

# Captive breeding and conservation of *Caretta caretta* in the Valencian Community

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Loggerhead turtles (*Caretta caretta*) are the most abundant chelonian member in the Western Mediterranean. Is specified **endangered** in the Red List of the International Union for Conservation of Nature (IUCN).

This study have a review of the main biological characteristics of the loggerhead turtle, its conservation level and the principal aspects of its reproductive physiology and captive breeding projects in the Oceanogràfic of Valencia.

## 1. Biology

- ❑ **Physical characteristics:** very large head, bony caparace with 5 lateral and 5 vertebral scutes. Flippers have 2 claws. The caparace is a reddish-brown with a yellow plastron. Hatchlings have a dark-brown caparace with pale brown on margins.
- ❑ **Size and weight:** 120 cm in caparace lenght and 120 Kg. Hatchlings have 35-45 mm in caparace lenght and 20 g of weight (Camiñas, 2002; Bitón, 2009).
- ❑ **Distribution:** global distribution between 60° N – 40° S (IUCN, 2015).
- ❑ **Diet:** loggerhead turtles are primarily carnivore. They're versatile predator of sessile and slow moving species (Tomas *et al.*, 2011). Garrets feed on small prey, including microalgae. Neonates feed on residue remaining yolk (Bitón, 2009).
- ❑ **Conduct:** migrational character with well-defined routes and seasons (Bitón, 2009).
- ❑ **Conservation:** in the last decade has been a population decline in the main areas of Atlantic nesting. The main threats are fishing, tourism, urbanization beaches, marine pollution, consumption of eggs and natural predators. (Merchán *et al.*, 2010; Abella, 2010).
- ❑ **Legalization:** calcified endangered in Red List of the IUCN, it's strictly protected by the Bern Convention (Annex II) and it's a species under strict protection by the Habitats Directive EEC (Annex IV). In Spain the loggerhead turtle was included in the National Catalogue of Endangered Species as "special interest".

## 5. Conclusions

The main conservation problem for loggerhead turtles is the human factor. For that reason, it's very important to educate people, specially fishermen, and raise public awareness. The Generalitat Valenciana, aquariums and recovery centers should be contribute to it. However, the migratory nature of this specie suggests that we should carry out a global campaign so that it would be effective worldwide.

Besides, the creation of more marine protected areas to promote habitat conservation is also interesting.

At the same time, captive breeding and *head starter* projects contribute to the strengthening of the wild population and maintains genetic variability. In the last years, they have been many advances in these aspects, but further studies are necessary for better understanding of the reproductive physiology of this species.

Finally, recovery centers have an important role in the rehabilitation and reintroduction of recoverable animals, helping to maintain the wild population.

