

Mehmet GÖLGE, UNPD Turkey- Project Manager

I let go firstly Professor Dr. Cemal Turan. He will be moderating. I wish we're going to have another fruitful day. Have a nice day.

Cemal TURAN, MarIAS Project Samandag Field Expert

Hello, Mr. Mehmet. Dear audiences, I hope you enjoy today. I should be moderating today, I cannot in English because we already had some foreign guests. This is the second day and it's been very fruitful so far. I hope it's going to be very fruitful today as well. Now I give the place to Professor Mahir KANYILMAZ, Head of Department of Fisheries.

Assoc. Prof. Mahir KANYILMAZ Head of Department, BSGM

Thank you. I'd like to thank you for giving us opportunity to give the information on the side of our detected channels. Regarding the fisheries regulation that is in effect in Turkey, I will briefly Inform you during the presentation. I think my presentation moving on the screen. I'll be talking about their current and past regulations when it comes to Fisheries and Aquaculture in Turkey. The fisheries law in Turkey would be the title of my presentation. Before they publish meant proclamation of the Republic of Turkey we also had some arrangements, the regulations back in the Ottoman era. The past piece of legislation was the regulation on the export of mussels and oysters, and the historical pennant sealer and Galata, Üsküdar and Hatlar region, followed by the 1882 regulation, which was enacted in January the ninth 1882. In the same year in May, this time and other regulation governing of the fisheries administration was enacted. So 150 years ago, the first piece of legislation came into force in Turkey when it comes to fisheries. Then, came the Republic of Turkey. After the proclamation of the republic in 1974. A regulation was the next phase and the same regulator same law actually law was amended in 1926. But the first regulation the first piece of legislation belonging to the republican period came in 1926 and called **cabotage** law, and it's covers the activities in the water and the fishing activities can be done by the Turkish citizens in the Turkish water and 19 of waters be another piece of legislation came to effect to regulate prohibitions in the areas in the area of fishing. In 1971, the aquaculture law was enacted, and it governs the protection of biodiversity and habitats and the waters and protection of natural species in the water resources. And the law was amended from time to time until today. But last year, the most extensive form of an amendment was undertaken. And in January of 2020, the amended law with the negative and disrespectful sustainable use and protection of the resources natural resources, protection of biodiversity and habitat, regulation of fishing activities, prevention of the spread of invasive and alien species in our resources and legal removal of fishery products from abroad. And similar arrangements have been similar works have been governed by the law. And the law in question generally governs the area of fisheries in Turkey, but the detailed provisions for the detailed provisions to be adopted as a regulation on aquaculture was adopted, and in 1993. And in this regulation, the purpose the scope and purpose of the law was kept, but the provision, this time more in depth and detailed. And in relation to this regulation and a variety of circulars were adopted from time to time, and with the updating of the aquaculture law, the invasive species protection of resources and similar activities have been still going on in order to update the legislation as required. And in addition to the law on Fisheries and Aquaculture, there are lots of circulars governing as the mature, approaching and support activities in the waters. And best way, liabilities, restrictions and prohibitions on fishing, and fishing for the protection of fishery resources. Government and in collaboration and consultation with the stakeholders, touch regulations are adopted. This year, as of September, a regulation on the commercial fisheries was adopted. And it'll stay in place. It will stay

effective until the August 2024, September 2024. And you can hear the regulation on the amateur approaching. When it comes to commercial fishing, what matters is especially in respect of the regulation, monitoring of the vessel, commercial fishing vessels is important. And also, you know, detailed data is to be kept and stored in the databases as a result of monitoring activities. So all of these aspects make their way into the regulation. That was good. In general, actually, we have a sum of 15 regulations related to fishing activities. But basically we have the Law on Fisheries and Aquaculture, followed by the regulation on aquaculture and fisheries and also the regulation on the nonprofessional fishing, amateur fishing. Thank you very much for your kind attention and for consuming lionfish. I'd like to extend my thanks to all of you. Thank you. If you have questions, I'll be more than happy to collect them.

[Cemal TURAN, MariAS Project Samandag Field Expert](#)

Thank you very much. Presentation for questions at the end of the session. Question just before the coffee break. We'll be having a Q&A session. The next speech presentation will be economics laws. Professor Vahdet. He has a very nice presentation coming up.

[Vahdet ÜNAL, MariAS Project Socio-Economic Expert](#)

Hello. Hi everyone. And we have some lessons to learn from the other countries experience there was an Atlantic and the Caribbean invasion will show us some solutions. You can see from here thanks to Aylin she has provided these photos to me this morning there are several opportunities to create a positive economy for the existence of lionfish, people are paying around \$300 a day to follow invasive lionfish trackers a specialty diving course in the some countries or you can see here a tool to hunt or fish catch this species and the United States in United States 2010 National Oceanic and Atmospheric Administration launched an eat lionfish campaign to bring together all the communities and stakeholders to school sailors on the ships to broaden the consumer awareness of invasive species because we should create fishing pressure on this species, we should get them out from the sea, while we are doing this a we should create a some additional economic benefits from the species. Coming to the end there are also some various campaigns and also some activities to publish a cookbooks on lionfish you can see some of my examples of this. The photo was taken by myself in Kaş on Antalya Turkey a few months ago and you can see the lionfish on the market for sale. So 25 lira which means the two and a half euro or almost three US dollar per kilo it thanks to the Mediterranean Conservation Society which is very strong in the in that area with the projects they provide it and also encouraged fishers will jump much and sometimes the Mediterranean conservation societies is paying for this just to create a market for this species. I think this afternoon Zafer Kızılkaya is going to present very interesting presentation about this as well as Phil and his friends also will present deliver a presentation on marketing issues. So you can see other people make use of power of lionfish to create some let's say employment opportunities or income opportunities. These photos belongs to Aylin, she is designer of these gifts that are impressive. And I'm sure there's huge demand on this products. So last minute, I would like to say we although we are in trouble with the lionfish entrance to our waters, on the other hand, we are lucky because we can benefit from the guidance of experienced researchers from other countries from the United States mainly from the countries around the Caribbean seas. They experienced difficult problems but have already found solutions. Thank you so much. This is all I can share with you for the time being I'm ready to get your questions. Thanks.

Cemal TURAN, MarIAS Project Samandag Field Expert

Thank you Vahdet for your valuable, very nice presentation. But we passed the time very much. Anyway, as I mentioned before, we will have the questions at the end of this section. So we passed through another presentation, fishing competitions, safe handling and spearfishing techniques and urgent need of help from scuba divers by Alex Fogg.

Alex Fogg, Coastal Resource Manager, Florida Fort Walton Beach

Great. Thanks again. Good morning, again from Florida. I'm Alex Fogg and for this talk, I'm going to be quickly running through fishing competitions specifically for lionfish. It can be extremely successful to not only remove a lot of fish from the system, but also raise a lot of awareness about the species. It's also I'm going to be talking about safe handling and why divers are so important to the successful management of this invasive species. I only have 10 minutes, so please don't ask questions at the end or when we have the allotted time. So to give you a roadmap of this talk, I'll briefly touch on organized lionfish removals. And we talked about this briefly yesterday with Dr. Harris and Dr. Gittings. But I'll touch on that first again, just to reiterate what we talked about. Also address proper gear to keep you safe during removal activities and during fish processing and handling. Lastly, I'll talk about how individuals specifically divers have gotten involved in the western Atlantic and why are they some of the most important pieces in managing this invasion. So let's start with organized events and competitions. I've already talked about this and how these events work, reiterate it again. What I mean by organized events is incentivizing participants specifically divers to remove lionfish. This isn't just rewarding the participants for biggest and most lionfish but also the smallest lionfish. This ensures that the participants are doing their best to remove every lionfish that they come across. But it also ensures scientists who may be sampling lionfish through these events are able to get an accurate representation of the lionfish population by reducing or eliminating any bias associated with activity. And during these events, there's a great deal of outreach and education around invasive species and conservation initiatives as a whole. And in most cases, there's a pulse of lionfish that actually make it into the market, which further incentivize divers to harvest lionfish and provide consumers who don't dive the opportunity to order a novel seafood dish that actually tastes pretty darn good and is really sustainable. So I'm not too familiar with lionfish events that have been organized in the Mediterranean today. I have seen a few here and there, but I don't know how they operated. And whether it's collaborating. Collaboration is really the key to all of this and whether it's collaborating with local dive shops and organizations, local governments, restaurants, venues and universities, it's all very necessary. It's probably the most important part of hosting a successful lionfish event. These collaborations can result in monetary sponsorships or support to just put towards incentivizing participation. Big money and big incentives bring about big participation. The event that we host here in the United States has grown to a very large event mostly because of the prizes that are on the table. In some cases, the event may be hosted in an area where regulations may prevent spear fishing, or scuba diving for that matter, but working with regulators to allow lionfish harvest only with authorized harvesting gear we talked about yesterday very small pole spears can actually make the event happen. And in the case of the Florida Keys, permits are actually issued to the event organizers to allow divers to harvest lionfish in areas where spear fishing is normally not allowed. And it's actually been very successful. They can only use a specific gear type being a pole spear, a small pole spear and no guns are allowed. This gear restriction significantly reduces the risk for poaching and illegal activities. These activities still will happen, but they would also happen even if spearfishing was still banned in those areas. A lot of divers make their own lionfish containment unit or contraption to hold lionfish during the dive a while you can certainly do

that and it works for the most part. There are units out there that in my opinion work much better than anything out there. Dr. Gittings spoke about a number of these pieces of equipment. The zookeeper lionfish containment unit is the tube or bag that is designed to keep you safe during the dive and is used by almost all novice and experienced hunters here in the United States. I believe zookeeper is a distributed in the Mediterranean now. Or at least they provide the components to allow you to build your own and I encourage you to go check them out if you can find them. Like the pole spears there are a number of choices. Polespears, probably the most efficient, about three to four foot long and have anywhere from three to six barbs or tines that have barbs on them. On the end of the spear that isn't the tip is actually equipped with a rubber band and that's what you use to propel the spear towards the lionfish. You can also just stab lionfish as well in just a moment I'm going to show you a video of how we do it over here in the United States. Lastly is gloves. There are a number of dive gloves out there some are puncture proof, some are basic, just like outdoor gloves each have their pros and cons but as long as you're wearing gloves, it'll provide a better grip on your equipment. And the gloves will also help lessen the severity of the sting. If that were to happen. On a lot of occasions, the spine can actually still make it through the glove but a lot of the venom comes off on the glove before it actually injects you. So the last item on this slide is 'oops' equipment. What I mean by 'oops' equipment is if you were to get stung, you want to make sure that you have things on board to be able to take care of that sting. Um, it's not pleasant, you will live, but it is quite painful. There's actually never been a reported death so that's a good thing. Lionfish venom is a protein based venom and it can be denatured with heat. So having heat packs or a thermos of hot water on board to help you nature that venom if you do get stung is really important on having ibuprofen and general first aid supplies are also good to have as well to keep the affected area clean. And again at the end of the presentation for those you may not know how I'll show you how to put all this together to harvest lionfish. So this last slide is a call to arms of sorts. Pretty much everything we know about lionfish is because of research, we were able to get our hands on lionfish that in most cases were captured by divers. The commercial market in the United States is supplied primarily by divers. The only reason we can host large tournaments and events surrounding lionfish is because we have divers to participate. Resource managers and local organizations need to work with divers to help develop management plans or rules to tackle this novel invasion. Specifically in the Mediterranean. I discuss how that's been done in the United States with permitting specific gear to harvest lionfish from certain normally closed areas. This again can be done in other regions such as the Mediterranean. If you ask for lionfish at your local restaurant and market and give those heavily pressured species arrest that's certainly a plus. If demand can be established and rules can be put in place to allow for the harvest of lionfish. The lionfish invasion can be slowed and it may be a case that lionfish become hard to find and the natives' species can catch their breath. So this last slide I have is a video. Let's see if this one works. From a lionfish tournament that we hosted over here in Florida. This is using the gear that I described the zookeeper in a polespear with a number of spines on it. I'm not actually using the rubber bands, but it's just like picking up trash. It's important to get the little ones too. That's really all I have. So again, if there's questions later on, please don't hesitate to ask.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Thank you, Alex, for this nice presentation and video sharing. We have the question at the end of the section. Now we pass through another presentation, which is lionfish fishing competition report from North Cyprus by Burak Ali çiçek.

