

WWF Project Final Report

Please complete and send, with Executive Summary (Project Summary Progress Report), by post, fax, or e-mail, to Europe/Middle East Programme, WWF International, Avenue du Mont-Blanc, 1196 Gland, Switzerland

Project No. / Activity No.	TR0020.01
Project Title	“Conservation of the Mediterranean Monk Seal in the Central Aegean and Central Mediterranean Turkish Coast”
Activity Title (if different)	-
Reporting Period	01.July 1998 - 30 June 1999

1. Introduction. Give a brief description of the topic, followed by a statement of the specific problem or requirement that led to the project's initiation

The biology and ecology of the highly endangered Mediterranean monk seal, *Monachus monachus*, (Hermann 1779) has been studied in Turkey since 1964. The main aspects of the studies were population biology and monitoring of habitat use. The main threats for the monk seal population throughout the Turkish coasts are the continuous loss of habitat due to coastal developments and deliberate killings mainly by fishermen.

CENTRAL AEGEAN:

The present WWF project TR0020.01 (formerly TR0015.01 & TR0019.02) was initiated in order to ensure continuity of the already started conservation efforts by the National Monk Seal Committee of Turkey in 1991, as it determined Foca as the Pilot Area due to the offer of SAD-AFAG and conservation efforts of the Foca Local Seal Committee founded in 1991. Entering and diving into the monk seal caves was prohibited in 1991 by the Ministry of Agriculture through the advice of The National Monk Seal Committee. In 1992, it was feasible to set the boundaries of the fishery - marine conservation area in Foca through the “Circular No.27” regulating the commercial harvesting of aquatic products which prohibits use of active fishing technics/devices in Foca Area.

MEDITERRANEAN:

Being the most endangered seal species in the world and because their major population has been subjected to mass mortality at Mauritania coasts recently, survival of each individual of the Mediterranean Monk Seal is of great importance. The small individual groups scattered at remote areas, which are overlooked and even ignored so far, are therefore getting more important. The monk seals inhabiting Cilician Basin in the Mediterranean, which is the strait between Anatolia and Cyprus Island, are among the disregarded individuals of this species. More importantly according to recent studies carried out on the Cilician coast showed that the number of individuals inhabiting the region can hardly be considered "few". But on the other hand, no attempt to conserve this group of seals has been accomplished by the regional authorities, and unfortunately in 1994, 6 seals were deliberately killed by the local fishermen.

Upon realisation of a seriously threaten monk seal population in the Cilician, an additional activity program was initiated under the frame of the first WWF Monk Seal Project in Foca, Turkey. In July 1995 WWF was decided to develop a full project in this area.

The present report includes the activities and the results during the last 12 months, from July 1998 until June 1999.

2. Objectives – as per the project contract

- I. To train local people to serve as local focal points in the Central Aegean. Involve local people and tourist in conservation issues and sensitise local and national decision makers
- II. Work for the creation of new protected areas in the Central Aegean Coast and new marine conservation zones in the Central Aegean and in the Central Mediterranean. Monitor illegal activities at sea and along the coast.
- III. Promote sustainable use of local fish stocks. Decrease negative interactions between fish farmers/fishermen and monk seals
- IV. Identify additional suitable habitats in the Central Aegean and Mediterranean Coast. Improve knowledge on seal behaviour and movements. Update population assessment.

3. Project achievements. Describe the attainment of the project's objectives

CENTRAL AEGEAN:

Re I. As a result of recruiting two new project assistants, the communication and collaboration of the project with the fishermen has increased its effectiveness. Daily talks, added to the fishing trips along with net piece and rope removal from the propellers of the fishing boats have helped develop closer contact with the fishermen. There is a list of 64 active artisanal fishermen, each of whom have been given a seal T-shirt. Some of the fishermen have been taken to talks with other fishermen from Yeni Foca and Karaburun. Furthermore, the efforts performed for the artisanal fishermen to organise them in the Foca Fishing Cooperative reached its target. Almost all of the artisanal fishermen in Foca joined the Cooperative and in the general assembly held in May 1999, 3 of them were elected in the board of directors. For the first time since the establishment of the cooperative, small-scale fishermen held the majority in governance.

A Local Monk Seal Committee held a meeting in December; the programme for the patrol boat and the recommendations on the new aqua products circular have been discussed. The proposal for the enlargement of the Foca Protected Area both North to Yeni Foca and South including Gediz Delta has been proposed for the 3rd time. However, the Ministry of Agriculture has not accepted this request.

The patrolling boat CEVRE was steering in the waters of Foca in the late afternoon of 12 November 1998 with its new diesel engine, for the first time after more than two passive years. The Turkish Ministry shared the cost of the new engine of CEVRE with the Municipality of Foca and newly established Environment Protection Unit of the Local Governorship of Foca. The Municipality and the Environment Protection Unit will cover the running expenses. Between December 1998 and May 1999, it patrolled the Foca Protected Area and adjacent waters for a total of 53 days, or 147 hours. The Marine Police and Coast Guard officers, local fishermen and SAD-AFAG staff took onboard some of its duties. During the same period, 11 calls were received informing the authorities of illegal diving, 2 cases of pollution caused by purse-seiners and one case of illegal purse seine fishing were prosecuted in court. In the vicinity of Foca, 3 sets of illegal coastal trawling gear were seized at sea. One vessel was also caught in action and its skipper brought to court.

SAD-AFAG provided 3 raincoats and 3 pairs of boots for the captain of CEVRE and 2 Marine Police officers to enable them to work in adverse weather conditions.

Public Awareness activities carried out in a temporary visitor centre given by the Public Education Centre of the Local Council between June and September 1998. The other activities conducted were;

1. Informative talks have been made in daily boat tours to tourists. A total of 503 Turkish and 474 foreign tourists have been informed.
2. Weekly market stands have been maintained. A total of 1539 Turkish (including locals) and 345 foreign tourists have been informed. Another stand has been opened in Yeni Foca and a total of 110 people reached.
3. Slide shows were given in various hotels and clubs as well as special events i.e. Festival Foca 1998. A

total of 367 people were reached.

4. Every weekend in the Summer months beach cleanings were performed in FPA.

5. Turkish and English informative leaflets were prepared.

The Authority for the Specially Protected Areas (ASPA) organised a week seminar regarding the Environmental Education in the Schools of Yeni Foca. 24 teachers attended from 12 SPAs of Turkey. The project gave a lecture on the Mediterranean seal and its conservation. Prior to the lecture a boat tour with the participants was organised within the FPA.

Reha-Necla Midilli Primary School (7 to 14 year old students) has used one of the environmental education materials that had been produced for the project in 1994. The material is the play called "Phoquevision", the main theme of which is the conservation of seals. The performance of the play took place at the graduation night of the school on June 4, 1999 and gathered public interest. The director of the same school had been involved in our works throughout the years and by the motivation he received from the project, he started environmental activities in his school. This year he succeeded to make his school receive the title "Eco-school" and become a part of an international organisation.

For this year, 383 students of the fore-mentioned school received environmental education. The outline of the work is as follows:

1. Illegal fishery had been explained and discussed:

- The illegal usage of trawling gear and purse seine gear has been explained via diagrams.
- The minimum hunting measures and weights of some favourable fishes were displayed so that the students could become environmentally aware consumers.
- The function and the sufficiency of controlling organisations (such as the coast guard) have been discussed.
- The interaction between the monk seal issue and illegal fishery has been pointed out.

2. An interview has been held between the student representatives and the head of Foca Fishing Cooperative. The students have compared and discussed what they have learned in class, with a person who has experienced illegal fishery problems in real life.

3. In the light of the seminars given at class and the interview held, student representatives collected their ideas and suggestions in a brief letter and they have delivered this letter to the Mayor and Local Councillor in hand. In the letter, the decision-makers were asked to intensify the controls over illegal fishery and bring new regulations to the usage of purse-seine gear. Students presented these points on behalf of them and their friends, the next generation.

4. A seminar with a slide-show about monk seals has been given to the students aged between 7-10.

In the second half of the reporting period, an American High School, the Turkish & American Society, the 3rd International Environmental Film Festival in Bodrum and the Ford 1999 European Conservation Awards-Turkish Ceremony have been attended with slide or multivision shows. Approximately a total of 600 people were reached.

Re. II. A "Marine military forbidden zone" (between Dis Kale and Deveboynu) within the borders of the naval base in Foca Protected Area has been proposed to open for the small-scale fishery. Therefore, the Siren Rocks which is the most important habitat for the monk seal, in the region, could have been closed for small-scale fishery (the mentioned coast was already closed for human usage but not small-scale fishery). This request has been repeated, however no response has been received so far.

Re.III. A Symposium of Coastal Fisheries' Problems in Izmir Bay has been organised, in cooperation with the Ozbek Aqua Products Cooperative at the 9 Eylul University - Institute of Marine Sciences and Technologies on the 10th of February. Opening presentations were made by the director of the Institute of Marine Sciences and the Deputy Local Councillor of Izmir Province. Presentations were given, including 3

by the scientists, 2 by Environmental NGOs and 5 by the fishermen cooperatives. The problems of the fishery in the region particularly the artisanal fishermen were emphasised. GOs were asked to work effectively to enhance sustainable fishery. The Coast Guard and the Ministry of Agriculture Izmir Directorate representatives (invited as observers) also gave presentations and tempered discussion occurred. At the close of the symposium, the participants released the following official declaration;

- Fisheries regulations must be revised according to scientific data to protect coastal ecosystems, endangered marine species and the artisanal fishery using the most selective fishing gear.
- Live catching of small fish for aquaculture installations must be prohibited.
- The depth limit for the purse-seine fishery must be increased to 40 meters from 18 meters; and any kind of coastal seines should be prohibited.
- The Lampara fishery should be forbidden between December and February in Izmir Bay.
- The effectiveness of marine law enforcement organisations must be improved; municipalities and local governorships should be active in controlling illegal fishing and marine pollution, taking, Foca as an example.
- Relevant laws must immediately be applied by national and regional governments to stop the pollution originating from the city of Izmir and the Gediz River.
- Coastal landfills must be avoided, as they are destructive to coastal ecosystems and habitats.
- The relationship between artisanal fishermen's cooperatives, scientists, lawyers and conservationists should be strengthened. Artisanal fishermen should organise themselves into fishing cooperatives and the formation of an artisanal fishermen's lobby must be accomplished.

