

Editorial: It's The Humans, Stupid!

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While I readily accepted the kind invitation of the guest editors to draft the editorial of this special edition of the Marine Turtle Newsletter, I didn't realize how difficult my task was. Pondering for an appropriate subject, I had the opportunity to look back at my 35 years of working with, and for the, sea turtles in Greece and also at the many years of liaising with knowledgeable colleagues in the Mediterranean and elsewhere. In my agonizing search for a subject, a persisting question was recurring in my mind: "in a dramatically changing world what will be the future of sea turtles?"

Sea turtle interactions with humans are known since immemorial times, and these interactions have shaped the existing sea turtle populations and the related marine ecosystems, and even the biological aspects of sea turtles as we know them today (Bjorndal & Jackson 2003, Frazier 2003).

In the eastern Mediterranean Sea, green turtles (mainly) have suffered enormous exploitation by humans going back at least 100 years (Sella 1995). The consequences of this exploitation to the turtle populations themselves and also to the related ecosystems, in which these populations were functioning, are not known.

Today, in the Mediterranean, humans are sprawling fast and steadily along its coastal zone with hotels, golf courses, summertime houses, seaside roads, and marinas. This coastal urbanization has gradually eaten into significant habitats and stunning landscapes. Furthermore, some of these constructions are ill-designed, if not illegal, and in many cases cause considerable erosion at nearby nesting beaches. Typical examples of such erosion are found along the northern coast of the Island of Crete, with the nesting beaches of Rethymno and Chania gradually disappearing and the associated turtle populations declining.

By the way, Greece is the only country in Europe, if not in the world, where building of houses is permitted outside planned human settlements. Several of the famed Greek islands have already been badly degraded by the hundreds of villas now speckling the once typically bare island landscapes. Similarly, on the mainland, highly productive fields have been transformed to not-so-productive luxury houses with swimming pools, used only a couple of months per year. This insanity, called "building outside planning" (sic), is legally established and, regrettably, very popular. It is therefore a matter of time that most of the accessible coastline in Greece will be built up.

Someone would argue "Well, this can be a reason for establishing protected areas". Although this is true in theory, in reality the only nesting area protected by law in Greece is that of Laganas Bay, on the Island of Zakynthos, featuring a National Marine Park. Although, the creation of the Park was admittedly an important milestone in sea turtle conservation in Greece, and also in the Mediterranean because of the regional importance of Zakynthos, the situation is far from being bright in the long run. Indeed, the Park has not yet managed to build up its own resources and is still at the mercy of the financing priorities of the central government. Furthermore, the management

responsibilities of the Park are focused primarily on its terrestrial part and, despite its name, much less on the neighbouring marine area. But even if this marine area, used by turtles as their inter-nesting area, would acquire full protection and adequate enforcement, this would not still be enough to safeguard the population because most nesting turtles migrate to far-away foraging areas, such as the Gulf of Gabès and the northern Adriatic, which fall in the jurisdiction of other nations. So far, no binding treaty has been developed to encompass these nations in a supra-national conservation scheme concerning sea turtles.

All other major nesting areas in Greece are actually unprotected, despite being all in the NATURA 2000 Network of the European Union. Kyparissia Bay, the second largest nesting area of loggerheads in the Mediterranean, with a long and wide sandy shore hosting an extensive coastal pine forest, several rivers and magnificent sand dunes, is gradually being degraded and recently found itself under severe pressure to be developed.

Furthermore, overfishing and long-time destructive practices have caused a documented decline of fish landings in the Mediterranean (Garcia *et al.* 2005). This is not confined only to target species but also to non-commercial fauna as well as to disruption of sensitive habitats because our fisheries are not yet managed in a broader ecosystem context. As a consequence, sea turtles as well as other marine fauna fall victim to a disrupted food-web structures or to resultant antagonism with fishers. More and more turtles are killed every year in Greece from frustrated fishermen struggling for a meagre fish catch. Human activities have distorted the marine ecosystem so much that the monk seals of Zakynthos are forced to eat loggerheads as summertime meals. A holistic approach to integrate fishing activities within the structure and function of marine ecosystems is regrettably lacking.

If we add to these problems the incoming climate change, the overall picture looks increasingly gloomy. Because sea turtles live in a medium with a huge thermal inertia, climate change will impact first humans. Sea turtles, if left alone, would be able, to a certain degree, to adapt to the expected environmental changes by establishing new nesting beaches, to avoid the rising sea water, and by modifying nesting seasons, to overcome biased sex ratios caused by increasing ambient temperatures. Of course, sea turtles will have eventually problems too, but these problems will rather be caused by the expected devastating disorder of the established human "way of life."

It's no secret that climate change will create overwhelming disruptions in agriculture and fisheries as well as in the availability of food and water, new diseases will emerge, and all this chaos will unavoidably lead to large-scale human migrations. We cannot even imagine in what ways the humans will react to this scenario, as a result of their disrupted lives. For the time being, and despite the early warnings, people in developed nations carry on with their

business as usual, while those in developing countries struggle to survive day to day and are most likely astonished at the enormous wealth that has been concentrated into the hands of few.