Burak ALİ ÇİÇEK, Academic Eastern Mediterranean University

Hello and welcome to all participants. My name is Burak Ali Çiçek from Eastern Mediterranean University from Cyprus. First of all, I should thank the organisers for the invitation, I am very glad to be here in this meeting.

I'm going to try to inform you about how we convince our officers to allow lionfish hunting with scuba diving and provide brief information about our activities and experiences.

Cyprus, it is the third biggest island in the Mediterranean with a very dry Mediterranean climate and limited runoff. It is at the end of the eastern part of the Mediterranean in the Levant. As you can see in the figure, with the arrows, I showed the currents coming from the Atlantic Ocean from Gibraltar. As you can see, the waters that are carrying nutrients entering to Mediterranean from Atlantic reach Cyprus at the end of this journey. In an other figure, a very brief image from orbits, shows that the chlorophyll-a concentration is very low around Cyprus because the nutrients are consumed by the plankton during this journey.

As you can see, the perilous waters, blue waters are clear and very good for tourism and scuba diving, but they are not productive. So, if we want to summarize the characteristics of our waters, we should say that we have low nutrients, very high temperature, very high salinity and oligotrophy which has a huge impact on the biota and the food web. This phenomena is shown by Turley in a very good research. You can see the variables or the steps in the trophic levels, primary production, bacterial production, fisheries, suspended materials and biomass. As you can see, production levels are totally different; very, very low from western part of the Mediterranean. Needless to say, the productivity is very low when we consider Atlantic and the other oceans also.

But in addition to all these negativities, we have positive aspects like biotope (or habitat) effect. As I told you, it's a big island, it has got different geomorphological structures both on the land and in the marine part; it has got different substratum types and we have got various macrophytes and invertebrates depending on the biotopes formed according to geomorphological diversity. So, providing this, especially in specific places, we have got hotspots.

Let me talk to you about that. There are approximately 237 main biotopes around our waters. Although the biodiversity is low, some species specific locations are very productive and we have got sensitive organisms, especially sea turtles, groupers, monk seals and mammals which we discuss their predatory potential and importance due to this behavior at Aylin's session yesterday. We have them in different substratum types or let's say biotopes.

The first one, the most productive one is the hard substratum, without going into detail, we can list the others as Posidonia meadows, macrophyte covered zones and bare substratum. In addition, we have got artificial reefs or unintended artificial reefs, which behaves like natural reefs.

In our previous projects and activities, which were not directly related with invasive species, we studied biotope effect in detail with underwater visual census technique. We tried to specify those areas and detect whereby biodiversity hotspots can occur. We have got different locations depending on different geomorphological/ecological patterns, but we detect that the biotopes of reef like rocky structures, soft

substratum with macrophytes, *Posidonia oceanica* meadows constitute biodiversity hotspots. We continue our observations with Underwater Visual Census for almost 18 years on selected locations after our initial work targeting to detect biodiversity hotspots. In time, especially last 10 years we detect an increase in invasive fish populations like *fistularia*, puffers and Lionfish. Okay, having this information and observing increasing population levels of invasive species, we focused our attention to their impacts on biodiversity hotspots.

In addition to field we also work in the laboratory and try to understand the feeding behavior, what they consume and etc. Simply, all those alien species, and now we are talking about this lionfish are consuming all the natives without or very little predatory pressure on them.

We present our long term data and the Lionfish impacts depending our observations to regulatory bodies like Environmental Protection Department and Animal Husbandry Department to convince them for culling with SCUBA; and we got it. The permission for a Lionfish fishing competition is received for free and SCUBA diving.

Because of the Covid 19 pandemic, we couldn't do it in 2020 but in 2018, and 2019, we organize it two times. We did it with permission of Ministry of natural sources and agriculture, animal husbandry department in collaboration with hunters Federation, and the diving centers. After presenting our data and convince our officials of Animal Husbandry Department to let us hunt those with scuba fishing and we were able to collect more data.

In those competitions, we separate SCUBA divers and free divers. We form teams, and also individual competitors, and set the categories like total weight of fish caught, number of fish caught, biggest fish, and smallest fish.

In 2018, there were 325 fish total, with 13 free diver teams with their own boats. They dive up to 25 meters, sometimes 30 meters, and there were three divers per team. That year there were three SCUBA teams, with two divers per team hunt between 20 to 30 meters. But in 2019, almost with the same effort, we catch 1025 fish, it is probably not because the population is increasing, but our divers learn how to hunt them. I tried to find the photos, as you can see, in 2018 when we started first, we used ordinary boxes, cans and etc. to catch the fish. We didn't have zookeepers in 2019 also but we produce similar equipments to zookeepers. Today it is available and some of the divers are using Zookeepers efficiently.

The good things and the bad things happened in 2018. There were three divers injured and one of them was taken to hospital. In 2019, no divers were injured, no accidents happen. Probably, like increased number of fish with experience, it is related with the divers are improving themselves in handling those fish.

I also want to mention about the diver performance. According to my notes, Scott yesterday inform us yesterday that the culling average of divers is 23 to 26 fish per hour in Caribbean which is close to our scores in 2018 and 2019. In addition, some experienced SCUBA divers collect approximately 100 fish per dive nowadays, which means that we are somehow improving ourselves or the population is increasing!

The last slide! Okay, we are suggesting manual eradication and some say that it is useless. They say: You cannot do anything while Mediterranean is becoming a tropical sea. Do not fight with it, try to get used to it are some of them. But I strongly believe that it is worth to do it. At least, introducing those fish and fish

products to the local markets and economy and awareness raising for protection of local species, especially groupers, sea turtles and others in this fight against invasive species are the goals of our efforts.

Thank you very much.

Cemal TURAN, MarIAS Project Samandag Field Expert

Thank you Burak. For this nice research and present. Annotation from Cyprus. And, by the way, we get the question by chat box, please ask the presenters the question by using the chat box. We only get the question by chat box. Just for reminding. And we passed through the other presentation. Last presentation for this section. Lionfish deepwater fishing by Steve Gittings. Hi, Steve.

Steve GITTINGS, Scientific Coordinator

Deepwater Traps for Lionfish

Steve Gittings and Holden Harris

Both deep and shallow water control of lionfish populations are critical if we want to protect invaded western Atlantic ecosystems. We've been gradually developing lionfish traps to support a deep water fishery for the last 5-6 years. Several different designs have been tried, leading to the current purse trap, which has recently undergone efficiency tests.

Lionfish will not be eliminated from their still-growing invaded range, but impacts to native ecosystems might be controlled through commercialization. Demand for lionfish in the seafood market exceeds supply, meaning there is an opportunity for commercial growth. Restaurants and retailers want lionfish. New food products are being developed by entrepreneurs. Initiatives are even underway to create markets for people who make jewelry from lionfish. Meanwhile, there is a huge, virtually untapped supply of lionfish in deep water, beyond scuba depths.

Divers can effectively clear lionfish with spears down to about 30 m. But there are a lot of deeper areas in the invaded range that are not currently being cleared of lionfish. Traps are likely to be the most effective way to reduce lionfish populations and protect native species.

With the right gear, commercial trap fishing could reduce lionfish populations throughout the invaded range without negative environmental impacts. The traps we've been working on are effective, low impact, FAD-based, non-containment traps. They use no bait, reducing bycatch and preventing ghost-fishing, if lost. They are transportable in large numbers, and easy to deploy and retrieve.

Our first tests of prototypes showed good capture rates, but some lionfish remained outside the frame because the uprights acted as FADs. So we tried to create a design without external structure.

A "dome trap" was built to remove all uprights, with the exception of the FAD. It attracted lionfish, but the flat frame descended too slowly. It also had a solid FAD, which made it difficult for a fishing boat to carry a lot of traps.

The current design allows the traps to be thrown overboard, where floats on the harness cause them to orient vertically and travel through the water at about a meter per second. When they hit the bottom, deflectors cause the jaws to separate and lay the netting flat on the bottom. A buoyant FAD stands up

off the bottom to attract lionfish from nearby reefs or while they swim past during hunting transits. When the traps are pulled, the loose netting billows, allowing the jaws to close completely before the net touches any fish inside. By the time the net collapses, the jaws are fully closed.

Recently, we started building traps without any welding at the hinges and simplifying the bending process to make it possible for anyone with rebar and a straight angle bender to build them. There is no need to do a curved bend if straight sides are easier, and tight bends at the axle points create hinge points using only the loops bent into the rebar. The rebar bender can be home-made with some steel bar and sturdy pipes. Using cheater pipes on both sides reduces stress on the bender and whatever pedestal is being used. Tight loops at one end and above the deflector of each jaw are used as insertions for the axle, thus creating the hinge. A loop and a bend on the ends of the axle hold it in place. It has been recommended that we dip the bends in marine epoxy to fill any micro-fractures that form with the extreme bending.

A priority need now is to get professional fishermen to try the traps and help determine the best ways to fish them, as well as to improve designs to make them more durable and reliable under the harsh conditions of the ocean environment, particularly corrosive water, high seas and strong currents.

Several research groups are modifying designs and evaluating the effectiveness of these traps in different habitats, and developing fishing techniques that best suit their location. We are attempting to coordinate those efforts to more rapidly determine what designs and operations are most effective, and which have the least risk in terms of by-catch, habitat impacts, entanglement risk for marine mammals and turtles, and ghost-fishing. We hope that these findings will help guide trap regulations and permitting in the affected countries.