All the presentations were collected in a booklet and are ready for publication.

For the new Aqua Products Circular (No.33) SAD-AFAG has proposed the followings to the Ministry of Agriculture;

- 1) Pelagic trawler limits should be deepened to 50 meters isobath.
- 2) Shrimp trawling should be banned in the Turkish Aegean.
- 3) A separate section should be created for purse-seine fishery.
- 4) Purse seine limits should be deepened to 50 meters isobath.
- 5) To have more than one generator onboard in purse seine light boats should be banned.
- 6) Use of light in depths shallower than 50 meters in purse-seine fishery should be banned.
- 7) All kinds of coastal seine fisheries should be banned by the year 2000.

Only proposal 7 has been accepted by the Ministry of Agriculture changing the time limit to 2001 and confining the restricted area to the Aegean.

Re.IV. Field research activities to monitor the status of the monk seal; observations and cave checks have been continued in the Foca Protected Area. Furthermore, seal sighting information has been collected from fishermen and locals. Through the reporting period, 160 observations were conducted from the previously determined observation spots including 3 new observatories in the Yeni Foca area. Seals were sighted in 12 (7.5%) of the observations. 83 seal sightings including the staff's observations have been accounted. 596 visits to the 7 caves used by the seals were performed and in 19 of them (3.2 %) evidence of cave usage has been found. Furthermore on 2 occasions seal evidence has been collected from an open beach on Hayirsiz Island. During the research activities new juvenile and young adult seals have been identified and named Fatma and Nevin respectively. Sühendan and Emine were the other identified seals encountered by the research team. Seal sighting records from Cesme (6 sightings of which 2 of them relate to dead specimens) and Karaburun Peninsula (4 sightings from fish farms) have been collected as well.

The discovery of an ailing seal at Cesme on 28 February 1999 was reported to SAD-AFAG. After a week of follow up, the seal had died. The tissue samples were taken from its carcass for virological, bacteriological, genetic, heavy metal & PCB analyses and was subsequently dispatched to Ministry of Agriculture's Veterinary Institute, Istanbul University's Aqua Products Department and ERAMUS University of the Netherlands. A viral infection is expected to be revealed as the cause of the death.

MEDITERRANEAN:

re.1. The lobbying activities on local decision-makers were focused on Bozyazi, one of the four administrative district remaining within the Cilician Basin project area. The governor and the mayor of the town have been visited regularly to discuss the coastal environmental problems within the project areas and newly established protected zones. Together with the governor two major projects concerning fisheries and pollution have been initiated. These are:

i) Just before the existing project period a meeting had been held between fishermen and the governor. At the end of this meeting it had been realised that although some of the local fishermen are ready to report illegal activities taking place around them, they do not have any means, such as VHF, to do this. We prepared sets of options to establish a communication network among local fishermen and the coast guard, including a radio station. Another of the options, buying a cellular phone for each of the fishermen was found to be reasonable by the governor and he promised to seek finance to realise this project.

ii) Part of a newly created protected area is used as garbage storage by the local municipality. Research has been conducted on this problem and a report indicating the number of houses dumping their garbage in this area. Seasonal variation in the total amount of garbage dumped and the origin of the people using that dumping area, was prepared and submitted to the governor and the mayor. The most striking point in this report was that almost 2/3 of the garbage is produced by the owner of the secondary houses, who only comprise less than 10% of the total population. Upon receipt of the report, the mayor agreed to remove the dumping site to another place out side the protected area and the governor promised to provide two trucks and a bulldozer to remove the garbage. The best dumping site was determined by the project team, but later it was discovered that the decision of the major was not adequate to use the new site, without going through a long bureaucratic change, including 2 Ministries (Ministry of Forestry and Ministry of Treasury) and the Central Governor at Mersin. In October, we completed the bureaucratic steps and are now waiting for the result. We are preparing a garbage management plan to improve recycling and to reduce the total amount of garbage.

The governor has also agreed to organise a local environmental conservation committee and we were asked to give a series of seminars to the people who may participate actively in the committee.

In the second half of the project period Turkey recently experienced elections and renewed its central and local governments. After the election most of the weak contacts that were established with the officers, deceased. To renew the contacts, the new mayors were visited. The project has been introduced and information about the progress of the project has been given to them. The major problem of these towns within the project area is the lack of income. The only hope of the new administrators to increase the income to their municipalities is tourism. During these visits it was repeatedly underlined that the ultimate aim of the monk seal conservation project is not only to protect the species, but the environment in which they live. It was also to remind them that if the project reaches its goal, the seals living within their town will draw international attraction and the town will be popular worldwide. Various examples of successful conservation - tourism attempts, like Medes Island, in Spain and Mira Mare in Italy were introduced to them. Therefore the protected sites established recently is not a factor undermining the tourism potential of the region, but to the contrary conserves the natural beauties which will eventually attract environmentally concerned tourists in the very near future.

As noted above, the important seal habitats in the area have already been declared as First-Degree Natural Sites by the Turkish Ministry of Culture, effectively prohibiting development. Another important step has now been taken to reverse the plight of monk seals in the Cilician Basin. The problems of the small scale fishermen revealed after the meetings carried out regularly, has been summarised along with the solutions for each town in a form of a report and a recommendation letter addressing the Ministry of Agriculture and Rural Affairs. Almost all the fishermen operating in the region (~130) signed this report. During the annual working group and advisory committee meetings, which were participated by one of the project members, this issue has been discussed in depth and consequently the Turkish Ministry of Agriculture and Rural Affairs (through the Fisheries Circular dated 26 January 1999) has banned all types of trawl and purse seine fishing around seal habitats along the Cilician coast. The newly established protection zone covers almost 15 nautical miles. A relatively small area surrounding important seal breeding caves has also been established as

a 'No-Fishing-Zone' by the same ministry. It is hoped that vulnerable pups will now be safeguarded against entanglement and drowning. During the last 5 years, four pups were found entangled in fishing nets, three of them dead.

It is evident that establishing enforcement does not mean much unless implementation is assured. While patrolling has been intensified following the deployment of a Coast Guard vessel, doubts remain over its effectiveness in covering such a wide geographical area. Until recently, close ties between small-scale fishermen and trawler operators hampered Coast Guard activities. Despite the fact that industrial-scale fishing has been largely responsible for driving them into poverty, there were often family ties between the two groups, and artisanal fishers also depended upon the trawlers for small, cheap, fish bait. As a result of a sustained education programs among local fishermen, those connections are now being dissolved. A significant portion of the fishermen are now ready to report illegal activities undermining the marine ecosystem. To encourage a reporting tradition among local fishermen, some selected individuals were supplied with mobile phones, thereby creating a discreet communications network linking the Coast Guard, the local governor, and the security forces. The budget of this activity was fulfilled partially by the local governor, partly from the SAD-AFAG's own budget and partly from the fishermen themselves. As a result of this cooperation, a trawl boat illegally and repeatedly fishing in the area has been reported to the public prosecutor and the boat has been confiscated.

To increase acceptance of the project by the local community and integrate young people in the environmental issues, a clean-up competition was organised at the most crowded beach of Bozyazi. The children living in the secondary houses around the beach were asked to collect as much man-made remnants in the sea as possible. Those who collected the largest amount of garbage were invited to take part in the cave survey activity. Three children, aged 10-14 took part in fun-filled activities and visited monk seal habitats with the research team.

Re. 2. For the Fisheries Circular of year 1999-2000 two sites were determined, one as a no-trawl zone and the other as a no-fish zone. A detailed report has been prepared and sent to the Ministry of Agriculture and Rural Affairs.

Two locations within the new protected zones were being used as garbage dumping sites by two towns, namely Bozyazi and Anamur. The majors of these towns were warned about the situation. The governor and the mayor of Bozyazi immediately stopped dumping in the protected area. On 8th June 1999, the dumping site was moved and cleaned by the facilities provided by the Municipality. We are hoping to remove and clean the other dumping site immediately.

A comprehensive report examining the illegal fisheries activities in the region was submitted to the Commander of the Coast Guard Headquarters, whilst he was visiting the area during the last reporting period. Consequently the Headquarters launched an additional powerful speedboat at Bozyazi harbour. This new boat has remarkably increased the efficiency of the coast guarding activities in the region.

The new protected area was monitored regularly and during the surveys any infringement against regulations were reported to the governmental authorities. As a consequence of monitoring attempts and our reports sent to the authorities, constructions of a holiday village and of a house have been halted and the owners fined. The project team is continuing to monitor the area for further infringements.

At least once a week the coast guard commander at the Bozyazi Marine has been visited. The locals known to use explosives were reported by name and address. The developments taking place in the area were reported to the coast guard headquarters in Ankara. The project leader was interviewed by a TV station crew about the ever-increasing coast guarding activities and the active participation of the locals in surveillance of illegal fishery.

The trawl survey to assess and monitor the state of the fish stocks was carried out on 4th of May 1999. The results of the survey were compared with the other fisheries surveys carried out previously on the same fishing grounds. The report of the survey has been submitted to the MARA (annex 1).

Re. 3. Fish stocks in the Cilician Basin have always been meager compared to other basins where the continental shelf is wide and where the rivers nourish the ecosystem with nutrients. However, socio-economic deprivation in the area drove many inhabitants to fishing. Despite limited fish stocks, commercial demand has driven market prices higher and spurred growth in the industry. Small artisanal boats were then replaced by large trawlers and purse seiners, with the inevitable result that fish stocks outside the three-mile fisheries zone were immediately depleted. Under existing law, this zone is reserved for small-scale fisheries and banned to trawlers in order to protect Posidonia meadows and fish nursery grounds. However, with the trawlers suffering a drastic reduction in catch, their infraction of the coastal zone became inevitable. A joint research program has been initiated by the Middle East Technical University, the Turkish Ministry of Agriculture and Rural Affairs and the Underwater Research Society - Mediterranean Seal Research Group (SAD-AFAG), to monitor the recovery of the marine ecosystem in the absence of large scale fisheries. The first phase of the fisheries research carried out in the region on 24th May 1999 indicated an abrupt decline in the size of fish stocks, as well as in species diversity (Annex 1). There is also some evidence that indicates that in the region near to the port, where the coast guard boat is based, the recovery of the stock is already underway. It is therefore hoped that further results of the research, if demonstrably successful, could act as a persuasive model in marine and fisheries conservation in many other critical monk seal areas.

