishers participating in the biological monitoring exercise carried out by the Fisheries Commission. Structured interviews were carried out with 120 fishers from the eight sampling sites for the biological monitoring, namely Axim, Shama, and Sekondi in the Western region, Elmina and Apam in the Central region, Bortianor and Tema in the Greater Accra region, and Keta in the Volta region, using a questionnaire. Participating fishers were purposively sampled based on their level of engagement in the biological monitoring process in their communities. Non-participating fishers were also randomly selected from the same communities. We further engaged key fisher association leaders, chief fishermen, and community leaders in key informant discussions. All responses were collected using the Kobo Collect application, and the data were analysed in Microsoft Excel.

3. Key findings

3.1. Involvement of fishers in the biological monitoring of closed seasons

A total of 120 fishers (60 participating and 60 non-participating fishers) comprising 63% males and 37% females participated in the study. The spread for the various communities is shown in Figure 1. Of the 60 fishers participating in biological monitoring, the majority (78%) were invited by a Fisheries Commission enumerator, 20% were nominated by their respective fisher associations and one participant joined independently after developing an interest in the exercise. Half of the active participating fishers reported that, prior to joining the monitoring exercise, they received extensive training on data collection and biological monitoring protocols. The other half indicated that they learned these skills on the job.

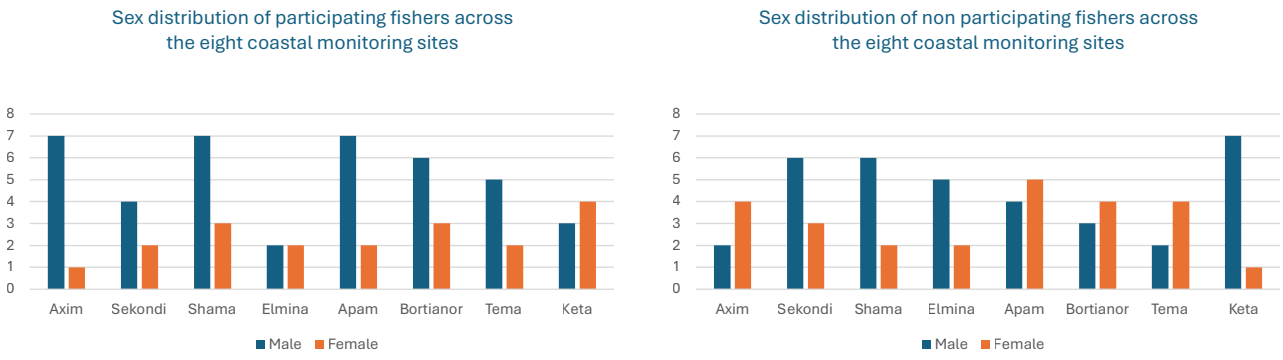


Figure 1: Sex distribution of fishers across the eight sites (participating fishers - left, non-participating fishers - right)

As participants, the fishers played varied roles in the monitoring exercise, each reporting engaging in at least one of the following: assisting in the sourcing of fish for analysis, measuring and gutting of fish, data entry, and educating fishers about the closed season. The majority of the fishers were involved in measuring and gutting fish, which helped them to observe firsthand the biological indicators (identification of the sexes and maturity of the gonads) that support the closed season, deepening their understanding of the policy.

> ***"I felt like I worked with the FC when I was asked to measure the fish on my own. I felt respected and part of the process."***
>
> Francis Cobbinah, Shama

A significant number of fishers also took on peer education roles, acting as community educators and advocates. These fishers played a crucial part in translating the closed season policy into practice, using their local networks to encourage others to observe the closed season.

"I didn't just measure fish – I explained to others why it was important. That made me feel good and proud to be contributing to protecting our resource.'

Emmanuel Arthur, Apam

3.2. Fishers' awareness and perception of the purpose of the closed season

There was a high level of awareness of the closed season among fishers, including both fishers who had been involved in the monitoring of the closed season and non-participating fishers. Fishers pointed to the numerous sensitisation (awareness) programmes and messages received in their communities before the implementation of the closed season. These messages were delivered through multiple channels, with radio/TV channels being the most frequently cited (Figure 2).