There are also other traps being used to catch lionfish. Lobster fishers in the US and elsewhere have been capturing lionfish as bycatch while targeting lobsters. They're caught in high enough numbers to make them worth selling, at least in local markets. Some are working on modifying traps to make fishing for lionfish lucrative for people already working in these waters. Scientists are modifying the entry funnels of existing fish traps in ways that enhance lionfish capture while reducing the entrapment of non-targeted species. They have had some success, though yields are not yet at levels that are likely to significantly reduce lionfish populations in deep water.

At least two groups have been working on ways to use image recognition to selectively target lionfish. One is attempting to build an inexpensive, rugged extension kit for lobster traps (it could also be adapted for use in other traps). A benefit for lobster fishermen using these technologies would be that they could use traps they already own rather than build new ones, and perhaps get approvals to fish outside of lobster season.

Holden Harris led the largest study on the traps and the first on their use for deepwater natural reef sites. He also compared different trap types, including lobster, seabass, and lionfish traps.

In our first study, we tested Gittings traps near high density artificial reefs in depths of about 40 m.

We found traps attracted about 10-times more lionfish native fishes, combined. In 82 trap sets, a total of 327 lionfish and 28 native fish were recruited to the traps.

Traps were retrieved with divers, and escapement was a major issue. 56% of the lionfish that had recruited to the traps escaped during slow trap closing.

Analyses of deployment factors indicated that lionfish recruitment was highest for single (versus paired) traps deployed <15 m from reefs with a 1-day soak time, for which mean recruitment per trap were approximately 5 lionfish and 0.1 native species.

More details of this work is available in our open access article published this August in PLOS ONE.

Following, these initial tests, three experimental trap designs were tested near mesophotic natural reefs 40-80 m in depth. 300 traps, 100 of each type, were deployed and retrieved.

Trap designs included spiny lobster traps, South Atlantic seabass pots, and the Gittings lionfish trap.

We found bycatch rates from lobster traps and seabass traps in these tests were unacceptably high for a directed lionfish trap fishery. Lobster traps caught 30 times more native fishes than lionfish by weight and seabass traps caught over 150 times more native fishes.

Gittings lionfish traps outperformed the other trap designs, with both higher lionfish removals and lower bycatch of native fishes. Lionfish catch rates in Gittings traps were five times higher than catch rates of native fishes. However, overall catch rates were quite low -- about one lionfish every other deployment.

Analysis of timelapse videos indicated lionfish catch could be optimized with a 2 day deployment and retrieving them in the morning. Lionfish recruitment at dawn was over 50% compared to that at midday.

Continued research and testing will be needed to examine potential methods to increase lionfish attraction rates, and test whether their use may be economically feasible for use by commercial fishermen.

[Holden HARRIS, Doctoral Researcher, University of Florida](#)

Thank you Dr. Gittings some Florida the deep water lionfish problem is of major concern. And in Florida we have a whole lot of hook and line fishing, and long lines. However, we found now that lionfish do not take a hook. So spear fishing using scuba is the primary way to remove lionfish, and it's been successful in shallow water. But of course, this cannot control these deep water populations. So the University of Florida has recently conducted two projects, testing lionfish traps in the Gulf of Mexico. The first study tested Gitting's traps in shallow water of about 40 meters near high density artificial reefs. And the second study expanded on this, testing these deep water natural reefs with several different trap types. Due to time constraints, I'll just present this from about a simplified level, but we'll point out details where you can go to find more details. So in this first study, we tested traps near these high density artificial reefs about 40 meters. What we found is in 82 trap sets, we caught a total of 327 lionfish, and 29 native fishes. So it was encouraging that traps attracted about 10 times more lionfish than all other native fishes combined. However, we also found that lionfish escapement was about 50%. So this is clearly a technical issue that we're currently working to figure it out. We also analyzed several deployment factors. So including single verse, parent traps, deploying and deploying traps at different distances from the reefs and at different soak times. Fortunately, we'll have to go by these figures pretty quick. But what I want you to notice is the size of this lionfish bar in orange is much larger than the size of these native fish bar. And we tested these

on these different factors. So overall, we found lionfish recruitment was highest for single trap compared to parent tracks. And it was better to deploy them at five or 15 meters from the reef, with about a one day soak time. So for this, we optimize this with approximately five lionfish and 0.1 native fish species. We expanded this in a larger subsequent study, and here we tested three different trap designs near deep water natural reefs. Traps included spiny lobster traps here and South Atlantic sea bass nets, sea bass pots and panel B and the Gitting's lionfish trap, oh, which we described earlier, we made 300 trapped appointments 100 of each time, and these were made in depths of 40 to 80 meters. And quickly show a couple preliminary results, we're still preparing this manuscript. It was evident that the Gittings trap outperformed the other two designs with higher lionfish removals and lower by catch of native fish species. The catch rates of Gitting's traps were about five times higher than the catch rates of native fishes. And really, it appeared evidence that the by catch rates from the lobster traps in the sea bass traps and these traps were unacceptably high for a directed lionfish fishery. So lobster traps caught about 30 times more native fishes than lionfish by weight. The sea bass traps caught over 150 times more native fishes by weight so clearly unacceptable. We also deployed time lapse remote video cameras onto these so we could document the rates when lionfish and other fishes showed up into these traps and supplements. The analysis of these time lapse videos indicate that lionfish catch can be optimized with a two day deployment and retrieving them in the morning. So in figure you can see this relative peak and lionfish catch in day two, and figure B very quickly just notice the highest bar in line fish cap count in the getting's traps was at dawn. And here lionfish recruitment at dawn was about 50% higher compared to catch at midday, which is encouraging. So ultimately, we found that the Gitting's traps were the best performing traps, and we determined some ways to optimize their use. However, we found in this test that the overall catch rates would rather low about one lionfish in every two trap sets, which is currently too low to support commercial fishing operations. So continued research and testing is going to be needed to examine potential methods to increase line fish attraction rates, and assess whether they're used may be economically feasible to use with commercial fishermen. So this is why it's exciting that our upcoming research will test this with fishermen and collaborators in the Florida Keys. These results were very high level, but please, if you're interested in more details, please get in contact with Dr. Gittings right now pointing to our open access article recently published in August and Plos one, and I'll paste this link into the chats. And to look forward to the results from our larger study is in preparation for frontiers in marine science. So we'll be happy to chat with this and chat more about this at the end or after. Thank you.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Thank you very much for this very interesting and good presentation and research. Please ask your questions by chat box using chat box. The end of the section we will get this question to presenters. Now we pass through the last presentation of this section. Lionfish fishing in Turkey by Zafer TOSUNOĞLU. The place is yours.

[Zafer TOSUNOĞLU, Academic, Ege University](#)

Thank you, Cemal. Well, first of all, greetings from İzmir. I will continue in Turkish, if I may. My house is on the earthquake line, by the way, and we have been affected. I prepared this presentation together with two of my colleagues whose names can be seen. Lionfish who made its way from the Suez Canal ended up in Turkey back in 2014. Then it has spread rapidly westward and recently northward it came all the way to the Aegean north side of the chain and it has been reported in İzmir recently. And the Western

Mediterranean side of Turkey did some field studies. And we understood that this species spread around the three seas and created high populations and repeated in high populations and Murat, a professional diver came across lots of lionfish during his diving actually. So in Turkey, specifically, and in Mediterranean region fishing is conducted by bottom trawling, trolling, gill entangling nets, long lines and other methods commonly used in Turkey's Seas are not effective in catching and removal of the lionfish. This is the bottom line because these fishing methods are the most extensively used ones in Turkey. And they only do by catch. They can catch one or two lionfish just accidentally. But it's better to design a special net, whose picture can be seen at the bottom and larger mesh size and thicker twine to be more effective and catching the lionfish. They can catch targeted in large 10 packs scalpers thanks to their larger aggregations, and thicker twine diameters can be more effective in catching the lionfish as by catch or as a target or discard species because of the fact that they are found in around reefs where the lionfish is localized, you can see the technical features of the net you can see the trammel net with 42 to 66 millimeters of inner mesh size and they can see the other mesh aside and the target species I already counted them and lionfish can be a part of the target species group in this respect pufferfish, lionfish, shark, skates and rays are caught as the target species, and the thing is at the bottom you can see that there was a special design of the mesh. So, normally this net is 200 meters in length, but when you lay it, it ends up in 100 meters and because of this specific design of the net, the chances of catching the fish would be increased. And this net has been quite instrumental and effective in catching the lionfish but if you use the net in the very mouth of the lion, I talked to a diver from Kas summertime 20 to 25 who used this net in the Kaş Kalkan region. And for four days, he captured approximately 100 kilograms of lionfish a day. And he was fed up catching the lionfish at first and that's why he packed up his luggage and turned back to Antalya. He said the thing is, if there is demand for the lionfish, then using this net can be great and the lionfish can be captured using specific net. But this net will be instrumental especially in catching the fish during summer time. And, half of the fish captured would be lionfish and the rest of the other receptor species they say and the lionfish hunting site in April and reaches its maximum yield in July and August and declines in September and ends in November in Kalkan, Kaş area and Mediterranean Conservation Society conducting and monitoring study and in the summer months of 2020 around Kalkan and Kaş, fishers in the heart of the area have captured lionfish from the 30 to 50 meters depth range of reef area and even they can go up to 100 meters with this net. But especially in gear, but the thing is a trapping model, a trapping design can be put in place just for the lionfish that is why we kicked off a project and are in cooperation with the university and are planning to try to trap the lionfish just before mentioned. I'd like to thank Mrs. Gitting's for this design actually, we're planning to try it. All the technical plans and details he shared them with us and he thought that we can tell there, we can try this trap. I'd like to extend my thanks to Mr. Gitting's once again for sharing his design and we will be designing a similar trap. And we will be using the trap, next summer time when the lionfish are getting collected from Ege University, and we have another project in Bodrum pending to learn the biological features of this fish from Ege university. And there has to be a fishing gear specifically for the lionfish. That is why we are targeting at designing such a trap that is targeting only the lionfish. This is why you need to come up with a fishing gear which can capture lionfish and protect the rest of the species. And lots of traps have been tried, as you can see on the slide, but the most effective ones where they admit they get things and Holden Harris presented was the purse trap.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Thank you, Zafer. Nice presentation and all the best wishes to you and your projects and studies. Thank you. We have a chat box. So I am checking the chat box to see whether you have any questions or not. Maybe one or two. Can we have questions in the chat box?

[Mehmet GÖLGE, UNPD Turkey- Project Manager](#)

Well, some of the questions got answered in the chat box of a date. But there was this question to Mr. Mehmet here from dg Fisheries and Aquaculture. Spearfishing or diving? Do we have any restrictions on them too? When it comes to Turkish regulations? Can you please enlighten us? How is the situation in Turkey when it comes to fishing and diving for the lionfish?

