

Does your pet goldfish suffer from tumors, broken bones, impacted eggs or unattractive scales? The prognosis is getting better: increasing numbers of vets are ready to do the needed surgeries.

Fixing Nemo

By Rebecca Skloot

Photographs by Max Aguilera-Hellweg

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r. Helen Roberts was about to make the first incision in what should have been a standard surgery — a quick in-and-out procedure — when she froze. “Bonnie,” she said, turning to her anesthesiologist, “is she breathing? I don’t see her breathing.” Roberts’s eyes darted around the room. “Grab the Doppler,” she told her other assistant.

“I want to hear her heart. Bonnie, how’s she doing?” Bonnie pushed up her purple glasses, leaned over the surgery table and lowered her face inches from the patient to watch for any signs of breath: nothing. “She’s too deep,” Roberts said, “go ahead and give her 30 c.c.’s of fresh water.” Bonnie picked up an old plastic jug filled with pond water and poured two glugs into the anesthesia machine. Seconds later, a whisper of a heart rate came through the Doppler. Bonnie wasn’t happy: “We have gill movement — but not much.” Then the Doppler went silent and she reached for the jug. “Wait,” Roberts said. “We have fin movement . . . damn, she’s waking up — 30 c.c.’s of anesthetic.” Roberts sighed. “She was holding her breath,” she said, shaking her head. “Fish are a lot smarter than people give them credit for.”

Yes, Roberts and Bonita (Bonnie) Wulf were doing surgery on a goldfish. Not the fancy kind that people buy for thousands of dollars and keep in decorative ponds (though they do surgery on those too), but on a county-fair goldfish named the Golden One, which Roberts adopted when its previous owners brought it into her clinic outside Buffalo, saying they didn’t have time to take care of it. Which is to say, it’s a regular fish that could belong to anybody. Just like Lucky, the one-and-a-half-pound koi with a two-and-a-half-pound tumor; Sunshine, who was impaled on a branch during rough sex; Betta, with a fluid-filled abdomen; and countless goldfish with so-called buoyancy disorders, like the per-

Fish Are Friends In the vanguard of “small-pet veterinary science,” Dr. Helen Roberts performs an elective gonadectomy — the removal of ovaries or testes, depending on what she finds — on “the Golden One.”

petually upside-down Belly Bob, or Raven, who was stuck floating nose down and tail to the sky. All those fish went under the knife.

Ten years ago, the chances of finding a fish vet were slim. But true to its history, veterinary medicine is steadily evolving to meet the demands of pet owners. Through the early 1900's, vets treated livestock mostly. You didn't treat cats and dogs — you usually shot those. But by the mid-50's, the world was in love with Rin Tin Tin and Lassie, and people started thinking, I shouldn't have to shoot my dog. By the 70's, dogs and cats could get human-quality medical care — but treating birds? That was insane. Instead, bird advice came from pet stores (and birds died of a "draft," a diagnosis akin to the vapors). Yet by the 80's, avian medicine had its own academic programs, a professional society, at least one monthly magazine and a large clientele. Today we have surgery for parakeets, organ transplantation for dogs and cats, chemotherapy for gerbils. But people who want to take fish to the vet — those people are still crazy. At least for the time being.

"I have no doubt fish medicine will become mainstream much like bird medicine did in the 80's," said Dr. David Scarfe, assistant director of scientific activities at the American Veterinary Medical Association. "It's actually happening far more rapidly than I'd imagined." According to the A.V.M.A., almost 2,000 vets currently practice fish medicine. That number is steadily growing, and the market seems solid: 13.9 million households have fish and spend several billions of dollars annually on fish supplies alone — tanks, water conditioners, food — not including veterinary care or the fish themselves, which can cost as much as \$100,000, sometimes more.

Fish diagnostics range from a basic exam (\$40), blood work (\$60) and X-rays (\$55) to the advanced: ultrasound (\$175), CAT scans (\$250). Veterinarians tube-feed fish. They give fish enemas, fix broken bones with plates and screws, remove impacted eggs, treat scoliosis and even do fish plastic surgery — anything from glass-eye implantation to "surgical pattern improvement," with scale transplantation, scale tattooing or unsightly-scale removal.

