



**“Nature connects to harmony of civilizations”**

**The Rufford Foundation’s Mediterranean Conference in Turkey**

**15<sup>th</sup>-16<sup>th</sup> May, 2017 – Köyceğiz, TURKIYE**



**Conference Proceeding**

On behalf of NATURA (The Society for The Conservation of Nature and Culture, TURKIYE) and the Rufford Foundation, it is our great pleasure to notice you about the Rufford Foundation's Conference in Turkey which was held on 15th and 16th May, 2017 in Koycegiz, Mugla-TURKEY. This was one of many RSGF conferences held all over the World with main reason to share our experience during the projects and to connect RSGF winners, as well as to gather all of them for the pleasant and motivating meeting.

Particularly, this Mediterranean conference was organized by connecting the Mediterranean countries (Turkey, Jordan, Israel, Palestinian Territory, Tunisia, Algeria, Morocco and Egypt) which have received support from RSGF so far. Except of those countries also we invited some recipients from Bosnia & Herzegovina, Armenia and Iran.



The motto of this conference was: "Nature Connects to Harmony of Civilizations" regarding to remains of the Ancient Mediterranean Basin.

Participants were able to present projects results of their research via oral presentation. We also hoped that they would actively participate on our round tables where we all shared our good and bad experiences regarding to the RSGF projects and go through some main and important issues which were later going to be useful for future RSGF applicants and ourselves.



During the conference we saved some details as the examples of the impacts from the projects. For instance, from Iran there was a good example of where Rufford Funding has enabled disproportionately large and tangible conservation impacts to be delivered. The project was a really good example which was conducted by the team of Echo of Persia Wildlife Foundation (EPW) titled as *Resolving human conflicts, participation of local people in conservation, and raising people awareness about threatened species in Parvar protected area*. As we learned from the presentation, the team achieved the sustainable progress about human conflicts on various big mammals in the huge geographical region. The second good example was from Palestine Territory. Despite very hard political and socio-economical situations, the project of wild biodiversity garden in Bani Naim to conserve local flora, perform ecotourism and to conduct botanical research, it was one of tangible conservation impacts to be delivered.



There was a good example of locally developed approaches to biodiversity management from Turkey. Ass. Prof. Nedim Kemer who is Landscape Architecture and working with hydrobiologists in multidisciplinary way on the nature conservation. During their habitat conservation project was developed and introduced in a sensitive aquatic habitat of a typical Mediterranean working landscape in the Köprülü Kanyon National Park, in South Turkey between 2007 and 2009. The essence of the project was to collaborate with locals to irrigate responsibly by preventing fish from swimming into dead-end irrigation channels during their reproduction cycle. This innovative project was named as “fish filter / scare-fish.”





On the other hand, there were some early career conservationists in the conference, but one team was really impressive. Salih Tora Benzeyen who is student in the department of the International Relations, is enthusiastic bird watcher in Turkey. After he joined the different bird conservation & observation projects/events, he decided to establish a Rufford Project related with the rehabilitations of the Raptors in the Central Turkey at the end of the last year. This was interesting because the Raptor rehabilitation never studied systematically in Turkey. On the other hand, they created some interesting and attractive social media events related with their Raptor Conservation Action project in Turkey. Even if they are just in the 3<sup>rd</sup> month of their project, their project and the Logo of Rufford already seems to be famous in Turkey.



There was a good example from Turkey related with how Rufford funding has helped support work on species and ecosystems that are traditionally difficult to fundraise for. The Conservation Biologist Senem Tuğ Aksöyek studied on Wolf populations in Bozdağ region, situated at the center of Anatolia (Turkey), was of particular interest owing to the Turkish Mouflon Breeding Station. Wolves are unwanted creatures in the region and they are called as monsters due to densely animal husbandry in the region. But with the support of Rufford, she could finish her studies. And she investigated the interesting results to solve the human-wildlife conflicts. If the sheepdog numbers get to increase (3 to 5), the numbers of wolf attacks get to decrease inversely. Then, just with this simple information, shepherds increased their sheepdogs in their herds. This study was the first attempt at elucidating human-wildlife conflict, which is usually the biggest obstacle in wildlife and herd management in many parts of the world as in Turkey.



There was an interesting example also how Rufford grants have provided seed funding to build capacity, identify conservation needs and develop replicable models for future projects. Dr. Baran Yoğurtçuoğlu is an Hydrobiologist in Turkey and studying on Toothcarps (*Aphanius sp.* species). This group of species is lesser studied in Turkey. Dr. Yoğurtçuoğlu studied well about its bio-ecological properties, threats, its invasives etc. He also identified specific conservation needs and develops replicable models for future projects such as creating artificial pools for in-situ conservations, working together with the Zoos for ex-situ conservations and industrial bodies in the study area to create a good sustainable conservation model.



NATURA that was the organiser of the conference had a good example of how Rufford funding has helped train a future generation of conservationists. During their second Rufford Project, they established a Sweetgum Working Group with the participation of the different stakeholders (G.D. of National Parks, G.D. of Natural Assets, G.D. of Forestry Department, G.D. of Water Affairs, Local Agricultural Departments, Municipalities, Governors of the towns, Local universities, NGOs, City Councils etc.) in Köyceğiz-TURKEY. NATURA is also in the executive board of the working group. The working group has just prepared 5 year (2018-2023) conservation action plan for this endemic forest. The action plan will be started to apply at the end of 2017.





Despite nearly all of the participants and the teams have published materials such as articles, books, oral&poster presentations, proceedings etc. related with their Rufford projects, there is a better example on this topic from Levantine Sea (Turkey). Dr. Aylin Akkaya Bař who is Marine Ecologist and working for Marine Mammals Research Association in Antalya-TURKEY. Although there are some studies on Marine Mammals in Turkey, the Levantine Sea, which was defined with a lesser degree of marine mammal presence, is actually home to a diverse assemblage of different cetacean species and the endangered Mediterranean monk seal that are known to be in a considerable population decline. However, insufficient data on basic ecological knowledge such as abundance, distribution, residency and movement patterns of marine mammals has contributed to the lack of effective conservation strategies within the Levantine Sea. After their Rufford Project's results of two-year annual surveys in the northwestern Levantine Sea, they observed Bottlenose dolphins (*Tursiops truncatus*), Beaked whales (*Ziphius cavirostris*) in Antalya and published those observation results.



Their observations were contributed the marine mammal knowledge of the area and to propose viable conservation strategies. Also those observations were so useful as conservation tools such as control the marine traffic, mass tourism (water sports), illegal hunting etc. in Antalya Province which is the one of most popular touristic destination in Turkey.



The meeting provided a multidisciplinary platform for environmental scientists, conservation specialists, management professionals and government regulators to discuss the latest developments in environmental research and nature protection and to present results of the projects supported by RSG Foundation.

On the other hand we had three special speakers during our conference. First key speaker was Ass. Prof. Çağatay Tavşanoğlu from Hacettepe University (Department of Biology, Ecology Section - Turkey). He gave a special speech about "Fire-related dynamics in the Mediterranean Basin Ecosystems". Second speaker was PhD Ugur Zeydanli who is the General Director of the Foundation of Nature Conservation Center (DKM-Turkey) gave a special speech about "the Conservation History of Mediterranean Ecosystems in Turkey". And third speaker was PhD Cem Orkun Kırac who is the General Director of Underwater Research Society (SAD-Turkey). He guided us during our boat trip at last day of the organisation. He also gave a very special speech about "the Conservation History of Marine Life and Coastal Ecosystems in Turkey" during the boat trip.

We listened to the impressive stories of the conservation projects that were managed by the recipients, we investigated the facts of forest fires in its places, we visited the sea turtles rehabilitation centre and finally during our field trip we deeply studied the Anatolian Sweetgum Forests that is a endemic forest in Levant Region.

At the end of the conference all participants enjoyed the naturally and warmly atmosphere of Koycegiz that is one of typical Mediterranean Town in Turkey. Moreover, the participants shared their experiences and created new collaborations during the conference.



We thank very much to Mr. Gürkan Demirkale who is the Governor of Köyceğiz, Mr. Kamil Ceylan who is the Mayor of Köyceğiz, Mr. Mehmet İşçi who is the Director of Köyceğiz Forestry Department, Mr. Mehmet Ali Şahin who is the Chef of Köyceğiz Forestry Department, Mr. Alp Giray who is the owner of Flora Hotel and Professor Yakup Kaska who is the General Director of Sea Turtle Rehabilitation Center (DEKAMER) in İztuzu Beach (Dalyan-Mugla) for their all support such as accommodation, logistics and information etc.

We also thank again to all the recipients of Rufford Foundation who were attended to the conference or couldn't come to the conference for some reasons. We hope that this conference will create good connections for the conservationists.





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Köyceğiz, TURKEY

Abstract Book



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## **The Rufford Foundation’s Mediterranean Conference in Turkey**

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Köyceğiz, TURKEY

Abstract Book

## **Conference Schedule:**

### **14 May 2017 (Sunday):**

**Attendee arrival to Flora Hotel, Köyceğiz (Muğla-TURKEY)**

**20:30** Welcome Dinner & Registration

### **15 May 2017 (Monday)**

**07:00-09:00** Breakfast

**09:00-09:30** Welcome and opening speech, short presentation about the conference

**09:30-10:00** Key Lecture-1

**10:00-11:15** 5 Presentations (15 minutes/each)

**11:15-11:30** Coffee Break

**11:30-12:00** Key Lecture-2

**12:00-13:30** 6 Presentations (15 minutes/each)

**13:30-14:45** Lunch

**15:00-19:00** Field Trip to Köyceğiz-Dalyan Special Protected Area (Oriental Sweetgum Forests and Authentic Sweetgum Oil Producing Facility in Kavakarası Village) and Köyceğiz Wild Life Reserve Area (Forest Fire Researches)

**19:30-20:30** Free Time

**20:30-21:30** Dinner

**21:30** Cultural Exchange

**22:30** Free Time

### **16 May 2017 (Tuesday)**

**07:00-09:00** Breakfast

**09:00-10:30** 6 Presentations (15 minutes/each)

**10:30-10:45** Coffee Break & Snack

**10:45-12:30** 7 Presentations (15 minutes/each)

**12:30-12:45** Coffee Break & Snack

**12:45-13:15** Key Lecture-3

**13:15-17:30** Boat Trip (from Köyceğiz to Dalyan. The route starts from Köyceğiz Lake, follows Sultaniye Thermal Springs and Mud Bath, Dalyan Chanel Systems, Ancient Kaunos City, Iztuzu Sea Turtle Beach and Mediterranean Sea). The lunch will be in the Boat.

**17:30-19:30** Visiting the Sea Turtle Rehabilitation Center at Iztuzu Beach and Landscape Viewing at Dalyan

**20:30-22:00** Dinner at Dalyan (towards Ancient Kaunos City), Discussions and Closing Ceremony

**22:30** Back To Flora Hotel

### **17 May 2017 (Wednesday):**

**Travel Home – Transfers (Check out 12:00)**



Welcome to Köyceğiz!

Thank you for attending the Rufford Foundation's 23<sup>rd</sup> in country conference here in Turkey.