[Assoc. Prof. Mahir KANYILMAZ Head of Department, BSGM](#)

Scuba diving and spearfishing is prohibited in Turkey, scuba diving hunting is prohibited. But without scuba, technically they can do the spear fishing. It is not prohibited. But for the encouragement of the lionfish hunting and consumption. We are going to come up with some new legislation pieces of legislation, we are going to do our best for the elimination of the species if you have any recommendations.

[Mehmet GÖLGE, UNPD Turkey- Project Manager](#)

Can I ask a question if I may? The limit the maximum catch limit for free diving is not more than five kilograms of lionfish at the moment? I think there's a needed change in legislation needed in this respect.

[Assoc. Prof. Mahir KANYILMAZ Head of Department, BSGM](#)

Well, be open to suggestion and if you are collecting feedback from the people stakeholders, currently so once we complete the process we will be creating the legislation and go public with it and your belt genomes so they're just station by the way the audience we are in the final phase of the formulation of the piece of legislation and people be bold when it comes to invasive species.

[Mehmet GÖLGE, UNPD Turkey- Project Manager](#)

You are also encouraging us because you are courageous, thank you. That was just question to Zafer. I'll be typing the question in the chat box for you.

[Holden HARRIS, Doctoral Researcher, University of Florida](#)

It looks like there's a question about yesterday, I talked about why fish populations and protected areas are not increasing. To clarify, the lionfish are increasing in those marine protected areas, but in those very healthy reefs, they haven't gotten near as high as the other areas that aren't as protected. And they also asked if we have an integrated invasive alien species plan into our management plan. And we do And for that, I want to turn it over to Dr. Gittings, who's Director of the United States National Marine Sanctuaries program are the chief scientist for the program and directly worked on developing that invasive alien species plan into our national plan. Remember, it was first sure the GRP

[Zafer TOSUNOĞLU, Academic, Ege University](#)

May I answer the question, if there is demand for this fish, the high levels of by-catch it may be okay. If the fisherman makes money out of this, then by catch can be tolerable, but the thing is, if there is no

economic gain, there is no income generated then, the fisherman have a go for the economically feasible ones. But if they go after the other species and then end up in lionfish as by catch, then the fishermen will be set up. After days actually, after for three or four days, I gave you an example of a diver from Antalya that is the thing. And by the way, it is quite challenging to remove the fish from the net. By the way, and we know that the fishermen are getting stung by the fish very frequently. Well, the fish might also be dropped accidentally on the feet of the divers, and it may also cause harm there. But the thing here is economic value should be known to the people. So based on that the tolerability of the by catch will depend actually, thank you.

[Mehmet GÖLGE, UNPD Turkey- Project Manager](#)

I didn't get the answer to interpretation. The technical team if I have a request, if you are going to speak in Turkish please use the interpretation manual Turkish language option. If you are going to speak in English, please use the same for the English Channel. Otherwise, the interpretation and the original speech job just overlap. Okay. It's again everything in the chat box it is related to the incentive system and when is it going to be started? And should the whole fish people that are just the tail? What about the payment of five Turkish Lira is like a bait individually? Or is it ethical just for one species of pufferfish? Or is it also applicable for other species of the pufferfish?

[Assoc. Prof. Mahir KANYILMAZ Head of Department, BSGM](#)

Okay. So far as far as it was planned and intended, because we all see this as a pilot study. We believe that it's the most damaging invasive species. And currently, we're still working on toward collecting comments and opinions from different scientific institutions, we just focus on the tail part and the payment amounts will be five Turkish Lira dependent on our budget. In the upcoming years. We believe that we will be including other species subspecies as well. So for the first year, the subsidy will be limited to 1 million fish. So 1 million, like I said fellows will be included under the scheme and small scale coastal fishermen will be our target audience. So not the commercial Fisher. And because the socio-economic level would like to subsidize and support the cost of fishermen by making use of this subsidy.

[Cemal TURAN, MariAS Project Samandag Field Expert](#)

Thank you. That's a good idea. I think we get close to a session if there are no further questions if there is one question from Patrick to Dr. Gittings.

[Mehmet GÖLGE, UNPD Turkey- Project Manager](#)

Let this be the last question and then we will have a poll. So I think getting all the sort of the question in the chat box, we can get the answer and now we'll get the break.

[Steve GITTINGS, Scientific Coordinator](#)

This the management plan question.

[Mehmet GÖLGE, UNPD Turkey- Project Manager](#)

Know what the catch mechanism, of a person trap is and take them to net?

[Steve GITTINGS, Scientific Coordinator](#)

Sorry, I don't see it. It's in the chat box. You said yes.

[Mehmet GÖLGE, UNPD Turkey- Project Manager](#)

No. So I have two questions. Yeah

[Zafer TOSUNOĞLU, Academic, Ege University](#)

What is the catch mechanism of purse trap and tapping to the net or fat in broad time, or catching to the close time?

[Steve GITTINGS, Scientific Coordinator](#)

So the, the fish are free to move until the net closes. So it's a non-containment trap. The fish the lionfish just come to the fad and stay for a period of time. And when the trap is pulled, the fish are contained only at the point when the trap is pulled. So there is no containment until the time that the fisherman pulls the trap. And then, and then other fish tend to leave because lionfish are docile, but other fish are not as docile. So they tend to leave and lionfish stay, even though the net is closing around them.

[Zafer TOSUNOĞLU, Academic, Ege University](#)

Okay, thank you.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Okay Professor Mehmet, let's proceed with the poll.

[Mehmet GÖLGE, UNPD Turkey- Project Manager](#)

Yes, again, with how this poll for one question. First, we will see the Turkish version in 30 seconds, you will see the English version of the same poll question, please answer just one of the versions. And it's a multiple choice question by the way down with your permission, we're going to give a break.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

And then we'll clean your land at about 10 or quarter to five. Yes, that would be nice. It was alter, I get contributor. One, I'll save that for you.

[Mehmet GÖLGE, UNPD Turkey- Project Manager](#)

Okay, let's make a correction. Now, I got the warning that you will see the poll question in both languages at the same time. So the poll is a single question. Multi choice poll. Let's answer that and then go for it. And then we will meet again at 4:50. Thank you in advance.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Section of this second day of meeting on lionfish. Now we start with marketing alternative users. We have the three presenters in this section but each presenter have five minutes to present their presentation. And this started field club. Emre Yemişken and lastly Merve Karakuş. They are presenting marketing alternative uses for lionfish products. Accessories, something else? Yes. Phillip, are you there? Phillip? Hello. The place is yours. Can you hear me? I think Mehmet B is not hearing. Phillip. Yeah, it's okay. Now

the place is yours. You have five minutes. Then the other presenter, Emre and Merve each has five minutes. You can start place is yours, please.

Phil KARP, Independent Citizen Scientist

Okay, I'm going to assume that you're hearing me. Yeah, my name is Phil Karp. I'm an independent citizen scientist, formerly with the World Bank. I want to thank the organizers for the opportunity to join this excellent program. Congratulate UNDP and the others for organizing I also want to express condolences to those affected by the earthquake in Turkey. I want to use my time to quickly give you some experience from the western Atlantic on market based approaches to control of invasive lionfish. We've already heard about the reason why lionfish control is important, particularly with respect to impact on Native marine ecosystems. As in the western Atlantic, I understand that lionfish are impacting both in terms of consumption of commercially important species such as grouper, but also ecologically important species such as herbivores, and cleaner wrasse. The problem of course, is that we are aware that broad agreement that eradication of lionfish is impossible. But fortunately, evidence has shown that regular removals and keeping lionfish populations below a certain level allows for recovery of native fish populations. And removals can be done in a number of ways, either through volunteer divers through organized events and calling or by marine management agencies. However, doing this on the regular basis that's required is often difficult and financially unsustainable. So the challenge is how to do this in a way that is financially sustainable on an ongoing basis. And this is where market based tools offer a very good set of solutions, and particularly the development of a series of vertical markets can provide a sustainable approach to suppressing invasive lionfish, and also at the same time provide an alternative income source for fishing communities and to support fisheries management and a native fish stock recovery. The first and best known vertical market and one that I think Dr. Olle referred to in this presentation. It is that of a seafood market or vertical market involving fishers, seafood sellers and restaurants and chefs. And there have been a number of efforts along these lines in the western Atlantic. Particularly to promote consumption of lionfish. We heard about lionfish cookbooks, efforts to raise awareness about the culinary benefits. And one of the key Philips for this in the western Atlantic and one that I think would be nice to consider in the Mediterranean has been the decision by Seafood watch, which is the best known sustainable seafood certification body in the US in 2017, to list lionfish as the best choice. And this was instrumental in having supermarket chains and restaurants begin to really serve lionfish on a much higher basis. Now the second vertical market and the one that Dr. Aylin Ulman referred to briefly yesterday, is that of jewelry and handicrafts. Lionfish spines, fins and tails can be dried and preserved in a variety of shapes and colors, resulting in very attractive material for use in jewelry. A variety of jewelry items can be produced using the spines using fins and tails. And even some innovative artists are using other parts of the fish such as pectoral fins and operculum. And making other types of products such as Christmas tree ornaments, key chains, hairstyle overs, and so forth. And also mixing the lionfish parts with other materials such as sea glass, feathers, coconut husk, and shell and even bottle caps. I've looked at life of his jewelry production for a number of years. And in terms of the current production, there's clusters of production in a number of countries in the Caribbean, as well as individual artists in several countries as well as in the US. And it's very nice to see that there's some additional production initial production already. In the Mediterranean in addition to a doctor woman. There are some artists in Cyprus who are already producing and selling a lionfish jewelry. To give you a sense of the degree of availability, just the other day I did a search on Etsy, which is the best known online platform in the US for selling handicrafts and over a dozen sellers of lionfish came up. When I did the same search. Three years ago, there were only a handful. So lionfish jewelry is

cool. But how does this address the challenge of managing the invasion, I want to quickly tell you about some empirical evidence from several countries in the Caribbean. One of the challenges to incentivizing fishers to remove lionfish has been the fact that the sales price for whole fish and filets has been relatively low compared to other species plus the risk of lost fishing days due to event emission. So we reason that if you could up the value per landed fish. By using parts of the fish that were previously discarded, such as the fins and spines and tails, you could incentivize fishers to remove lionfish. So we looked at this in several countries where artists are buying the fins and the spines for fishermen. And we found that the land value could be increased by up to 61%. In the case of Bailey's the other impact is on livelihoods by creating income opportunities for the artists. And a survey of artists found that over a third indicated that there had been a substantial or great deal contribution to their household income by getting involved in jewelry production. And in fact, I think this is where the benefits are highest, the ancillary benefits in terms of acquisition of new business skills, empowerment, increased household income, and raised awareness about the threat imposed by lionfish. So to conclude, I think the evidence from the western Atlantic is that market based tools can have an important role to play in managing lionfish. The development of vertical markets of seafood and jewelry can both help to support regular removals and also raise awareness and bring ancillary benefits such as new income opportunities. And finally, I just want to say that the potential is particularly strong for Mediterranean countries to learn from this experience, I think that the fact that there's a middle income the fact that there's a high sense of fashion, within the middle of Middle East countries, as well as an interest in products are produced from natural sources. More of a face to face type situation. So thank you very much and look forward to comments when we get to the Q&A part of the program.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Thank you very much, Philip. Thank you, Philip. Now we move on. Move to Mr. Emre. Yeah, the place is yours.