But some of the most common and vexing fish ailments are buoyancy disorders. They involve the swim bladder, an organ in the digestive tract prone to infections, obstructions and defects that destroy a fish's ability to regulate air, leaving it "improperly buoyant," to the point of floating or sinking in odd positions — usually upside down. Surgically inserting a tiny stone in the fish's abdomen to weigh it down is the best option, but since that costs anywhere from \$150 to \$1,500, depending on where and how it's done, many vets first recommend green-pea treatment: "Feeding affected goldfish a single green pea

(canned or cooked and lightly crushed) once daily might cure the problem," Dr. Greg Lewbart wrote in a paper titled "Green Peas for Buoyancy Disorders." Lewbart is a top fish veterinarian, but even he isn't sure how pea treatment works.

When I tell people I'm writing about fish medicine, their reaction is almost always the same: why not flush the sick fish and get a new one? Actually, for several reasons. First, there are the money fish. "I've worked on several fish worth \$30,000 to \$50,000," Lewbart once told me. These are the fancy koi that work fish shows for big prizes, then retire to a life of reproduction. "I examined one in Japan an owner turned down \$200,000 for," Lewbart says. That's what he calls a big fish. "People will spend thousands to fix them." But not all koi are show koi; many are what Lewbart calls U.P.F.'s: ugly pond fish.

Which brings us to the human-fish bond, and people who gasp if you mention flushing because they swear their fish have personalities so big they win hearts. I heard stories of Zeus, who weighed two pounds but dominated the house cat by biting onto the cat's paw and yanking it headfirst into the tank when it swatted the water. There was Sushi, the "gregariously affectionate" koi with recurring bacterial infections. And Zoomer, the "koi with a vendetta," who shot out of the water at her owner, David Smothers, and broke his nose — something his pet Ladyfish never would have done. She'd just cuddle with him in the pond and wiggle when he kissed her. David spent thousands trying to save Ladyfish when lightning struck near his pond, creating a shock wave that broke her back. He got X-rays, CAT scans, chiropractic adjustments and spinal surgery, then spent weeks in the pond, gently holding Ladyfish's tail during physical therapy. Nothing worked, and he still tears up when he talks about it.

The human-fish-bond people don't understand the money-fish people. "They don't even name their fish," Bonita Wulf says, sounding shocked. The organizers of the Singapore International Fish Show just announced a fish-adoption initiative, declaring that "fish have their lives, and they have feelings, too," so if fish don't win shows, it's "more humane to bring the fish up for adoption," rather than flushing them down the toilet. Others train fish to fetch and dunk basketballs. "Some of fish personality might be a feeding response," says Dr. Julius Tepper of the Long Island Fish Hospital, "but so is a lot of what we interpret as affection from cats." Sushi's owner doesn't buy that. "You have to meet Sushi to understand," she told me. So I went with Dr. Roberts to Marsha Chapman's house thinking, O.K., Sushi, show me this personality of yours.

"Sushi's in here," Marsha said, leading me to the 6-foot-long, 150-gallon tank in her family room. Marsha is a warm and motherly special-

education teacher in her 50's who looks you in the eye and sounds as if she's talking to a room of second graders. "Hi, baby," she cooed. "How's Mama's girl?" Sushi darted to the surface of the tank and started splashing frantically. "That's right, show us how you wag your tail." And Sushi did (though a wagging fish tail looks just like a swimming fish tail to me). "She's just like a dog that way," Marsha said. "If I could hug her, I would."

Aside from Sushi's size (two feet long), her looks are unimpressive. Mostly white, a few orange spots, short nonflowing fins, trademark carp whiskers. Lewbart would call her a U.P.F., though not around Marsha, who reached in the tank and patted Sushi's head. "Look who's here, Sweetie," she said, "Say hi to Rebecca."

Sushi ignored me. But she did the "basketball dance" for Marsha, swimming in place, face against the glass, jerking back and forth and up and down. And Marsha did it right back. She put her red-lipstick-covered lips an inch from the tank opposite Sushi's. She clenched her fists, bent her elbows and knees, stuck out her butt and wiggled her body violently while making loud kissing noises. The more Marsha danced, the more Sushi danced. Then Roberts walked in the room saying, "Isn't he cute?" and Sushi hid. "Dr. Roberts thinks she might be a boy, but Sushi is a girl's name." Marsha tapped the tank. "Don't be afraid, Dr. Roberts makes you better."