In 2012, we held our first conference in Nepal. Due to the success of this the trustees felt that there was a need for more direct communication between the grant recipients. Very often researchers work in isolation and these conferences provide a forum to discuss ideas, problems, issues and create invaluable networking opportunities.

We hope you enjoy the next few days and enjoy meeting your fellow researchers.

I look forward to chatting with you all.



Josh Cole  
Grants Director – The Rufford Foundation

May 2017,

Welcome to Köyceğiz, TURKEY!

On behalf of the Organizing Committee, it is our great pleasure to invite you to the Rufford Foundation's Conference which will be held on 15th and 16thd May, 2017 in Köyceğiz, Muğla-TURKEY. This is one of many Rufford's conferences held all over the World with main reason to share our experience during the projects and to connect Rufford's small grant winners, as well as to gather all of you for the pleasant and motivating meeting.

During this conference we are hoping to see many interesting presentations about highlighted conservation projects developed within countries of Mediterranean Basin. The motto of this conference is "*Nature connects to harmony of civilizations*" based on the rich natural and socio-cultural histories of Mediterranean. All of the invited speakers are future conservation leaders for this biodiversity rich region. It is our obligation to gather new knowladge and base our conservation activities on Scientifically Based Conservation. It is also our obligation to react when faced with degradation of our nature.

I hope that this conference will bring us all together and help us establish regional network for conservation of nature.

All the best and wish have a great time in Köyceğiz!



Okan ÜRKER, PhD  
NATURA

## Conference Itinerary:

**14 May 2017 (Sunday):** Attendee arrival to Flora Hotel, Köyceğiz (Muğla-TURKEY)

**20:30** Welcome Dinner

**15 May 2017 (Monday):**

### DAY 1

**07:00-09:00** Breakfast

**09:00-09:30** Welcome and opening speech, short presentation about the conference

**09:30-10:00** Key Lecture-1 (*Uğur Zeydanlı* – “An Evaluation of Nature Conservation Studies in Turkey: 1958-2017”)

**10:00-11:15** Presentations of the projects I

**10:00-10:15** 1. *Yasin İlemin, Okan Ürker*, “A Current Assessment On The Wildlife Properties Of Anatolian Sweetgum Forests”

**10:15-10:30** 2. *Parham Dibadj, Setareh Babaki, Pantea Ardani, Ashkan Asharioun*, “Resolving human conflicts, participation of local people in conservation, and raising people awareness about threatened species in Parvar protected area”

**10:30-10:45** 3. *Senem Tuğ Aksöyek*, “Conflicts Surrounding Wildlife: Wolf example”

**10:45-11:00** 4. *Deniz Mengüllüoğlu*, “Preliminary steps for conservation of Eurasian lynx in Anatolia”

**11:00-11:15** 5. *Dilek Şahin*, “The Yelkouan Shearwater Puzzle: Movement of a Pelagic Seabird in Turkish Straits”

**11:15-11:30** Coffee Break & Snack

**11:30-12:00** Key Lecture-2 (*Çağatay Tavşanoğlu* – “Fire-related dynamics in the Mediterranean Basin ecosystems”)

**12:00-13:30** Presentations of the projects II

**12:00-12:15** 6. *Mohammed Abudaya*, “Assessment of the Giant Devil Ray (*Mobular mobular*) Fishery in Gaza, Palestine”

**12:15-12:30** 7. *Meeransa Syed Shafee*, “Participation of artisanal fisher-women in Morocco in the safeguard of natural marine resources”

**12:30-12:45** 8. *Nedim Kemer*, “Social and Cultural Barriers of Conservation Efforts in Turkey”

**12:45-13:00** 9. *Nibani Houssine*, “Environmental Education and Research in the Coastal Areas of Al-Hoceima Province, Morocco”

**13:00-13:15** 10. *Baran Yoğurtçuoğlu*, “Conservation efforts for critically endangered *Aphanius transgrediens*: Small fish-big challenge”

**13:15-13:30** 11. *Gidon Winters*, “A low cost field-survey method for mapping seagrasses and their potential threats: An example from the northern Gulf of Aqaba, Red Sea”

**13:30-14:45** Lunch

**15:00-19:00** Field Trip to Köyceğiz-Dalyan Special Protected Area (Oriental Sweetgum Forests and Authentic Sweetgum Oil Producing Facility in Kavakarası Village) and Köyceğiz Wild Life Reserve Area (Forest Fire Researches)

**19:30-20:30** Free Time

**20:30-21:30** Dinner

**21:30** Cultural Exchange

**22:30** Free Time



**16 May 2017 (Tuesday)**

**DAY 2**

**07:00-09:00** Breakfast

**09:00-10:30** Presentations of the projects III

**09:00-09:15 12. Karim Omar**, "Sinai Primrose - How are you? & why are you stuck here? Conservation status assessment of *Primula boveana* in South Sinai, Egypt"

**09:15-09:30 13. Kaan Hürkan**, "Collecting Comprehensive Data for the Conservation of Turkish Orchids: Herbarium Database of Turkish Orchids"

**09:30-09:45 14. Khaled Sawalha**, "Nature and Biodiversity in Palestine"

**09:45-10:00 15. Gökhan Ergan**, "In Search of Fire Ephemerals: The Relationship Between Mediterranean Plants and Fire"

**10:00-10:15 16. Arsen Gasparyan**, "Lichen Conservation and Education in Armenia"

**10:15-10:30 17. Murat Özaydınlı**, "Why People Don't Care About Nature?"

**10:30-10:45** Coffee Break & Snack

**10:45-12:15** Presentations of the projects IV

**10:45-11:00 18. Elnaz Najafi Majd**, "Assessment of The Threats of The Vulnerable Species Urmia Lake Newt (*Neurergus crocatus*) in its Distribution Range"

**11:00-11:15 19. Ana Ćurić**, "European common spadefoot toad *Pelobates fuscus* (Laurenti, 1768) in Bosnia and Herzegovina - First RSG project results and further research progress"

**11:15-11:30 20. Ahmed M. Shawky**, "Assessment of the status and distribution of *Dugong dugon* in Wadi El-Gemal National Park, Southern Red Sea, Egypt"

**11:30-11:45 21. Aylin Akkaya Baş, Emine Ulusoy**, "Combining Research with Education for Marine Mammal Conservation in the northwestern Levantine Sea, Turkey"

**11:45-12:00 22. Vahit Alan**, "Cetacean Research in the Karataş Coasts and the Project Experiences"

**12:00-12:15 23. Salih Tora Benzeyen**, "Conservation Action for Decreasing the Number of Injured Raptors in West-Central Anatolia"

**12:15-12:30 24. Sargis Aghayan**, "Use of Long-legged Buzzard as a model for conservation of Raptors in Khosrov Forest State Reserve"

**12:30-12:45** Coffee Break & Snack

**12:45-13:15** Key Lecture-3 (**Cem Orkun Kırac** - Coastal & Marine Biodiversity Of Türkiye)

**13:15-17:30** Boat Trip (from Köyceğiz to Dalyan. The route starts from Köyceğiz Lake, follows Sultaniye Thermal Springs and Mud Bath, Dalyan Chanel Systems, Ancient Kaunos City, Iztuzu Sea Turtle Beach and Mediterranean Sea). The lunch will be in the Boat.

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**22:30** Back To Flora Hotel

**17 May 2017 (Wednesday):**

**Travel Home – Transfers (Check out 12:00)**

## An Evaluation of Nature Conservation Studies in Turkey: 1958-2017

Uğur Zeydanlı

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The declaration of the Yozgat Pineland as National Park in 1958 can be acknowledged as the foundation of modern conservation efforts in Turkey, although it was not formed with a biodiversity conservation perspective.

This early period can be extended until the early 70's and is characterized by the formation of new national parks on one hand and the preparation of 'Long Term Management Plans' with the support of US National Parks Service on the other (Arda, 2002). Following the gazette of the new protected area statuses with the 2873 numbered National Park Law in 1983, protected area studies picked up pace. By 1990, the total area of the protected areas reached 837.000 hectares with 33 national parks, 17 nature parks, and 35 strict nature reserves and (Sakarya, 1998). During these years, severe discussions took place between the General Directorate of Forestry and General Directorate of National Park regarding the management approach of these protected areas of which a majority consisted of forest ecosystems. With the declaration of wetlands as protected areas in the 1980's, a balance in terms of ecosystem representation was ensured (Bilgin *et al.* 2007). On the other hand, this strict protection status created management problems in these wetlands, as these areas were heavily used for socio-economical activities. An important gap in the protection of the marine and coastal areas was fulfilled following the ratification of Barcelona Convention in 1989 and with the establishment of the Authority for Special Protected Areas.

Another important actor in nature conservation in Turkey is NGO's. Turkish Society for the Protection of Nature (TTKD) and Society for the Protection of Nature (DHKD) are the earliest active NGO's. DHKD played an important role particularly in wetland and bird conservation in Turkey and supported these studies with the publication of Important Bird Areas (IBA) (Magnin and Yazar, 1997). IBA can be accepted as one of the first systematic conservation study. This approach was later followed by similar studies such as Important Plant Areas (Özhatay *et al.* 2005), Important Turtle Nesting Areas, Key Biodiversity Areas (Eken *et al.* 2006), Priority Butterfly Areas (Zeydanlı *et al.* 2012). These Important *Taxa* Area studies were followed by a Systematic Conservation Planning (SCP) approach with the key feature such as integration of the socio-economic constraints into biodiversity assessment. SCP thus delivered the necessary data background and planning tools for the integration of biodiversity conservation into forestry, agriculture, energy and tourism (Turak *et al.* 2011). SCP introduced a new paradigm to nature conservation studies in Turkey; utilization of the biodiversity conservation in the natural resource management (Zeydanlı *et al.* 2015).

Beyond all these steps, there are key problems that need to be solved for more successful conservation efforts;

- Lack of complete red lists and development of a national biodiversity information management system,
- Lack of collaborative environment with environmental NGO's, academia and governmental organizations,
- Lack of effective governance system and management approach for protected areas,
- Favoring recreation in protected areas instead of biodiversity conservation since the first protected areas,
- Lack of robust conservation policies to balance the intense economic development demand.

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**Key words:** Conservation history, Turkey, Systematic Conservation Planning (SCP), Protected Areas, Management

## Fire-related dynamics in the Mediterranean Basin ecosystems

Çağatay Tavşanoğlu

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Fire is a powerful force affecting many ecosystems in the Mediterranean Basin. Among these ecosystems, shrublands and Mediterranean pine forests are the ones in which fires burn the most frequently. In fire-prone Mediterranean Basin habitats, the fire has a significant role in ecosystem processes and therefore is a primary component of the ecosystem. Since the most significant and direct effects of fire are on plants, many plant species evolved specific adaptations to survive fires. In the Mediterranean Basin, many species exhibit fire-stimulated germination, in which seed dormancy is broken by fire-related cues such as heat shock or smoke. Some others (mostly pines) have serotinous cones allowing them to protect seeds from the heat of the fire, and then to release seeds towards the burned soil to germinate. Moreover, some geophytes flower in a higher rate after the fire and many shrubs resprout just after the fire. Evidence for the existence of fire-adapted species in the Mediterranean Basin has been increasing for the last 15 years, and this allows us to understand the dynamics proceeding in these ecosystems. Vegetation dynamics in many regions of the Mediterranean Basin mostly depend on fire. Consequently, long-term succession after the fire occurs in a different way than it is observed in temperate and tropical ecosystems, and alternative vegetation states can occur depending on the fire regime. Crown and surface fires are the most distinct fire types seen in the Mediterranean Basin ecosystems. Plants show specific adaptations to such different fire regimes, and therefore a change in fire regime may result in biodiversity loss and vegetation shift. Ongoing land-use changes and climatic warming throughout the Mediterranean Basin is resulting in significant changes in local and regional fire regimes, and threaten ecosystem stability and health in this biodiversity-rich area. More attention to the role of fire in the Mediterranean Basin fire-prone habitats is needed to manage and conserve these ecosystems properly.