## 2. Life cycle

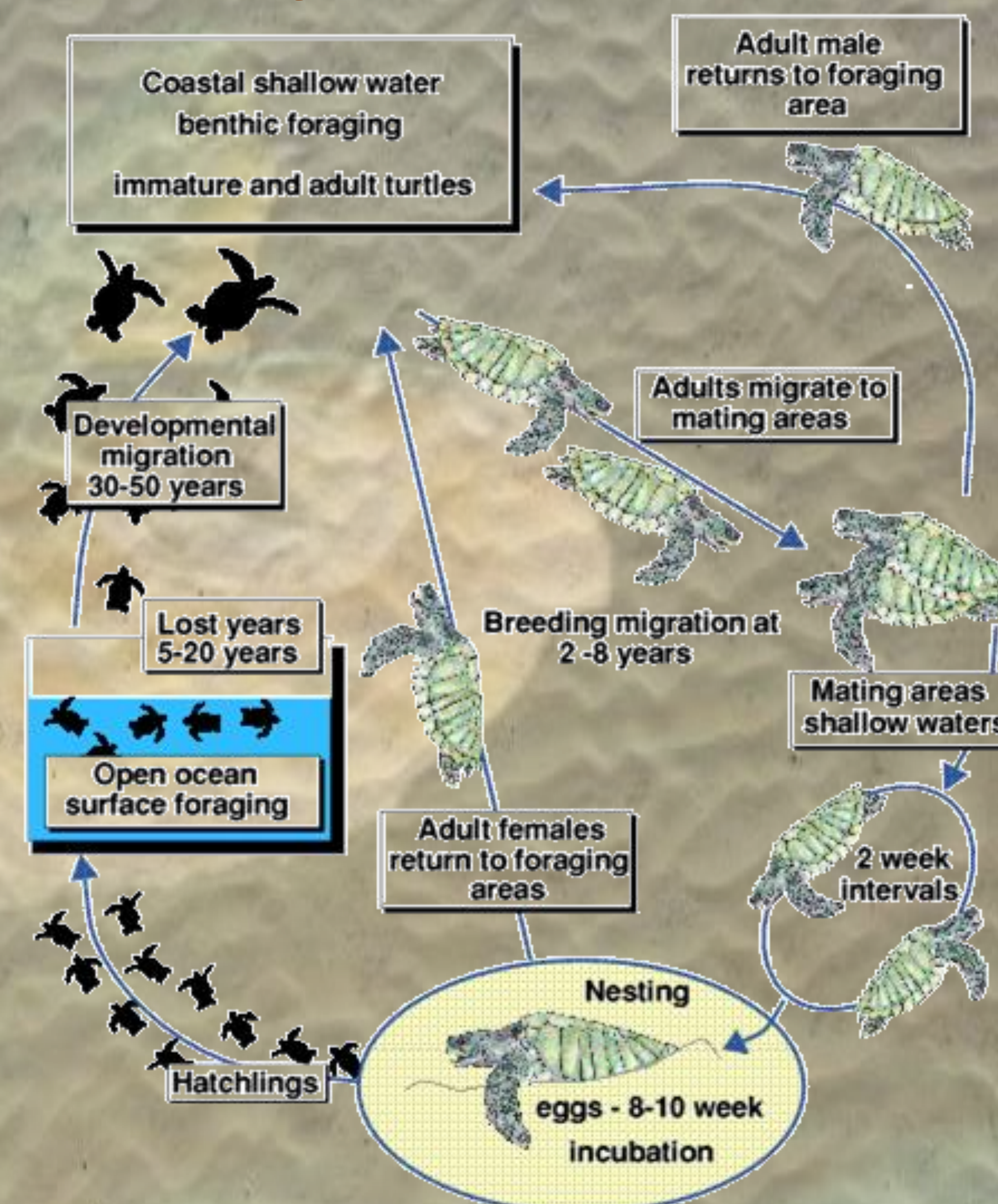


Figure 1. Generalised life cycle of sea turtles (SPNL, 2016)

## 3. Hormonal cycle

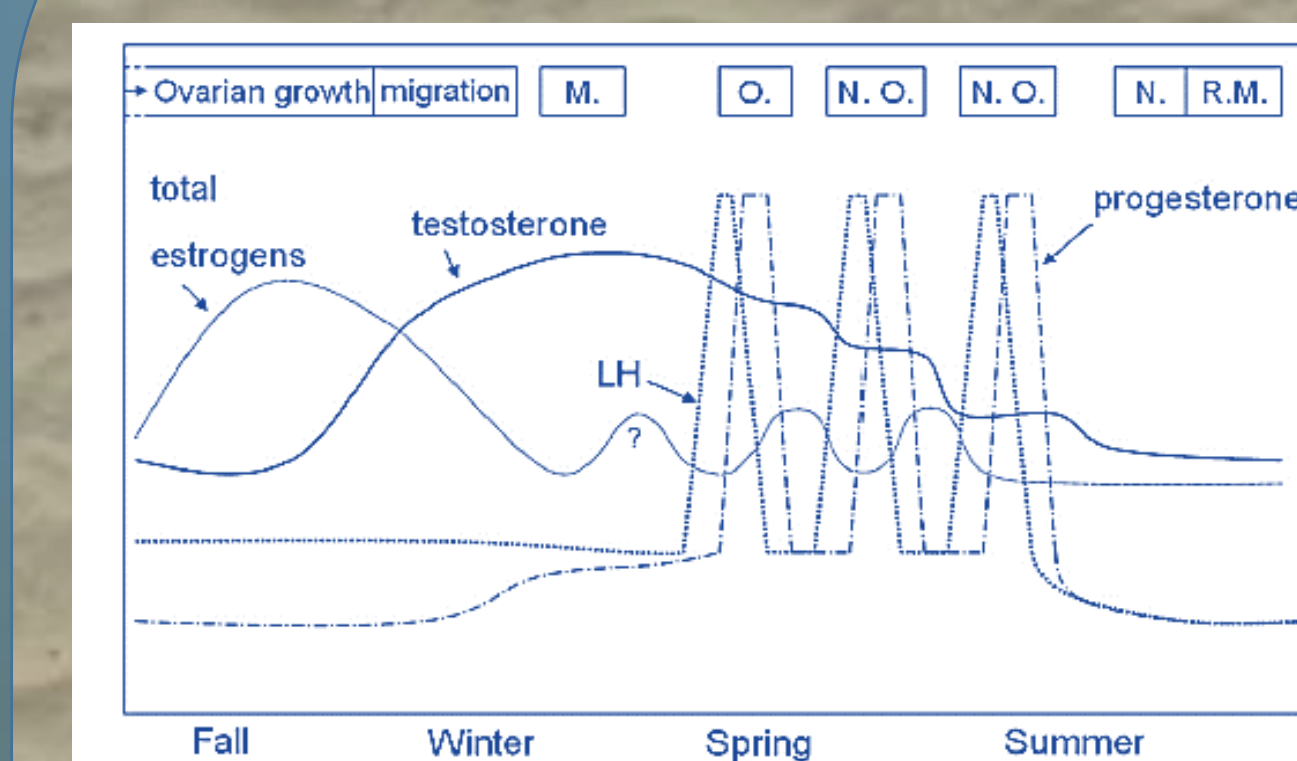


Figure 2. Hormonal cycle of *C. caretta* female (Gaëlle *et al.*, 2011)

