



Florida Fish and Wildlife Conservation Commission

Fish and Wildlife Research Institute

The beautifully marked Caribbean spiny lobster has long been a favorite Florida seafood and is one of our most important fisheries. As a result, marine conservation laws have been implemented to protect this valuable species from being overexploited, and management efforts are continually being examined to ensure the sustainability of this fishery.

# SPINY LOBSTER

Mysterious Crustacean of the Caribbean

are protection from predators and can present a hazard to anyone handling the animal without wearing gloves. There are two large prominent spines, sometimes called horns, above the eyes.

A spiny lobster's body has two main parts: the cephalothorax (head section) and the abdomen (tail section). The cephalothorax comprises the head, a cape-like carapace or shell, the mouthparts, antennae, antennules

## Description

The Caribbean spiny lobster (*Panulirus argus*) is a crustacean closely related to crabs, shrimp, and crayfish. Common names for this lobster include crayfish, crawfish, langosta, and Florida lobster. There are about 12 species of lobster in Florida; Caribbean spiny lobsters are by far the largest and most abundant. They vary from whitish to a dark red-orange. The two large, cream-colored spots on top of the second segment of the tail section are the diagnostic features for identifying this species. There are also two smaller cream-colored spots adjacent to the tail fan. Spiny lobsters lack the large, distinctive, crushing claws of their northern cousins, the American lobster.

The name "spiny" comes from the strong, forward-curving spines projecting from the hard shell that covers the body and antennae of the lobster. The spines

(smaller antennae-like structures), and ten walking legs. Spiny lobsters wave their long, spiny antennae like whips for fighting and defense. They use the shorter antennules to sense movement and detect chemicals in the water. The lobster's mouth, located on the underside of and toward the front of the cephalothorax, is surrounded by large, heavy structures called mandibles, or jaws, and by maxillipeds, or accessory jaws. Both sets of jaws are used for biting and grinding food and directing it into the mouth.

The abdomen, or tail section, is narrower than the cephalothorax. The shell covering the tail section is divided into six ring-like segments, and each segment ends in a spine on each side. Under the tail are four pairs of small leaf-like structures called pleopods (or swimmerets). The tail ends in a flat, flexible fan with a broad center section—the telson—and has two lobes on each side of the telson called uropods. This fan

<b>AT A glance</b>	<b>Common Name</b>	Crayfish, Crawfish, Langosta, and Florida Lobster
	<b>Scientific Name</b>	<i>Panulirus argus</i>
	<b>Size</b>	Maximum size approximately 9–10 inches carapace length (15–20 pounds)
	<b>Range</b>	In the tropical and subtropical waters of the South Atlantic, Gulf of Mexico, and the Caribbean Sea
	<b>Habitat</b>	Hardbottom, seagrass, and coral reefs of South Florida and Caribbean
	<b>Regular Season</b>	August 6 to March 31; sport season for recreational harvest during the last Wednesday and successive Thursday of July of each year





generates the thrust needed for the animal to “tail flip”—a rapid backward escape mechanism that presents an armored, thorny front to any potential enemy.

To determine the sex of a spiny lobster, examine the underside of the cephalothorax and tail section. The fifth pair of the male’s walking legs has sperm-duct openings at the base; these openings become greatly enlarged during the breeding season. Also, the second walking legs of mature males are much longer than the other walking legs. The fifth pair of a female’s walking legs has hook-like structures at the tips, but her second leg is not longer than the others. On a male, the pleopods beneath the tail section are single and paddle-like. Each pleopod on a female has two lobes; one lobe is paddle-like, and the other lobe resembles small pincers.