Use of explosives for fishery purpose is a common application in the region. Not only coastal fishermen use dynamite in certain seasons for certain school forming migratory fishes but also some of the locals practice explosives for fishing. An extensive survey has been carried out among the fishermen and the hazards given to the ecosystem by the explosives were explained to them. They were warned that the use of explosives for fishery is one of the main factors undermining the fish stocks, coastal ecosystem and in turn their own livelihood. Finally they were asked to terminate such activities. By their help and support, a list of locals known to use explosives was prepared and sent to the security forces, the governor and the coast guard commander. Although there are still some people practicing explosives there is a remarkable reduction in general.

Re. 4. The project area, which was limited to Cape Anamur in the west, was expanded to Gazipasa and the area was surveyed 4 times, during which at least one individual seal was sighted. During these visits 6 new active seal caves were discovered. This new area holds pristine habitat away from illegal trawlers and holiday villages. We believe that there are still more undiscovered monk seal caves in the area. A more detailed survey is required to uncover them.

The total number of identified seals in the Cilician basin has increased to 18. As the number of individuals increases, the risk of recurrent counts is also increased. In order to avoid overestimation of the population size the method of identification has improved (see Section 4). The results of the monk seal population size assessment studies have been compiled in a scientific article and will be submitted in a journal soon.

One student from the Middle East Technical University Institute of Marine Sciences was sent to a workshop on Population Viability Analysis. She discussed the beneficiaries and shortcoming of applying PVA to monk seal populations.

3.1 Constraints and obstacles encountered

CENTRAL AEGEAN:

- 1) Habitat explorations have not been performed on the coasts between Yeni Foca - Foca and Karaburun Peninsula
- 2) Tele-cameras/video cameras have not been mounted in the important monk seal caves.
- 3) Advocacy and preparation of a feasibility report in order to obtain the prohibition of the trawl gear for fishing in seal sites of Turkey, particularly in Foca Karaburun Regions has not been realised.
- 4) Advocating at the Ministry of Agriculture for extension of specific fishery regulations applied in Foca towards Yeni Foca and Gediz Delta has not been realised.

MEDITERRANEAN:

No Constrains or obstacles has been encountered during the project term

3.2 Action(s) to overcome the constraints and obstacles

CENTRAL AEGEAN:

1) The research boat of SAD-AFAG is not in action yet. Having changed the diesel engine of the research boat and on completion of maintenance this investigation will be carried out. Extra funds have already been secured for this purpose, although they have not yet been received from WWF-Belgium.

2) Tele-camera /video camera mounting to the potential monk seal caves to observe the behaviour of the species needs extra funds as well. For this purpose extra funds have already been secured although they are again yet to be received from WWF-Belgium.

3-4)Eventhough the Local Monk Seal Committee comprises of the Local Councillor of Foca, the Mayor of Foca & Yeni Foca, and fishing cooperatives of Foca & Yeni Foca, SAD-AFAG sent an official letter to the Ministry of Agriculture in order to obtain the extension of specific fishery regulations applied in Foca towards Yeni Foca and Gediz Delta. For the 3rd time, this has not been accepted by the ministry due to the ban for the trata fishing gear which will be realised in the Aegean Coasts of Turkey by the year 2001. This ban has already been annouced by the ministry in the current aqua products circular released in March 1999. Furthermore due to this announcement by the ministry and the tight schedule of the scientists at the Aegean University the feasibility report for the trata gear has not been realised.

MEDITERRANEAN:

No Constrains or obstacles has been encountered during the project term

4. Methodology

CENTRAL AEGEAN

Public Awareness

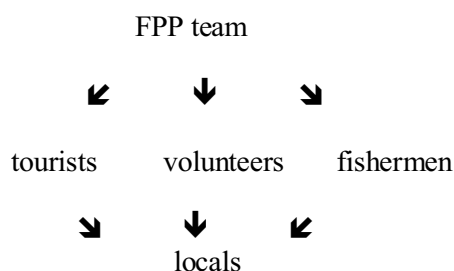
The public awareness methodology consists of several points:

- continuous contact with fishermen through:
 - daily talks
 - joining the fishermen regularly on their fishing trips
- contacts with all people working with tourists e.g.:
 - travel agencies and tour operators
 - local catering companies and hotel management
 - boat captains
 - bar owners and waiters
 - etc.
- to maintain an attractive visitor centre
- activities outside the office like slide shows, beach cleaning campaigns, stands, questionnaires
- volunteer programme with:
 - good written information outputs to inform new volunteers
 - personal contacts and agreements with responsible teachers for summer stages and training
 - national and international slide shows and lectures in Turkey and abroad to inform possible future volunteers/trainees
 - regular contact with foreign volunteer organisations
 - professional guidance for the volunteers/trainees
 - weekly activity schedules and reporting.
- to maintain a good co-operation with the Foca Municipality by regularly contacting the mayor and his staff.

Contacting tourists in Foca in order to inform them about the FPP activities might seem not very effective in the long run since most of the tourists are not staying longer than two weeks. Yet tourists are quite important for Foca therefore everything happening around tourists will attract the locals' attention. Giving information to tourists over and over again makes people aware that the monk seal issue is important enough to keep repeating the same information, even if tourists only stay for a short period of time.

Also personal contacts between fishermen and volunteers can achieve the same final effect. Young people coming to Foca to spend part of their summer holiday working for the monk seals are also interested in how small scale fishermen are working (surviving) in Foca. For the students these contacts are a way to understand that rules and regulations are not easily implemented, that the best way to achieve conservation is through mutual understanding and that local people have to be considered in conservation activities. A volunteer able to understand a fisherman's feelings after a seal attack on his net might in the future result in a biologist/conservationist who can work together with local people instead of against them or without them. (see figure1)

Figure 1. Public awareness information flow:



Protection measures :

- Official letters have been given to relevant GOs and NGOs. Meetings and campaigns have been organised to solve the problems regarding nature conservation in collaboration with the Local Monk Seal Committee including TTKD-Foca, the municipality of Foca and the Fishermen Society.
- The Coast guard commander was invited to the Local Monk Seal Committee meetings to inform him on our progress since the boat is the only patrolling tool for the area.

Research :

1) Cave -checking :

Caves are checked three times a week if the weather permits, by using frogman gear and an inflatable boat. During the checks, dynamics of the beaches and traces of seals are registered. If hairs or faeces are found, they are collected for further lab analyses.

2) Seal identification :

From the field research (cave patrols and observation from specific spots) and the information gathered from fishermen, 11 individuals have been identified in Foca and Karaburun since the beginning of the project. For the identification, direct observation has been performed and photographs of the individuals have been taken, compared and evaluated. 8x30 binoculars and 250 mm focal lenses have been used for taking photographs.

MEDITERRANEAN:

Site Surveys

The following strategies were applied.

1) Interviews: In the first years of the project the priority was given to the fishermen operating in the area, although other locals were also involved. Upon realisation of the hesitation in the fishermen's answers this approach has been modified by including families, particularly wives of the fishermen.

2) Coastline search - from land: Utilising information obtained from interviews, coastline-having access from land, was searched for suitable habitats. This method was applied especially in winter and during very rough sea conditions. Meanwhile observations were made for seal sighting.

3) Coastline search - by boat: The part of the coastline which has no or very difficult access from land was surveyed by an inflatable boat or by a boat hired from local fishermen.

4) Coastline search - by diving: Some of the caves were already known by the fishermen and were described. To explore new caves having only underwater entrances, pre-defined sections of the coastline were surveyed underwater. The seal sightings and the structure of the coastline were the basic criteria for the selection of the coastal segment to be surveyed. Steep cliffs plunging sharply into the sea were also preferred.

5) Cave survey: The caves discovered by our own team during coastline surveys or described by the local people were visited to find any indication of seal presence, such as fur pieces, faeces or crawling traces on soft ground. Thereafter caves were classified as "active, potential or others".

In this period some caves, which are classified as "active" and frequently used by the seals were visited more often in order to understand cave usage behaviour of the individuals. Additionally some caves were visited with regular intervals in a day to figure out diel periodicity of cave usage.

Population Assessment

The most important basic knowledge necessary, either in a scientific work or for a conservation attempt, is a reliable estimate of population size of the species in question. As regard to endangered species, the direct counting technique via individual recognition is an appropriate method since these species are generally very few in numbers. The major problem in direct counting is the stretch of the region on which the individuals are distributed. The time needed to survey the entire extent of a habitat usually is long enough to increase the

risk of recurrent counts. The only way to eliminate recurrent counting is to document and identify each individual within the population.

The length, colour, scars and natural marks on the body and ratios on the body of an individual are some of the characteristics used in the identification of an individual. To see these characteristics seals are observed at the most probable encounter sites, such as around resting caves or feeding grounds. As the individual specific peculiarities of the seals are observed they are noted. Observations made by naked eye, are however prone to bias, therefore photography is a preferred technique.

From the beginning of the project a significant number of seal photographs has been taken during cave surveys and observations. These photographs were catalogued and used to improve individual recognition, a method known as photo-documentation. The same approach has been used for video records. We have several close-up video shots of the seals, in which distinctive features are conspicuous.

The seals are timid and shy animals. The most probable observation time is at sun rise and sun set, when the light is too dim for photography and hence requires expensive equipment and considerable experience in photography. These two factors are not always available. In the project, the new approach is disregarding the quality concerns to take as many photos as possible from a fixed position. Additional effort is being spent to include a reference object, such as rocks, within the frame. Afterwards using precise measuring techniques, images are analysed in order to get as much information as possible. The slides are examined under binocular with micrometer attachment to facilitate precise measurements at micrometer level. The dimensions of the seal and the reference objects are compared and the size of the seal is calculated with appreciable precision. This approach even makes it possible to estimate the growth rate of the individuals.

