ARTICLES

[Editor's note: this article was originally presented as a Keynote Address at the 7th Mediterranean Conference on Marine Turtles (Tetouan, Morocco, 18-21 October 2022) by Dimitris Margaritoulis as former Mediterranean Region Vice Chair of IUCN's Marine Turtle Specialist Group.]

Sea Turtles in the Mediterranean: Personal Reflections

Dimitris Margaritoulis

ARCHELON, the Sea Turtle Protection Society of Greece, Athens, Greece (margaritoulis@archelon.gr)

I would like to begin my talk by thanking the President and the organizers of the seventh Mediterranean Conference on Marine Turtles, for the opportunity to speak to you today. This is a great honour for me, and I find it very impressive and very encouraging, to see such a large and diverse number of researchers, working with marine turtles in the Mediterranean. Unlike most participants in this room, I do not consider myself a genuine sea turtle researcher; I rather feel more like a sea turtle teacher. I believe that I have mentored many young people in the secrets of sea turtles and in possible ways to conserve them. I have been involved in efforts to promote sea turtle conservation since the late 70s, although I came to know sea turtles by simple coincidence.

It happened in 1977, about 45 years ago, when, with my family, we were camping on Daphni beach on Zakynthos Island (Fig. 1) and a sea turtle –I did not know then it was a loggerhead– literally knocked the door of our small tent. This event changed completely our lives, both Anna's and mine. I was much surprised when my academic acquaintances of related disciplines did not know that sea turtles were nesting in Greece.

However, others were doing already work with sea turtles in the Mediterranean. Remzi Geldiay, Ibrahim Baran and Andreas Demetropoulos were working on nesting beaches of Turkey and Cyprus, and Roberto Argano, Joan Mayol, Gregorio DeMetrio and Juan Camiñas were investigating turtle captures in fishing ports and gears.

Figure 1. With Anna and our daughter Lenio in Daphni, Zakynthos, 1977.

I was –and still I am– a devoted naturalist and I was receiving then the monthly magazine of the National Geographic Society where I found an article about marine turtles. The author was a professor at the University of Florida. His name was Archie Carr. Archie was the father of modern sea turtle research and conservation. I asked his address from the magazine, and I wrote to him in Gainesville. His research assistant, Karen Bjorndal, replied to me. They were fascinated that turtles were nesting in Greece –they already knew that they were nesting in Turkey and Cyprus, and that "American" loggerheads were visiting the Mediterranean crossing the Atlantic.

I was much impressed by Archie Carr and his team. I did not have the chance to meet him in person, but I was reading many of his marvellous articles and books. His work highlighted sea turtle problems and helped create the human community that continues to strive for a better future for sea turtles around the globe. I recall a funny story. In the early years of our work,

we knew in Greece only the nesting areas of Laganas Bay in Zakynthos and Kyparissia Bay in west Peloponnese, and we were intensely curious to find out why turtles nest specifically on those beaches. I actually instigated, through the Ministry of the Environment, a project with Greek universities to investigate oceanographic and beach characteristics in those areas, in the hope to find an answer.

Not surprisingly, we did not find any explicit feature that would attract sea turtles and the question remained unanswered. At that time, I was reading the book "So, Excellent a Fishe" where Archie recites that natives in Costa Rica believe that green turtles are guided to their rookery in Tortuguero by a conspicuous 120 m-high hill, the Cerro Tortuguero (or Turtle Mountain).

Archie jokingly said that he did not reject fully this belief. He exactly narrates in his book: "It is Cerro Tortuguero, a myth says, that draws-in the turtles. I have spent ten years looking for a better theory, so I never argue the point". I promptly thought of Vounaki hill —a 100 m-high mount— overlooking the core nesting area of Kyparissia Bay and, in my mind, I had almost fixed the possibility that turtles were attracted there by the conspicuous shape of this hill (Fig. 2A).