**Key words:** Adaptation, conservation, ecosystem processes, management, the Mediterranean Basin, wildfire.

## Coastal & Marine Biodiversity Of Türkiye

Cem Orkun Kırac

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Türkiye has considerably rich marine and coastal biological diversity, some of which do not exist in the world, or majority of the Mediterranean basin. Existence of such a great biological diversity including endangered or Mediterranean region endemic species strictly depends on pristine marine & coastal habitats, somehow remained untouched in the country to date.

Turkish coasts and seas host populations of some endangered fauna and flora some of which being flagship or indicator species such as Mediterranean monk seal (*Monachus monachus*), which is critically endangered (CR) and now endangered (EN) by IUCN, thriving and breeding along remote and untouched rocky coasts having marine caves mainly in the western & southern Turkish coasts. Loggerhead turtle (*Caretta caretta*) and Green turtle (*Chelonia mydas*) foraging and wintering in coastal waters and breeding on 21 beaches along southern coasts of Türkiye, Dalmatian pelican (*Pelecanus crispus*) living and breeding only in Kızılırmak Delta along Turkish Blacksea coasts (in the North) and Gediz Delta along Turkish Aegean coasts (western Türkiye), Marbled teal (*Marmorenetta angustirostris*) breeding only in Göksu delta (S Turkish coasts), Audouin's gull (*Larus audouinii*), endemic to Mediterranean basin, lives and breeds in the remote islands along western & southern Turkish coasts, Eleonara's falcon (*Falco eleonora*), a summer visitor in the pristine and remote Mediterranean islands, Sandbar shark (*Carcharinus plumbeus*), a very rare breeder in the whole Mediterranean, that migrates to Boncuk Cove in Gökova Bay in June each year and breeds, Dusky grouper (*Ephinephelus marginatus*), an endangered (EN) fish, ranging along Turkish coasts from İzmir to İskenderun, Posidonia sea grass (*Posidonia oceanica*), a Mediterranean endemic true sea plant, ranging from Marmara Sea to Aydıncık town on Mediterranean coast of Türkiye, Cretan date (*Phoenix theophrastii*) endemic to Türkiye (Datça region) and Greece, Oriental sweetgum or Turkish sweetgum (*Liquidambar orientalis*) a deciduous tree native to the eastern Mediterranean region, that occurs mainly SW Türkiye and on the Greek island of Rhodes only. Also several different sand dune plants including lilies and orchids. The list of rare or endangered bio-diversity in Türkiye can be extended for some other mammals, fishes and birds as well as serpents and many insect and plant species.

There are three protection status in the country; National Parks (NP), Special Environment Protection Areas (SEPA) and Natural SIT areas (SIT). Recently established DG Spatial Planning under the Ministry of Environment and Urban (MoEU) took over the authority for development planning with its establishment act in 2011. DG Spatial Planning is now able to approve any development and industrialization project in any coastal zone including NPs and SEPAs. As for the SIT areas, MoEU developed another policy and started a discussion on the "justification" of existing natural SIT areas, which are currently under strict protection against any urbanization or house & road construction currently. MoEU asked some private companies in Türkiye to carry out a new assessment studies on the existing SIT areas to review and revise the existing SIT areas if these areas should remain or remove their "SIT protected status"! This poses a great risk for these untouched natural areas, falling into the KBD Areas in Türkiye as well, which may result in complete non-existence of SIT areas in the near future in Türkiye. The current policy of the relevant Ministries is "development at any cost" gives great and irreversible harm on the existing KBAs of Türkiye with an increased acceleration. In



case this negative process progresses, it will then be break point for the country, after which biological diversity will be faced with a great diminish including the above mentioned species that are important for Türkiye and Europe. However, NGOs generally do not allocate time, financial resources and expert staff specifically to cope with this great problem threatening the wild habitats in Türkiye, since they are engaged with other conservation and research projects not aiming the urgent defence and real time monitoring of the state of KBAs or generally cannot achieve this due to staff and monetary shortages. In other words, urgent defence of natural habitats and coordinated actions to stop detrimental development projects seems a great gap in the conservation dilemma of the country. Therefore, KBAs should urgently be defended with a new and concentrated approach by several relevant stakeholders including NGOs, Universities and the Chambers of Environmental Engineers, City Planners, Biologists and Landscape Architects and the local people in the concerned local coastal areas.

SAD has experience and knowledge to deal with marine research and conservation since 1985, which has completed many several conservation projects in cooperation with local and national scale NGOs like Doğa Derneği and ex-DHKD as well as international organizations such as UNDP and EU and nature conservation NGOs like MedPAN and WWF International. SAD has been active member to UNESCO Turkish National Committee on Underwater Cultural Heritage Conservation, Turkish National Monk Seal Committee (co-founder member) and Steering Committee member to "Strengthening of MPAs in Türkiye" a project carried out by Turkish Ministry of Environment & Urbanization and MedPAN.

Key Bio-Diversity Areas of Türkiye, a substantial project and two-volume book publication was developed and published by Doğa Derneği in 2006 with substantial support by SAD for developing coastal Key Bio-diversity Areas (KBAs) along Turkish coastline on KBAs and marine/coastal fauna & flora. This book can safely be taken as a reference source for scientific and conservation purposes for future studies.

**Key words:** Coastal diversity, Marine ecosystems, KBAs, Türkiye, Mediterranean Sea

## A Current Assessment On The Wildlife Properties Of Anatolian Sweetgum Forests

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**Objective:** Anatolian Sweetgum trees (*Liquidambar orientalis*) could grow up only at Southwestern Anatolia, on Rhodos and Cyprus islands. In this study we try to figure out how wildlife species are affected by habitat fragmentation in sweetgum forests. During 2014-2016 we carried out fieldworks in sweetgum forests to determine wildlife properties and their importance in terms of conservation biology.

**Material and Methods:** Fieldworks were conducted in Fethiye, Dalaman, Köyceğiz, Gökova and Marmaris regions where sweetgum forests occupy 30 to 250 hectares area. 2351 camera trap days sampling was carried out in eight different sweetgum forests. These forest patches were clustered into three groups to evaluate their ecological status. These groups are defined as follows: natural, semi-natural and plantation. In addition to camera trapping empirical observations and capture-release methods are performed to determine amphibians, reptiles, birds, mammals and their community parameters in three forest groups.

**Results and Discussion:** According to samplings 4 amphibian, 8 reptiles, 28 bird, 4 small mammals and 5 large mammals was recorded in sweetgum forests. Large mammals are chosen as indicator species due to their ecological roles in sweetgum forest ecosystem. Large mammals significantly play an important role in wildlife studies. Large mammals species are considered key species where they exist. Especially large carnivores are sensitive indicator of ecosystem integrity since they survive only where lower trophic levels remain relatively undisturbed. In this context plantation forests have a special importance for wildlife and habitat integrity. Plantation forests have significant role for large mammals and their dispersal between natural forest patches. According to our results a plantation forest which is related with a natural sweetgum forest acts like an ecological corridor. This corridor allows wildlife a natural dispersal and high species diversity. Plantation forest patches which are isolated from natural areas show no species diversity. According to our results human effect on sweetgum forests causes bottleneck effect for populations and low species diversity. As a solution for these biological problems ecological bridges between natural sweetgum forests should be generated by sweetgum plantations.

**Key words:** *Liquidambar orientalis*, Forest ecology, Wildlife, Wildlife corridor, Mediterranean mammals, Large mammals,

**Acknowledgements:** This study was supported by The Rufford Foundation. Project code and title: 16444-2, "Reviving Oriental (Anatolian) Sweetgum Forest in Southwestern Turkey".

## **Resolving human conflicts, participation of local people in conservation, and raising people awareness about threatened species in Parvar protected area**

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In progress of our conservation activities in Parvar protected area we have done these activities so far:

1- Holding several sessions with poachers and discussing about their problems and difficulties and the reasons of their motivation toward illegal hunting and explaining about the importance of carnivores species and their conservation values to the poachers and ask their participation to not hunting vulnerable species. We have tried to reduce this conflict in the region. One of the advantages of holding these sessions was participation of a poacher who used to hunt more than 50 Brown bears, and now is willing to cooperate with the project.

2- Designing and printing educational brochures about main mammals species of the area for raising awareness of ecotourists and travelers who are coming to the area in proper seasons. The brochures are consisting information about the value of these species and providing simple solutions toward participatory conservation. The project's team members were managed special canopy along side of the main road of Parvar protected area and the brochures were fully explained to people by team members and volunteers. These actions could be effective in reducing conflicts as well.

3- Holding several sessions with local people in main villages of the area such as Tom, Koolim, Shelly and Kowerd villages. These sessions were held in Mosques and were consisting of elderlies, poachers and enthusiast local people who are willing to participate in the project. These session were held in order to solve the conflict problems among villagers, carnivores and the department of environment, which is one of the main priorities in the region. Introducing the project to the people and describing the necessity of implementing the project for conservation of the area have done during these sessions.

4- Resolving some of human conflicts like Brown Bear and orchard as pilot by electric fencing, in one of the orchard in the area. We have realized that local people are prefer to take the damage cost from Doe instead of solving the conflict problems. We are trying to find proper solution for this problem.

5- Involving volunteers in Red deer participatory conservation in call mating season. 46 volunteers joined game guards to protect red deer during this vulnerable season from mid September till end of November in 2014, 2015 and 2016 in Parvar Protected area. Educating volunteers and attracting participation in conservation, were the most valuable achievements in this project. Involvement of some illegal poachers was the major result of the project.

6- Designing and installing standard caution road signs of Persian Leopard at a proper place on the main road of the area to prevent wildlife auto accidents.

7- Holding session with some of different representative of the Semnan province at the Department of Environment, in order to negotiate about the participatory conservation management of the area. This session were held additional to our commitment with The Rufford Foundation.