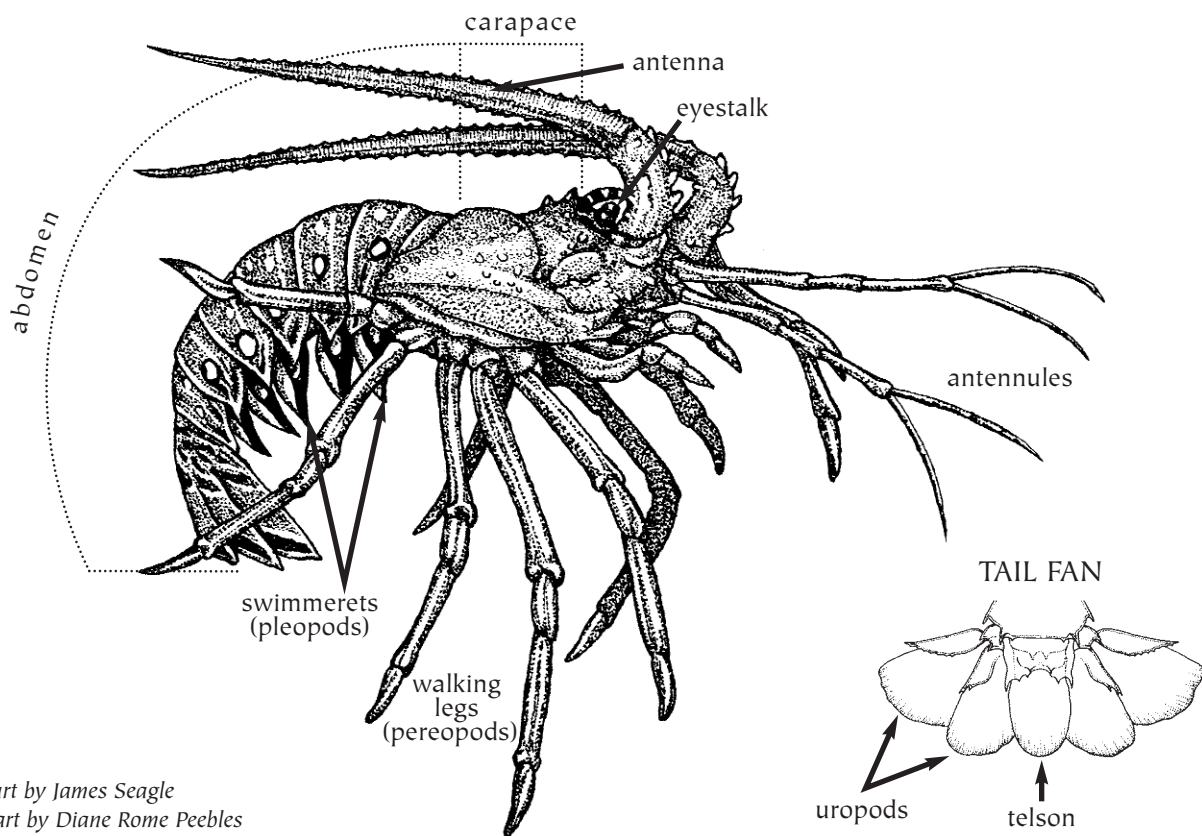
## Life History

The peak mating season of the Caribbean spiny lobster is between March and July. When lobsters mate, the male deposits a sperm packet, or spermatophore, on the underside of the female between her fourth and fifth walking legs. The sperm packet is a light, pinkish-gray when deposited and darkens to black as the covering

develops; because of the dark color, it is commonly called a “tarspot.” When ready to fertilize her eggs, the female scratches the spermatophore with the little hook on her fifth walking leg to release sperm when she discharges eggs from her oviducts. The fertilized eggs attach to long hairs called “setae” on the pincer-like lobes of her pleopods. During the three-week incubation period, the orange egg mass becomes dark brown as the developing young use up the yolks. A female lobster carrying eggs is said to be “berried.”

A female lobster with a three-inch carapace can produce about 250,000 eggs per spawning, and a female with a four-inch carapace can produce over a million eggs. Large lobsters typically spawn two or three times during the annual mating season; smaller animals may spawn only once a year.