Figure 2. A: Vounaki hill in Kyparissia Bay, presumably guiding turtles there. B: Marathonissi Island in Laganas Bay – resembling a huge basking turtle.

In Zakynthos, however, the explanation for the large aggregation of turtles was more obvious; turtles were attracted in Laganas Bay by the turtle-like shape of Marathonissi island (Fig. 2B)!

Dear Colleagues, Ladies and Gentlemen,

I am greatly honoured to be invited here by the conference organizers. The President of this conference, in his announcing message, emphasized the longevity of the event. Indeed, the first Mediterranean conference was organized in 2001, more than twenty years ago. The idea belongs to Douglas Hykle of the Convention of Migratory Species (CMS). RAC/SPA, the Bern Convention and the Marine Turtle Specialist Group of IUCN readily endorsed his proposal. The Conventions traditionally provide most of the conferences' funding. However, in the last conferences, I see more donors, and this is much promising for the continuation of these important events, although "fund-raising" certainly increases the burden of the President. Following the example of the global Sea Turtle Symposium, from the third conference we introduced the "conference President" in order to concentrate all responsibilities to one appropriate person, as they would coordinate best the realization of the event. This change proved very effective, indeed.

With seven Mediterranean conferences in two decades, it is inevitable to talk about generations and destinations. If I am not mistaken, the current seventh conference has attracted a large number of abstracts, the largest from any other previous conference. Very appropriately, Mustapha Aksissou noted in his welcome address: "This conference is a reunion of old friends with the new generation of sea turtle researchers and conservationists". Indeed, the number of young people attending this conference and their multi-discipline presentations amazed me, being the oldest among you.

I suspect I know why Mustapha invited me. Being the oldest, to do some reflecting on my personal history, I suppose, but more to the point, on how Mediterranean marine turtles were elevated to their present status in the global scene.

Elevating the Mediterranean to the global sea turtle scene

Before the eighties, the Mediterranean did not actually exist in the international sea turtle scene. Lack of knowledge was overwhelming, and our closed sea had not yet developed its own personality; generally, it was rather treated as a "Gulf of the Atlantic". A Mediterranean identity was built up gradually and slowly, in piece-meals, but these were uninterrupted.

Several non-Mediterranean sea turtle researchers assisted greatly our efforts. One of the first was Jack Frazier who in 1982 –that is 40 years ago– came to Greece and accompanied our first tagging team in Zakynthos, providing practical advice and invaluable insights for the conservation of this population. I consider him as my mentor, and I appreciate much his philosophical approach to several sea turtle matters.

In the beginning of 90s, comparison of mtDNA between Mediterranean and Atlantic loggerheads by Brian Bowen, then at the Genetics Department at the University of Georgia, provided the first indication that Mediterranean loggerheads comprise an independent demographic unit. This helped greatly our conservation efforts, and later led to the establishment of the current Mediterranean Regional Management Unit, exemplified by Brian Wallace et al.

A major incident that amplified a Mediterranean identity was my participation, by invitation, at the elaboration of the Global Strategy for the Conservation of Marine Turtles organized by the MTSG in 1994 in Puerto Vallarta, Mexico. This 5-day meeting brought me in close association with distinguished marine turtle experts from around the world. I was fortunate to know there some giants of global sea turtle research and conservation like Karen Bjorndal, Colin Limpus, George Balazs, Alberto Abreu, Debby Crouse, Neca Marcovaldi, and several others (Fig. 3). The particularities of sea turtle conservation in the Mediterranean were included in the Strategy, which was later translated into six languages: Spanish, French, Arabic, Chinese, Portuguese and Farsi. The Strategy includes recommendations that promote the survival of healthy marine turtle populations and their habitats. And healthy populations signify populations fulfilling their ecological roles in the wild.

Figure 3. With Karen Bjorndal (front centre) and George Balazs (right), the then Chair and Vice-Chair of the IUCN's MTSG, at Puerto Vallarta, Mexico, on the occasion of elaborating the Global Strategy (June 1994).