**Key words:** Conflict, Wildlife, Participation, Persian Leopard, Brown bear  
**Conflicts Surrounding Wildlife: Wolf example**

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As in many other cultures, the extraordinarily adaptable wolf (*Canis lupus*) evokes respect, fear and hatred, all at the same time, throughout the country. Specifically in degraded habitats, where native prey is scarce, domestic ungulates constitute a substantial part in wolves' diet. Maladapted and/or inefficient livestock husbandry practices exacerbate the human-wildlife conflicts. Bozdağ region, situated at the center of Anatolia, is of particular interest owing to the Turkish Mouflon Breeding Station. The purpose of the project was to determine the distribution of wolves in the study region, via radio collar tracking; diet composition by scat analyses; and the factors that play important roles on the conflict between humans and wolves, namely, livestock depredation, wolf attacks on humans, and human attitude towards wolves, in order to propose ways to mitigate the conflict. The study region encompassed 9 villages and >50,000 domestic sheep. Field trips in and outside the fenced Mouflon Breeding Station were organized for scat collection. Additionally, shepherds of the surrounding villages were interviewed to investigate animal husbandry practices and depredation events and to assess the attitude towards wolf. However, early on in the project, the number of scats collected dropped significantly within two consecutive field trips. Later, during the interviews, we found out that the wolves in the study area were systematically removed, despite our arrangements with the local authorities. Consequently, diet analysis and radiocollaring could not be performed. Domestic sheep in the study area grazed in flocks; each flock was attended by a shepherd and a number of mixed breed livestock guarding dogs (LGDs). Median flock size was 500 and the average number of attacks that the flocks were subjected to annually was 1.96. Number of LGDs per 100 sheep varied between 0.46-3.33 and unexpectedly, the flocks that are attended with less number of dogs experienced on average fewer depredations; suggesting that the quality of the LGD is more important than the quantity. Although it was not statistically significant, flocks with aggressive dogs that were stated to deter strangers and sheep of other flocks experienced less wolf attacks on average than flocks attended with non aggressive LGDs. No correlation could be found between the flock size and wolf attacks in 2003-2005. Wolf attacks on humans in Turkey does not seem to be very frequent according to the records of Ministry of Health on rabid attacks and news stories but the lack of documentation makes it inconclusive. Moreover, false information given by the news sources exacerbates the unrealistically bad reputation of wolf. No verified record of human death could be found in Turkey between the years 2000 and 2005 and rabies stand out as the primary reason of attacks on humans. This study was the first attempt at elucidating human-wildlife conflict, which is usually the biggest obstacle in wildlife management in many parts of the world as in Turkey. Incentives towards incorporation of better LGDs could decrease depredation damage and mitigate an important aspect of the conflict between humans and wolves; however, negative perception of this carnivore seems to extend further than rural communities.

**Key words:** Wolf, human-wildlife conflict, livestock, depredation, livestock guarding dog (LGD)

## Preliminary steps for conservation of Eurasian lynx in Anatolia

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Eurasian lynx is a protected species under Turkish law and no hunting quotas are given by the Department of Hunting. However, poaching is a serious threat for the wellbeing of the species and is likely taking place in many lynx habitats (Can, 2004; Şekercioğlu et al., 2011). There is also some extent of conflict in our study area in north-western Turkey with hunters where lynx population is accused to reduce the hare numbers in the area. However, there is also a high extent poaching pressure on hare population. This conflict threatens the lynx population in two ways; first reducing the prey source available to the Eurasian lynx due to excessive hunting and second direct killing of the lynx due to conflict on the common prey source. Therefore, the main purpose of our research have been a) to quantify annual influence of hunters and lynx on the hare population by estimating the harvested numbers b) to estimate and compare the hare population numbers in “only hunting”, “only lynx”, and “hunting plus lynx” areas to assess the real influence of all cases and c) to understand the spatial ecology of the lynx in the area to propose hunting and no hunting zones for brown hare to the Department of Hunting as conflict mitigation. Interviews with locals, human hunting observations, camera trapping and GPS monitoring of lynx showed that, a) lynx and humans hunt almost equal numbers of brown hare and have equal impact on the hare population in the study area, b) there are no segregated areas but lynx and hunters co-occur in the majority of the area, c) lynx doesn't avoid human dominated landscapes and can occur in very close distances to human settlements, which in turn doesn't allow to propose hunters hunting grounds where lynx doesn't occur. Therefore, besides local awareness raising, with a broadly participated meeting at Ministry of Forestry and Water Affairs, we proposed long term monitoring of the local lynx and prey populations and filming of a documentary on lynx ecology and monitoring, to attract new generations' attention on studying and being a part of wildlife research and conservation practices and to decrease the impact of poaching on both lynx and hare populations locally and countrywide. The idea was gladly accepted and supported by the General Directorate of Nature Conservation and National Parks and filming has started in 2015 to be finished and released in summer 2017.

**Key words:** Eurasian lynx, Anatolian lynx, hunters, conflict, conservation

**Acknowledgements:** This study was supported by RSG Project No: 11447-1, IZW Berlin and General Directorate of Nature Conservation and National Parks of Turkey. We would like to thank Nallihan Tourism Society and Ay family for providing temporary accommodation support in the field.



## **The Yelkouan Shearwater Puzzle: Movement of a Pelagic Seabird in Turkish Straits**

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The Yelkouan Shearwater is a globally threatened seabird species endemic to the Mediterranean, and its global status assessment is complicated by the fact that no information exists on the species from Turkey. Breeding Yelkouan shearwaters spend their non-breeding season in the Black Sea and non-breeding birds are assumed to use the same area during Bachelor years. The Turkish Strait System, the sole marine connection between the Mediterranean and the Black Seas, is of critical importance for the movements of Yelkouan shearwaters, as these birds do not fly over the land. To evaluate the activity of Yelkouan shearwaters in Turkish Strait System a monitoring study was conducted between 2012-2013. Land based counts in two narrow straits and ship-based counts in the Sea of Marmara were performed to collect data on the numbers and the movements of the species. The results of the simultaneous land based counts in two straits suggested that the Sea of Marmara is potentially an important area for Yelkouan shearwaters during chick rearing period. The bird activity in the Dardanelles was lower during the study period in comparison to the Bosphorus but wider spatial coverage is needed in the Dardanelles to better compare the activity between both areas. This study contributed to the global population assessment effort for the species; led to propose new marine protected areas and confirmed the importance of Turkish Strait System for the conservation of this threatened species.

*Key words:* Yelkouan shearwater, Turkish Strait System, bird counts, population estimates, marine protected areas.

## Assessment of the Giant Devil Ray (*Mobular mobular*) Fishery in Gaza, Palestine

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Mobula rays span tropical, subtropical and temperate waters of the world and are among the most charismatic of marine species. However the survival of mobula rays is severely threatened by growing fisheries pressure driven by demand for their gill plates in Chinese Medicine. The largest of these rays is *Mobula mobular*, found only in the Mediterranean, and classified as “Endangered” by the IUCN RedList and protected under the Barcelona Convention. This project assessed the scale of the seasonal *Mobula mobular* fishery in Gaza, Palestine; the only country not party to the Barcelona Convention in the Mediterranean. Throughout February to April 2015, surveys were conducted at 8 landing sites and included the collection of biological and socio-economic data on the fishery and trade in order to provide local, regional and international policy makers with the information required to help regulate this fishery. The number of species encountered was recorded, along with gender, sexual maturity and dimensions. DNA samples were collected and sent for analysis. Interviews were conducted with fishers, consumers, fish dealers and other professionals working in the fisheries sector to solicit their views on the mobulid fishery and collect information to establish catch methods and gear used, key fishing grounds, market values, information on product usage and details on the export trade. A total of 84 individual specimens (11% females, 89% male) were recorded and all males confirmed as mature adults. No pregnant females were recorded. Meat was consumed fresh by locals and according to fishers, is the only driving force behind this fishery. However the export of gill plates don't exists. This study highlighted the lack of knowledge and awareness among all parties regarding the vulnerability of *M. mobular*. Therefore, several awareness sessions were conducted with fishermen, fish dealers and school students to inform the target people of this species, threats, and growing pressures, protection status and required actions. To encourage them to voluntarily reject any attitude that threatens this species and to contribute on solving the problem of lack of awareness regarding the vulnerability of *M. mobular* as a major problem.

**Key words:** Giant Devil Ray, *Mobular mobular*, Fishery, Palestine

## **Participation of artisanal fisher-women in Morocco in the safeguard of natural marine resources**

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All along the 3500 km coastlines of Morocco (3000 km length on the Atlantic and 500 km length on the Mediterranean), nearly 4000 fisherwomen are directly involved on the exploitation of natural resources from the marine environment. Most of these fisherwomen are either poor, single, divorced or widows. They work in very difficult conditions (hard work and difficult access to exploitation sites), and the natural resources are not controlled by proper legislation. They do not organize in Groups or in Associations to reinforce their livelihood, and face problems for marketing the fished products.

The resources exploited by fisherwomen in Morocco are mostly comprised of bivalve mollusks, algae, sea urchins and sea cucumbers. These resources are being over exploited and in the near future, this would result in the disappearances of certain species particularly carpet shell clams and sea cucumbers. Moreover, the fishing sites are not monitored for health risks.

The work presented here gives short description of different projects on fisherwomen and Environment, conducted during the past 15 years (2010-to date), funded by several national and international funding organizations, including The Rufford Foundation (UK) during the year 2004-2005. These projects were mainly oriented towards improving the socio-economic conditions of fisherwomen by sustainable exploitation of marine resources.

The actions undertaken during this period were:

- Creation and organization of fisherwomen cooperatives
- Public awareness meetings on environmental aspects of fishing
- Aquaculture training for clam and mussel culture
- Education and training for the fisherwomen on the transformation and commercialization of fished products;

These actions were undertaken on different sites of the Moroccan coastlines: costal lagoons, estuaries, and intertidal regions. Local fisherwomen at these sites participated and were benefitted from these projects.

**Key words:** Morocco, fisherwomen, Environment, Training

## **Social and Cultural Barriers of Conservation Efforts in Turkey**

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A habitat conservation project was developed and introduced in a sensitive aquatic habitat of a typical Mediterranean working landscape in the Köprülü Kanyon National Park, in South Turkey between 2007 and 2009. The essence of the project was to collaborate with locals to irrigate responsibly by preventing fish par from swimming into dead-end irrigation channels during their reproduction cycle. This innovative project was named as “fish filter / scare-fish.”

The project consisted of two dimensions: one is being the physical - implementation of an innovative fish filtering device to prevent fish par from swimming into the agricultural ditches; and the other is a social dimension - which is collaborating with the local people who acquire irrigation water from the aquatic habitat. The physical dimension of the project was successfully implemented and was operated for a couple of years. Although the initiation of the social dimension seemed to be satisfactory the project failed due to lack of collaboration and eventually losing its local support.

Conserving critical habitats and maintaining traditional harmony between humans and wildlife in the working landscapes of less wealthy areas is an ongoing challenge especially in the developing nations. Deeply embedded customs and strict belief systems of traditional societies often constitute serious barriers for the conservation efforts. Especially when such efforts attempt to introduce instruments of new inventions and to suggest new methods of practices the resistance is even greater. In the end the project failed completely due to strict social and cultural barriers. This project is a good case to demonstrate the fact that the bio-physical solutions are in vain without strong support of social and cultural foundation.