A spiny lobster begins life looking nothing at all like an adult. A newly hatched lobster enters the world as a tiny, flat, spider-like larva called a phyllosome and is transparent except for pigment in the eyes. The newly hatched larval lobster drifts in the ocean, feeding on other tiny drifting animals (plankton). Carried by ocean currents, the drifting phyllosome passes through 11 developmental stages before finally chang-



Lobster art by James Seagle  
Tail fan art by Diane Rome Peebles



ing into a transparent, swimming, lobster-like form called the puerulus. Scientists have long thought this larval stage lasts as long as 9 months, but in 2005 *P. argus* larvae were reared by one lobster scientist from a phyllosome to a puerulus in 142 days.

The puerulus does not feed at all; its mission is to swim from the open ocean to nearshore waters and find a place to settle, preferably in clumps of red algae in a hardbottom area. Occasionally, the puerulus will settle in seagrass. By the time the puerulus has found a suitable habitat, it has begun to develop brown and white markings as camouflage. Within a week of settling, the puerulus molts and develops into a juvenile spiny lobster.

### FAST FACT

*Many of the adult lobsters caught in Florida are hatched from eggs that may have come from as far away as South America.*

A juvenile lobster feeds at night on crustaceans and mollusks and hides during daylight hours, a nocturnal pattern that continues throughout adulthood. As the lobster grows, it molts. When a lobster molts, a line along each side of the carapace splits and the soft, flexible animal backs out through the opening. The soft, vulnerable animal quickly absorbs water and expands before the new, and larger, exoskeleton hardens. The process of molting and acquiring a new exoskeleton takes about two days.

About three months after settling, with a carapace length of about one inch (2.5 cm), a juvenile leaves the

algal clumps for a hardbottom habitat of sponges, solution holes (mini-sinkholes), and small coral heads. Minimum legal harvest size (three-inch carapace length) is reached about two years after the puerulus settles. Minimum legal harvest size is also about the point of sexual maturity.

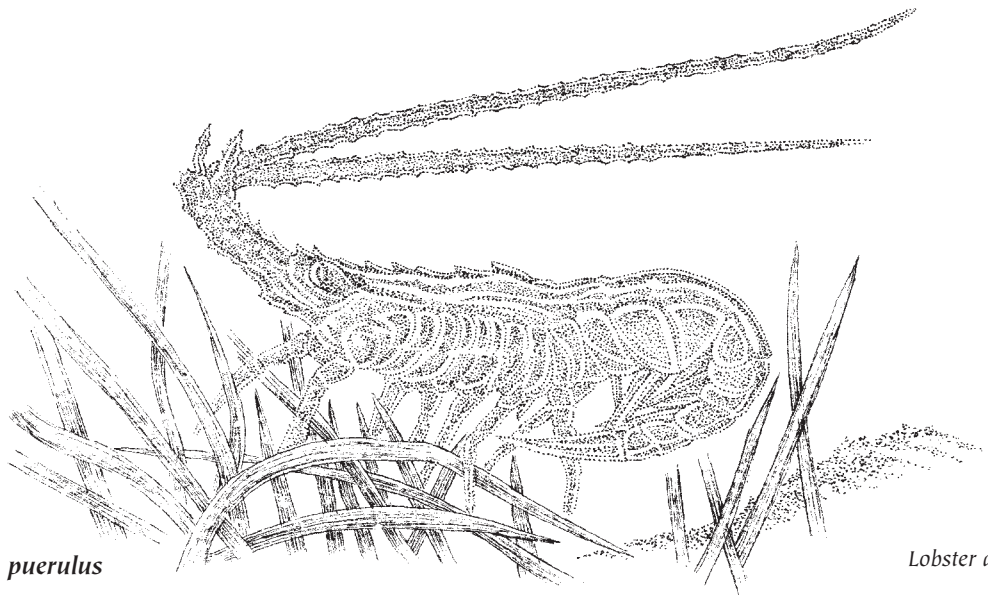
As spiny lobsters mature, they migrate seaward to offshore reefs. In remote areas or when protected from fishing, spiny lobsters can grow to over 15 pounds and may live for 20 years.

### Range and Habitat

Caribbean spiny lobsters are widely distributed throughout the tropical and subtropical waters of the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico, inhabiting the seas around Bermuda, the West Indies, and southern Florida. They have been reported as far north as Beaufort, North Carolina, and as far south as Rio de Janeiro, Brazil.

