Extinction Avoided—Now What?

By Carlos Delgado-Trejo and Cutzi Bedolla-Ochoa

Studies of the eastern Pacific green, or black, turtle (*Chelonia mydas*, known locally as *tortuga negra*) that began in the 1960s estimated that there were some 25,000 nesting females in the Mexican state of Michoacán. Those studies used nest counts along some 80 kilometers (50 miles) of coastline and several important nesting beaches such as La Llorona, Motín del Oro, Xicuaza, Maruata, Maruata Viejo, Paso de Noria, Cachán de Echeverría, Arenas Blancas, and Chocola. The early studies suggested that turtle numbers were in decline because of the near-industrial-scale overconsumption of eggs and adults that supported burgeoning local and regional markets. Thus, a broad-based conservation program was recommended to save the black turtle from extinction. That effort has now been under way for decades and is led by Mexican authorities with support from a number of international backers.

According to the most basic of metrics (the numbers of nesting females), Michoacán's black turtle conservation program is an undeniable success (see *SWOT Report*, vol. XIII, pp. 44–45). In the most recent breeding season, fully 86,000 black turtle nests were recorded at Colola Beach between August 2021 and April 2022, representing roughly 28,000 nesting females. That number is nearly the estimate for 1965's total population for all of Michoacán, but *at a single beach*! And if one considers the entire state, this number increases to at least 104,000 nests (or approximately 35,000 females).

Moreover, now that long-term studies have shown an average remigration interval of three years, we can estimate the total number of Michoacán black turtle females at around 105,000, a near quadrupling of the estimated abundance since 1965. Indeed, the recovery of the black turtle throughout the Mexican Pacific is noteworthy, and significant increases in nesting have also occurred in the neighboring states of Guerrero, Jalisco, Nayarit, and Oaxaca (at Palmarito Beach).

As has been reported for Florida and Hawaii (USA), Galápagos (Ecuador), and other sites around the world where sea turtle populations appear to be recovering, Mexico's black turtle rebound is the result of steady and continuous conservation efforts by national and international organizations, indigenous communities, academics, students, and volunteers, who have collaborated synergistically on this arduous task for more than 50 years.

How Many Turtles Are Enough?

Although numbers of turtles are an obvious and often-used metric, they are but one of many approaches that must considered when one contemplates long-term sustainability. For the many people and projects worldwide that are dedicated to biodiversity conservation and that have seen successes of this nature, especially with sea turtles, a question resounds: What is the next step? Since the 1960s, we conservationists have rallied to prevent the extinction of the black turtle, and now—in some places at least—we appear to have achieved and surpassed that worthy goal. Barring some unforeseen cataclysm, and if we continue what we have been doing, trends indicate that extinction has been avoided and that turtle numbers should continue to rise.

But how many turtles are enough? For instance, the increase in black turtle abundance is undeniable and evident to the people who live in coastal Michoacán, many of whom recall hunting, selling, or consuming turtles for food in their youth, and many of whom are still faced with the challenges of poverty and hunger—problems that sea turtle harvesting could potentially alleviate.

Understandably, some people are thinking that it may be time to change the laws, to question the authorities who protect turtles, and to return to the old paradigm of utilization. But even if harvesting could be demonstrated to be scientifically sustainable (there are presently no data to support this concept), it would still be very hard—and potentially very damaging—to turn a decades-old "protection" mindset back into a "use" mindset. Furthermore, were the use of sea turtles to become commonplace once again, how would we avoid repeating the scenario that brought these animals to the brink of extinction 50 years ago?

Nonextractive Use

For the moment, we are not prepared to give an answer about returning to a paradigm of consumptive use of sea turtles, nor would such a return even be legal without significant changes to Mexican policy that are highly unlikely and certainly slow. It does not make sense to cease protection or to slow recovery efforts that have been underway for decades. But what we can and should do is to support efforts to generate local income, jobs, interest, and conservation attention through nonextractive uses of sea turtles.

Well-managed ecotourism is one such alternative that can generate local jobs and revenue while simultaneously creating an incentive to protect turtles by turning them into a "goose that lays golden eggs" and hence likewise creating an incentive to protect them at all costs. In the case of the black turtle in Michoacán, tourism can help local livelihoods and is gradually becoming a necessary alternative source of financing for conservation activities.

Such alternative funding sources are needed because international support is drying up as the urgency of black turtle extinction has diminished and may be arguably absent in the foreseeable future. Other innovative financial schemes are worth considering, such as "payment for ecosystem services" initiatives, which would produce higher income by using living turtles rather than harvested turtles and would ensure that revenues revert to local communities that are on the front lines of such turtle protection.

ABOVE: An eastern Pacific green (or black) turtle returns to sea after nesting at Colola Beach, Michoacán, Mexico. The innumerable tracks that mark the sand are evidence of this population's impressive recovery. © Carlos Delgado-Trejo

Ways to Design Conservation at a Generational Scale

During the restoration process of sea turtle populations, the design of self-sustaining, generation-scale strategies must become more commonplace. It is important to plan for the long term and to avoid the traditional boom and bust of conservation investment; investment is usually high when extinction is high or threats are acute, and planning disappears when the urgency diminishes. Just because populations have recovered does not mean that all threats have been ruled out. Effective beach protection ensures that some threats have been removed or significantly reduced, thereby allowing population growth through recruitment of hatchlings and protection of adults in nesting and feeding areas. But other threats continue, and new ones can always emerge or old ones reemerge.

Social changes can at some point favor biodiversity conservation but can later work against it, especially if the perception of abundance encourages exploitation—as has happened in the past. In addition, when the analyses of abundance and recovery of a species such as the black turtle is used to design ongoing management strategies, it is equally important to undertake an in-depth socioeconomic analysis of the human environment in which the animal is immersed. Humans must not be left out of conservation planning for the long term. ●