**Key words:** local participation, habitat conservation.

**Environmental Education and Research in the Coastal Areas of Al-Hoceima  
Province, Morocco**

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Although it is one of the poorest parts of the northern Morocco, the National Park of Al Hoceima hosts one of the most astonishing coastal biodiversity clusters of all the Mediterranean. The almost forty kilometres of steep rocky cliffs dropping into the sea are home to hundreds of pairs of endangered bird species, and create an unbelievable submarine landscape hosting hundreds of species from the smallest invertebrates to the rare Monk Seal recently (extincted).

The area is almost untouched by humans from the land because of the steepness of the cliffs, but there is a large fleet of commercial fishing vessels which ply this coast. This coastal core area is currently covered by a weak provincial protection status and together with other relevant marine zones of the province, act as a 'lung' for the commercial fish stocks targeted, and several important nursery areas have been identified. Due to the weak protection status and the lack of proper monitoring, the access of damaging bottom trawlers and the use of explosives for fishing is not prevented.

We are working in a systemic approach to address this complex set of problems with a large research and bottom top participatory planning program organized by AGIR an environmental Moroccan NGO, traditional fishermen have been able to contribute, alongside supervising bodies, to a participatory action plan that led to redefined zoning of the marine protected area. Through the action plan recommendations we could eradicate most of all non-responsible fishing activities. The plan had been co-managed with the supervising bodies, and the real challenge has been reached through the chains of results, as the restoration of both Biodiversity and commercial stock fisheries. The challenge was to upscale this experiment to all the Moroccan Mediterranean Sea; so the Strengthening of marketing through the creation of fisheries cooperatives has permit to more than 2000 fishermen a better income in this region.

**Key words:** Environmental education, marine protected areas, coastal zones, Morocco



## Conservation efforts for critically endangered *Aphanius transgrediens*: Small fish-big challenge

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Acıgöl Toothcarp (*Aphanius transgrediens*) is one of the most threatened vertebrate species in the world. The only natural distribution area of this tiny endangered fish is the ground water dependent wetland which consists of about 20 small freshwater springs flows into the Lake Acıgöl. According to our previous Rufford Project, almost all of these springs were determined to be invaded by the Eastern Mosquitofish (*Gambusia holbrooki*), one of the worst invasive animal species in the world.

Within this project, we determined age, growth, reproduction and feeding of each species after determination of population statuses and sizes. Accordingly, we assessed the invasion success of *Gambusia* in different springs, food interaction and habitat use of two species in the area. We tried to construct sheltered man-made ponds which can serve as population cores for further re-introductions. However, it was not fully achieved due to a combination of following factors: (i) changing of district governor for three times, (ii) unpredictable people behaviour i.e. not to being mentally ready, (iii) decreasing of the water level, and finally (iv) coup attempt in the country which interrupted many activities by the way leading to state emergency. Instead of constructing a pond, we put the b plan in place. We physically removed *Gambusia* from a small semi-isolated spring and made it partially ready for *Aphanius* reintroduction. By these activities a well-trained permanent volunteer group including undergraduate and graduate students was also constituted.

Finally, we carried out a questionnaire study with random people including trained volunteers and locals about the existing results and the fate of the project. All the participants have very positive approach in general. Most of them have the opinion that the project has made progress very effectively even as is. Still some suggestions arose. The most repeated suggestion was to held the activities with a higher number of people (volunteers) and in more organized way (~70%). Other suggestions were focused on spreading the activities as much as possible to other springs and other lakes for different species. No remarkable complaint was heard from participants.

**Key words:** Critically Endangered, Killifish, Acıgöl Toothcarp, *Aphanius transgrediens*, Eastern Mosquitofish, *Gambusia holbrooki*

## **A low cost field-survey method for mapping seagrasses and their potential threats: An example from the northern Gulf of Aqaba, Red Sea**

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In the Gulf of Aqaba (GoA), coral reefs have been considered the dominating ecosystem, while seagrass meadows, recognized worldwide as important ecosystems, have received much less attention. This is partly due to the absence of comprehensive seagrass maps, which limits awareness, evaluations of associated ecosystem services and implementation of conservation/management tools.

We present the first detailed mapping of seagrass meadows along the Israeli coast of the northern GoA using a low cost method. The mapping was done by snorkelling along transects perpendicular to the shore above meadows growing at depths of 15-25 m. Measurements taken every 5-15 m along these transects included GPS position, water depth and visual estimations of the percentage seagrass cover. This was followed by tracking the meadows' shallow boundaries parallel to shore. Measurements were entered into a GIS system and complemented with layers indicating locations of shoreline infrastructures, near-shore human activities and potential pollution threats. We also valued the ecosystem services of the seagrass meadows in the region using a benefit transfer approach.

In total, we surveyed 9.7 km of the 11 km shoreline and collected 2830 data points. Seagrasses were growing along 7.5 km of the shore, with the shallow (15-25 m) meadows found to cover an area of 707,000 m<sup>2</sup> and valued at over US\$ 2,000,000 year<sup>-1</sup> in associated ecosystem services. Coastal uses and threats varied in character and location, however, a municipality runoff point and drainage canal located close to the largest and most dense meadow were identified as the main threats to seagrasses in this area.

Taken together, these GIS layers enhance our understanding of seagrass distribution in this area. They allow us to develop a GIS-based tool for assessing how changes in the Gulf might affect the cover and state of seagrasses, improving the conservation efforts in the region.

**Key words :** Seagrasses, Ecosystem services, Gulf of Aqaba, Red Sea

**Sinai Primrose**  
**How are you? & Why are you stuck here?**  
**Conservation status assessment of *Primula boveana* in South Sinai, Egypt**

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In order to develop an efficient and effective conservation strategy using complementary *in situ* and *ex situ* techniques, we must have a clear understanding of each target species' geographical distribution, its habitat preferences, population characteristics, and requirements. The Sinai primrose, *Primula boveana* has been reported as one of the rarest and most endangered plant species worldwide (Richards, 2003). It is endemic to the St Katherine Protectorate (SKP) in southern Sinai, Egypt, and has high medical importance because of substances extracted from its roots. This species is severely threatened by both natural (aridity of the area) and human factors (scientific research and over-grazing). All these factors are pushing *P. boveana* to the brink of extinction. The study is aimed to assess the current conservation status of this species according to IUCN criteria in order to produce a series of recommendations for conservation action. In addition, we will try to enhance the understanding about the IUCN Red List Category & Criteria by using this species as a case study.

In order to achieve that and to fit to the IUCN Red List assessment requirements; we studied and discussed the geographic range, population characteristics, habitat and ecology, threats, uses and trade, and conservation actions for the target species. The results of this study come as follow:

**Geographic Range:**

*Primula boveana* has been reported as one of the rarest plant species worldwide (Richards 2003, Jimenez *et al.* 2014). It is endemic to the high mountain area of the St. Katherine Protectorate (SKP) in southern Sinai, Egypt, with a narrow altitudinal range between 1,745 and 2,210 m asl. The gorges of Shaq Mousa and Shaq El Garagniah are the most important places for this species within the area of SKP. Its extent of occurrence (EOO) is c. 13 km<sup>2</sup>. The subpopulations are small in size and on average each cover 5 m<sup>2</sup> of land, with the actual area occupied by the species being c. 0.7 km. The area of occupancy (AOO), based on a 2x2 km grid over these subpopulations, is 6 km<sup>2</sup>.

**Population characteristics:**

Most of the *Primula boveana* subpopulations are small, with individual plants occurring sporadically in space in little groups where the soil is wet. The number of mature plants has declined from 'abundant' in 1832 (Richards 2003), almost 2,000 in 1991 (Al Wadi 1993), and 336 in 2007 (Jimenez *et al.* 2014). In 2014, the total global population size was recorded at c. 1,010 individuals during the last survey carried out by SKP rangers, but only 165 individuals were mature (about 16% of the total population). There are nine very small but clearly separate subpopulations, but only seven of them contain between three and 65 mature individuals. During the last 10 years these subpopulations have shown large changes in the total number of individuals, cover and density. There was a peak observed between 2008 to 2010 (345 to 360 mature individuals) but now (2012-2014) the population is at its lowest observed number; it may be that the species undergoes extreme fluctuations. The Elgalt Elazrak subpopulation appeared again from 2007 to 2012, before disappearing again. Areas including Shaq Elgragenia that were recently recorded as one of the main sites for *P. boveana* were not found in the past (2005 to 2008). These fluctuations in the subpopulations lead to fluctuations in both EOO and AOO. Drought is the main limiting factor for this species, and because the plant is

distributed within such a very small restricted area, the effect of this threat will be felt by the entire population; thus they are all effectively in one location.

#### **Habitat and Ecology:**

*Primula boveana* is a perennial with stems up to 60 cm long. The greyish-green leaves are spear-shaped, up to 20 cm long in a rosette. It bears several whorls of long-tubed, golden-yellow, scented flowers in late spring, and reproduction is by seed in late summer. It is restricted to montane wadis fed by melted snow and distributed in moist ground in the vicinity of wells and sheltered mountain areas, especially cliffs and caves with steep slopes of up to 90° on northeast- (78%) and east-facing (22%) granite. The cold winter climate (minimum temperature can reach -10°C) and cool summers (maximum about 29°C) of the high elevations of Mt. St. Katherine are the coolest on the peninsula (Omar *et al.* 2013). The arid climate has a mean annual rainfall of about 37.5 mm (between 1971-2014), some in the form of snow, but there is great inter-annual variation with up to 300 mm in any one year, usually between October and May. Relative humidity is low, ranging from 10-35% (data for 2005-2014), and potential evaporation rates are very high, in excess of 20 mm/day during August. *Primula boveana* grows in loamy sandy soil with average pH 8.2, electrical conductivity 760 µs/cm and organic matter 3.5% (Omar 2013a). Due to its restricted micro-habitat, *P. boveana* is the dominant species in most sites, but its associated species are *Adiantum capillus-veneris* L., *Mentha longifolia* (L.) Huds., *Hypericum sinaicum* Boiss. and *Juncus rigidus* Desf. (Omar 2013a).

#### **Major Threats:**

As a result of climate change, the wild population of this species could be in extreme danger in the relatively near future. The most important natural threats are the long-lasting droughts, the very scarce irregular precipitation during the year, the fragmentation inherent to its habitat, and the possibility that rare floods may cause harm such as uprooting (5% loss observed). Apart from climate change, the most important human impacts are reductions in water availability caused by collection for human consumption from the nearby areas, possible sheep and goat grazing, insect pests that eat the vegetative parts and may cause reductions in plant vigour (observed), and a species of ant that collects the seeds, perhaps causing reductions in the reproductive rate. The subpopulations have very low genetic variation amongst individuals within them, and gene flow between them must be extremely low or actually zero. Conversely, genetic differentiation among the subpopulations is high (Jimenez *et al.* 2014). It may self-fertilize most of the time, apparently with little or no detrimental effects (Al Wadi and Richards 1993, Jimenez *et al.* 2014). Probably deleterious alleles have been purged a long time ago, possibly making inbreeding depression not a major problem today, although also possibly restricting its ability to evolve in response to environmental change (Jimenez *et al.* 2014). Additionally because of its importance and rarity, this species is a target for collection. However, the species is not commercially or traditionally used in Sinai, but it has been collected for pharmacological testing by various scientific research centers. The unmanaged collecting for this species will lead to deterioration in population size. Water is being relocated in some localities from elevated wadis which are rich in water to supply to low wadis. This activity leads to consumption of water from wells and results in habitat deterioration and declines in population size.