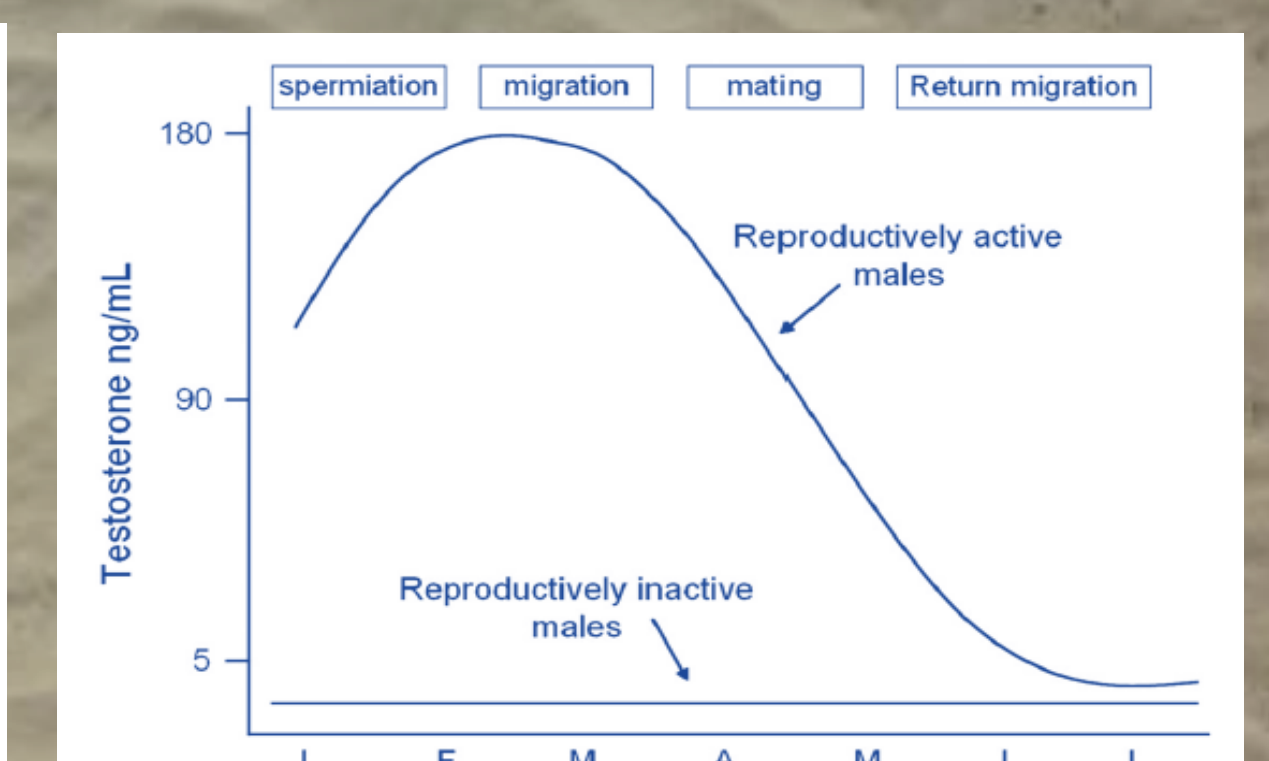


Figure 3. Hormonal cycle of *C. caretta* male (Gaëlle *et al.*, 2011)

## Specific study techniques

It's important to use non-invasive techniques that determine the health and reproductive status of each animal. Hormonal radioimmunoassay, blood sampling, radiology, ultrasound, endoscopy or laparoscopy and histology are currently used (IUCN / SSC, 2000; Gaëlle *et al.*, 2011).

## 4. Captive breeding of *C. caretta* in the Oceanogràfic of Valencia

In the period 2010-2015 the Oceanogràfic of Valencia and the Rara avis company carried out a captive breeding project of *C. caretta* by using unrecoverable animals. They used intramuscular injections of synthetic FSH to mate induction. They got ovulation induction, but oocytes don't pass to oviduct and no eggs were formed.

Simultaneously, they carried out a *head starter* project from a nest found in Alicante in 2014. The eggs were incubated *ex situ* and hatchlings were kept in captivity for a year until they were freed in summer of 2015, with a very good survival rate (Crepo, 2016).

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