[Emre YEMİŞKEN, Research Assistant, Istanbul University](#)

Hello, everyone. First of all, I would like to thank you very much for having me for this important meeting. I am Emre from Istanbul University. I'm here as a researcher and innovator. Well, we all consider the lionfish as a fish food, but it's also used for having other benefits. Certainly, it's the best and the simple way to consume it.. But why don't we use it as an alternative products? Imagine that when you prepare the lionfish for dinner, you throw away some part of it. cut spines, then clean scales, remove internal organs and then cut the head and remove the bones. You have just white meat. So, how could we take advantage, of lionfish waste? first of all we can talk about the marine protein hydrolysates.

Also it plays a significant role as functional ingredients for food industries. Protein hydrolysates can be used in health care, such as antioxidant, antimicrobial activities. In the food & beverage application, the product is proven to have a positive impact on gastrointestinal issues associated with Irritable Bowel Syndrome (IBS) and Crohn's disease. When we talk about the mph, we need to talk about also marine collagen. As we know that it has included the collagen derivatives as well in the marine proteins. . Fish type I collagen is unique its extremely high solubility in dilute acid. Collagen derived from marine organisms, offers advantages over mammalian collagen due to its biocompatibility, biodegradability, easy extractability, water solubility, safety, low immunogenicity, and low production costs. Profoundly, recent reseaches report collagen plays a unique role in promoting all phases of wound healing when there is any skin injury to the body. you can see our some results here. We have already done the dry collagen and the

collagen sponge, and also nanofiber marine collagen band, from the lionfish skin. And secondly, we can talk about Glycosaminoglycans. When we talk about the glucosamine.

Hyaluronic acid and chondroitin sulphate are the most known GAG's in the market. It includes heparin/heparan sulfate, chondroitin sulfate/dermatan sulfate, keratan sulfate, and hyaluronic acid.

Glycosaminoglycans (GAGs) in marine animals are different from those of terrestrial organisms, mainly in terms of molecular weight and sulfation. The therapeutic properties of GAGs are related to their ability to interact with proteins, which is very much influenced by sulfation position and patterns. Since currently GAGs cannot be chemically synthesized, they are sourced from natural products, with high intra- but also inter-species variability. They play a crucial role in the cell signaling process, including regulation of cell growth, proliferation, promotion of cell adhesion, anticoagulation and wound repair. And the third one as a last one, fish oil and omega three, we can use it for the obtaining the fish oil and omega three also. Rich in long-chain omega-3 fatty acids, especially EPA and DHA, it can supplement diets inadequate in these fatty acid. We can list benefits of fish oil as lower blood pressure. Reduce triglycerides. Reduce the chance of abnormal heart rhythm. Reduce the likelihood of heart attack and stroke. Here is you can see that some kind of numbers from the market we bring these numbers from 2019 and Here are the some numbers for marketing approach of these marine bioactive raw materials. Also it's growing up almost 5% every year in specifically all these market.

On the otherhand, there is another offering for the future as Biomaterial source. The new trend of scientific research indicates that marine derivatives biocompound can be useful for 3D bioprinting process. The next-generation biomaterials come from the sea and lionfish byproducts can be part of it. Before I finish, I would like to thank you all for listening to me and I would like to special thank Aylin ULMAN to give me this opportunity to talk in this platform. And as our African proverb saying, if you go fast, go alone if you go far, far go together. So I would like to also thank to my teammates, Taner Yıldız and Mert Kesiktaş. If you have any questions about my issues, please don't hesitate. Thank you very much.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Thank you for this presentation. So we move to Merve KARAKUŞ. She's from the training Research Institute.

[Merve KARAKUŞ, Engineer, MoAF, Mediterranean Fisheries Research, Production and Training Institute](#)

Hello, Professor Cemal. I'd like to start I wish a quick introduction, I am from the fisheries research and training institute, I've been working there for eight years. I work as an engineer of aquaculture I'm mostly studying marine ecology and actively I've been dealing with the invasive species and we know our ministry has this as a priority action plan, so I've been actively involved in the invasive species. I'm also the coordinator of biology. If you are not familiar with this project, let me explain it for you related to puffer fish, so it is expanding on the cost ladder in Turkey. After total toxin levels need to be defined and the methods we need. The purpose of our project to it related to public awareness of both pufferfish and the lionfish. It started in 2018 and is ongoing. Specifically I can talk about lionfish FSB to detect which species are available in Turkey or where are they expanding? What is the biology? How are they fitting and how are they behaving? We are researching these topics so we'd like to understand why they are expanding and why are they spreading so fast. So we are interested in science and there's reasons because in future we will need statistics and some studies would like to create a necessary foundation and basis for all those these as you have been discussing in the last hour. Also there will be some legislation work, we need to

create the necessary foundation for that as well. In Kaş and Kekova sanctuaries, we carried out some research, we worked with team members and we caught lionfish with spears, we studied them in the laboratory, we check the development phases, growth phases, gonads, etc. And of course, in the original habitats and also in the invasive fields, we organized certain events. For example, in Antalya, Gazipaşa district we organized a competition that helps the visibility of our Project currently, our project is writing down the final reports by the end of the year for the purpose of helping future legislative work. We are creating certain documentation. We're going to give the documents to the Agricultural Research DG of Turkey. You heard the intentions of the Mr. Mahir, in certain areas where the scuba diving and hunting should be allowed by use of spears. The Turkish people, mostly just like sea bass and seabream, are the popular species, not the lionfish, but specifically in Antalya lionfish is already being served as fish and chips and other types. Cooked fish is already being offered to the consumers and there are also other options. For example, fish meal, fish flavor, fish oil, supplements, cosmetic use jelly and oxytocin is an important to drug in which the fish ingredients are used in textile and also in biogas and fertilizers. You can also find the official ingredients. Cosmetics should mention specifically because it's attracted to women, but also the jewelry from the fins of lionfish, necklaces and earrings are produced but of course the second is not specific to women. Cufflinks can be produced for men, mostly in the Caribbean's we see this kind of production a lot. They use almost all parts of the fish and they waste nothing. They use the fins and spines and bones. So normally what would be the best waste, it turns into an ornamental jewelry they cut off the tail and dry out. If you leave the fins in a shade area when they are drying, then you may eliminate and avoid discoloration. And then you can use gold, silver and other metallic material in order to create a beautiful piece of jewelry. These pictures are from the Caribbean. And this is mostly done in the Caribbean, of course for the conservation of reuse in the Caribbean's. I'm always talking about the Caribbean because that was already an integrated area. Once a fishing derby is organized and then they think about how we can provide further conservation data organized workshops for this purpose. And again, this is about jewelry making and how that has been an important source of income for the women. On the left hand side you'll see a very nice accessory that is used for eyeglasses. Very chic earrings magnificent. Mr. Phil Karp, mentioned all of this in his presentation so I'm not going to spend too much time on this. But you see the value amounts about 61% in Kaş and Fethiye. There is a sale of this fish. The up to date price is 25 Turkish lira. In Kaş cooperative In June, the price was 22 Turkish lira. In Alanya, one fisherman sells one fish for 25-30 Turkish Lira and that man created his own market for himself, he dries the tails and he uses details to get them it's five in order to make some jewelry that has many alternative source of income for that household. And also there was one housewife within the scope of our Bayoma project. We just cut out tails and then we dried them and we saw the tail so that lady and she a design very beautiful jewelry by using those tails because of the pandemic she cannot promote the product. But anyway, but next year during the spring and summer, they will be available online and in Kaş, Kekova. You can also find them in the streets. So some short survey currently, in fact, there is not much cost because not much money is paid for the material. And also, I mean the fish material, but for other jewelry making materials, they pay a little amount, it means that for the first year the profit margin is estimated to be about 30%, and upto 50-60% for the second year. If you have any questions about the project, you can send them by email, you can type them into the chat box, I know that your time is limited. Thank you. Thank you for your kind attention. Thank you, Professor Cemal.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Thank you, Merve for this nice presentation. I see that the ministry is also doing an executing this project. And this is a very comprehensive project. It has many aspects. Thank you for informing us about this. And I wish you good luck. Thank you. Going next present issue. It's about food cartel. Delivered by Mr. Nicolas Doumpas.

[Nikos DOUMPAS, Alien Species Pillar Manager](#)

Hello, everyone, and thank you. It's really nice. All these two days. I mean, I have learned so much. I'm going to present you, share screen just a moment. Okay. Do you see the presentation? Okay. So I'm going to present you a project that iSea is implementing in Greece and we are trying to promote the consumption of edible alien species. It's called Pick The Alien. We all know and we have learned that alien species are a great problem in the Mediterranean and worldwide because they cause many negative effects to the local ecosystems in the economy. Greece is one of the most effected countries with over 230 alien species recorded. From our projects, "Is it alien to you? Share it!!!" (facebook citizen science group to identify alien species), this is a map of records from the last year that we have made from records that we get from citizen scientists all over Greece. We can see that the Dodecanese region and Krete island, are the most affected and most alien species are recorded there. Now, the negative impact in the marine ecosystem, they invade this place. As we can see, they sideline other species. Also, in the economy, for example, blue crab is reducing the product of, for example, mussel farms and from the fish caught from the nets. And of course, we all know the negative effects of the consumption of toxic puffer fish that exist in Mediterranean, in the human health. Now what we can do, there are many innovative techniques. We can use the toxin, for example, in medical and pharmaceutical uses, for example, they're trying to find out a new way to use the toxin in botox techniques. As it was mentioned before, there are also the commercial use of making jewelry from the fins of lionfish. We can see here two photos from Aylin, and thank you for the photos. And of course, there is the consumption of edible alien species and of course, lionfish. The project started last year with funding from, Cyclades Preservation Fund and this year with both Ionian Environment Foundation and CPF, a big project was born. One of the things that we do is raising awareness, because people needs to know that there are alien species in Greece. Here are some informative posters that you can find and the memorandum with information if these are edible, if they are toxic, if they are venomous, and of course if you cannot eat it or not. These are the posters. And now we all know that most of the alien species are edible. We can see some examples here such as lionfish, trumpetfish, Red Sea goatfish, spinefoots, these all species exists in the Mediterranean and in Greece in great numbers and we can take advantage of this species. And especially these ones in other countries, are considered delicacy while in Greece they are thrown away. In the last year, we tried to inform mostly fishers in order to promote to them the consumption and selling this species because they already catch them. But because there is no market for these species they cannot sell them. So we are trying to teach them that they are edible and tasty, how to handle lionfish in order to promote and sell this species to the fish market and to the restaurants. This year we tried to inform the chefs, the restaurant owners, and the consumers because we want to make the next step. Since that fishers already know that these species can be eaten, It's now time for the next step for the restaurants to know and learn these species that they are edible that they are tasty and they can sell them to the consumers to promote them to consumers and additionally promote this seafood. And on Ionian we have visited Lefkas islands, Kefalonia island and Zante Islands with the food truck. Because of the COVID pandemic we didn't have the chance to make indoor events, we decided to find out a way that more people will attend the events, since they were afraid to be indoors. So the best way was to

