

Shrimp

Five species of pandalid shrimp of various commercial and subsistence values are found in the cool waters off the coast of Alaska. **Pink shrimp** (*Pandalus borealis*) are the foundation of the commercial trawl shrimp fishery in Alaska. Pinks are circumpolar in distribution, though greatest concentrations occur in the Gulf of Alaska. Ranging from Puget Sound to the Arctic coast of Alaska, the **humpy shrimp** (*P. goniurus*) is usually harvested incidentally to pink shrimp. In some cases, however, the humpy constitutes the primary species caught. Both pink and humpy shrimp are usually marketed as cocktail or salad shrimp. Known for its sweet flavor, the **sidestripe shrimp** (*Pandalopsis dispar*) is also caught incidentally to pinks; however, there are small trawl fisheries in Prince William Sound and Southeast Alaska which target on this deeper water species. The **coonstripe shrimp** (*Pandalus hypsinotis*) is the prized target of various pot shrimp fisheries around the state. Coonstripe shrimp can be found from the Bering Sea to the Strait of Juan de Fuca while sidestripes range from the Bering Sea to Oregon. **Spot shrimp** (*P. platyceros*) is the largest shrimp in the North Pacific. Ranging from Unalaska Island to San Diego, this species is highly valued by commercial pot fishers and subsistence users alike. Most of the catch from the sidestripe, coonstripe, and spot fisheries is sold fresh in both local and foreign markets.

General description: Pandalid shrimp can be characterized by a long, well-developed spiny rostrum and are medium to large in size. The body is generally slender and there are five pairs of "swimmerets" located on the underside of the abdomen. Pinks exhibit uniform coloration from light to reddish pink. The humpy shrimp is also light to reddish pink in color but has a series of reddish dots that form faint stripes backwards across the abdomen (or body). Midway down the back is a pinched area or "hump" which further distinguishes the humpies from pinks. Pinks and humpies are the smallest of the commercial pandalids. Coonstripes are very robust, have large heads, and have a series of dark bands on both legs and body. The sidestripe is relatively slender with characteristic long antennules. A light pink in color, sidestripes earn their title by the presence of white bands that run the length of the abdomen. Both coonstripes and sidestripes are medium in size. Spot shrimp are large and stout and are light brown to orange in color. Conspicuous white, paired spots located just behind the carapace (head) and just in front of the tail give the spot shrimp its common name.

Life history: Pandalid shrimp are among the relatively few animals that exhibit protandrous hermaphroditism (each individual spends the early mature part of its life as a male and later transforms into a female for the balance of its lifetime). For example, a pink shrimp will typically mature sexually as a male, spawn one or more times, pass through a short transitional phase and subsequently mature and spawn as a female. In the spring, after about a six month incubation, the eggs hatch into planktonic, free-swimming larvae. By mid-summer, the larvae have undergone several molts, rapidly increasing in size after each molt. After the last larval molt the shrimp is now a juvenile and settles to the bottom. After a year or so, the juvenile molts and develops into a mature male and may spawn as a male for one or two seasons. Some juveniles, however, never mature into males; instead, they develop directly into females. Prior to fertilization, the mature female molts into a shell specialized for carrying eggs. Male and female grasp, the male depositing a packet of sperm on the underside of the female. Egg release follows soon after mating, and the eggs are fertilized as they pass externally underneath the abdomen of the female where they attach to hairlike structures (setae). The female carries the developing eggs until they hatch. Clutch size in pandalid shrimp ranges from a few hundred eggs to about 4,000 eggs and is usually proportional to the size of the female. Fall spawning and spring hatching seasons are the usual case, but timing varies with species and range.

Habits: Shrimp inhabit varying depths and habitat types. Spots and coonstripes are generally associated with rock piles, coral, and debris-covered bottoms, whereas pinks, sidestripes, and humpies typically occur over muddy bottom. Pink shrimp occur over the widest depth range (10-800 fathoms) while humpies and coonstripes usually inhabit shallower waters (3-200 fathoms). Spot shrimp seem to be caught in greatest concentrations around 60 fathoms, but range from 2 to 250 fathoms. Sidestripes are typically found from 25 to 350 fathoms, but most concentrations occur in waters deeper than 40 fathoms.

Most shrimp migrate seasonally from deep to shallow waters and also more vertically in the water column. Pink shrimp, for example, have been observed moving off the bottom in the evening, occupying the whole water column for much of the night, and returning to the bottom in early morning. Pandalid shrimp are opportunistic bottom feeders that will eat a wide variety of items such as worms, diatoms, detritus (dead organic material), algae, and various invertebrates. Shrimp themselves are often the diet of large predator fish such as Pacific cod, walleye pollock, flounders, and salmon.

Commercial fishery: The shrimp fishery in Alaska began in Southeast Alaska near Petersburg in 1915 with pink shrimp as the target species. With the advent of mechanical peelers in 1958, the trawl fishery rapidly expanded to include the Kodiak and lower Cook Inlet areas. By 1967 and 1968, small localized fisheries began developing in the Alaska Peninsula and Chignik areas. By 1972, a third small fishery was initiated in the Aleutian Islands area. A formerly large population of shrimp in the Pribilof Islands region of the Bering Sea has been exploited only by foreign fleets. Fisheries have occurred in the Aleutian, Alaska Peninsula, Kodiak Island, Cook Inlet, Prince William Sound, and Southeast Alaska areas. Alaska shrimp landings peaked in 1976 at 129 million pounds of which 119 million pounds came from the Kodiak and Alaska Peninsula areas. Annual trawl harvests are now far below historic levels with major areas in Kodiak, the Alaska Peninsula, and Cook Inlet closed due to poor stock conditions. Pink shrimp generally comprise more than 80 percent of trawl landings. The major pot shrimp fisheries occur in Cook Inlet, Prince William Sound, and Southeast Alaska and usually total less than 500,000 pounds annually. Coonstripes are the primary target of the Cook Inlet pot fishery while spot shrimp are the primary species caught in Prince William Sound and the waters of Southeast Alaska.

Subsistence fishery: Lightweight pots are fished from boats to collect personal use shrimp. Small subsistence fisheries occur statewide.

Preparation: Shrimp can be cooked many ways, though boiling in salted water for a few minutes is the preferred method for small shrimp. Spot shrimp can be split (or butterflied) and broiled with butter and garlic for a lobster-like feast.

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Revised by Al Kimker and reprinted 1994