Augmenting Mediterranean cooperation

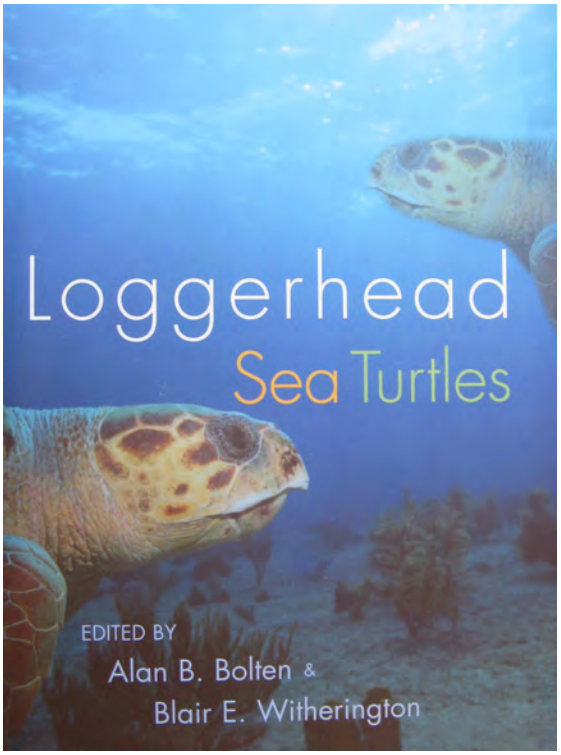
When, in the course of our tagging programme in Greece, tag returns started to come-in from the Gulf of Gabés and from the Adriatic Sea, we realized that to conserve sea turtles in the Mediterranean, we need strong and viable regional cooperation.

Twenty-one states occupy the coasts of Mediterranean, and sea turtle migrations demonstrate that these states are somehow inter-connected. A decline in a national population may be a direct consequence of human activities in another country, many hundred kilometres away. Therefore, while local conservation is crucial, co-operative action is necessary at the regional level.

The burden to organize the Mediterranean coastal states fell primarily

on the international conventions and other supranational entities related to nature conservation and environmental protection in the Mediterranean. The Barcelona Convention, the Bern Convention, the Convention on Migratory Species (CMS) played important roles in channelling governments towards these goals. This took some time, starting from scratch and progressively building up to recently where the conservation of sea turtles is a legal obligation to all Mediterranean coastal states. International and national NGOs played also significant roles in informing, lobbying and pressuring both the international conventions and the national governments. MEDASSET's work into this respect was exceptional.

However, behind the "official" and legal procedures, an active group of sea turtle specialists of different nationalities emerged gradually, working voluntarily on many occasions and topics. Some of them became members of the Marine Turtle Specialist Group of IUCN and provided to international conventions and entities, as well as to national governments, the essential expertise and data. Members of this group assisted in the organization of the Mediterranean conferences, mainly by staffing the scientific committees. I was privileged to be appointed, by IUCN, the first Mediterranean Chair of this group. Initially its members were 3-4 and did not provide adequate coverage neither of geography nor of subject. We managed to change this, by persuading IUCN –then, very stringent in appointing new members- that in the Mediterranean we should have at least one expert per country in order to achieve the desired level of regional cooperation. We succeeded and in October 2007 we had 29 MTSG members in the Mediterranean. These experts became actual focal points in their country and assisted in the creation of more experts by a sort of multiplier effect. However, not all countries had sea turtle experts. Especially some small countries…. but not always small. I recall that, surprisingly, we could not find experts from France. This was after the retirement of Jean Lescure and the voluntary withdrawal of Luc Laurent from the sea turtle scene. All French researchers we knew were working outside Mediterranean. It is much comforting to see today many French colleagues actively involved in the Mediterranean.