#### **Conservation Actions:**

The entire global distribution of *Primula boveana* is inside the St. Katherine Protectorate. Six from the nine subpopulations are already protected by fenced enclosures, and regular monitoring by SKP rangers takes place every two years to detect the effects of this protection on population trends. On average 48 checks are made every year to keep a watch on the current situation for the plant and its habitat, and to record any detrimental activities. Funded by UNEP, the Medicinal Plants Conservation Project tried to conserve some important species, *P. boveana* among them, using cultivation inside greenhouses as well as storing its seeds for future use. Studies were initiated of its ecological, morphological and reproductive ecology, and the threats to its existence (Omar, 2013b). Much more is needed, however.

**Justification:**

*Primula boveana* qualifies as **Critically Endangered** because it is endemic to a tiny area (with an EOO of 13 km<sup>2</sup> and AOO of less than 6 km<sup>2</sup>) of the high mountain area of the St. Katherine Protectorate in southern Sinai, Egypt. The total population size of mature individuals is less than 200, distributed among nine subpopulations. As the main threats are drought and climate change, effectively there is only one location. There is a continuing decline in habitat quality for this species, with evidence of declines in subpopulation numbers and numbers of mature individuals. Climate change is projected to further reduce the available habitat of this high-elevation specialist. Monitoring data suggests that the species might undergo extreme fluctuations but further observations are needed to determine this fact. Due to the small number of mature individuals and the population structure this species would also qualify as Endangered under Criterion C2a(i) and D. Conservation actions, gaps, needs, and research needs as well as recommendations for effective conservation practices on this species were identified and submitted to the decision makers.

**Key words:** Sinai primrose, *Primula boveana*, South Sinai, Egypt, most endangered plant species



## Collecting Comprehensive Data for the Conservation of Turkish Orchids: Herbarium Database of Turkish Orchids

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The main goal of this project is to generate a unique digital database of “Orchids of Turkey” that has all the data collected from major herbaria of Turkey and related European countries which have significant collections of Turkish orchids. We acquired 6660 unique records from 18 herbaria collected by 680 collectors in total ranging from 1836 to present. We counted 183 raw taxa (including hybrids, misidentification or extinct) from 7 geographic regions. Although the year 1982 was the leading year on orchid collection, the peak era was 1970s. The most effective collector was G. Taubenheim during those years. Statistical analysis of the dataset created by this project uncovered many details about the orchids researches of Turkey.

**Key words:** Orchidaceae, Digital herbarium database, Turkey.

## Nature and Biodiversity in Palestine

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Palestine enjoys various ecosystems including temperate Mediterranean, desert and semi dry climates. Nature consists rich biodiversity of both wild plants and animals; as essential natural resources. Plant biodiversity is a major natural treasure including plants of agro-biodiversity, wild flora and medicinal plants. There are more than 2500 wild plant species distributed in different natural habitats of Palestine; while agricultural crops include land-races of many edible cereals, legumes, vegetables and cultivated herbs and wild native trees of natural forests like olive, pistacia and oaks to meet the challenges of food security. Recent research has proved the importance of wild relatives of many crops for biotechnological applications to improve quality and production of cash crops like wheat as first crop in the world.

The current status of biodiversity in Palestine is evaluated as critical due to challenges that impose real threats on natural resources. The dangers on biodiversity include: climate change, pollution, the occupation and settlements and over use of natural resources. Different approaches of sustainable use of biodiversity should be employed. *In-situ* and *ex-situ* methods should be applied to conserve biodiversity. Natural reserves, botanic gardens, seed and gene banks should be adopted at all levels of governmental and non-governmental institutions. The project of Botanic Garden is launched at Al-Quds University (cooperation with Spanish FUNC1/MEDOMED) and wild biodiversity garden in Bani Naim (established through Rufford project) to conserve local flora, perform ecotourism and to conduct botanical research. The sections of the garden include: rock garden, the Andalusia garden, herbal garden and others. The future efforts should include regional and global projects to protect nature in Palestine.

### Ecosystems and biodiversity

Palestine contains variety of ecosystems including: Jordan valley - Dead Sea area, which is characterized as dry-semi tropical (warm in winter to hot in the rest of the year). Eastern slopes: semi arid. Central high lands: Mountains of West Bank and Coastal plain: Gaza strip have Mediterranean environment. Desert: Negev with arid climate. The climate of Palestine is characterized with: topography: 375 m below sea level in the Dead Sea within Jordan rift valley (the lowest area under sea level on earth) to up to 1000 m above sea level in the mountains of Palestine. Biogeography of Palestine includes: Plains, mountains, eastern slopes, Jordan valley and Dead Sea; indigenous plants are adapted to these various natural habitats. Average temperature: 0 -7°C winter season to 25-42°C in summer time. Average rain fall: 50-150 to 350-500 mm, starting with the minimum level in the Jordan valley and Negev desert to the maximum rain fall in the coastal area of the Mediterranean Sea. This variety of nature reflects rich plant biodiversity. Plant Biodiversity: The most famous families in nature of Palestine are: Compositae (96 genera with 260 species), Graminae (87 genera with 198 species), Leguminaceae (62 genera with 268 species), Cruciferae (63 genera with 124 species), Labiatae (23 genera with 99 species) and then Lilaceae (23 genera with 97 species) (Sawalha, 2006). The Palestinian people developed landraces in agro-biodiversity makes some of traditional crops as national assets. Wheat, barley, lentils, tomatoes, roman olives, grapes, olives and melon are just examples. Most of the wild vegetation areas are considered as open grazing lands representing 35% of the West Bank area, where as forests form about 52 km square in the West Bank.

The diversity of crops includes the following:

- A) Vegetables like: tomatoes, potato, cucumber, cauliflower, cabbage pepper.
- B) Fruits: grapes, olives, almonds, figs, orange, grapefruit, plums and palm dates.
- C) Cereals and field crops: wheat, barley and lentils.
- D) Herbs: thyme, parsley, chamomile, anise, coriander and fenugreek
- E) Wild crops: sheih (*Artemesia sieberi*), thyme, hweraih (*Diplotaxis eruroids*).

### **Dangers And Challenges Facing Biodiversity**

Biodiversity is facing dangers and challenges leading to destruction of natural ecosystems and then disappearance of biodiversity. Observations and evaluation by experts and botanists of biodiversity in the Eastern Slopes indicate that plant biodiversity is declining since the Israeli occupation in 1967. The following dangers against biodiversity can be outlined:

- 1) Israeli Occupation; effects including: Settlements. Control of natural water resources The separation wall. Check points on roads.
- 2) Pollution: many forms of pollutants like solid wastes (plastic, metals), air pollution by stone industry and burning wastes
- 3) Urbanization: expansion of cities and towns on natural lands.
- 4) Human activities: over harvesting & overgrazing.
- 5) Desertification & climate change.

### **Proposed Solutions**

The following suggestions for conservation of nature and biodiversity in Palestine:

- 1) End the Israeli occupation, regional and global cooperation.
- 2) Change of life style to respect nature,
- 3) Save climate by reducing level of global warming.
- 4) Encourage eco-tourism.
- 5) Adoption and enforcement of legislation to protect nature and biodiversity.

**Key words:** Biodiversity, Flora Palestina, Ecosystems, Conservation, Ecotourism

## In Search of Fire Ephemerals: The Relationship Between Mediterranean Plants and Fire

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Fire is an important force on the plant communities of Mediterranean-type ecosystems. On this study, we focused on assess the drivers of plant diversity and to determine fire-dependent species after a forest fire in 2013 in Milas district of Muğla province (Turkey) in the eastern Mediterranean Basin. By conducting field studies, we determined plant diversity in the recently burned site and surrounding habitats (old-burned site, Turkish Red Pine forest, and roadside habitat) during the first year after the fire. Germination response of the members of the post-fire flora to fire-related cues was tested. Seeds belonging to 94 taxa were subjected to aqueous smoke solutions in different concentrations (1:1, 1:10, 1:100), and their germination were compared to the control (distilled water). Seeds of 29 Fabaceae taxa were subjected to heat shocks in various intensities (60 °C, 80 °C, 100 °C, 120 °C, 140 °C, 5 min.) and mechanical scarification to determine their germination in response to these cues. Germination response of *Chaenorhinum rubrifolium* (Plantaginaceae), a species only found in the recently burned site, to heat shock, smoke, and chemicals in smoke (karrikinolide, mandelonitrile ve nitrate) were examined in detail. The recently burned site had greater plant diversity than other habitats in the study. We identified 80 unique taxa only found in the recently burned site among the 362 plant taxa collected in the study. Evidence for heat shock-, smoke-, and light-stimulated germination were obtained in many taxa found in the recently burned site in germination experiments. In this study, several candidate taxa for fire ephemerals were proposed for the eastern Mediterranean Basin. The findings revealed that more studies are needed to determine the relationship between fire and plant species found in post-fire flora in the Mediterranean Basin. The results of the study supports the idea that fire is a significant force shaping plant traits and plant community structure in the Mediterranean Basin.

**Key words:** Forest fire, Fire ephemerals, Fire ecology, Eastern Mediterranean

## **Lichen Conservation and Education in Armenia**

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Armenia is known as an internationally recognized biodiversity "hotspot" and priority area for conservation action. More than 620 lichens are known from Armenia so far. Among them 230 taxa of epiphytic lichens have previously been reported. However, level of environmental awareness and education remains relatively low. The Lichen Conservation and Education Initiative has been initiated recently with support of the Rufford Foundation. It is aimed to promote conservation of lichen diversity via introducing visual resources for conservation education and ecotourism in Armenia. The initiative is continuation and development of the recently initiated lichenological studies in Armenia.

Within the project, the first guidebook about epiphytic lichens of Armenia was designed for educational, research and ecotourism purposes. It includes an illustrated and annotated dichotomous key, notes on species, information about spot tests and a terminological glossary. The identification key includes 51 species of common epiphytic macrolichens distributed in the temperate forests of Northern Armenia and in the dry montane woodlands in the South of the Country. The guidebook was a result of cooperation with Prof. Pier Luigi Nimis (Trieste University). In addition to the printed version of the illustrated bilingual guidebook, it is available online and the mobile version (iOS and Android) via the App KeyToNature have also been created.

Furthermore, the indoor exhibition area with the title "Tree of Life", which included not only lichens but also other organisms, has been created in the Museum of Yerevan Botanical garden. The exhibition includes short information stands with attached specimens. The exhibition provides an opportunity for visitor to get information about biodiversity of Armenia and evolution history. Moreover, outdoor lichen exhibition area in the greenhouse also has been established.