promote the alien species consumption with street food events. On the Ionian islands, we had lionfish, spinefoots and blue crabs for the consumers to try out. In a conclusion we informed more than 30 chefs and restaurants in Cyclades and Ionian. And then more than 3.000 consumers tried out at the edible alien species and everyone was enthusiastic about the taste and positive on buying in a restaurant this species and tasting it. We have also created recipes of edible alien species, a book that contains recipes for lionfish, trumpetfish, spinefoots, and now we are going to update it by adding blue crabs. This e-book can be found in English in Greek language and in Arabic, so everyone can find it in our site. Not only it was about promoting alien species, but we want to inform more about the negative effects of alien species to local communities. While they were tasting, I was giving the scientific information that people had to have in their mind in order to understand why we're doing this because it's not only about tasting something new, it was about promoting the species in order to reduce their expansion and their increase of their population. And it was really important for the consumers to understand that they should start asking and they should start taking in the restaurants and advising also the restaurant by themselves to add in their menus the edible alien species. Here you can see some examples from the plates that the chefs of the "food cartel" prepared. This is made from blue crabs. The next step is to promote in other islands and regions in the Dodecanese with the food truck and with street food for the consumption of edible alien species. Thank you Nicholas all for your attention.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Ask by chat box any questions? Chat box in the end of the section, Okay, thanks for your nice presentation. Thank you very much. Thank you. Yes. Now we pass through the other presentation, which is economic organization of lionfish and into introduction to the consumption in Turkey Zafer Kızılkaya. Hi Zafer.

[Zafer KIZILKAYA, Mediterranean Conservation Society, AKD](#)

How are you?

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

I'm alright. Thanks for being here for the workshop. And the place is yours.

[Zafer KIZILKAYA, Mediterranean Conservation Society, AKD](#)

Nice. From Mediterranean Conservation Society, our project is about economic polarization of lionfish, not only lionfish, but in this case, we just concentrated on lionfish production to customers in Turkey. And this project is funded by the United Nations Development Program, small grants and endangered landscape program. And we started in two places in Turkey, Göcek and Kas towns where small scale fisheries having a lot of problems about invasive species. So we have a stock assessment analysis about the invasive species. So we use you know, daily fishers going out and out of let's say, thousand meters of net, how many or how many kilograms of which species of invasive species coming out. So, this is one of the day from this summer. And you can see this is from June, 8 of June, and 25 kilograms of lionfish came out of a net, the length of the net is 2200 meters. And it is more than 50% of the catch in terms of weight is lionfish. And you can see the other invasive here from the, you know, letter names you can follow it up. So, there is a big problem. The invasive species in Kas. And this is a kind of picture is quite historical because this fishing net is 3000 meters 267 fish came out of this fishing net, there was only one local species. So

which is more than 99% of this catch with innovative as a purchase and all the mentioned you know, some of them getting at least 5060 kilograms of lionfish soldier fish puffer fish. So fishery is not anymore in livelihood but challenge with invasive species in this places like Kaş if you move further Eastern to Turkey, it's getting worse we believe. So we know, regarding the survey you asked one question, we had a very elaborate survey in Kas with almost 459 consumers 31 restaurants altogether and 20 fishers about a behavior change. So, when we are talking about the consumers 85% of consumers in Kaş don't eat lionfish, and 91% don't eat trumpet fish. We also just put 50 here in Göcek, 91% don't eat lionfish at all. And when you look at the graphs, the reason why they don't eat lionfish it's apparently just striking it is not readily available to buy. You know if you look at a lionfish in Göcek which is Turkish, which is green color on the graph, it is not readily available is the biggest problem. The second thing is restaurants don't serve this fish. And the third one is it is not a local fish. So these three answers are just showing us that we have to concentrate on distance. When you come to consumer again, Kaş and Göcek 23% have seen lionfish for a sale in some way in the market or in the fishing boat somehow 10% have tried it at home 15% have traded at a restaurant. When you come to go Göcek 6% have seen lionfish for the sale. 99% have tried it at home. 1% have tried it in a restaurant. And the role of chefs and restaurants here are very important. We communicate, it's one of the top chefs in the country, more than 15 of them. And they have been running very high end restaurants, not the kind of daily type of restaurants but very high end that you cannot go without a reservation. So they tried all the lionfish, you know, that we sent including also soldier fish, any other you know, images that you get from the fishing community, and they have many recipes, and they like the fish they like the texture they like the you know, taste and they love it, they can move it and they can play it in many ways. So when we come to restaurants in Kaş, or Göcek, six restaurants correctly identified lionfish, one claims lionfish to be a local species. In Göcek, one restaurant is currently serving it correctly identified the lionfish and claims it should be a local species. So why do you serve lionfish when you ask to restaurant owners? The answer that strikes makes a good profit and environmentally friendly and that it tastes good. So these three answers shows us what a restaurant could see when they are trying to serve lionfish to consumers. And another answer that gives us you know, kind of challenging easily available during his season but what sees so when you ask the same question why leaders serve us not in my you don't serve us not in you know, lionfish in the restaurant, some of them say it is unhealthy, low customer demand, nobody knows it not readily available or thinks it does not taste good. So the second thing is that we prepare a film about health and safety. So each chef has a different style to clean the fish. Some of them are very familiar, they even didn't cut the, you know, dorsal spines, and some other chefs have a kind of, you know, scissors to cut the all the spines. Now we come to the restaurants again, 10 restaurants, were surveyed about lionfish. They say that 24% they say the law of demand 23% say there's a familiarity problem. And 23% says the preparation is a challenging thing. And five restaurants were asked in Göcek boats or lionfish if there is a greater customer demand. So you can see also on the right side important factors when you choosing a fish for sale in the restaurant, sustainability, and profit of sale of the dish place I'm not going into details of this. So, there are so many question and graphics that we came out of this including pictures. So, if you have a question later, I can answer directly. So, the key messages the primary barrier selling lionfish by fishers are market value is not high enough to justify fishing. But I saw that in Belize \$3 per pound means \$3 per 2.2 kilogram. In Turkey we offer \$3 per kilogram, you know even this price is not, you know, kind of enough for the community. Second thing is there is not enough demand for lionfish among customers. And yet 20% of restaurants and 20% of customers claim lack of availability as a secondary barrier. Availability and thus visibility attributes the great sense of similarity. So, you can see here in other graph, Kaş and Göcek similarity and consumption is apparent that the all you

know lots of people in Kas are much more familiar than with Göcek. So another key message high percentage of customers are very concerned about health of the sea. And but only three to 37 pounds of consumers who eat lionfish caught this as a factor. Hundred percent of Fishers and restaurant did identify the lionfish correctly. However, 25% of fishers believe that they prey on fish eggs and other species suggesting a fair bit of information. Only 55% of consumers correctly identified lionfish and 100% of fishers catch lionfish, all of it unintentionally as a by catch and it is on average 20 to 30% of annual catch and supply exists demand can be stimulated. In the meantime, we have any Instagram account for this you know what the new species in the Aegean. And here is our thing. We now work with 25 very high end restaurant from the Muğla to Bodrum to Istanbul, mainly in Istanbul. They now put the lionfish in their menus. And we also started working with three big hotel chains. It's all international chains. So there is a big demand right now from the restaurants, but we don't have enough fish. In the summertime, many of the fishing community members somehow are involved with tourism business so they don't go out fishing. Or they change their gears, which is only for, you know, sandy waters, so they never catch lionfish. So in a moment, we had a big shortage of lionfish. We have you know, storage, we have whole chain delivered and everything. But we don't have fish. And these restaurants are very high end restaurants. And there is no excuse for us to say that we don't have supply. So in this case, we contacted with minister of agriculture, fisheries and cultural general directory, to ask permission to harvest with long poles, we have poles we have these zookeepers, and our permission was declined by ministry. So we couldn't harvest any fish at that time for the restaurant, something of demands. So this is the biggest problem for the time being sustainability of supply. So Mahir, probably you're hearing this, you know, you have to reconsider your, you know, thoughts about getting permission, catching lionfish on scuba by poles. Because the more restaurant the more people the chef, the chef's hear from the others in Istanbul and in other region. So there is more demand coming to us but we could not answer them because we don't have a kind of sustainable supply from the local community. Thank you. Okay. Yeah, this is my last sentence as long as there is a demand in the from the restaurants we only go to fishers local community to buy lionfish paying \$3 per kilo so if there is a you know, sustainable supply, this is a kind of snowball. It's gonna get a big avalanche in couple of years' time period ahead. Thank you.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Thank you Zafer, the pictures are really nice. The dinner time but we get to hungry now. Nice pictures on food. Thank you very much.

[Zafer KIZILKAYA, Mediterranean Conservation Society, AKD](#)

Thank you.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Now we move to last presentation because Tahsin not show up, Tahsin Ceylan. He had a work to do. Because the workshop is beyond the shadow. So he has to move. That's why this presentation now it's gonna be last one. Which is the current station of the lionfish in and around Antalya province by Mine.

[Mine CANIKLI, SÜR-KOOP](#)

Hello. I represent Fishers Cooperative. I'll be talking about the current situation. I got data from the heads of cooperative societies in and around Antalya, first of all, are we talking about the lionfish itself I will talk about its origin of the lionfish. In fact, normally it inhabits the Indian Ocean and the Pacific Ocean,

especially live lesson or course, the lives mostly in the rocky habitats. However, it is dangerous for the people, human beings. I mean it is expanding however through or the Mediterranean and the upper and lower fins and also the normal spines are a danger to the human beings. And in 2014 we got first reports according to data got from the cooperatives in and around on Antalya lionfish, in fact, is a by catch that you can find in the net together with other species of fish with the long line and with their entanglement. Why not? They normally catch fish, but in those case, they also find that they lionfish as by catch. So normally the weight is around one kilogram and you can now find in some restaurant menus in Kaş. There are good chefs who can really do the cleaning so they prepared a nice filets. However, there is a very limited number of people who can do it. It's not really commercially sustainable. The price per kilogram ranges 15 to 20 Turkish Lira. In Kaş, the prices differ, it may be 10 or 20 per kilogram. However, the sales is not very active because even that sellers are people who are familiar with how to do the gutting the killing, etc. I got this information from the heads of cooperatives. I'm in Antalya in Kaş, we have a disguiser cooperatives they provided this information. And I represent the union of Fisheries cooperatives. I'd like to thank you for your attention.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Thank you Mine for the nice presentation. Thank you. Last section now. Now we can throw the question. Now opened it question as section and also up group discussion together. We make the summary and group discussion and also the questions for the last presentations together. So we save the time, also. And Iraz. Can you put down some conclusions or remarks for this section?

