Turtle Recovery in Cyprus

THE IMPORTANCE OF LONG-TERM COMMITMENT

By KIMBERLEY STOKES

Local turtle champion Kutlay Keço has been watching green and loggerhead turtles nest on Alagadi Beach in northern Cyprus since the 1970s. Alarmed at the ever-increasing levels of nest predation by stray dogs, he invited two university students, Annette Broderick and Brendan Godley, to collaborate in surveying the population. In 1992, they established the Marine Turtle Conservation Project, documenting a 90 percent nest predation rate, and they set out to turn these unsustainable losses around.

The co-dependency of conservation and research has been a cornerstone of the project since the beginning, and the structure is built on a motivated and well-trained volunteer workforce. Carefully supervised night visits to the otherwise off-limits nesting beach provide the double service of tourist education and fundraising (through donations and a souvenir gift shop) to offset project costs. Keço maintains a deep involvement in the project, housing the volunteers on his land and working with the government to protect nesting

beaches through SPOT, the Society for the Protection of Turtles in North Cyprus.

Each summer, teams of volunteers carry out daily patrols of every nesting beach on the north and west coasts of northern Cyprus for the duration of the breeding season (May–September). The teams record and protect new nests and excavate any that have hatched. At Alagadi Beach, patrols continue throughout the night at sufficient regularity to encounter every single nesting turtle, thus enabling the calculation of reproductive rates such as clutch frequency and remigration interval. By covering a great breadth of nesting sites and implementing in-depth monitoring at one major site, the project is able to observe relatively widescale nesting trends while also collecting individual fecundity metrics to interpret the broader nest count data. The longevity of the data series allows us to see past short-term fluctuations in nesting numbers so we can observe underlying population trends.

Population assessments should be based on data from multiple life stages wherever possible, not just from nests and nesting females. However, the accessibility of nests and females provides logistical opportunity for low-cost, long-term monitoring. Whether assessments come from nesting beach counts or in-water surveys at foraging grounds, monitoring schemes with a core set of simple, robust, and inexpensive measurements often have higher chances of remaining consistent and sustainable in the long term.

Many green turtle research projects estimate the number of nesting females by dividing the number of nests on a beach by a widely accepted average clutch frequency of three nests per female. At Alagadi Beach, where each nest is assigned to a known (tagged) female, green turtle clutch frequency consistently averages three nests per female, thereby validating this widely used method at a regional scale.

In contrast to Cyprus, however, Ascension Island's green turtles are larger, migrate farther, and have a longer season of favorable nesting conditions than do their conspecifics in the Mediterranean. Their average clutch frequency has been shown to be as high as six nests per female per season. Such variations highlight the importance of determining regional reproductive rates, as well as monitoring changes in productivity over time.

Nesting beach research is not limited to adult females and hatchlings; advances in tracking and molecular technologies increasingly extend the scope of insights possible from nest site projects. For example, 12 years of satellite tracking from Alagadi Beach sparked a collaborative tracking project from green turtle nesting sites across four Mediterranean countries. This combined effort has identified shared foraging grounds and migratory corridors with seasonally high concentrations of turtles, thereby revealing an urgent need to investigate fisheries bycatch levels in those key areas.

Moreover, genetic studies at Alagadi using parentage analysis have shown that the green turtle breeding population consists of more males than females, a big surprise considering the heavily female-biased sex ratios of hatchlings that have been recorded there and on surrounding coastlines. This pattern has also been observed in green turtle populations in the southern Great Barrier Reef and in Georgia, U.S.A. Such revelatory findings emphasize the limitations of our understanding of sea turtle biology.

Climate change adds another dimension to the need for long-term data. Long-term monitoring projects from an array of taxa have proved invaluable in demonstrating a clear biological response to recent warming. For sea turtles, some populations are gradually shifting their nesting phenology out of the hottest part of the season, which goes some way toward ameliorating the negative effects of rising sand temperatures on hatchling survival, size, and sex ratio. Major uncertainties remain regarding the resilience and adaptive potential of sea turtle reproduction to modern climate change; conservation and research must go hand in hand in seeking to protect these ancient mariners.

Twenty-three years after the Marine Turtle Conservation Project conducted its first surveys in northern Cyprus, monitoring continues, and in situ nest protection has reduced the once prolific predation rates to less than 5 percent. Green turtle nesting in the region is rising steadily, adding to a growing body of evidence that recovery of vastly reduced sea turtle populations can be achieved, given adequate protection over appropriate timescales. ■

AT LEFT: Researchers tag a nesting green turtle on Alagadi Beach, Cyprus. Long-term research at Alagadi has led to insights into turtle biology that extend well beyond the nesting beach. © OLKAN ERGULER