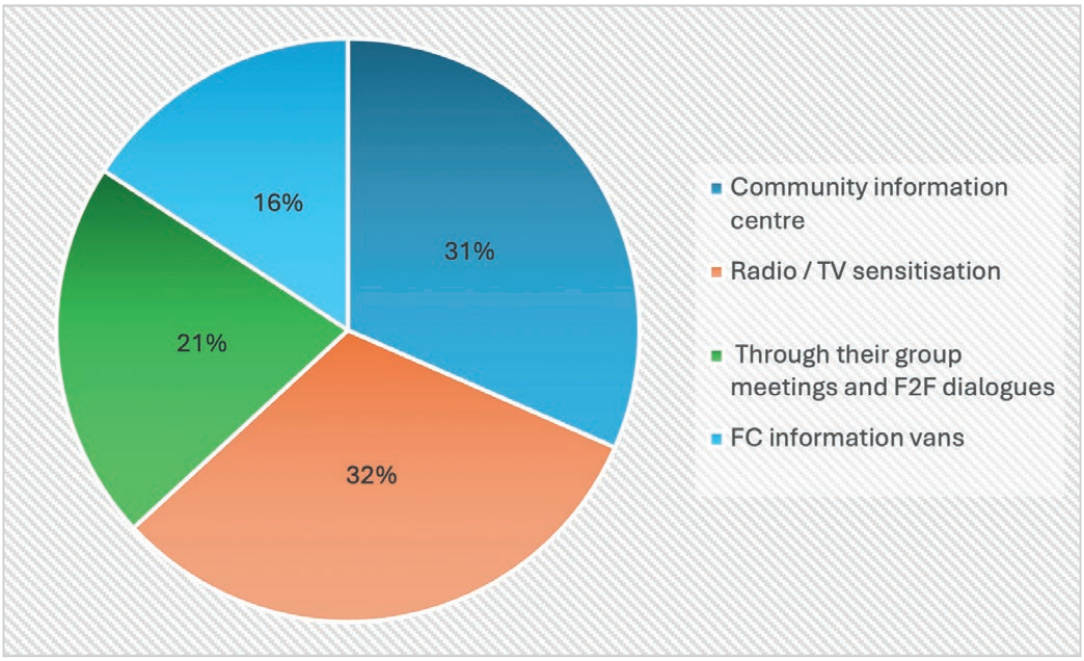


Figure 2: Avenues for closed season sensitisation

Overall, fishers demonstrated a good understanding of the scientific aims of the closed season, likely due to widespread sensitisation messages combined with the participation of some fishers in biological monitoring activities. Fishers who had participated in closed season monitoring demonstrated a better understanding of the science behind the closed season than their non-participating peers: 92% of participating fishers stated that the closed season was introduced to allow small pelagic fish to reproduce, thereby helping to rebuild fish populations, compared to 78% of non-participating fishers.

Nevertheless, almost a quarter of non-participating fishers, and a minority of participating fishers, lacked an understanding of the need for a closed season, viewing the measure as a top-down directive to be adhered to rather than as a measure to support the recovery of fish populations. There is therefore a need for ongoing education and meaningful participation of fishers in closed season implementation, especially for fishers who have not yet been directly involved in monitoring activities.

3.3. Benefits of fisher inclusion in the monitoring of closed seasons

Of the respondent fishers involved in closed season monitoring, 80% affirmed that their participation improved their understanding of the closed season. This led to some fishers taking on the role of peer influencers in their communities, further broadening understanding of the need to comply with the directive.

Responses from fishers who were not directly involved in the monitoring process supported these findings. Around 90% of these non-participating fishers felt that their peers being involved in closed season monitoring enhanced the overall sense of ownership by fishers of the management measure, potentially leading to greater compliance. The consistency between the responses of participating and non-participating fishers suggests widespread recognition of the value of fisher inclusion in monitoring activities, even by those who have not yet been directly involved.

Nearly half of participating fishers surveyed considered that their involvement in closed season monitoring strengthened collaboration with the regulator, helping to build trust between fishers and Fisheries Commission officials in their communities (Figure 3). This, in turn, may be considered vital for long-term policy adherence.

Nearly a third (29%) of participating fishers cited peer influence as the second most important benefit of their involvement in monitoring. Fishers involved in monitoring felt empowered to educate their peers at association meetings and to encourage them to comply with the closed season: around three-quarters of fishers who had not been participating in monitoring activities reported learning about the monitoring efforts through their fellow fishers and association meetings.

This highlights the importance of peer-to-peer communication in spreading information, as fishers tend to trust and respond more positively to messages conveyed by their colleagues and community leaders than to those from outside sources. Peer influence is therefore vital to ensuring the messaging of the closed season and its impacts on fish population recovery reaches as many fishers as possible, encouraging a greater sense of ownership of the measure and improving compliance.