[Iraz ÖZALTINLI, UNPD Ankara, Project Associate](#)

No, I think Mehmet can make some conclusion for the section obviously, but we do you know, prefer to do this, you know, evaluation the last question maybe before going through discussion on job.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Okay.

[Iraz ÖZALTINLI, UNPD Ankara, Project Associate](#)

We have lost one question, you know, to maybe evaluate before going through discussions session.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

All right. Yeah. As I said, together and firstly question then discussion.

[Iraz ÖZALTINLI, UNPD Ankara, Project Associate](#)

Yes, exactly. Thank you

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Yeah, any question?

[Iraz ÖZALTINLI, UNPD Ankara, Project Associate](#)

Yes, thank you.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

This is a poll came out.

[Iraz ÖZALTINLI, UNPD Ankara, Project Associate](#)

Okay, we have of course one question one last question. And you see the Turkish ones and, you know, after just 30 seconds you got the English ones. These were answered by Turkish people, of course they are going to answer Turkish one.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Yeah. Is there any popup restriction in your computer?

[Burak ALIÇIÇEK, Academic Eastern Mediterranean University](#)

I couldn't understand.

[Iraz ÖZALTINLI, UNPD Ankara, Project Associate](#)

Would you please scroll down on the poll window?

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

So you got it.

[Burak ALIÇIÇEK, Academic Eastern Mediterranean University](#)

There are several others Okay. Yes.

[Iraz ÖZALTINLI, UNPD Ankara, Project Associate](#)

And maybe we can switch to English now. I guess it's enough. Yes. Thank you.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Wonderful enough. Yeah. Just close this one for now.

[Iraz ÖZALTINLI, UNPD Ankara, Project Associate](#)

This is the English one for the Turkish one is done. And you know, yes the English one is you know. Exactly.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

All right.

[Iraz ÖZALTINLI, UNPD Ankara, Project Associate](#)

Are we okay, filling out the evaluation? We're going to think we're done. Yes, we can close it. When are you say it's okay? Yeah, let's close it. I think everyone closed on evaluation already. Awesome. Thank you. Okay, Professor over to you over down with a poll. All the experts. We believe that was an awesome and great event or we had some technical issues, but in a way, everything was great and very useful. Of course,

as the report is going to be prepared. We're going to get your confirmation before we share all the presentations. Now I'd like to give the floor to our project manager Mr. Mehmet Gölge. Well let's start with the questions. Okay. I did the thank you part before the questions but anyway, I'll give the floor to the director general and head of department later on anyway.

Vahdet ÜNAL, MariAS Project Socio-Economic Expert

I have one question, can I ask directly? Okay. Last question to Zafer Kızılkaya. However it is open to anyone else. The question is I think there's a great paradox on supply and demand of lionfish because the first said during the summertime fishers prefer to work in tourism sector rather than fishing. So fishers target more valuable and more commercial fish species rather than lionfish. So there is no regular supply for the lionfish. How are we going to deal with this challenge, this issue? Actually, there we are complaining about the lionfish. We claim that there's lots of lionfish in the sea. And there's market chefs and the big restaurants and the hotel owners are demanding lionfish, but the market, there's something wrong in the market. How are we going to solve this problem this way? One of the question. Second one is, do you think this is a problem of the situation or conditions of small scale fisheries in Turkey, or maybe in Mediterranean, which is turning into a part time fishing activity rather than full-time commercial activity? Thank you, Mr. Chair. Thank you.

Zafer KIZILKAYA, Mediterranean Conservation Society, AKD

Ask the first question. Right. And then maybe the second question is better to be answered by my here economists. As a first question, it was our surprise that over 800 kilometers of coastline more than 33 cooperatives, there are risks that we couldn't get even three kilograms of lionfish, but when we dive, there are thousands of them. If they allow us to harvest we can harvest as many as you like. But no fishers are going out or no fishers catching and on the other hand, in Bodrum Peninsula, approximately 14 to 16 fishery cooperatives Fisheries and Aquaculture General Directorate in a Bodrum office, misinformed them that catching lionfish is illegal. So when we ask for lionfish from those cooperatives, they clearly answered that we cannot do it because they told us by government, this is illegal catching and selling lionfish, we told them there is no such thing. So, such kind of misinformation coming from government is also just you know, making the things difficult for us. So, there should be a kind of lionfish fishery organized. And another reason is that they are not catching lionfish or any other invasive species, they still don't recognize them as a target species. This is just by catch if they go out fishing, if they put their nets along a rocky reef, and if they catch lionfish, then they are trying to sell it to us, right. Otherwise, this is not a target species is a personal dimension, there are days they are dozens, hundred kilograms, or lionfish, and we offer to pay them \$3 in cash, which makes \$300 for revenue for the lionfish share of their catch, so they're not interested. So there should be a kind of more, you know, peer to peer communication with community members, local government officials that lionfish could be harvested, lionfish could be sold, and it should be a target species, maybe there should be more incentives, rather than buying just \$3 per kilo, which is a kind of, you know, not that high price. But it's not that bad. If they're coming with 20-30 kilos of lionfish, only getting hundred dollars from the lionfish or among their catches, it is something for their livelihood, I believe. And you are making the, you know, socio economic analysis. So it's a kind of, you know, alternative income for them. So, there should be a kind of good information channels, you know, coming from government side to that they should go and harvest lionfish and other species. And in the time that we cannot find any lionfish for restaurants or hotel chains, and you know, we need a permission to go and do a harvest twice for scuba diving in space.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Okay. Thank you. We please can we make the question and answers short?

[Mahir KANYILMAZ, Head of Department, BSGM](#)

I like to clarify one point? I don't know maybe it is later to interpretation in Bodrum. You said there was misinformation coming from the government, if I understood you correctly. So rather than saying government maybe you should say or you retract to say that the local staff working there individuals recently informed the fishes because the DG for Fisheries and Aquaculture is not against the catch of this fish and there's no restriction about this but of course we recognize the need to improve the catches. We're going to work on it.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Thank you, Professor Mahir KANYILMAZ.

[Zafer KIZILKAYA, Mediterranean Conservation Society, AKD](#)

There is no lionfish catch in Bodrum.

[Mahir KANYILMAZ, Head of Department, BSGM](#)

Okay. I will call Bodrum now and I will sort it out.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Okay, Professor, Vahdet ÜNAL about your first question? I think it is applicable for Antalya is specific for a certain region in Iskenderun Bay, in Mersin Bay. This is not a common problem. So the fisherman to fishing in the summer as well. They continue with they return it but for Antalya, you're right. That is the case. Any other questions?

[Mahir KANYILMAZ, Head of Department, BSGM](#)

I would like to clarify one more point. This is the check box in the Caribbean's point, I think they're talking about the abuse, with the grouper catch. So for the grouper catch, it can be offered as an excuse. But of course this is not a valid excuse. We recognize this.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Yes, there is always abuse of a new group introduced. So this is always applicable. Yes. Any questions?

[Teoman SANALAN, President- Der Anglers Society](#)

May have a command?

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Yes, please.

[Teoman SANALAN, President- Der Anglers Society](#)

Okay, I just pulled over the rod. The chair of amateur fishing society. My name is Teoman. So first, it's about the implementation of the current legislation, there is a lack of sanctions, because of the lack of sanctions, the illegal severe fishing, especially of groupers, Istanbul commonly and the catch is sold to the restaurants. And they when you ask the fisherman they easily explain you how or they circumvent the inspections etc. You have to sort this out regarding the lionfish, there are some recommended solutions even if you implement them or not implement them, please know that there is there is need for action regarding the abuse. Unless you implement the legislation, in effect in a more effective way, or unless your produce smarter reps of legislation implement this, you will continue suffering from the abuse problem. The second comment is related to the potential role to be played by amateur fishers. For example, can you give any recommendations from the Caribbean experience because we are ready to help for the puffer fish we already started working on it. And likewise, we can offer our help for lionfish as well. So the foreign colleagues showed us very good data. We also benefited a lot from survivors presentation would like to do our best. What can we do? Thank you.

[Mahir KANYILMAZ, Head of Department, BSGM](#)

Thank you, Teoman. Excuse me. I always feel the necessity to take the microphone and answer. Okay. You said that the legislation is not effective not maybe this is not really true. But you should say that people who are willing to abuse the legislation are always walking ahead of the legislation. Yes, this is the case all around the world. And we will do and we will be doing our best. Thank you.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Let's close the session. I believe this is what we should do. Because we are really out of time. Let me talk about the evaluations. Let's do some overall evaluation of the last couple of days. So you can also take this as a summary after two days, you can also speak after my summary. So after the puffer fish and now introducing lionfish, it seems to be a problem, it was already included in one of our polls. So there is lack of awareness, which is a huge gap, which is a huge challenge. Because lionfish should be known as an economic valuable fish. And there is work to be done regarding the fishing and hunting of this fish and some projects are needed, maybe some research projects, and there's a gap in Turkey about this. So regarding biological data regarding the catching techniques. There is a gap in Turkey, unfortunately, there is such a gap in Turkish seas about biological ecology and catching of lionfish. We need more studies and more research. This is clear. So when I look at the last couple of days, I can make the following overall evaluations. There were some scientific researches, they were actual executive as projects. But of course, the number should be increased, MARIAS effect is here in order to cover and close this gap. It's a very precious project in in this regard, because the Marias aiming at closing the gap. The ministry and UNDP are willing to close the gaps and work on at least narrowing down the existing gaps. So there are some gaps in the legislation. And that was also mentioned by Mr. Mahir Kanyilmaz. The government is working on it. And of course, the legislative gaps and vacuums need to be completed Marias is working on it as well, as far as I'm concerned. So this is my personal evaluation of the last couple of days, of course, about economic value we heard a lot, especially from the United States, and the Caribbean, there are many lessons that we can learn. And foreign colleagues provided us with beautiful presentations. So that's all. Is anybody want to talk? Who'd like to give an overall evaluations?

[Phil KARP, Independent Citizen Scientist](#)

Mr. Turan? Can I make a comment, please?

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Yeah, please.