Our previous studies showed that one of the most important habitats for lichen diversity conservation in Armenia are temperate forest ecosystems in the "Dilijan" National Park. Consequently, we have intended our efforts to strengthen educational capacity and awareness in the park and surrounding communities. We have posted seven informational guide boards along the ecotourism trails of the National Park. Thousands of visitors will be able to get information about some of lichen species, download via QR code lichen guidebook and get basic information about biodiversity. In the Dilijan Central School and 6th secondary school the lichen educational sections have been created. They consist of the tablets with interactive lichen tutorial for schoolchildren, specimens of lichens and fungi from the National park and presents basic information. The results and impact of all implemented activities as well as general information about lichenology in Armenia are available on the websites [www.lichenology.am](http://www.lichenology.am) and [www.yba.am](http://www.yba.am).

**Key words:** Lichen, conservation, education, hotspot, Armenia

## **Why People Don't Care About Nature?**

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Through human history, environmental impact has largely been a by-product of human desires for physical comfort, mobility, relief from labor, enjoyment, power, status, personal security, maintenance of tradition and family. In parallel with technological developments since the nineteenth century, as a result of human-driven impacts such as industrialization, population growth, urbanization, different types of pollution, the pressure on resources has rapidly increased. Excessive and unconscious use of natural resources by human have caused disturbance of natural balance and threaten the human life.

In our century, nature conservation is the common problem of all societies and governments. Only relatively recently has environmental protection become an important consideration in human decision-making. Despite increasing awareness of environmental problems, the rate of taking action against these problems is still very low. Therefore, finding the answer of “why people don't care about nature” can be a starting point to build new ways and strategies to make more people incorporated into nature conservation actions. The answer of this question has many different aspects such as economical, phsycological, social, cultural, evolutionary and etc. These aspects are more or less interconnected to each other and establish the scope of human ecology. In that case, ecology of human, as a dependent, consumer and a part of nature, should be considered as much as ecology of nature when building strategies for nature conservation.

**Key words:** human ecology, conservation, environmental phsycology

## **Assessment of The Threats of The Vulnerable Species Urmia Lake Newt (*Neurergus crocatus*) in its Distribution Range.**

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*Neurergus crocatus* is known as Urmia Lake Newt or Azerbaijan Newt and listed as “vulnerable-VU” by the IUCN Red List of Threatened species. This newt inhabits in southeast of Turkey, northern Iraq and northwest of Iran. Despite the significance of its conservation, there is almost no data about its life history, exact distribution range, ecology and population status. This may be attributed mainly to geographic inaccessibility, permanent ethnic tensions, and decade-long military conflicts.

Extensive field surveys carried out across the potential range of *N.crocatus* and data about habitat and microhabitat variables, water quality, population size/density were collected to identify the threats.

Anthropogenic destruction of habitat is a major threat to species survival and significant cause of species extinction all around the world. The most notable threat to this species is habitat loss through divergence of stream for irrigation of cultivated lands, drainage and water conduit for close local peoples' communities, pollution, road construction works, drought and flood. All these single threats when combined might lead to the decline and extinction of these species populations throughout its distribution range.

Conversely local people's thought, these newts are not poisonous and don't harm humans and livestock. Killing newts by the thought that they are poisonous, plucking vegetation inside the spring that animal laying egg on them in order to use the water source by locals in is one of the unintended consequences. Educating about the nature of this harmless and rare species, its importance and role in ecosystem is the other main priority of our project. Raising awareness about this valuable species is very essential while the main threat to these animals is in consequence of human activities and changes in their habitat; and eventually will help survival and protection its populations.

**Key words:** Threats, Anthropogenic destruction, Conservation, Urmia Lake Newt, *Neuregus crocatus*

**European common spadefoot toad *Pelobates fuscus* (Laurenti, 1768) in Bosnia and Herzegovina -  
First RSG project results and further research progress**

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European common spadefoot tad (*Pelobates fuscus* (Laurenti, 1768)) is a wide – ranging European anuran species and in Balkan it can be found mostly in lowland areas of northern and eastern lowland areas (Pannonian basin). It is listed as LC on the global IUCN Red List and the populations are in constant decline. In neighbor countries species is listed as DD in Croatian Red Book of Amphibians and Reptiles as well as DD in Red Book of Fauna of Serbia I – Amphibians (Jelić et al., 2012; Kalezić et al., 2015). Its ecology suggested that species could be found in northern parts of Bosnia and Herzegovina, so called Posavina region, so we based our research on lowland areas along the Sava River. Main activities of the project were defining distribution map of *P. fuscus* for B&H, listing all herpetofauna species that share habitat with *P. fuscus*, listing all possible threats, raising awareness of the local people, educating team members and students as well as local people and other interested. Until year 2014 this species was only suspected to inhabit Bosnia and Herzegovina. The main result of the following project was defining distributional area of European common spadefoot toad for Bosnia and Herzegovina and new populations were found near towns of Kozarska Dubica, Srbac, Brod, Modriča and Šamac. Unfortunately, there is a lack of natural habitats and species adapted to anthropogenic sites, where human influence represents one of main threats. Posavina region is rich with amphibian and reptilian species, and we found 25 species on sites along with *Pelobates fuscus*. Tadepoles, including individuals larger than 14 cm, were found on only one locality near Modriča town. Education activities were successfully conducted in elementary schools and organizations in B&H and we are continuing education in elementary schools of Posavina region and universities of Banja Luka, Sarajevo and Zagreb. We also managed to connect organizations and their members from B&H and Croatia through the implementation of the project.

This project was a great opportunity for me and my team to gather all necessary data for the further researches that are still going on. One of the project product is a scientific paper, which publication is in process. I would like to thank Rufford Foundation and the whole team for the opportunity and great support that made a huge impact on the first steps in my carrier and education, particularly the whole research of *Pelobates fuscus*.

**Key words:** distribution, spadefoot toad, Posavina, education



**Assessment of the status and distribution of *Dugong dugon*  
In Wadi El-Gemal National Park, Southern Red Sea, Egypt**

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Dugongs are the only herbivorous marine mammals that are strictly feeding on sea grasses and is one of these endangered species. They are found in different locations along the western coast of the Red Sea, Egypt. Until recently, no scientific data was collected on the number of Dugong individuals inhabiting the National Park area. Wadi El Gemal National Park (WGNP) is one of the most biodiversity spots where endangered species of the Egyptian coast of the southern Red Sea are found. A study of status and distribution on the dugong was carried out December 2015 to October 2017 at WGNP. This study will provide the first synopsis of the distribution and assess the status of the dugong on the southern Red Sea, Egypt. A total of 73 interviews were conducted across Wadi El Gemal Village (n= 36), Abo Ghoson Village (n= 11), Qulaan Village (n= 5), Hamata Village (n= 16) and Lahmy Village (n=5). The majority of the respondents belonged to the age group of 26–50 years. Of the sampled population of fishermen, 48% had parents who were fishers, while 44% had grandparents also involved in fishery-related activities. Information on the dugong distribution, abundance, mortality (in particular, estimates of gill net mortalities) and many other data were collected. A field survey was occurred to define the geographical and status of *D. dugon* in its habitat according to the information gathered by the questionnaire. Every Dugong individual will be recorded from the surface and underwater sighting using GPS to locate it on a map and to characterize the extent of occurrence and area of occupancy. GIS map was performed with 423 sighting record within Wadi El Gemal National Park boundary.

Photo identification technique were conducted from underwater and surface to identify the different individuals of dugong. The morphological characteristics of dugong individuals and estimate their numbers was recorded using the Photo-ID technique by underwater observation with a professional camera HD Go Pro Hero4 Silver Edition using SCUBA diving. A catalogue will be prepared for all individuals recorded using the scars and notches on the Dugong body as well as recording its frequency among the different study sites. A total of 5 individuals were identified in the catalogue (3 males, 1 female, and 1 calf). Re-sighting and movements among different sites were recorded for each dugong. Photo Identification (Photo-ID) was conducted to the dugong individuals focusing on the flippers (Left and Right), fluke and the scars on the dorsal view as well as the dugong sex was identified. The big male of Shams Alam Beach was the most identified dugong from underwater using SCUBA diving and was re-sighting several times. The dugong was approximately 2.5m long with one distinct notch as V shape in the middle of the left flipper. In addition to the notches along the fluke margin especially the left side. It was observed at an average depth of 6m and a distance of 250m from the shore. With comparison with the previous identified dugongs before, it was confirmed with a male dugong that sighted in the same site before at March 2016. This concluded that using the Photo ID techniques for dugong notches can used effectively to identify the dugong. The other male dugong was recorded underwater in the site of Torpha south and swam fast, so no photos taken for it. The other three dugongs were identified together only from the surface due to its fast swimming, where we couldn't met them underwater.

The Dugong habitat was described using transect and quadrat method to determine the main vegetation structure of the sea grass meadows, species diversity, and cover in these areas using SCUBA diving. The percentage cover of the seagrasses and abundance were calculate using 0.25m<sup>2</sup> quadrat in four different sites. The main species was *Halophila ovalis* and *Halodule uninervis*, the

main two seagrass species favored by the dugong. The measurements of dugong feeding trails were conducted like length, widths and depths and the trail width ranged from 18 to 20cm. One of the most record was that of small trails with width 7cm, which means that it was related to small dugong coming to feed in this site. Also, found that three different measurements at Wadi El Gemal Island, which ensure that this area visited by three dugong individuals, one of them is calf (I think three dugongs are big female with calf and another adult dugong that may be male).

Raising the awareness of decision-makers, staff, rangers and local communities to better understand the conservation status of the target species was conducted and act in support of dugong conservation efforts. Two workshops were conducted during the project period. First workshop to 4 Wadi El Gemal Rangers and 12 others was conducted (i.e., 10 university students from Suez Canal University and Port Said University, Faculty of Science, Marine Science Department, in addition to one photographer and one videographer), including 6 girls. I teach them our project objectives like: how to conduct the dugong questionnaire, feeding ecology techniques, dugong Photo ID techniques and how to raise public awareness. Second workshop was conducted to the dive and snorkel guides from different diving centers located within Wadi El Gemal National Park (WGNP). I introduced a presentation including Dugong taxonomy, our project objectives, what are we do for dugong survey and awareness, then open discussion occurred with them for any more comments of details need to add. One of the most public awareness outcomes was creating a dugong team called The Egyptian Dugong Team (**EDT**). The team was trained very well and shared in the field work for 4 days and collected a very useful data. Also, the **EDT** participated in two events in Egypt, the first is World Wild Life Day and the second is Marine Life Day. The EDT get high sound in Egypt now and I suggest in next project to increase the number of the team members to increase the awareness, education and monitoring of the Dugong in Red Sea, Egypt.

During our interview survey that conducted before, some interviewees confirmed us with dugong sighting at Marsa Alam region. This area located outside of Wadi El Gemal National Park by 50 km north. They confirmed us that there are many sited for dugong in this area and have a human impacts from a tourism visiting these sites. At the end of our project, I visited only one site in Marsa Alam (i.e. Marsa Mubarak) and recorded the tourism impacts on the dugong. Further project is suggested to study the effect of the tourism activities on the dugong behavioural and the presence of the dugong in their natural habitats. Also continue using the Photo ID to identify more individual and know if these individuals moves to Wadi El Gemal National Park of not. Public awareness need to performing to the tourists whom coming for dugong watching in Marsa Alam.