Roberts is a petite "warm fuzzy fish vet" whose no-nonsense appearance — no makeup, a thick black plastic sports watch — almost clashes with the turquoise contacts that make her eyes beautifully inhuman. She surrounds herself with pewter fish and glass fish; papier-mâché, metal, wood and stone fish; and of course, her pet fish: Splotch, Carrot, Harrison, Ford and about 32 others, including B.O. (Big Orange), her favorite. He's "the dog of the pond" in the many fish pictures in her living room and office, or on her computer desktop. "Come on, Sush," Roberts said. "I'm your friend."

I stared into Sushi's tank for hours. Marsha put the "Twin Peaks" theme song on repeat, and I thought, Fun fish. She was active and sparkly, she swam back and forth, her muscles moving with the music in slow melodic waves. It was mesmerizing. But to me she was more like a Lava lamp than a pet. Then again, to her I was more like a piece of furniture than a human. I didn't feel Sushi's personality — I felt Dr. Roberts's and Marsha's. When Sushi swam by, their eyes widened, they smiled, touched the glass, said hello. When she turned, they said things like "Isn't he amazing?" and "She's so funny."

They know people might say they're crazy. "I don't care what people think," Marsha said. "I use my relationship with Sushi as a springboard for teaching special-education students about affection for unconventional people, like themselves." She stared into the tank, her voice suddenly serious. "It enlarges the world when you see how

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much possibility there is for loving people and animals who aren't usually given a chance."

2 THE GOLDEN ONE finally stopped holding her breath, which meant Dr. Roberts could actually spay her. Well, at least that was the plan. "I'm pretty sure she's a female," Roberts said, "but it's always hard to tell with fish. If she turns out to be a boy, it's no big deal. We'll just neuter her." Roberts was born in England, raised in Italy and Georgia; her accent is soft, slightly rural and completely unidentifiable. "Goldfish are the rabbits of the fish world," she said when I asked why she was spaying her fish. "I don't want to face the ethical decision of what to do with all those babies."

Aside from the human-quality surgical instruments and monitors, the setup was 100 percent garden-supply store: one Rubbermaid tub full of pond water and anesthetic, clear plastic tubing attached to a submersible pump with duct tape. The Golden One lay on a plastic grate above the tub, yellow foam pad keeping her upright, tube in her mouth pumping anesthetic water from the tub, through her gills, then back again. Like a recirculating fountain.

It's the same setup used in the first account of pet fish surgery I could find, which was performed in 1993 and written about two years later by Dr. Greg Lewbart at the College of Veterinary Medicine at North Carolina State University. Lewbart, a professor of aquatic medicine, has short brown hair, graying sideburns and a soft blanket of freckles — like someone misted him with tan paint. "I don't tell my clients," he told me, hesitantly, "but I got into fish as a fisherman." He couldn't help laughing when he said this. "It's undeniably weird: I sometimes spend my weekends at the coast fishing." Then he paused. "I do mostly catch and release, but not always, and either way, it's unpleasant for the animal: I take the hook out, traumatize the fish, then throw it back in the water with a huge wound on its face or toss it into a cooler where it flops around for a few minutes. Then I go into work Monday, somebody brings in a goldfish, I console them, take their fish to surgery, then put it on postoperative pain medication."

Lewbart loves fish medicine — he flies around the world teaching and practicing it; he publishes scholarly articles and books on it. But he's not all fish. "My real love is marine invertebrates," he told me, like snails, worms, horseshoe crabs. "It's still a little down the road when people are going to start bringing those guys to the vet. But I think it'll happen in the same way fish medicine happened."

Fish medicine actually dates to the 1800's, but it didn't start to catch on until the 1970's and 80's, when scientists started publishing research articles on everything from fish hormones and nutrition to pondside operating tables. But that had

nothing to do with pets. Until Lewbart published his surgery paper, references to fish medicine came from fisheries, marine biology and wildlife.