[Phil KARP, Independent Citizen Scientist](#)

Yes, thank you. Okay, yes. So very quickly, I think, you know, this has been excellent. And we've heard about a number of different types of initiatives relating to harvesting, gear, marketing and the like. And I would just like to make the point that, from the experience of the Caribbean, the countries that are doing best are those that are taking an integrated approach that are looking at on the one hand, raising awareness among consumers, which that then raises the interest and the price that consumers are willing to pay for lionfish. At the same time, they're being strategic about the areas in which they allow fishers to remove lionfish, and the areas that are close to fisheries. So for example, within marine protected areas, there, they encourage dive operators to take divers to do removals. And they tell the diver operators to do removals in the area, something to fishermen leave those lionfish for the fishers. Integrating also the food item and the handicraft item, as I mentioned, by having artists buy fins and spines, from fishermen, it raises the landed value. At the same time, what we've done in Belize and elsewhere, is that the jewelry artists give free earrings to waitresses and servers in the restaurants. So that is again as another way of raising awareness. So my point here is that an integrated approach is a way to create synergies, and really to result in a higher impact than having a bunch of individual uncoordinated initiatives. Thank you.

[Cemal TURAN, MarIAS Project Samandag Field Expert](#)

Thank you. Yeah, I totally agree with your integrated approach is crucial for the lionfish. And any more suggestion? Mr. Gürel speech is yours.

[Prof. Dr. Gürel Türkmen - Ege University Faculty of Fisheries](#)

I would like to contribute on a few topics. So, regarding the use on lionfish in aquariums, they also have such a value. If I missed this, 'm sorry about this but I did see in some of the presentations you have touched upon this. Let me say the following in the importation of marine aquarium fish, lionfish and pufferfish importation is still permitted. Maybe you can review the legislation in regards especially to this Mahir Kanyilmaz. In his presentation, he is announced that they're going to review the legislation in future. So how about economizing this fish for aquarium use? So how about a harvesting time-line and transferring them live? How about putting some requirements in the legislation so that we will not leave any gaps in the future? About the use of lionfish for aquarium and also, let's look at the distribution the natural distribution of lionfish in the Turkish seas of Bodrum, Marmara, Kaş and other districts with touristic resorts of Turkey with a high potential. So in boat trips, for touristic purposes and also for touristic awareness. We need to raise awareness in the community. What can we do about this? Because there's a huge gap I believe about this awareness. Also, as far as I'm concerned, around the world and main types of lionfish are useful aquariums in Turkey mostly to too often. Pterois miles is one of them that is a hybrid type so. This is naturally existing in our seas, maybe we should stop its importation. And we can use it in urban aquariums for awareness raising, and let's concentrate on catching them live, harvesting them live and transmitting them live. Mahir Kanyilmaz please take this into consideration, that this workshop can be an opportunity for conveying these wishes to you.

Cemal TURAN, MarIAS Project Samandag Field Expert

So Mr. Kanyilmaz? Would you like to say anything?

Mahir KANYILMAZ, Head of Department, BSGM

So regarding the aquaculture regulation who are updating it, it's about to be finalized, we are going to open it up for comments. We're making some new regulations about importation of alien species.

Cemal TURAN, MarIAS Project Samandag Field Expert

Okay, you are going to have it ratified. Currently, there are two types of this lionfish in our contract, maybe you can just generalize the wording in the legislation. So just say okay, all the lionfish because maybe in the future we're going to see another type of lionfish we don't know.

Mahir KANYILMAZ, Head of Department, BSGM

Yeah, in the regulation, we will just throw the framework and then it will be followed by a communique. Maybe in six months or one year it will be detailed with the communique. So the regulation will be a more general piece of legislation. Okay, thank you.

Cemal TURAN, MarIAS Project Samandag Field Expert

Okay, we recognize the need for awareness raising as Mr. Gürel has mentioned. Any other inputs?

Teoman SANALAN, President- Amateur Anglers Society

May I add one more thing? My battery is almost dead. But anyway, so I also studied environmental information management and indicators. So we give certain warnings because of climate change effect the changes in the species that may be higher mobility of the species because of surface seawater temperatures are changing and icebergs are melting down. This is changing the salinity of Mediterranean waters, so that mobility will be increasing, so the habitats will be changing in future, you will see more of this mobility.

Cemal TURAN, MarIAS Project Samandag Field Expert

In fact, Marias takes into consideration many components, many of these components not only a catching and harvesting areas not on the biology and ecology, but also we take into consideration the climate change, as Phil has mentioned, or have to adopt an integrated approach, we need to take into account many components together, this is how we can deal with this effect. And many researchers did their research accordingly so far. So for the first time, I came across this fish in Samandag, for the Turkish area, so many endemic species were shifted by this fish as some endemic species, which used to be high in quantity, it is barer now because lionfish is feeding on them. So the behavior is changing. I compare how the lionfish was on the first sighting and how it is now. There is a huge change in behavior. Sometimes I put it in a corner and I also caught it a camera. In fact, earlier it was intimidated. It used to be intimidated, but now it is not any more intimidated, it is trying to send me away. It's trying to show me that it is the boss. So there is a huge change of behavior. Thank you. Do we have time moderator? Yeah, let's say five minutes. Okay, I will be very brief.

Vahdet ÜNAL, MariAS Project Socio-Economic Expert

Surely that's a big problem. But I think it's easy to deal with this is my personal opinion. I think it's very clear what we need to do. So the Director General for Fisheries and Aquaculture, the head of resources department, he has been with us since the beginning of this event. So he's very familiar with this topic. And I am sure that he has noted down all the highlights from these discussions. This is important. I believe that we didn't react very quickly. In the face of pufferfish, I'm not criticizing any person or any additives. But the pufferfish just entered into Turkish waters and we couldn't react properly and we couldn't make use of it in a positive way. But that's an example for us. Now, we need to think about ways of benefiting from lionfish because during this workshop, we heard about a lot of these ways. So, first of all, a good fishing or harvesting pressure should be created and then markets should be created. I wanted to highlight these effects, one last sentence, the legislation whatever is needed in legal terms should be prepared as soon as possible that we can take steps forward.

Cemal TURAN, MariAS Project Samandag Field Expert

Thank you. Okay, let me say the last sentence and then I will give the floor to İrfan Unsal, because he's the coordinator of the project. Let me say the last sentence. I did field work in Iskenderun Bay. For Marias as I did the last site abundance map, I'm always in the field. In our waters, for example, longspine sea urchin may not be readily available, but think about human health. Talking about ecology, there's some harm it can create. So that long spine sea urchin should also be dealt with like it is a big deal, or some of you know it's very enormous. Eel catfish, its name is Patras at night. During daytime, you cannot see. And there are some more species as well. But first of all, we have to cope with the lionfish. As highlighted in the talks, we were delayed in taking action in the face of pufferfish, but we shouldn't be delayed, to act in the face of lionfish, the sooner the better. So the DG of Fisheries and Aquatic culture, Mr. Mahir Kanyilmaz, I'd like to thank you, you are very sensitive about these issues, and you're very active. Thank you. So, Professor, if for now, I'd like to give the floor to you.

İrfan Unsal, MARIAS Project Coordinator

Thank you, I know it's late. But anyway, I would like to thank for the relevant information. Various projects will be continuing. And this is not only Turkey's project, this is a regional project. So we act within the framework of conventions, that we need cooperation, cooperation with neighboring countries, our ultimate goal is to raise awareness, we need to create an economic value for this species, there is a Caribbean model now, maybe we can develop a Mediterranean model, or we also work with other species, Atlantic starfish, puffer fish and other dangerous alien species. We will continue. Now we're going to involve all citizens. I'd like to thank everyone for the contribution. I hope this cooperation will continue. I hope in future we're going to hold a face to face workshop. I hope if the future allows, we want to organize a workshop in Antalya. Now I'd like to give the floor to . Deputy Director General he's going to close the session. I'd like to thank all the participants,

Mahir KANYILMAZ, Head of Department, BSGM

Excuse me. I don't want to usurp the microphone. But on behalf of the director general, I would like to say a few words before the DG, I would like to speak. If you excuse me, anyway, just go ahead. Okay, Director General, can I speak?

Cemal TURAN, MariAS Project Samandag Field Expert

Yes, please.

Mahir KANYILMAZ, Head of Department, BSGM

The seminar, the symposium, and many workshops, symposiums seminars I have participated in. But thinking about the needs of this country., I think about the good examples and practices. This has been very fruitful because this has been very well focused. This has been contributed a lot by foreign experts. I'd like to thank the project team. I'd like everyone who put efforts in the organization of this event. I owe you. This thank you, as the Director General for Fisheries and Aquaculture, the aquatic biodiversity is our responsibility. Were aware of this responsibility. So the project's demands, requests coming from the field are always considered in our office, we try to respond to those demands within the framework of legislation. If the legislation is not enough for the date, then we try to update the legislation, please be aware of this, the problem is a global problem. I hope we will achieve better results altogether. I would like to thank all the participants, I'd like to thank you on behalf of the director, Chairman, and I would like to thank the organizers. Thank you Have a nice evening or have a nice day. Good morning also depending on which you are part of the world you are. Have a nice day. That's all for me. Thank you.

Irfan Unsal, MARIAS Project Coordinator

Reach out, hello. If there are no further speakers, I'd like to take the floor of our two day workshop. So maybe it took your attention. I tell out all the speeches, I believe that it was a very fruitful event. I'd like to thank all the organizers. I'd like to thank who delivered a presentation and who contributed to topic. And I see that the number of participants is over 110. I would like to thank each and every one of us specifically that this has been a great achievement. Thank you. Of course. It's a pity that we cannot make it face to face and physically but in a way this is not possible for the time being, just like in all the workshops around the world. We hear similar problems so biodiversity is threatened and native species are under the threat everywhere. Everyone is trying to achieve similar goals. This is good to see that we are all trying to achieve the same thing. I hope we will be able to hold the next workshop in Antalya, I'd like to thank you once again, have a nice day and evening. Thank you. I think you can't, you can't officially close the session. Thank you just some short acknowledgement to the participants. So from the Mediterranean and from the Caribbean, all the experts participating, I'd like to thank you for sharing your experience or knowledge with us. You put a lot of effort in your work.

Mehmet GÖLGE, UNPD Turkey- Project Manager

Thank you, we hope we will continue benefiting from that experience. As Mr. Director General mentioned, there will be a follow up of this event. First, we're going to share our report, maybe it will be a like a book, including all the proceedings of the event, we will check what we can do regarding the lionfish and also regarding other priority species we are working on to have similar initiatives, I would love to thank the speakers for sharing their knowledge. We would like to thank you for being moderators. It was valuable. And if you facilitated the running of our event, thank you. I'm aware you contributed a lot to the organization. Aylin, she initiated the communication with experts. Thank you. So this is not a project of UNDP only. This is all our project, the Ministry of Agriculture, many departments, and many countries have also contributed a lot to this initiative, I'd like to thank all the relevant departments. Thank you very much. During the last two days, we had two patient interpreters, I would like to thank them for helping us communicate. Thank you. And Iraz from the project team. Thank you as well. We will meet again in future in other events. Have a nice day or evening. See you. Thank you.