**Key words:** *Dugong dugon*, herbivorous marine mammals, sea grasses, Wadi El-Gemal National Park, Southern Red Sea, Egypt

## Combining Research with Education for Marine Mammal Conservation in the northwestern Levantine Sea, Turkey

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The Mediterranean Sea is one of the most important biodiversity hotspots in the world, with 20 of the total 90 cetacean species inhabiting this basin. 12 cetacean species are present in Turkish waters, making this a significant marine habitat, whilst it also holds geopolitical and strategic importance. With its extensive marine and coastal areas, Turkey possesses rich marine and terrestrial biodiversity values. On the other hand, the Levantine Sea, which was defined with a lesser degree of marine mammal presence, is actually home to a diverse assemblage of different cetacean species and the endangered Mediterranean monk seal that are known to be in a considerable population decline. Marine biodiversity of Turkey is currently experiencing intense human pressures. These threats include: destruction of marine habitats; over exploitation of marine resources; bycatch, vessel traffic; pollution and conversion or destruction of coastal areas. However, insufficient data on basic ecological knowledge such as abundance, distribution, residency and movement patterns of marine mammals has contributed to the lack of effective conservation strategies within the Levantine Sea. We, hereby, report the results of two-year annual surveys in the northwestern Levantine Sea to contribute the marine mammal knowledge of the area and to propose viable conservation strategies. During the current study, boat and land surveys were conducted from three different locations in the northwestern Levantine Sea (Antalya, Finike, Fethiye) between March 2015 and July 2016. 132 days (631 hours) were spent in the search of marine mammals, of which 32 survey days (213 hours.) were conducted from the boat. Encounters were as follows: bottlenose dolphins (*Tursiops truncatus*) we observed in 50 days, beaked whales (*Ziphius cavirostris*) in four days, striped dolphins (*Stenella coeruleoalba*) in two days, Mediterranean Monk Seals in 11 days and Risso's dolphins (*Grampus griseus*) on one occasion. In addition, loggerhead turtles (*Caretta caretta*) (22 occasions) and green turtles (*Chelonia mydas*) (16 occasions) were sighted. All the named species above are categorized as either vulnerable, endangered or data deficient by IUCN Red List. The current study reported an uneven distribution, high seasonal encounters and varied residency patterns of marine mammals within the northwestern Levantine Sea. We propose that the northwestern Levantine Sea, specifically the coastal waters of Antalya Bay, is an important bottlenose dolphin habitat and adjacent waters may be of similar significance. Our results demonstrate the pressing urgency to continue and update the research and conservation effort to investigate marine mammal populations in the Levantine Sea. Obtaining robust data on species abundance, distribution, individual identification, residency patterns are the first steps in developing conservation measures that will encourage the survival of populations of Mediterranean monk seals and cetaceans. While local efforts to preserve a specific habitats are critical, a nationwide initiative aimed at mapping the remaining populations and colonies and creating a network of marine protected areas connected by corridors, alongside educational and awareness programs, remains the highest priority to ensure the survival of the target species in Turkey.

**Key words:** Marine mammals, conservation, education, northwestern Levantine Sea, Turkey

## Cetacean Research in the Karataş Coasts and the Project Experiences

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Even though Karataş region, as a part of Eastern Mediterranean is a potential for cetaceans, the region has no study on the cetacean species or other nature conservation studies until this project. In this context, initially the current state of the cetacean was tried to be revealed in the area. The study focused on which cetacean species use the area, interaction with fisheries, identifying potential threats on cetacean and conservation efforts as well as to create public awareness with educational and lobby activities were realized. Also, it created an important preliminary scientific baseline on cetacean as well as necessary data-set for conservation of the species.

The efforts were made based on the photo-ID methodology. Therefore, sea surveys were conducted in the favourable weather and sea conditions (1-3 Beaufort). The small groups of dolphin have been encountered in the field studies during the summer season. The originates of this condition are increasing coastal marine traffic in summer season and decrease in fish stocks. However, the encountered rate showed an increase in the autumn and winter seasons and even we were observed that the dolphins close to the shore (almost 1.5-2 m. depth). We encountered only *T. truncatus* (bottlenose dolphin) individuals and maximum cluster size 25 individuals so far. Also, 4 *T. truncatus* individuals were identified by photo-ID. Preliminary results of the dolphin distributions in the Karataş coasts were obtained. *T. truncatus* distributions are generally concentrated in the close areas Seyhan and Ceyhan rivers mouth.

**Key words:** Karataş coasts, cetacean, dolphin, *Tursiops truncatus*, bottlenose dolphin, photo-ID, distribution, public awareness, fisheries interactions

## Conservation Action for Decreasing the Number of Injured Raptors in West-Central Anatolia

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The raptors have the key role in the ecosystem. Unfortunately, they are also one of the main victims of the human activities. The number of injured raptor cases pass over 300 individuals per year in the Wildlife Clinic of the Ankara University Veterinary Faculty. Very diverse species like Long-legged Buzzard (*Buteo rufinus*), Common Buzzard (*Buteo buteo*), Common Kestrel (*Falco tinnunculus*), Imperial Eagle (*Aquila heliaca*), Black Vulture (*Aegypius monachus*), Egyptian Vulture (*Neophron percnopterus*), Eurasian Sparrowhawk (*Accipiter nisus*), Goshawk (*Accipiter gentilis*) and Long-eared Owl (*Asio otus*) that are injured mostly because of the human activities are treating in the clinic. Since 2014, number of the cases and the diversity of species increased regularly due irregular clinic records and personal observations. Furthermore, 75 percent of the injury cases caused by firearms and pesticides. Among all, less than 20 percent of the cases released to nature back after the treatment while the rest being sent to the sanctuaries or deceased.

Accordingly, the team aims to investigate the origins of the raptor injury cases, eliminate the lack of knowledge and propose a conservation plan in this direction. The main objectives of the project are determine and minimize the threats towards the raptors that have critical roles in the ecosystem as top predators, raising awareness in local communities including the children and young people, monitor the datas that is provided by fieldworks and clinic records to update the conservation priorities to sustain the project's conservation goals.

The project will be applied in the western part of Central Anatolia covering **Ankara, Bolu and Eskisehir** provinces. The geographical borders of the region are the Ilgaz Mountains in the North, Haymana Plateau in the South, Eskisehir city center in the West and Elmadağ Mountain in the East. This geography has very important role for birds, especially for the raptor species because of its diverse geographic landforms and habitats.

**Key words:** Raptors, poaching, injured birds, rehabilitation, conservation

## Use of Long-legged Buzzard as a model for conservation of Raptors in Khosrov Forest State Reserve

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The Khosrov Forest State Reserve is designated as Important Bird Area in Armenia, and is a destination for number of Raptor species including globally endangered Egyptian, Bearded, and Cinereous Vultures, and locally endangered Snake-eagle, Golden Eagle, Lesser Spotted Eagle, and others. It is surrounded by several villages and towns among which the Oortsadzor, Dashtakert, Shaghap, Lanjanist, Garni, and Goght villages are the closest ones and people from those both villages have informal access to the Reserve. There is a tradition to keep Raptors as pets at home in many parts of Armenia as well as in mentioned villages. Every year local kids, who know the nests in surrounding area very well, take several nestlings from easy accessible raptors' nests, e.g. Long-legged Buzzard and keep at home until they die. The situation became worse, when some restaurants and individuals started to purchase alive Raptors, and also when information about purchasing of falcons by falconers from Middle East was distributed in Armenia. Since that time, every hook-billed bird in Armenia is at extremely dangerous position.

The overall goal of our project that we implemented in 2014 was to provide the alternative way to interact with the Raptors for the children by using the rather common Long-legged Buzzard as a model. Simultaneously we have collected scientific information about Long-legged Buzzard, which was be used for two purposes: a) for understanding the population conditions, and value of the species for agriculture (in the control of rodents' populations), and b) for developing educational materials showing the importance of the species for ecosystem and human well-being.

By the end of the project we obtained the following results:

- local children started to watch Raptors (breeding in Khosrov Reserve and the outskirts) in nature instead of taking them to home
- local children better understood importance of Raptors for the nature and for the human
- at the end of program we have well developed scheme of conservation education aimed to shift the activities from catching and killing to watching and photo-shooting (the scheme is useful for education of children about other raptor species as well)
- students of biological departments are trained to do conservation in practice

**Key words:** Long-legged Buzzard, raptors, conservation education, Khosrov Reserve, Armenia

## Nature Conservation Volunteering in Archipelagos Institute of Marine Conservation

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**Abstract:** We can define volunteering as an uncoerced helping activity which is not engaged in, nor primarily for financial gain neither by force or mandate. Data gathering for fisheries, monitoring terrestrial mammals, marine&terrestrial reptile guarding, bird watching, marine mammal watching, underwater viewing for fishes & benthic invertebrates, water quality analysis (marine debris, microplastics etc.) are some of the activities among nature conservation volunteering. Established in 1988, Archipelagos Institute of Marine Conservation is a non-profit, non-governmental organization which aims to research and defend the biodiversity of the Greek Seas and the eastern Mediterranean by cooperating with local communities and authorities to develop and apply pilot management and conservation projects.

**Key words:** Marine conservation, volunteering, Archipelagos Institute, Samos Island

## Conservation activities of endangered Marmaris salamander (*Lyciasalamandra flavimembris*) from Muğla, Turkey

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Lycian salamanders are one of the group that include endemic species in Mediterranean, Turkey (Muğla and Antalya provinces) and some adjacent island. Among the species Marmaris salamander (*Lyciasalamandra flavimembris*) is an endangered endemic species and found in Northwestern part of Muğla province. Within its naturally restricted range, the major potential threat to the species is habitat loss due to forest fires, urbanization and climate change. The species is listed as EN-Endangered in IUCN Red List and its population is decreasing.

In this study, we're aiming to determine distribution of the species, population density, phenology, and threats on the population. Besides, we're planning activities to raise awareness for the species conservation. this study will provide a scientific resource for decision makers for using futures habitat management plans. Besides creating a scientific resource, we are aiming to raise awareness among both the decision makers and the local community.

To monitoring current population status, study area was divided 10 km<sup>2</sup> grids and will visited the activity season (November – February) of Marmaris salamanders. After determining distribution of the species, We will select three quadrates (10 kmx10 km) from different dominant habitats (e.g. open, scrubs, and forest) and monitor in winter and autumn. In these quadrates, All the individuals will be marked with Visible Implant Elastomer (VIE) and we will use capture-recapture method to obtain data and estimate population size and density. To understand habitat preferences of Lycian salamanders, we will test different variables (in each transects) in the salamander's habitat. We will note the moon phase (1=new moon, 2=crescent, 3=quarter, 4=gibbous, 5=full moon), wind (Beaufort wind scale) and weather (Sky codes) conditions, and as well as the pre- and post-release precipitation. We will record soil moisture, relative air humidity, and air temperature. These data will be helping us to link between environmental variables and presence and/or abundance of salamanders. To understand reproduction activity, we will observe phenology and breeding season of the individuals in natural habitats and all datas recorded properly.

**Keywords:** Amphibians, Marmaris salamander, Muğla, Antalya, Endangered