The evaluation of the sighting records gathered during the research surveys revealed the fact that the majority of the sightings were done during cave surveys rather than observations from land. But on the other hand, it is almost impossible to take a photograph without disturbing a seal in a dark cave. During the previous reporting term an additional technique had been applied. Four monitoring equipment sets were purchased by the donations provided by PADI Foundation, USA to be left at potential haul-out sites, capable of detecting and photographing any seal as it hauls out onto the beach. This set-up records the date and time of the seal's movements in the cave and takes photos at given intervals. This data can be stored for up to three months. This mark-recognition data, as soon as it reaches significant quantity, will be used to assess the population size of the region.

Up to now a considerable number of seal pictures have been gathered in the archive. On the other hand only a very limited portion of this photographs are suitable for individual recognition. In order to utilise the seal photos on which any of the above mentioned specific characters are not visible a new technique has been adopted. In this new approach the photos (or slides) are examined under a binocular and some morphometric measurements are made, such as inner and outer inter-orbital distances, skull diameters, eye to nostrum distance etc. From these measurements the ratios are calculated and from the combination of these ratios an index for each individual is set. Utilising this new technique the indices calculated for well-known individuals were statistically compared and highly significant differences were found, which prove the validity of the new technique. The details of the analysis and the updated list on individuals in the region will be presented in a scientific journal.

Public Awareness and Education

Two important activities have been carried out. The art teachers of the schools in the town were informed about the project and asked for their help to increase the awareness and sensitisation of the youngsters. In cooperation the pupils were asked to prepare baked dough work of the monk seal and its conservation. An excellent collection has been obtained and the outcome is presented in an exhibition and at the project office. An annual drawing competition, the first of which was finalised last year, was repeated within this reporting period. The participation to the competition has increased remarkably compared to last year and the qualities of the drawing were better. The figures of the seals drawn by the children were strikingly improved. Even solely this is a good sign that the seals are getting known by a broad group of children in the region. The awards of the winners were given in a ceremony attended by the deputy governor, mayor, director of the

education board, teachers and the parents on the last day of the education term.

In addition to the above mentioned public awareness activities, information boards were prepared and presented at the private and state schools of the town. On every occasion, like national days, information stands were opened to popularise the project and the monk seals.

5 Lessons learned from the project

CENTRAL AEGEAN :

1. The urgent international transfer of the organ parts of dead monk seals according to official standards has been discovered. CITES transfer declaration has been obtained from the Ministry of Forestry. A sponsor company has arranged all the custom relations.
2. It has been found that the regular visits to the relevant ministries are of great importance to learn about important meetings and events to follow up by the SAD-AFAG Coordination office based in Ankara.
3. Activities organised to show the problems of the artisanal fishery to media and to GOs are found to be very beneficial to establish good contacts with the fishing cooperatives.
4. The written and the visual media kept people informed on the development of the project activities and the status of the seals in the region helping to keep the attention of the general public on the monk seal and marine conservation issues. This is found to be very important and received a good feedback from the general public.
5. The use of the predator nets by one or two fish farms was found to be beneficial in preventing attacks by the seals. If we had persuaded one of the fish farms to use one of these predator nets from the beginning, then maybe other adjacent farms would have followed suit.

MEDITERRANEAN:

i) There is a significant inconsistency in the results of cave surveys, observations and infrared monitor recordings. It was realised that several times observers failed to sight seals wondering about. There are several factors affecting the probability of detecting a seal swimming in the vicinity; such as the state of the sea, turbidity, cloudiness, mood of the observer, time of day, behaviour of the individual, mode of seal activity etc. Similarly on several occasions the infrared monitors failed to record seals in the cave, even though the seals were observed during the cave surveys. The reason for recording failure is because the seals are not always using the swimming platform when they rest in the cave.

Consequently the most probable method to encounter a seal is during the cave surveys, but on the other hand there are very few good quality photographs that can be used in photo-identification could be taken during cave surveys. It is also worth to noting that since direct confrontation with the seal is inevitable in cave surveys the most perturbing method is this method as well.

In the future it is therefore planned to install remote controlled infrared video cameras for photo-recognition and behavioural research.

ii) Alliance for the common enemy united fishermen and the seals (project team). People now see the seals as the key to banning trawling in the area. The seals are no longer seen as "man-eating sea devils". Quite the opposite, locals now think they are rather cute.

Yet, despite all the hopeful developments, the seals' long term future is by no means assured. The project has succeeded in Bozyazi, but there are five other towns to convert. There is a worry that if and when the trawlers are excluded, this will only bring the local fishermen and the seals back into direct conflict. Therefore continuation and even further expansion are inevitable for the long-term conservation of the seal of the region.

6 Conclusions and recommendations

CENTRAL AEGEAN:

The area is continuing to be one of the strongholds for the Mediterranean seals. However, the since wider area could not be surveyed during the reporting period. The home range as well as the preferred sites of the individuals identified could not be monitored in the adjacent regions. Most of the artisanal fishermen of the Izmir Bay support the idea of sustainable use of the fishing stocks. Better legislation in the İzmir Bay is their hope for the survival of the artisanal fishermen like the Mediterranean monk seal. To reach this goal the fishing cooperatives of the region need to work in a better organised union.

MEDITERRANEAN:

The project is progressing slowly but the steps taken so far are sound and appropriate. It is hard to conclude that the project has reached to its ultimate goal, which is to create an everlasting, self-financing, peaceful environment that is respectfully appreciated by the locals. There is still a very long way to go, and there is still a lot to learn about the seals, locals, and the attitude of the government and administrators.

7. Outputs. List of reports, policy documents, media articles

CENTRAL AEGEAN:

Publications

Güçlüsoy, H., Mo, G., Savas, Y. & Sigismondi, C. 1999. Feasibility Study for Daily Monitoring of a Potential Breeding Cave for the Mediterranean Monk Seal *Monachus monachus*. Monachus Science, Monachus Guardian Vol.2/No.1. ISSN 1480-9370. 58-61 pp.

Proceedings (presented);

Mo, G., Güçlüsoy, H., Savas, Y. & Sigismondi, C. 1999. Use of an Infrared Light Sensitive Camera for Monitoring Cave-Breeding Seals, Applications for the Mediterranean Monk Seal Conservation. 13th European Cetacean Society Annual Conference European Seals Workshop. 5 April 1999, Valencia, Spain.

Savaş, Y. & Güçlüsoy, H. 1999. Izmir Körfezi'nde Kucuk Balıkçılar ile Kiyisal Ekosistemin Karsisindaki Tehditler ve Kiyisal Ekosistemlerin Korunmasinda Su Urunleri Kooperatiflerinin Rolu. Izmir Körfezi Kiyi Balikciliginin Sorunlari Sempozyumu. 10 February 1999, Izmir, Turkey.

Savaş, Y. 1999. Documentation Techniques used in Researches on Highly Endangered Mediterranean Monk Seal *Monachus monachus*. SAD Sualti Günleri'99 Sempozyumu, 26-27 February 1999, Ankara, Turkey.

Referee approved proceedings;

Güçlüsoy *et al.* "The Participation & Financial Contribution of Volunteers to The Conservation of the Mediterranean Seal in the Central Aegean Project Turkey" MEDCOAST Conference, Antalya 1999.

Articles; written publications on national and international level;

51 articles about monk seals and the project activities were published between December'98 and June '99.

- Seals forming club, Radikal (National Newspaper), 16 July 1998.
- The last pup, Milliyet (National Newspaper), 1 September 1998.
- The last pup, Cumhuriyet (National Newspaper), 1 September 1998.
- Seal cup born in Turkey's heaven (WWF International Intranet), 16 September 1998.
- Seal cup born in Turkey's heaven (WWF News Bulletin), 15 September 1998.

- Mediterranean seals are waiting to be adopted, Yeni Asir (Regional Newspaper), 14 October 1998.
- Seals are happy, Milliyet (National Newspaper), 17 October 1998.
- Henry Ford European Conservation Awards, Hurriyet (National Newspaper), 30 October 1998
- Fathers of the seals, Milliyet Ege (Regional Newspaper), 23 November 1998
- Seals habitat has been declared as 1st degree protected area (National Newspaper), 3 December 1998.
- No possession for our seas. Milliyet-Ege (Regional Newspaper), 21 December 1998.
- The meeting for saving the seals is tomorrow. Cumhuriyet (National Newspaper), 22 December 1998.
- Let's attend to Henry Ford European Conservation Awards. Hurriyet (National Newspaper), 31 January 1999.
- Coastal fishery is under discussion. Milliyet-Ege (Regional Newspaper), 11 February 1999.
- The problems of the coastal fishery. Cumhuriyet (National Newspaper), 11 February 1999.
- We saw the sea as a garbage deposition area. Yeni Asir (Regional Newspaper), 11 February 1999.
- Otosan Conservation Award. Milliyet-Ege, (Regional Newspaper), 06 February 1999.
- Looking for a place for the seals. Cumhuriyet, (National Newspaper), 26 February 1999.
- Mursaloğlu faded away, Cumhuriyet. (National Newspaper), 24 February 1999.
- Help for the sick seal in Cesme. Yeni Yuzyil (National Newspaper), 05 March 1999.
- Afford for the saving of the Mediterranean Seal. Cumhuriyet (National Newspaper), 05 March 1999.
- Another seal had died. Milliyet (National Newspaper), 10 March 1999.
- The Mediterranean Seal died in Cesme. Hurriyet (National Newspaper), 10 March 1999.
- The polluted bay killed the seal. Yeni Asir (Regional Newspaper), 10 Marc 1999.
- The bones of the seal will be exhibited. Yeni Asir (Regional Newspaper), 11 March 1999.
- Another seal died in Foca. Cumhuriyet, (National Newspaper), 09 March 1999.
- The seals are our children. Cumhuriyet (National Newspaper), 17 March 1999.
- A camera for the living of the seals. Yeni Yuzyil (National Newspaper), 02 April 1999.
- The secret life of seals. Zaman (National Newspaper), 02 April 1999.
- The seals are under observation. Gazete Ege (Regional Newspaper), 02 April 1999.
- The seals are under observation. Hurriyet (National Newspaper), 02 April 1999.
- The secret shot for the Mediterranean Seals. Cumhuriyet (National Newspaper), 02 April 1999.
- The paparazzi's following the seals. Radikal (National Newspaper), 02 April 1999.
- The seals under observation. Turkiye (National Newspaper), 02 April 1999.
- The Mediterranean Seals are under threat. Aksam, (National Newspaper), 11 April 1999.
- Why did the seals died? Zaman, (National Newspaper), 11 April 1999.
- The new threat for the seals. Cumhuriyet, (National Newspaper), 11 April 1999.
- Opposition for the new aqua products circular. Cumhuriyet (National Newspaper), 24 April 1999.
- The seals are under threat. Gazete Ege (Regional Newspaper), 11 April 1999.
- The Mediterranean seals and the Carettas will be saved. Aksam (National Newspaper), 19 April 1999.
- Prohibition for the seal slaughter. Cumhuriyet (National Newspaper). 21 April 1999.
- The seals are saved. Local Newspaper
- One of the last seals. Donna (Monthly), April 1999.
- The seals will be protected. Cumhuriyet (National Newspaper), 03 June 1999.
- Environmental anger increasing. Hurriyet, 06 June 1999.
- Mediterranean seals could be adopted. Gazete Ege, (Regional Newspaper) 28 June 1999.
- Mediterranean seal volunteer. Cumhuriyet, (National Newspaper) 29 June 1999.
- Seals are the symbol of Foca. Gazete Ege (Regional Newspaper - Foca Supplementary) 28 June 1999.
- Henry ford European conservation awards went to Foca. Gazete Ege (Regional Newspaper - Foca