Improved data accuracy (8%), though cited less often as a benefit, remains a core outcome of participatory monitoring. The low response rate may indicate that fishers see trust and compliance as more tangible than technical outcomes.

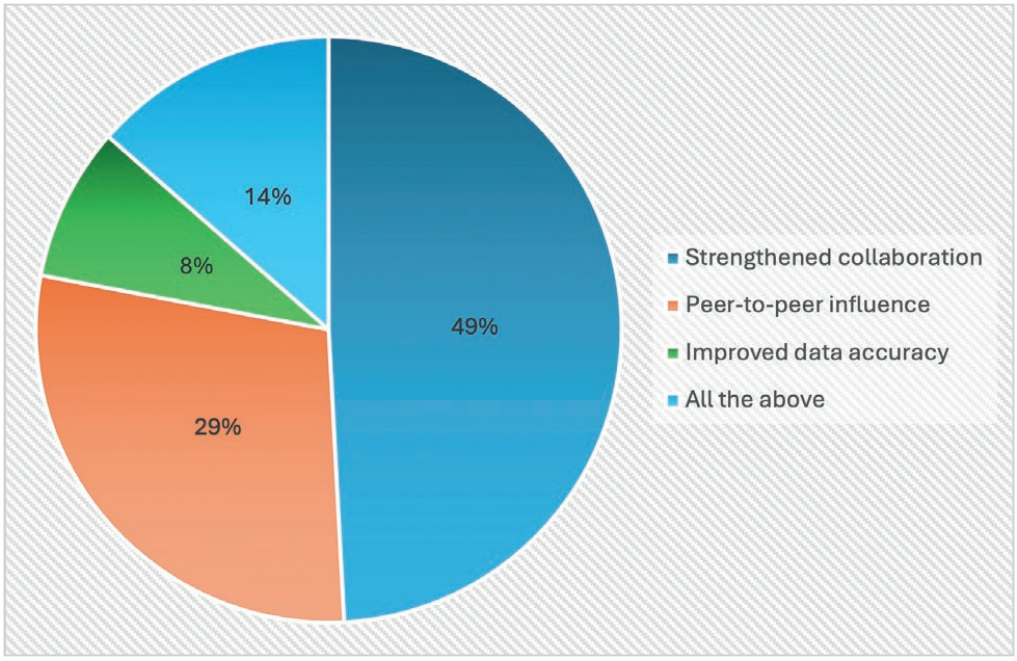


Figure 3: Benefits of fisher inclusion in monitoring the closed season

3.4. Impacts on compliance

A key question in this study was whether fisher involvement in monitoring activities led to improved compliance with the closed season policy. Responses from fishers indicated that compliance was initially seen as non-negotiable, simply because it was a government directive that had to be adhered to, with fines or other sanctions being imposed in the event of non-compliance. Over time, however, there appeared to be a shift in perspectives, as understanding of the purpose of the closed season grew among fishers, in part as a result of fisher involvement in monitoring activities.

Thus, the policy appears to have evolved from a top-down directive into a collaborative effort, which was reflected in an overall willingness to comply with the policy. As several of the fishers noted, enforcement ensures forced compliance; however, involvement fosters complete ownership. The findings suggest that fishers are more likely to comply with fisheries management measures when they are actively involved in shaping them.

> ***"Initially, we complied because it was the law and didn't want to be sanctioned if we broke it. Now we know the fish need time and a suitable environment (to reproduce) and that's why we stop fishing."***

Samuel Bassaw, Shama

> ***"We complied because we had to. But now we understand why it matters."***

Nana Appiah Mensah, Sekondi

> ***"We are the ones on the water. If you include us, we will understand, support, and help others comply."***

Kojo Mensah, Apam

These assertions were confirmed by some fisher leaders in the communities, who noted that when fishers are actively involved in the process, they are better positioned to comprehend and comply willingly. They urged the Fisheries Commission and other organisations to continue engaging with fishers through training programmes that can help shift attitudes and promote collaboration in managing their resources.

> ***"When we are part of the process, we get to understand. We can explain it to others, and they listen."***

Nana Kow Payin, Apam

> ***"Before implementation, we did not understand the relevance of the closed season, but after the 2nd year and [a lot of] education, we have come to see the benefits."***

Nana Kow Panyin

The findings are consistent with the Ministry of Fisheries and Aquaculture's report on the implementation of the 2023 closed season, which indicated high compliance with the closure directives across all coastal fishing communities.[27] The Ministry considered this indicative of an acceptance of the closed season as an important strategy to help replenish fish populations.