Adult spiny lobsters live in the caverns and crevices of coral reefs and hardbottom areas, hiding during the day and emerging at night to hunt and eat. Both juveniles and adults are opportunistic feeders and will eat a wide variety of prey. Their preferred diet is small crustaceans and mollusks.

Occasionally adult lobsters participate in mass migrations, marching in line from shallower water to deeper ocean in response to some environmental cue. Each animal uses its antennae to maintain contact with the one ahead, a behavior known as "queuing." A line or queue (pronounced *cue*) of lobsters may have only a few or more than 60 animals marching seaward.



*Panulirus argus puerulus*

Lobster art by James Seagle



Because moving through water creates considerable drag, each lobster behind the leader saves energy by taking advantage of the turbulence created by the one ahead. As the leader tires, another moves up to become leader and the leader falls back to another place in line. If attacked, the queue forms a circle with their antennae facing outward, like a herd of bison facing a predator.

## FAST FACT

*Studies by the Fish and Wildlife Research Institute have observed movement of individual animals up and down an offshore reef tract, over distances up to 50 or 60 miles and at rates up to two miles per day.*

## Economic Importance

Spiny lobsters have long been an important commercial and recreational fishery in south Florida, particularly in the Keys. The commercial lobster fishery in Florida has been dominated by the use of traps since the 1960s. Since about 1970, the commercial landings of Caribbean spiny lobster in Florida have fluctuated between 3.1 million pounds and 7.9 million pounds per fishing season. Typically, 90% of the landings are from the Florida Keys.

The regular eight-month season for the Caribbean spiny lobster in Florida opens each year on the 6th of August and closes on the 31st of March the following year. Prior to the opening of the regular season, there is a two-day recreational sport season on the last Wednesday and successive Thursday of July each year. Approximately 40% of a season's landings are brought in during the first month, with a sharp decrease in landings afterward. Landings decline further after the opening of the stone crab fishery on the 15th of October.

Although Florida lobsters have probably been harvested for personal consumption since the first humans arrived here, it could be argued that the sport of lobster fishing began in the 1930s with the "goggle fishermen." The goggle fishermen were free divers (no scuba gear, just a mask) and were therefore limited to shallow water. Deeper recreational fishing did not

occur until the popularization of scuba diving in the 1950s. Today, the typical recreational harvest is 1.5 to 2 million pounds between the start of the two-day sport season in July and Labor Day—or 20% to 25% of the season's total harvest of spiny lobster.

## Management Efforts

There has been a tremendous increase in the worldwide demand for all species of spiny lobsters, creating a need for better management of existing stocks and for more sophisticated research upon which to base management decisions.

State marine conservation laws were implemented to protect the spiny lobster population in Florida. Among the most important laws are those designed to protect the lobsters' reproductive capabilities. Conservation regulations forbid the harvest of lobsters between April and August (except for the two-day recreational sport season at the end of July) to protect egg-bearing females from harvest during the peak spawning period. Regulations also prohibit the take of any egg-bearing female. Minimum harvest size is a carapace length of three inches (76.2 mm). During the regular season, recreational harvest is limited to six lobsters per person per day. During the special two-day sport season, recreational harvest in Monroe County and Biscayne National Park is limited to six spiny lobsters per person per day; 12 lobsters per person per day are allowed in other counties during the two-day season.\*

Recent changes in regulations have designated many marine protected areas (MPAs) in the Florida Keys where the taking of Caribbean spiny lobsters is prohibited at all times. These areas are Everglades National Park, Dry Tortugas National Park, the Card Sound-Biscayne Bay Sanctuary, and the marine reserves of the Florida Keys National Marine Sanctuary.

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\*Fishing regulations may change annually. Contact the FWC Division of Law Enforcement for information about current regulations. Current saltwater fishing regulations can also be found on the Web site for the FWC Division of Marine Fisheries Management, located at <http://MyFWC.com/marine>.