Supplementary) 28 June 1999.

- Conservation families for the Mediterranean seal. Hurriyet-Ege (Regional Newspaper). 28 June 1999.
- Phocceans made peace with the seals. Gazete Ege (Regional Newspaper). 29 June 1999.

Television and radio programmes

- TRT-1 Radio - "Mediterranean seal and SAD-AFAG" 15 minutes magazine programme. July 1998
- Documentary Contest of Festival Foça - "Foça" 3 minutes in 26' documentary. July 1998
- NTV - "Voices and Colours" 5 minutes magazine programme August 1998.
- TRT-1 TV - "Internet" 26 minutes magazine programme September 1998. (www.ecovolunteer.org and www.monachus.org)
- Radyo 9 - "News" 5 minutes magazine programme October 1998.
- NTV - "Gift to the Earth Campaign" 5 minutes November 1998.
- TRT-Int "Mediterranean Monk Seals & Foca" 30 minutes alive magazine programme. December 1998.
- TRT - "Patrol Boat Cevre - Back to Foca Protected Area" 6 minutes news item. January 1999.
- Radio Pop "Adoption Campaign" 6 minutes live news item. March 1999.
- TRT "Radio programme" 6minutes live news item. March 1999.
- Kanal Ege "Dead of Zennube from Cesme" 6 minutes news item multiply broadcasted. March 1999.
- Capitol Radio "Dead of Zennube from Cesme" news item. April 1999.
- NTV "Noah's Ship" news item. April 1999.
- NTV "Sealwatch" news item. May 1999.

Other reports and documents produced

- "Fethiye Faralya Report" to be a party of court case to support the Ministry of Culture for the protection of Faralya Fethiye because of having 2 important monk seal breeding caves.
- "Report for the Annual Aqua Products Circular" to recommend new items for the circular. i.e. banning of coastal trawling by the year of 2000 and increasing the depth limits of Purse-seiners from 16 meters to 50 meters.
- "Financial Proposal" for the WWF Belgium Campaign funds.
- "2 informative leaflets" regarding the Mediterranean seals and the Aegean part of the project
- "Autopsy Report of Zennube & General Report of Zennube" produced after the dead of seal Zennube in Cesme.

MEDITERRANEAN:

Proceedings (presented);

Gücü *et al.* 1998. Conservation of the Mediterranean Monk Seal in Turkey - Central Aegean and Cilician Basin Projects. United Nations Environment Programme Mediterranean Action Plan Meetings for the Evaluation of the Action Plans for Marine Mammals. Arta Greece 29-31 October 1998 1p. (Poster Presentation).

Seminars

A series of slide shows aiming tourists were presented on 8 August 1998, 9 August 1998, 15 August 1998 at different holiday resorts in Bozyazi

"Let's learn about the Mediterranean Monk Seal". An introductory lecture at METU Foundation College, Mersin on 6th January 1999 by Ali Cemal Gücü

"Documenting an endangered species - Mediterranean Monk Seal" A seminar presented during Sualti Gunleri 99, 26 February 1999, by Ali Cemal Gücü Ankara (Symposium Abstracts will be published soon)

"Studies carried out by Middle East Technical University Institute of Marine Sciences for the conservation of the Mediterranean Monk Seal and its habitats". A briefing for the Minister of Environment of the new cabinet, Mr Fevzi Aytekin, his undersecretary, and for the Governor of Mersin City on 27 February 1999, by

Ali Cemal Gücü.

"Mediterranean Monk Seal *Monachus monachus* Hermann 1779 in the Cilician Basin - From extinction to recovery – A seminar given at Middle East Technical University Institute of Marine Sciences, Mersin on 26 March 1999 by Ali Cemal Gücü

"The Cilician Basin Monk Seal Conservation Project" A seminar given at Mersin University Faculty of Tourism, Anamur on 19 February 1999 by Ali Cemal Gücü

"The treats facing Mediterranean Monk Seal *Monachus monachus* in the Cilician Basin - with an emphasis to cave diving" . A seminar given to the diving instructors of Adana, at PINEPARK Hotel, Mersin on 1st May 1999 by Ali Cemal Gücü

Articles; written publications on national and international level;

"The Seals of Mersin Under the Protection of METU Marine Sciences Institute". **ODTÜ'LÜ**, quarterly magazine of the Middle East Technical University. Summer 1998. No. 19. 20-21 pp. (Turkish).

"Let's Learn About Mediterranean Monk Seal" **Akdeniz Postasi**, Daily Local Newspaper, 5 October 1998

" Beauties of Anamur" **Anamur Gercek**, Monthly Newspapers, 15 October 1998

"New Discoveries in Cilicia - Researchers discover a hitherto unknown population of Mediterranean Monk Seals along Turkey's Mediterranean Coast", **The Monachus Guardian** <http://www.monachus.org> . An international biannual electronic newsletter, December 1998

"The Fishermen of Bozyazi want to protect the nature". **Aksam** Turkish daily newspaper, 1 February, 1999

"An important step for the management of Bozyazi and Aydıncık fisheries". **Bozyazi Egitim**, Monthly local newspaper, 2 May, 1999

"The first step is taken to protect an ecological heritage, Cape Kizilliman". ". **Akdeniz Postasi**, Weekly local newspaper, 24 June 1999

"An important step for the management of Bozyazi and Aydıncık fisheries". **Akdeniz Postasi**, Weekly local newspaper, 17 May, 1999

"Wildlife Campaigning - Action Stations - Mediterranean Monk Seal Conservation Project". **BBC Wildlife Magazine**, June 1999

An article about the monk seal conservation project. **Zaman** Daily Turkish Newspaper, 1 June 1999

"An interesting approach to save Mediterranean Monk Seal - Seal Line" **Hurriyet Cukurova**, Daily Turkish Newspaper, 5 June 1999

"Monk seal protection with mobile phones " **Hurriyet** , Daily Turkish Newspaper, 6 June 1999

"The seals of the Mersin is under protection by METU. **Sariyayla** Monthly magazine. December 1998

"A cooperation with the fishermen for the conservation of the seals" 10 June 1999 **Mersin** Daily local newspaper,

"Wanted: Recovering Fish Stocks". **The Monachus Guardian**. <http://www.monachus.org> Vol 2. No:1 May 1999 An international biannual electronic newsletter

Television and radio programmes

An interview on TRT 1 Cukurova Radio - A national Radio Station, 9 September 1998, 20 min.

An interview on Radio Metropol - A local Radio Station, 21 September 1998.

TRT 1 - A national TV Station, 18th June 1999.

NTV - A national TV Station, 1st June 1999, 4 min.

KTV - A local TV Station, 7th June 1999, 3.5 hours, live

Samanyolu TV - A national TV Station, 13 June 1999.

An interview on K33 TV - A local TV Station, 15 June 1999.

An interview on TRT 1 Cukurova Radio - A national Radio Station, 2 July 1999, 10 min.

Other reports and documents produced

"1st Preliminary survey report of the monitoring project on recovery rate of an deteriorated ecosystem recently reserved as a protected area. - Detrimental effects of trawl fishery on the fish stocks on a narrow continental shelf". Submitted to the Ministry of Agriculture and Rural Affairs and State Planning Office. (see Annex 1)

8. Equipment status report. (Vehicles and items of capital equipment purchased with project funds)

CENTRAL AEGEAN:

Computer: is not sufficient for the purposes. A new PC is needed to facilitate our work by using Internet. Personal PC of the project executants is used currently.

Dot Matrix Printer: Sufficient for the correspondence. However for the preparation of the reports and scientific documents it is necessary to have a better quality printer.

Fax & Tel: It is in good condition and fundamental for the correspondence and communication.

TV & Video Recorder: Both are in good condition The system is fundamental to show monk seal and environmental related videos to schoolchildren and to interested people.

Underwater Equipment: 1 wet suit fundamental for field research is in good condition. Furthermore underwater pulley and underwater cave torch are also fundamental in the new areas to monitor the potential caves of the monk seal

Camera: is personal equipment of project executants and in bad condition. A new auto-focus camera is needed.

Inflatable Boat: A new inflatable donated by the 2 Dutch and 1 German Foundations (see acknowledgments) is in good condition.

MEDITERRANEAN:

Underwater torch (for caves): is in good condition.

Underwater torch (for emergency): is in good condition.

Underwater Mask: is in good condition.

Camping Lamp: is in good condition.

Vivitar 70-210 mm zoom lens for Nikon: is in good condition.