While compliance with the closed season directives has been high, around 8% of non-participating respondents admitted to either fishing themselves or knowing someone who had fished during the closure. They emphasised that many fishers were not adequately prepared for the closure and faced immediate financial pressure to support their families. The absence of alternative livelihoods also contributed to their non-compliance.

3.5. Challenges faced by participating fishers and willingness to participate in future monitoring and citizen science initiatives

While fisher involvement in closed season monitoring has yielded clear benefits, it has come with challenges for some participants. In a few cases, participants said that they had been accused of taking money from the government and/or civil society organisations, with some members of their communities considering their participation to be solely for financial gain. A few women reported losing customers and income from their regular activities while participating in the monitoring exercise. However, through peer influence, fishers eventually began to understand the need for this participatory monitoring process.

"Some people thought I was getting rich from this"

Agnes Bessah, Shama

Despite these challenges, fishers believed the benefits they received from their participation far outweighed the challenges. All respondents surveyed indicated they would be willing to participate again in the closed season monitoring and urged the addition of more participants. In addition, around 85% of participating fishers showed an interest in expanding their involvement to other citizen science initiatives. None of the respondents viewed participation as a burden, despite the time commitment required alongside their daily activities.

"I would do it again. It helped me understand the science, encouraged others to join, and made me feel part of rebuilding our stocks and fisheries."

Samuel Bassaw, Shama

A fisheries enumerator from the Fisheries Commission leading a monitoring session.

3.6. Perspectives on the inclusion of fishers in fisheries management

All non-fisher participants unanimously agreed that fishers should be included in the design and implementation of fisheries management measures, extending beyond the closed season. Their responses highlighted a strong understanding of the importance of fisher inclusion, emphasising that it is not a formality, but an essential part of fostering a sustainable ocean economy and effective governance. Inclusion was recognised as promoting ownership of policies and leading to a deeper understanding of management measures. It was noted that when fishers are involved from the outset, they are more likely to support and comply with management measures.

Fishers expressed pride in their local experience and traditional ecological knowledge, which they consider can provide valuable contributions to policy design. According to the fishers interviewed, their insights can help tailor management interventions to real-world conditions and improve the chances of successful implementation. Inclusion also allows them to educate their peers, clarify policy objectives, and encourage voluntary compliance within their communities.

> ***"We are many and key players in the industry. When we are included from the start and understand the rationale behind the policy, we can reach more of our people than the Fisheries Commission."***

Jacob Okai, Chief fisherman, Bortianor

The sentiments expressed by fishers were confirmed by key fisher leaders in the communities. Some leaders noted that after their inclusion in the closed season monitoring exercise, their members exhibited a complete shift in attitude towards the closed season. They observed improved knowledge among participants, who were better equipped to communicate the rationale behind the closed season.

> ***"We feel we are in school now... most of my fishers can lead discussions on the closed season during our meeting."***

Nana Kow Panyin, Cabinet member of chief fishermen, Apam

Leaders explained how their members had gained a deeper understanding of fish biology and had become skilled at distinguishing between male and female fish, as well as identifying various maturity stages. They had emerged as effective communicators, translating scientific concepts into relatable messages for their peers.

> ***"My fishers today have a good understanding of the various maturity stages of fish... They are also able to educate their peers."***

Ruben Jefferson Ocansey, Greater Accra regional chairman, Canoe and Fishing Gear Owners Association of Ghana.

Biological monitoring in Shama.

Box 2: Assessing socio-economic impacts of closed seasons

In 2023 and 2024, under the SOP, 504 fishers and 414 fishers, respectively, participated in a closed season socio-economic assessment using the PRA methodology. The PRA, primarily conducted through focus group discussions, placed fishers at the centre of the discussions and analyses, encouraging open conversations about the impacts of the one-month closure. In 2023, Small Pelagic Co-management Committee (SPCC) members were trained as facilitators to lead discussions, whereas in 2024, trained MOFA/FC staff led the discussions.

The assessment included various actor groups along the fish value chain, such as the crew, canoe owners, hustlers, fishing input dealers, and fish processors. Fishers were placed in groups of tens, depending on their actor groups, to discuss the social and economic impacts of the closure. The top issues were prioritised by voting and harmonised in the plenary session using pair-wise ranking.