Chapter 11

Loggerhead Turtles in the Mediterranean:

Present Knowledge and Conservation Perspectives

—Dimitris Margaritoulis, Roberto Argano, Ibrahim Baran, Flegra Bentivegna, Mohamed N. Bradai, Juan Antonio Camiñas, Paolo Casale, Gregorio De Metrio, Andreas Demetropoulos, Guido Gerosa, Brendan J. Godley, Daw A. Haddoud, Jonathan Houghton, Luc Laurent, and Bojan Lazar

Figure 4. The "Loggerhead Book" of Bolten and Witherington, published in 2003, contained our first collective article –Chapter 11– on Mediterranean loggerheads, authored by 15 experts working in the Mediterranean Sea.

A great opportunity to augment regional cooperation was the co-operative writing up of the Mediterranean Chapter in the Loggerhead Sea Turtles book of Bolten and Witherington, published in 2003 (Fig. 4). Fifteen co-authors from nine Mediterranean countries as well as sea

turtle experts working in the Mediterranean strived for more than one year to finalize this chapter, which still is widely used as it contains many data not published elsewhere.

It may sound a bit strange, but the global Sea Turtle Symposia played also a decisive role in the development of a regional cooperation mode in the Mediterranean. More and more Mediterraneans were attending them, waving the Mediterranean flag. We soon realized that it would be a waste of time (and money) if we could not explore fully this opportunity in order to better know each other. Indeed, the so-called "Mediterranean meetings at the Annual Sea Turtle Symposia" started in 2001 in Philadelphia, USA, and thanks to my successor Paolo Casale –today one of the two global MTSG Chairs– and the current Mediterranean Region Chairs, continues until today (Fig. 5).

Figure 5. The Mediterranean meeting at the 24th Sea Turtle Symposium (Costa Rica, February 2004).

I recall the amusing motto of our first meeting in Philadelphia: "we Mediterraneans should cross the Atlantic in order to know each other". The companionship that characterized these meetings eventually transformed into common understanding and willingness to cooperate. Result of this, are the many multi-national projects, elaborated and implemented in the Mediterranean, by sea turtle experts that happen to know each other from these meetings and had developed mutual respect and trust.

I should note here that by "Mediterraneans" I mean also the marine turtle experts from non-Mediterranean countries that conducted long-term research in the Mediterranean and have established strong bonds with local researchers, local organizations and communities, and assisted in building capacities that augmented further sea turtle research and conservation.

We also started to make use of internet through MedTurtle, the Mediterranean Listserv, a very useful tool for our communications. Recently, a new resource appeared: The MedTurtle Bulletin, conceived and realized by ALan Rees, with a wide array of co-editors and advisors reflecting nicely the concept of "regional cooperation". Finally, yet importantly, I would like to stress the many products of the inter-governmental collaboration, among Mediterranean countries, coordinated by the RAC/SPA, pertaining to marine turtle conservation in the Mediterranean.

"Mediterraneans" not only attended regularly the global Sea Turtle Symposia but increasingly took positions of responsibility at the International Sea Turtle Society (ISTS), which is the global association of sea turtle experts that organizes the Annual Symposium on Sea Turtle Conservation and Biology. Several "Mediterraneans" were elected members in the ISTS's Board of Directors, its Nomination Committees and even in its Presidency (Fig. 6). Twice, so far, the global Sea Turtle Symposium took place in the Mediterranean, in Greece (in 2006) and in Turkey (in 2015).

Figure 6. The ISTS Board of Directors at their annual meeting (Shepherdstown, West Virginia, August 2016), with participation of two "Mediterraneans"; Yakup Kaska (fourth from left, upper row) and ALan Rees (first from left, lower row).

Reflections on research

Of course, the elevation of Mediterranean to its present sea turtle status did not happen automatically. It was a result of the persistent and arduous work by many researchers and conservationists. Time is not enough to describe the conservational and research achievements of the past 30 years or so. I will just throw-in some topics.