500 mm Tele objective & Tripod for ZENITH: is in good condition.

Diving Suit: is in good condition.

Underwater strobe (for NIKONOS V): is in good condition.

Video camera: is in good condition.

Scuba diving equipment: is in good condition.

Acronyms. Avoid the use of acronyms if possible, but list those used (e.g. WTO – World Trade Organisation)

ASPA : Authority for the Specially Protected Areas
FPA : Foca Protected Area
GO : Governmental organisation
MEDCOAST: Mediterranean Coasts (NGO)
MARA: Ministry of Agriculture and Rural Affairs
METU: Middle East Technical University
MoE: Ministry of Environment
NGO: Non-governmental organisation
NMSC : National Monk Seal Committee
NTV : Nergis Television
PVA : Population Viability Analyses
SAD : Underwater Research Society
SAD-AFAG : Underwater Research Society / Mediterranean Seal Research Group
SPA : Specially Protected Area
TRT : Turkish Radio and Television
TUDAV: Turkish Marine Research Foundation
UN : United Nations
WWF : World Wide Fund for Nature

Acknowledgements – as required

We are deeply grateful to all the fishermen within the Foca Protected Area and other areas who are supporting the project with sighting information and logistics. We would also like to thank the municipality of Foca especially former Mayor A. Nihat Dirim. Our thanks also to the Authorities of the Specially Protected Areas, who are supporting us by providing public awareness materials and who realised the restriction of the Siren Rocks. To all our volunteers: we are grateful for the support and trust confided in our project and us and for all the work they did! We would also like to thank the Ecovolunteer Programme for providing us with volunteers from western Europe especially from The Netherlands. We would like to thank Dr. Peter J.H. van Bree who helped us to renew our inflatable research boat as well as his critics on the project progress. We would like to acknowledge Van Teinhoven Foundation (NL), Lucie Burger Foundation (NL) and Society For the Protection of the Marine Mammals (D) for the donation of the inflatable boat. We would also like to acknowledge the Henry Ford Conservation Awards financial contribution to our activities. We are deeply grateful to WWF-Mediterranean Programme Office as our main donor.

Annex 1

PRELIMINARY SURVEY REPORT OF THE MONITORING PROJECT ON RECOVERY RATE OF AN DETERIORATED ECOSYSTEM RECENTLY RESERVED AS A PROTECTED AREA

- Detrimental Effects Of Trawl Fishery On The Fish Stocks On A Narrow Continental Shelf
(Summary of results)

In May 1999, five trawl hauls were taken from infralittoral and circalittoral zones of five different localities selected inside and outside of the recently established protected zone. The aim of this study is to compare the results with the outcomes of the study previously carried out in 1984 at the same location and time of the year, in order to understand the current status of the fish stocks in this area.

Table 2. The list of the fishes caught and the amount of the catch (gr / 30 min) of each species in May 1984 and the diversity indices and the percentages of the Lessepsian and economical fish species of the total catch.

Duration	30	30	30		30	30
Date / Location	May-84 / West of Kizilliman			May-84 / East of Kizilliman		
Species / Depth	II (infralit.)	III (circalit.)	III (circalit.)	I	II (infralit.)	III (circalit.)
<i>Cynoglossus sinusarabici</i>	200	300				
<i>Lagocephalus spadiceus</i>	100		160			
<i>Saurida undosquamis</i>	900		1140		382	300
<i>Stephanolepis diaspros</i>	700	320	40		1228	
<i>Upeneus asymmetricus</i>	140				109	
<i>Upeneus moluccensis</i>			500			500
Lessepsian Total	2040	620	1840	-	1719	800
<i>Arnoglossus laterna</i>	300	4	200		28	300
<i>Blennius ocellaris</i>			100			100
<i>Boops boops</i>	800					
<i>Bothus podas</i>	500	300	460		764	
<i>Citharus linguatula</i>	100		600			500
<i>Dasyatis pastinaca</i>					2318	
<i>Dentex dentex</i>		1900				
<i>Diplodus annularis</i>	3600	700			682	
<i>Diplodus vulgaris</i>	3100	4100			682	
<i>Lepidotrigla cavillone</i>	300		1600			240
<i>Macrorhamphosus scolopax</i>						200
<i>Merluccius merluccius</i>			700			100
<i>Mullus barbatus</i>	13300	16500	6600		16228	10900
<i>Mullus surmuletus</i>	200	3100			2182	
<i>Mustelus mustelus</i>			1640			
<i>Pagellus acarne</i>	100					200
<i>Pagellus erythrinus</i>	4000	4900	2660		109	5600
<i>Pagrus ehrenbergi</i>					409	
<i>Pagrus pagrus</i>	4300	8100			2100	
<i>Raja miraletus</i>	2700				818	
<i>Scorpaena notata</i>	1200	3300			55	40
<i>Scorpaena porcus</i>	1200		140			
<i>Scorpaena scropha</i>		340				
<i>Serranus cabrilla</i>	4900	1300				200
<i>Serranus hepatus</i>	700	400	340			
<i>Solea vulgaris</i>			500			
<i>Spicara flexuosa</i>	2500	40	1500		96	1300
<i>Synodus saurus</i>			1000			
<i>Trachinus draco</i>			700		628	
<i>Trachurus trachurus</i>						300
<i>Trigla lineata</i>	1500	2500	300		328	740
<i>Trigla lucerna</i>	1200		400			
<i>Uranoscopus scaber</i>	1500		600			300
<i>Xyrichthys novacula</i>					137	
<i>Zeus faber</i>		4				100
Mediterranean Total	48000	47488	20040	-	27560	21120
Total	50040	48108	21880	-	29279	21920
total number of species	26	18	22	-	19	18
number of economical species	14	11	11	-	11	10
% economical species	54	61	50	-	58	56
Economical species biomass						
% economical species biomass						
H' index	3.7556025	3.0143508	3.6028481		2.5478743	2.3784821
dominance	0.1131427	0.1779222	0.132242		0.3294732	0.3190124
number of Lessepsian species	5	2	4	-	3	2
% Lessepsian species	19	11	18	-	16	11
Lessepsian species biomass	2040	620	1840	-	1719	800
% Lessepsian species biomass	4.08	1.29	8.41	-	5.87	3.65
<i>Octopus vulgaris</i>	1200	3900	900			
<i>Sepia officinalis</i>	3000	400	17900			400
<i>Penaeus sp.</i>			500			
<i>Posidonia oceanica</i>			40		1228	

Table 3. The list of the fishes caught and the amount of the catch (gr / 30 min) of each species in May 1999 and the diversity indices and the percentages of the Lessepsian and economical fish species of the total catch.

Duration	30	30	30	30	30	30
Date / Location	May-99 / West of Kizilliman			May-99 / East of Kizilliman		
Species / Depth	I	II (infralit.)	III (circalit.)	I	II (infralit.)	III (circalit.)
<i>Saurida undosquamis</i>		92				
<i>Upeneus moluccensis</i>		3035	106			40
<i>Upeneus assymmetricus</i>		32			79	
Lessepsian Total	-	3159	106	-	79	40
<i>Arnoglossus laterna</i>						11
<i>Balistes carolinensis</i>					74	
<i>Blennius ocellaris</i>						5
<i>Boops boops</i>		32	238			
<i>Bothus podas podas</i>					53	
<i>Citharus linguatula</i>						3
<i>Coris julis</i>		5			42	
<i>Diplodus annularis</i>		844	739		216	179
<i>Diplodus vulgaris</i>			924			
<i>Hippocampus ramulosus</i>						5
<i>Lepidotrigla cavillone</i>						11
<i>Microchirus ocellatus</i>					5	
<i>Mullus barbatus</i>		475	185		84	264
<i>Mullus surmuletus</i>		26	343			264
<i>Mustelus mustelus</i>			739			
<i>Myliobatis aquila</i>		528				
<i>Pagellus acarne</i>			290			
<i>Pagellus erythrinus</i>		633	369		396	185
<i>Pagrus pagrus</i>			290			84
<i>Raja radula</i>					132	
<i>Rhinobatus rhinobatus</i>						1056
<i>Scorpaena scrofa</i>			158		3	106
<i>Scorpaena notata</i>			53			
<i>Scorpaena porcus</i>		13				
<i>Serranus cabrilla</i>		63	844		169	264
<i>Serranus hepatus</i>		53	185		3	106
<i>Spicara flexuosa</i>		633	238			206
<i>Spicara smaris</i>		185	765		53	121
<i>Symphodus ocellatus</i>		3	11		5	3
<i>Syngnathus sp.</i>					3	
<i>Synodus saurus</i>					765	
<i>Trachinus araneus</i>					343	
<i>Triglaporus lastoviza</i>		13	79		26	42
<i>Uranoscopus scaber</i>					69	
<i>Zeus faber</i>					53	3
Mediterranean Total	-	3507	6449	-	2494	2916
Total	-	6666	6555	-	2573	2956
total number of species	-	17	18	-	20	20
number of economical species	-	10	10	-	5	8
% economical species	-	59	56	-	25	40
Economical species biomass						
% economical species						
H' index		2.602049	3.7164573		3.2815913	3.0484469
dominance		0.2538985	0.0905985		0.1491345	0.1685651
number of Lessepsian species	-	3	1	-	1	1
% Lessepsian species	-	18	6	-	5	5
Lessepsian species biomass	-	3159	106	-	79	40
% Lessepsian species biomass	-	47	2	-	3	1
<i>Octopus vulgaris</i>			264		106	343
<i>Sepia officinalis</i>			185			90