These engagements were held in the same eight communities across the four coastal regions where the biological monitoring of the closed seasons was happening. The use of the SPCCs – committees which include fishermen – in the various regions to facilitate and lead these discussions encouraged rich dialogue among fishers, supported the exchange of local knowledge, and gave community members the power to take charge of the assessment process.

Findings from all eight sampled sites indicate a strong consensus among fishers that the closed season is a crucial measure for rebuilding Ghana's declining fish populations. In addition to this, fishers consistently emphasised the positive social benefits of the closed season. They valued the chance to recover physically and mentally from the demands of fishing, the opportunity to reconnect with spouses, children, and extended family, and the time to participate more fully in religious services, festivals, and community conflict resolution. The closure also afforded them time for essential maintenance work such as repairing canoes, nets, and gear, as well as tidying processing sites.

Despite these positives, fishers experienced some adverse impacts due to the one-month fishing closure. Most significant was the immediate reduction in household income and increased economic hardship. Canoe owners highlighted the financial burden of supporting their crew members during the closed season, to ensure their employees would still be available when the season started. Fish processors and traders likewise used their funds to support their households and employees, which decreased the capital available at the beginning of the new season and made it challenging to resume their businesses.

The limited or lack of alternative income sources further increased the financial burden on fishers and their households during the closed fishing season. Although the government provides some relief items to support artisanal fishers and fish processors/traders during closed seasons, they intimated that these were insufficient.

Fishers also stated that the timing of the closed season, which coincides with a period of high potential catches, intensified their hardships. The closed season in July tends to reduce the availability and affordability of fish, negatively affecting nutrition in very low-income households.

In addition, fishers reported increased instances of theft during the closed seasons, as well as increased financial stress leading to depression, substance abuse, and family conflicts. The 2023 study revealed that fishers often migrate to other communities to seek alternative livelihood sources during the closed seasons and that the rate of school absenteeism among children increases during these periods due to reduced household income.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4. Conclusion and recommendations

This study confirms that Ghana's closed fishing season is widely recognised by fishers as a crucial measure for rebuilding small pelagic fish populations. Fisher inclusion in closed season monitoring has fostered several benefits, from a deeper understanding of the science behind the policy to increased ownership of and compliance with the management measure, the building of trust between fishers and the Fisheries Commission, and positive peer-to-peer influence through educating fellow fishers on the closed season.

The involvement of fishers in monitoring has transformed the closed season from a top-down policy into a process where fishers are not just observers, but are active co-managers and champions of management interventions, which is critical to the recovery of declining fish populations. Fishers expressed a desire to be consulted on critical decisions impacting their industry and livelihoods, emphasising that local knowledge and experience should inform policy design. Ultimately, they want to be part of the solution. When they are engaged from the beginning, fishers not only comply with the policies, laws, and regulations: they take the lead.

Across the eight communities surveyed, fishers expressed strong understanding and support for the ecological goals of the closed season, although this was higher among fishers who had participated in biological monitoring than among non-participating fishers. Many fishers also highlighted the social benefits, including opportunities for rest, gear maintenance, and family reconnection. Fishers were quick to mention, however, the socio-economic impacts of the closed season, such as loss of income and increased hardship during the closure, due to a lack of alternative or supplementary livelihoods. Fishers also expressed frustration at ongoing illegal fishing – particularly light fishing – which threatens to undermine the aims of the closed season (**Box 3**).

Box 3: Sustaining the gains of the closed season

The widespread use of illegal and destructive fishing methods is an ongoing concern in Ghana's fisheries sector, which threatens to undermine or even entirely negate the gains achieved during closed seasons. A persistent issue is the use of light to attract fish – primarily small pelagics – a practice prohibited under Regulation 11(1) of the 2010 Fisheries Regulations, LI 1968. Historically, fishers would wait until the fishing period in August to catch small pelagics; today, however, the use of light allows fishing to be carried out all year round.

Fishers note that there is little motivation to stop light fishing as the law is not enforced, and this has become the status quo. Fishmongers meanwhile complain that fish caught using light start deteriorating very fast before they have the chance to process them.
There is a clear need for concerted action to end illegal and destructive fishing to ensure the gains of the closed season are sustained. Failure to do so may render the closed season almost meaningless or, at the very least, severely compromised in its aims of recovering and rebuilding small pelagic fish populations.

During EJF's engagements with fishing communities, fishers repeated a number of recommendations for improving the implementation of the closed season to make it more effective, inclusive, and sustainable. These recommendations form the basis of the recommendations to the Government of Ghana, through the Ministry of Fisheries and Aquaculture and the Fisheries Commission, set out below.