In the late 70's, a few obscure papers mentioned the burgeoning field of pet fish; some even said vets should make the transition from aquaculture to pets. But that didn't happen for more than a decade, until koi exploded into a multimillion-dollar industry, the Internet appeared and owners started typing "fish veterinarian" into search engines. When they found research papers by vets like Lewbart, owners started calling and e-mailing. "I never thought of being a fish vet," said Dr. Tepper of the Long Island Fish Hospital. "Then I got a call from a guy wondering if I treated fish or knew someone who did. I said, 'No, actually, I don't.' Then I was like, 'Why didn't I think of this earlier?'"

Pet-fish medicine isn't exactly mainstream: many owners don't know fish vets exist; others look but can't find them. The A.V.M.A. and several vets are working on databases for referring



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"Sushi" — the koi with personality — receives a house call.

clients, but they're not available yet. Until then, Lewbart will keep fielding 400 to 500 calls and e-mail messages a year from people with fish questions, and many owners will take matters into their own hands. Just like Bonita Wulf, who isn't an actual fish anesthesiologist; she's a fish hobbyist with a gravelly smoker's voice and a very large gun collection. (As Dr. Roberts says, you don't joke about flushing fish with a woman like Bonnie.) Wulf talks to her fish and carries pictures of them in her purse. "I've got grandkids too," she says with a grin, "but I only carry fish pictures." She has taken more courses in fish health and medicine than most veterinarians, and she started by Googling the word "koi." Inevitably, that leads to KoiVet.com, an all-you-need-to-know-about-fish site, and Aquamaniacs.net. Between the two, thousands of fish hobbyists join message boards for moral support and immediate do-it-yourself help during fish crises. They're starting to refer one another to fish vets, though traditionally fish medicine is one of the few areas where pet owners, as a rule, know more than veterinarians. But things have changed: veterinary schools are starting to teach fish medicine.

I RECENTLY WENT to North Carolina to visit a seminar at one of the only aquatic-medicine departments in the world, which Lewbart oversees. He and his colleagues also run a one-week intensive fish-medicine course, as well as the world's only aquatic-medicine residency. Their courses

are always full. On the first day of the seminar, eight vet students from around the country learned to catch, anesthetize and transport fish. They drew blood, took fin and scale samples, looked under microscopes for parasites. They saw an underwater frog with a fluid-retention problem, a turtle filled with rocks it wasn't supposed to eat. The seminar is about 25 percent aquatic reptiles and 75 percent fish, but the first day, there were no sick fish. And it was sunny out, so Lewbart took everyone to Ben & Jerry's for a fish-medicine lecture. As he sat in the sun wearing black plastic sunglasses — ice cream in one hand, fish book in the other — Lewbart talked about fish cancer and carp herpes. "Are there any questions?" he asked eventually. A student from Pennsylvania raised his hand: "Can a person make a living as a fish vet?"

The answer is yes and no: despite hourly rates up to \$100 for "tank calls," business would be tight for a full-time pet-fish vet right now. Some successful pet-fish vets work in fisheries, public

aquariums, zoos or the tropical-fish industry; others supplement their practices with teaching and research. But most pet-fish vets must treat other animals too. "Dogs and cats are the meat and potatoes," Roberts says. "Fish are the spice." That's likely to be true for a while. "Fish medicine is still a hobby," Tepper says. "It costs me thousands of dollars a year." He blames this in part on seasonality — koi are dormant in winter — so he and others are encouraging preventive fish medicine. That's what's unusual about the Golden One's surgery: she's perfectly healthy. Spaying means Roberts won't have to face the ethical baby-placement issue, but it's also a business move. "If I can master this," says Roberts, "I can offer it to owners who say, 'I really love this goldfish, I just don't want a thousand more.'"

3 Fifteen minutes before the Golden One would be up and darting around her pond looking for food, Dr. Roberts poked around in the fish's abdomen. She told Wulf about her new video game, then stopped suddenly. "Look at that, Bonnie." Roberts pulled a long yellow gelatinous strand from the Golden One's belly. "That looks male, doesn't it?" Bonnie nodded. "Yep, Helen, that's male." Roberts laughed. "How could you be male? You look so female!"

"Don't spay that one," Bonnie said. "O.K.," Roberts shot back, chipper as always. "We'll neuter him." Then she turned to me and whispered: "Fish medicine isn't an exact science yet. But we're working on it." ■