But we shouldn't be exceptionally pessimistic nor dramatic. Despite the glumness, I can see some hope. First, there is a growing trend at international organizations and in several governments around the globe in working seriously towards ecological and social justice, which are entirely intertwined. Second, there is now an outstanding base of knowledge - produced by many young researchers - upon which management and conservation schemes can be firmly based. Finally, and despite our current efforts to behave carelessly as a species, we can in fact be responsible and ingenious. When circumstances become truly rough we may well rise to a new level of intellect and wisdom, and start at last performing like a proper *Homo sapiens*.

BJORN DAL, K.A. & J.B.C. JACKSON. 2003. Roles of sea turtles in marine ecosystems: reconstructing the past. In: P.L. Lutz, J.A.

Musick & J. Wyneken (Eds.). The Biology of Sea Turtles, Vol. II. CRC Press, Boca Raton, FL. pp. 259-273.

FRAZIER, J. 2003. Prehistoric and ancient historic interactions between humans and marine turtles. In: P.L. Lutz, J.A. Musick & J. Wyneken (Eds.). The Biology of Sea Turtles, Vol. II. CRC Press, Boca Raton, FL. pp 1-38.

GARCIA, S.M., I. DE LEIVA MORENO & R. GRAINGER. 2005. Global trends in the state of marine fishery resources 1974-2004. In: Review of the State of World Marine Fishery Resources. FAO Fisheries Technical Paper No 457. FAO UN. Rome. pp. 10-14.

SELLA, I. 1982. Sea turtles in the eastern Mediterranean and northern Red Sea. In: K.A. Bjorndal (Ed.). Biology and Conservation of Sea Turtles. Smithsonian Institution Press, Washington D.C. pp. 417-423.

Reproductive Data of Loggerhead Turtles in Laganas Bay, Zakynthos Island, Greece, 2003-2009

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Laganas Bay on the Island of Zakynthos, Greece, hosts the largest nesting aggregation of the loggerhead turtle (*Caretta caretta*) in the Mediterranean (Margaritoulis *et al.* 2003, Margaritoulis 2005). Laganas Bay has a southeastern orientation with a coastline of approximately 20 km, with an opening of about 12 km. The nesting area consists of 5.5 km of suitable nesting habitat which covers six distinct beaches (see Fig. 1 and Table 1). These beaches vary greatly in the degree of development, human use, accessibility, slope, orientation, substrate composition, and color. Detailed descriptions

of these beaches, the major problems they face, together with their climatic conditions, appear in Margaritoulis (2005).

Because of the importance of Laganas Bay, the National Marine Park of Zakynthos (NMPZ) was established in 1999 and in 2000 a specific Management Agency was formed. The creation of the NMPZ and its Management Agency are major steps forward in the protection of the area, primarily by incorporating local opinions and through promoting a more balanced situation, enforcement of existing regulations, and the implementation of an effective wardening scheme on the nesting beaches.

The nesting effort and associated reproductive data in Laganas Bay have been systematically monitored by ARCHELON since 1984; in the last few years the monitoring work has been carried out in cooperation with the NMPZ under a more detailed protocol. Nesting data from 1984 through 2002 have shown no specific population trends probably because of the relatively high inter-annual variability of nesting effort (Margaritoulis 2005). We present here the main reproductive data of the loggerhead turtles in Laganas Bay for the 7-year period 2003-2009.

The basic methodology of the monitoring work is described in Margaritoulis (2005). For the

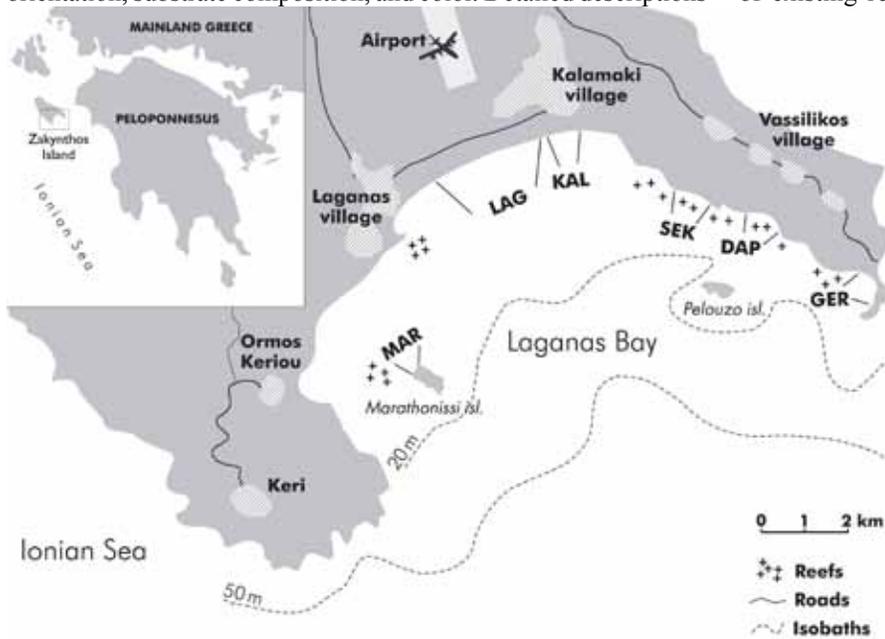


Figure 1. Laganas Bay, Zakynthos Island, Greece, with the six beaches comprising loggerhead nesting habitat: MAR=Marathonissi, LAG=East Laganas; KAL=Kalamaki, SEK=Sekania, DAP=Daphni, GER=Gerakas).