1. Ensure closed season announcements are made early and clearly, preferably by February of the year in which the closed season is due to take place, or at least three months ahead of time, to allow fishers time for sufficient financial and logistical planning.

2. Intensify and expand education and awareness-raising initiatives, particularly through peer-led outreach and regular sensitisation via radio, television, community information centres, and community meetings, along with follow-up engagements to reach artisanal fishers directly.

3. Consider making fisher inclusion a regulatory requirement for monitoring of all fisheries management measures, and expand fisher inclusion participation initiatives to include more fisherfolk, particularly women and youth.

4. Disseminate the findings of both biological and socio-economic monitoring exercises widely. Local networks and meetings could serve as effective avenues for such dissemination efforts.

5. Consider the provision of soft loans to fisherfolk during closed seasons to alleviate the financial hardships faced, and provide training on financial management, simple bookkeeping, and the introduction of savings programmes, to help boost the financial strength of fishers.

6. Channel closed season relief items into the provision of supplementary and alternative livelihoods and implement longer-term support programmes in skills training and income diversification.

7. Conduct an assessment of the socio-economic impacts of extending the closure of the fishery for artisanal fishers to two or three months. Such an assessment must consider the need for support for small-scale fishers during the closure to ensure the sustainability of the management measure and maximise ecological benefits.

8. Strengthen enforcement against illegal fishing, especially in the period leading up to and following the closed season, to ensure the ecological gains of the closure are protected.

9. Implement transparency in the fisheries sector by implementing the principles of the Global Charter for Fisheries Transparency,[28] focusing particularly on Principle 9: *Publish all collected fisheries data and scientific assessments in order to facilitate access to information for small-scale fishers, fish workers, indigenous communities, industry associations, and civil society in developing fisheries rules, regulations, subsidies and fisheries budgets, and decisions on access to fisheries resources. Make these processes, policies, and decisions easily accessible to the public and enforcement agencies.*

Nana Kow Otoo participating in data collection in Shama.

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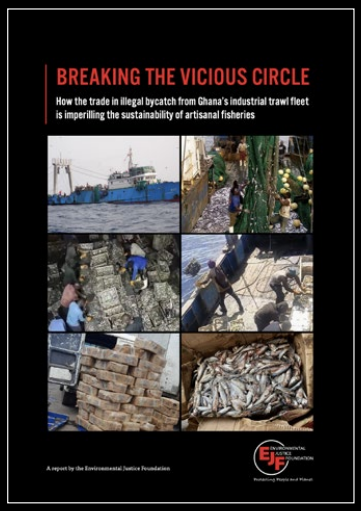

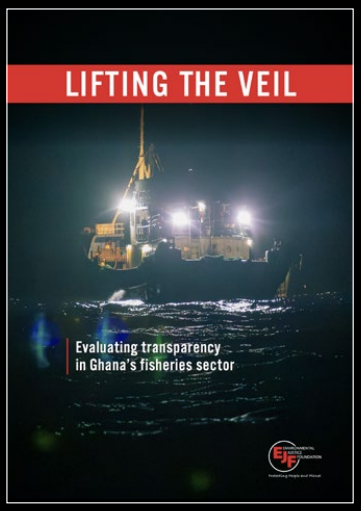

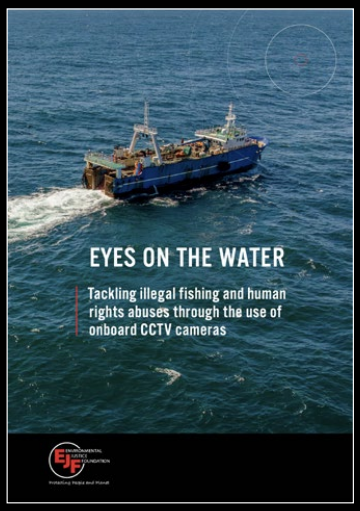

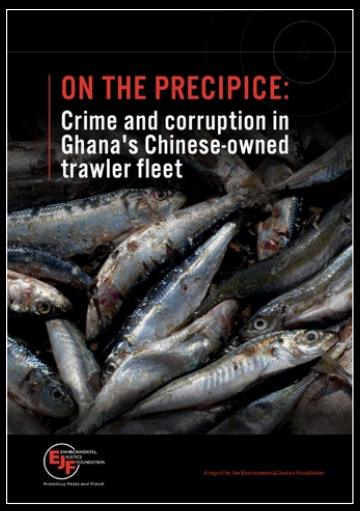

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