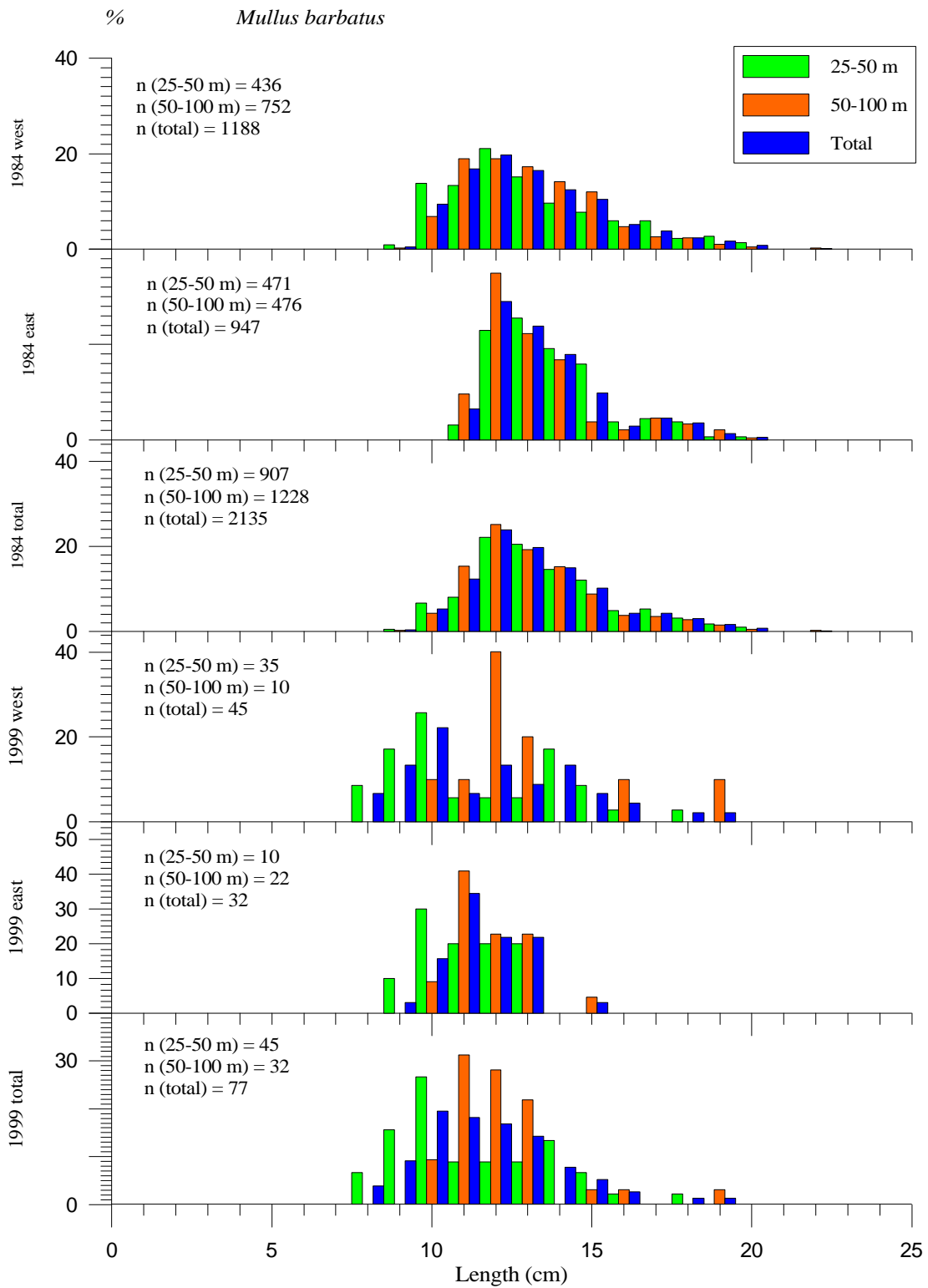


Figure 1. Length-frequency distribution of red mullet, *Mullus barbatus* in 1984 and 1999 surveys. Green colour indicates the percentage of red mullet in the catch from the infralittoral zone (25-50 m), red colour in circalittoral zone (50-100 m), and blue colour is the total of infralittoral and circalittoral zones.

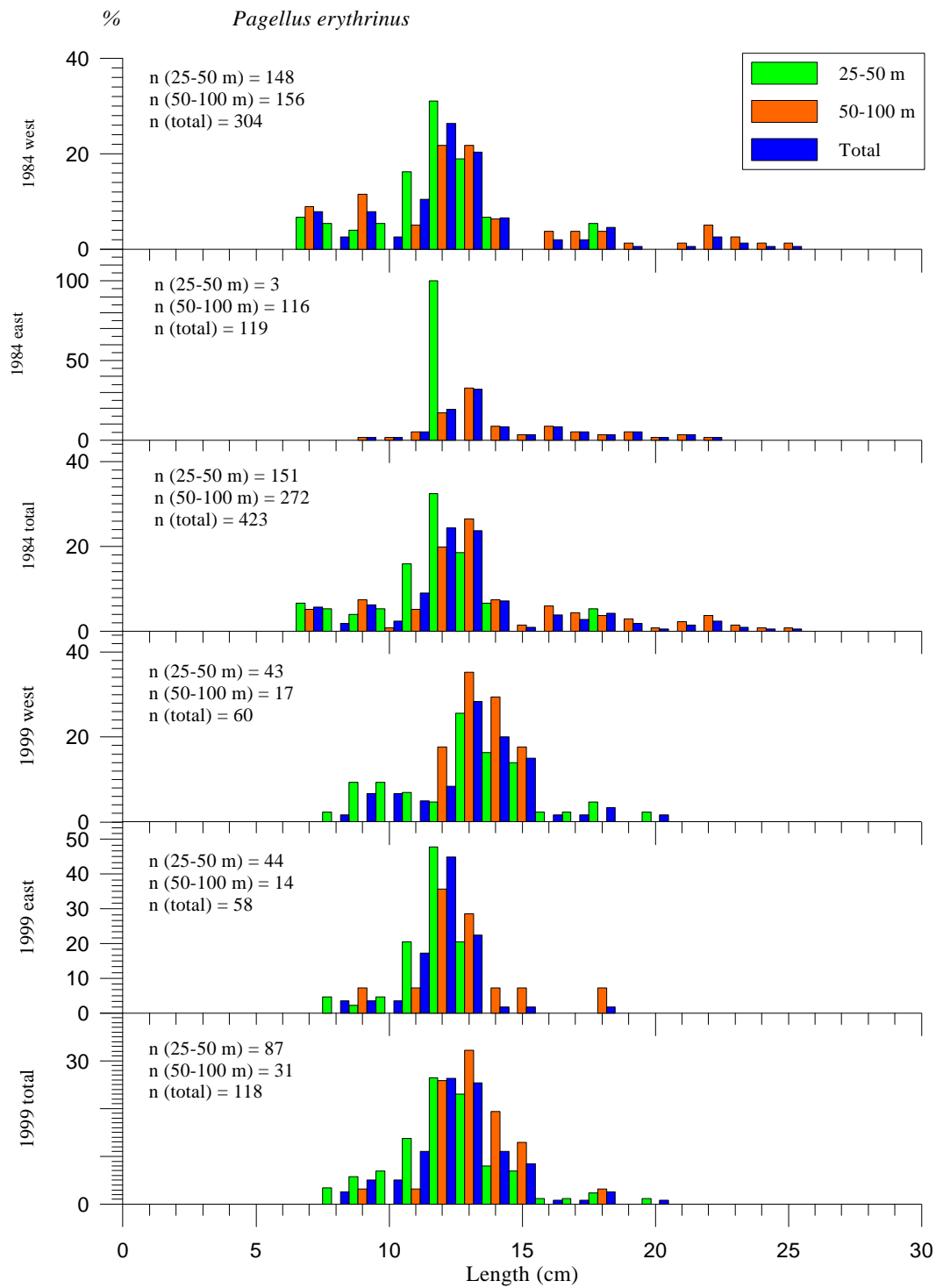


Figure 1. Length-frequency distribution of bream, *Pagellus erythrinus* in 1984 and 1999 surveys. Green colour indicates the percentage of bream in the catch from the infralittoral zone (25-50 m), red colour in circalittoral zone (50-100 m), and blue colour is the total of infralittoral and circalittoral zones.