Long-term monitoring programs, tagging studies, discoveries of new nesting and foraging areas, telemetry, genomics, stable isotopes, demography (longevity, breeding frequency and sex ratios), age at maturity, growth rates, survival probabilities, modelling, population dynamics, phylogeographic studies, abundance assessments from the air, development of in-water projects, assessment and mitigation of threats on land and at sea, physiology, behaviour, and many others.

All these subjects are outstandingly depicted in the ever-growing number of scientific publications concerning the Mediterranean. Not to mention the hundreds, if not thousands, of graduate and post graduate works featuring sea turtles as their main topic. In some cases, however, we had to avert parachutism, especially in the early years. What is parachutism or parachute science? Kartik Shanker et al. provided an exceptional description of this phenomenon. “Parachute science is when researchers “drop in” to conduct research, travel back home to analyse data, and then publish results with no involvement of local researchers. This phenomenon is also described as “neo-colonial” research, or “safari study”. The rationale is that if any meaningful long-term benefit is to be accomplished, this will be done by the people of these nations and not by visiting scientists from elsewhere.”

Research on sea turtles is not easy. This is perhaps the reason that sea turtles were not investigated, actually sort of ignored, previously in the Mediterranean. Field research needs a great deal of time, dedication and –of course– adequate funding. Especially the time component is overwhelming, often surpassing the lifetime of researchers. The first sea turtle researchers in the Mediterranean were pioneers.

Obviously, there are still gaps in our knowledge on some basic life history traits, which continue to hinder progress toward building accurate population models, including survivorship, dispersal and migration at different stages, mating systems, carry-over effects and sex ratios of the breeding population.

More importantly, a clear understanding of the ecological roles of sea turtles at different life stages is missing.

Reflections on conservation

Major successes appear also in the conservation efforts for sea turtles in the Mediterranean. Especially in the protection of nesting areas. Today many important rookeries across the Mediterranean are adequately protected. By “important”, we usually mean a beach with many nests, which is not very correct. A beach with few nests can also be important in terms of genetic diversity, production of male hatchlings, or even being in a northern latitude that increasingly attracts turtles from southern beaches due to global warming. We are lacking such information, and we usually concentrate our efforts only to beaches where “large” populations reproduce.

There are examples of local communities that conserve successfully their own small rookery. The local community at Cirali beach in Turkey is such an example (Fig. 7). We should reinforce these efforts in the Mediterranean, in a way that local stakeholders and turtles can live together in the long-term.

In conclusion, we have to find new ways of getting people –at all levels– to participate in decision-making that promotes viable management of sea turtles. Networking, information-sharing,

and capacity building are important steps towards this goal.

Figure 7. In Cirali beach, Turkey, with Eladio Fernandez-Galiano (centre), officer of Bern Convention, and Bayram Kutle (right), head of the community co-operative that monitors and protects turtle nests on the beach (May 2005).

Conservation attitudes have benefited from the charismatic character of sea turtles; they are definitely flagship species, which makes them very suitable to communicate environmental messages, and assist in public awareness campaigns and educational programs. There are many such programs in the Mediterranean, and most are very successful.

The success of conservational goals in the Mediterranean is evidently reflected in the downgrading of the loggerhead turtle in the IUCN's regional Red Listings.

The change of the Loggerhead Red List status from Vulnerable to Least Concern is undoubtedly a result of the many long-term monitoring and conservation programs going-on, and the tremendous success of the public awareness and educational efforts. In Greece, a sociological study pointed out the loggerhead turtle as the most favourable animal to children.

Nevertheless, we say, rather light-heartily, that a sea turtle population has increased, while we usually neglect the time scales of sea turtles. In the Mediterranean, there are no nesting data older than forty years. Forty years is close to nothing in the development of a sea turtle population. We tend to start our calculations from when we have started our research, ignoring the shifting baseline syndrome! According to this "syndrome", scientists tend to describe population change taking as starting point the onset of their work. This is a very human way of thinking though.

