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*Guest Blog*

# How to Grow a Jellyfish

*Jellies are among the Monterey Bay Aquarium's most popular animals—but it takes work to keep the tanks filled*

By Natalie Jacewicz on November 18, 2015





Sea nettles on display

*Photo by Natalie Jacewicz*

At nine in the morning, an hour before the Monterey Bay Aquarium opens to the public, the curator of husbandry operations walks across a tiled tundra of empty exhibit halls. Watery displays drench the floors in blue-green light, and a groggy-eyed sculpture of a whale the size of a bus hangs from the ceiling overhead. Paul Clarkson seems to be trespassing on a defunct discotheque. But then he swings open two steel double doors to reveal a hidden maze of bubbling tanks and whooshing pipes. This is where the party's at, and jellyfish are the life of it.

People love aquariums. Almost two million visitors flock to this one each year for the chance to press their noses against glass displays housing 35,000 animals and plants. The jellyfish exhibit ranks among the most popular in aquarium history. But pilgrims seldom ponder how aquariums keep all of those tanks populated—an especially difficult task when so many species have natural life spans of only a few months.

“You don't go to Petco,” Clarkson says. And in some cases, the aquarium can't turn to the wild either. Case in point: sea nettles, brilliantly orange jellyfish the size of dinner platters that once teemed in the Monterey

Bay. Warming water trends have exiled the animals for the past two years. So the aquarium stocks sea nettles and many other animals through large-scale, trial-and-error breeding efforts, whose experiments unfold in rows of tanks that the public never sees. The aquarium welcomes more babies than any American hospital.

“There are hundreds of thousands of jellies being popped off in the lab right now,” says Clarkson.



PAUL CLARKSON, CURATOR OF HUSBANDRY OPERATIONS AT MONTEREY BAY AQUARIUM, CONTEMPLATES A VAT OF BRINE SHRIMP THAT WILL SERVE AS JELLYFISH FOOD. PHOTO BY NATALIE JACEWICZ

When the aquarium opened its first jellyfish expo in the early 1990s, the idea of filling a whole exhibition with translucent, pulsing blobs defied convention.

“People thought, ‘Who’s going to want to come see jellyfish?’” Clarkson says. “And now these things have become part of our DNA. They’re some of the most popular animals we have on display.” Today a live “[jelly cam](#)” records the creatures’ every billow, proving that nature can compete with a lava lamp any day.

The tentacled tenants beguiled the public, but aquarium staff had to figure out how to keep the invertebrates around. And that meant becoming experts on rearing baby jellyfish.

Jellyfish start life in the ocean as filter-feeding stumps less than a centimeter tall. The top of the stump has a halo of frilly tentacles, similar to a sea anemone. In favorable conditions, these stumps, or “polyps,” eventually begin to bud, like thin potato latkes flapping off the top of a potato pancake stack. These little latkes—baby jellyfish—use a rim of translucent, stubby spokes to beat through the water. The conditions that spur this budding process vary from one species to another, says Steve Haddock, a scientist who heads [JellyWatch](#) at the Monterey Bay Aquarium Research Institute. When conditions are right, polyps produce many babies at once. Otherwise, the polyps may not bud at all. This predisposes these little animals to population booms and busts.

Once they have budded, the baby jellyfish eat and grow, eventually becoming adult “medusas,” so called because their tentacles resemble the mythical gorgon’s serpent locks. When most people think of jellyfish, they picture the medusa stage.

But cajoling polyps into producing young jellyfish requires finesse.

“Jellyfish are really good at waiting until the world is right for them... We have some populations that will stay in polyp form for months or

even years,” Clarkson says. “The challenge is getting these darn things to reproduce and make a jelly.”

This means adjusting temperature, nutrients—anything that might hit a particular batch of jellies’ sweet spot. He gestures to a series of interconnected watery chambers. Polyps the size and color of dirt flecks speckle the first tank. When they bud, they produce larvae smaller than pencil erasers. These flow into an adjoining chamber, Clarkson explains, where they eat microorganisms called rotifers, also raised on site.



AN AQUARIST FEEDS SPOTTED JELLYFISH THAT WILL SOON GO ON DISPLAY. PHOTO BY RANDY WILDER FOR THE MONTEREY BAY AQUARIUM.

Biologists then move the animals to beakers with water cycled by magnetic stirrers. Staff crane their necks over the containers to determine when each jellyfish is big enough to graduate to yet another

tank, where the menu features brine shrimp, also known as sea monkeys, farmed in frothy, brown vats. If the jellyfish grow into big species like sea nettles, they turn cannibal and consume gobs of home-grown, cloud-shaped moon jellies.

Eventually, biologists move the jellyfish to displays. (Some lucky moon jellies get their own display, separate from sea nettles.) Though the exhibits appear infinitely deep to viewers, the tanks only stretch about a foot from front to back. A blue backdrop creates the sense of endless space. Motors cycle the water, allowing jellyfish to swim endlessly without going anywhere, like vibrant streaks of oil paint splashed through water.

Clarkson notes that the breeding program does not eliminate the need for wild jellyfish. Occasional newcomers must still be captured to add a sprig of zest to the captive gene pool. Sea nettles like cool water. Whatever the reason for the bay's warming waters—El Nino, climate change, or a mix of factors—they keep sea nettles away. If the creatures don't return, the breeding program will eventually have a problem.

But for now, the aquarium is awash in jellies.

Once the aquarium opens for the day, visitors pack the galleries. Decades after their debut, the jellyfish still seem to hold their own against other charismatic attractions.

A gaggle of sixth graders stand in the octopus exhibit, a clam's throw away from a sea otter tank. They confidently proclaim "glowing jellyfish" to be their favorite creatures at the aquarium.

Perhaps they always loved jellyfish. Or, perhaps, the aquarium's displays spawned their enthusiasm—one more product of the untiring

nursery raising medusas behind closed doors.

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