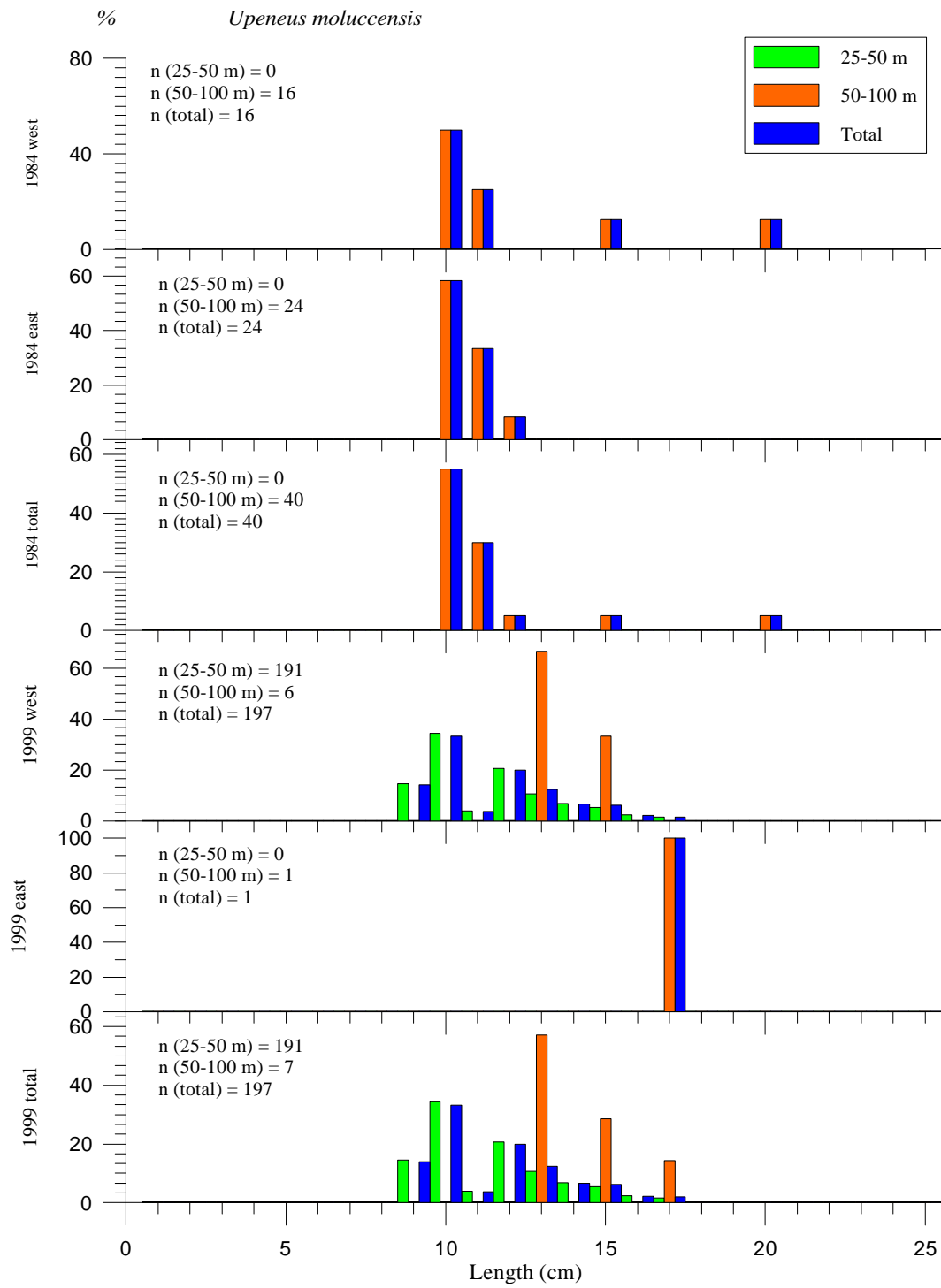


Figure 1. Length-frequency distribution of goat fish, *Upeneus moluccensis* in 1984 and 1999 surveys. Green colour indicates the percentage of goat fish in the catch from the infralittoral zone (25-50 m), red colour in circalittoral zone (50-100 m), and blue colour is the total of infralittoral and circalittoral zones.

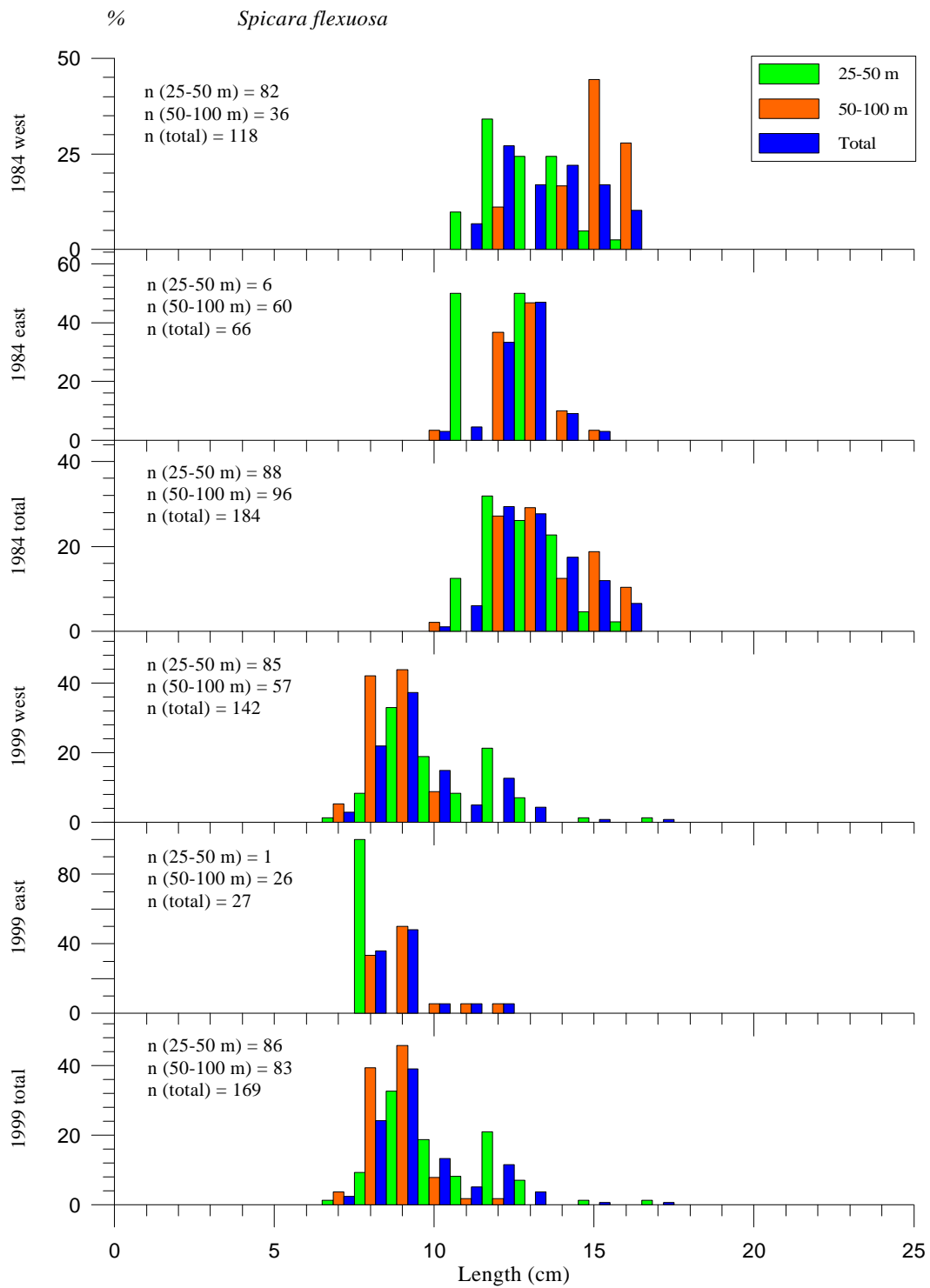


Figure 1. Length-frequency distribution of pickarel, *Spicara flexuosa* in 1984 and 1999 surveys. Green colour indicates the percentage of pickarel in the catch from the infralittoral zone (25-50 m), red colour in circalittoral zone (50-100 m), and blue colour is the total of infralittoral and circalittoral zones.

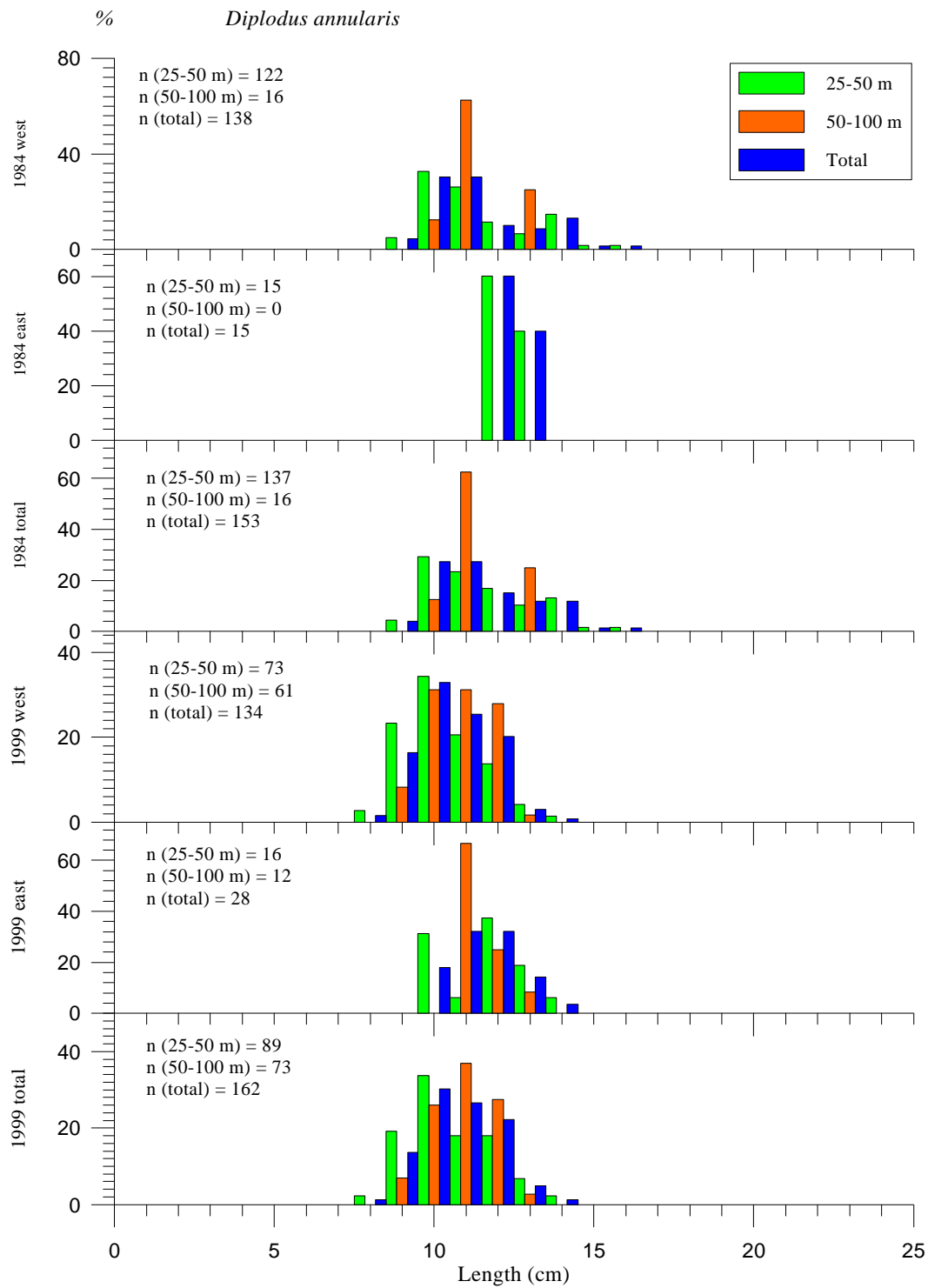


Figure 1. Length-frequency distribution of annular bream, *Diplodus annularis* in 1984 and 1999 surveys. Green colour indicates the percentage of annular bream in the catch from the infralittoral zone (25-50 m), red colour in circalittoral zone (50-100 m), and blue colour is the total of infralittoral and circalittoral zones.