At sea, however, there are problems. The marine phase of turtles is not protected adequately. Turtle bycatch goes beyond national jurisdictions. No single country can reduce bycatch efficiently. Any progress on bycatch reduction requires coordinated actions from the entire fishing industry in the Mediterranean and beyond.

It is very promising that we are moving, gradually, towards a basin-integrated management. RAC/SPA, GFCM, MedPAN and other supranational entities are seeing to that. Integrated basin-management is particularly important for the reduction of turtle bycatch in the Mediterranean.

Presently, there has been much interest to define the economic value of biodiversity and natural resources. People planning their vacations in the Mediterranean think of beautiful coastal landscapes, blue seas, clean beaches, and a variety of animal and plant species being around. On the other hand, holiday countries in order to satisfy this tourist requirement are struggling to find ways to deal with nature. Harmonizing tourist expectations with the needs of protected species and habitats in a sustainable way is very challenging.

Since tourism threatens sea turtles, it is important that holiday countries spend some of their profits from tourism, for sea turtle conservation. This will pay back in the long-term, especially if conservation efforts target an entire ecosystem, i.e. the beach, the dunes, the coastal forest, the lagoon, and the people that live in this ecosystem.

The ultimate goal for conservation is to integrate people and turtles. The traditional antipathy between conservationists and stakeholders should be over. Both can find a common ground, for getting a win-win result.

This brings forward the question “how many turtles are essential for the Mediterranean ecosystem?” Difficult to answer. Conservation of sea turtle populations will not be a steady-state situation, as everything seems to be on the move. The turtles, the people and their activities, and the environmental conditions. We are living in a dynamic environment, and things are changing very fast.

Heraclitus, the ancient Greek philosopher, said the only constant in life is Change. Everything changes, around us and within us. You cannot step into the same river twice. The river has changed and you have changed.

At the end of the day, constantly changing environments and conditions perplex our conservation goals. For instance, the looming climate change.

Reflections on climate change

Climate change will transform ecosystems. Ecological changes will have significant consequences for the conservation of sea turtles. It is expected that the Mediterranean will be impacted more than other regions. Researchers are trying to predict how turtle populations will respond to sea level rise, increase of temperatures, and change of sea currents. Mitigation measures as nest shading or watering are proposed to offset negative impacts.

However, sea turtles have survived millions of years by adapting to the many cycles that govern our planet. Lunar cycles, solar cycles, climatic cycles, and others in the history of Earth. Sea turtles have persisted over the ages by confronting environmental changes. They adapt to the changes by using various “tricks”. They shift their breeding to higher latitudes or change the timing of their nesting to cooler months of the year. The increased nesting levels in the western Mediterranean may be an effort of turtles to colonize new suitable habitats.

But while we are trying desperately to find out the impacts of climate change on sea turtles, we do not consider equally the tremendous impact of these changes on humankind. We are discussing if this beach or that beach will continue hosting nests when the sea level rises, but we ignore the behaviours of people under those conditions.

Will the tourism industry continue running as today? Will fishing practices continue, as we know them? Will agricultures continue functioning as today? Will peoples move also to northern latitudes? Will today’s cities, and even regions, be abandoned? These are very tough questions.

Epilogue

Closing this talk, it is my personal hope that the Mediterranean conferences will go on with new candidate countries to host the conference and with the continuing assistance of the international conventions. The Mediterranean, our beautiful and fragile sea at the historic crossroads between Africa, Asia and Europe provides unique opportunities for research, education, and conservation.

Above all, I do hope that you all –the younger generation– shall continue growing into an inclusive and supportive sea turtle Mediterranean community. Move ahead with your research, do a better job in protecting the nesting beaches, the foraging areas and the other ecosystems that sea turtles use. Be in touch with colleagues in other nations. Share your work with others. Inform the public with your findings.

We are all on the same boat, the planet Earth!