

# CETACEAN RELATIONS

*Tracking generations of Sarasota Bay dolphins*

by Adam Voiland



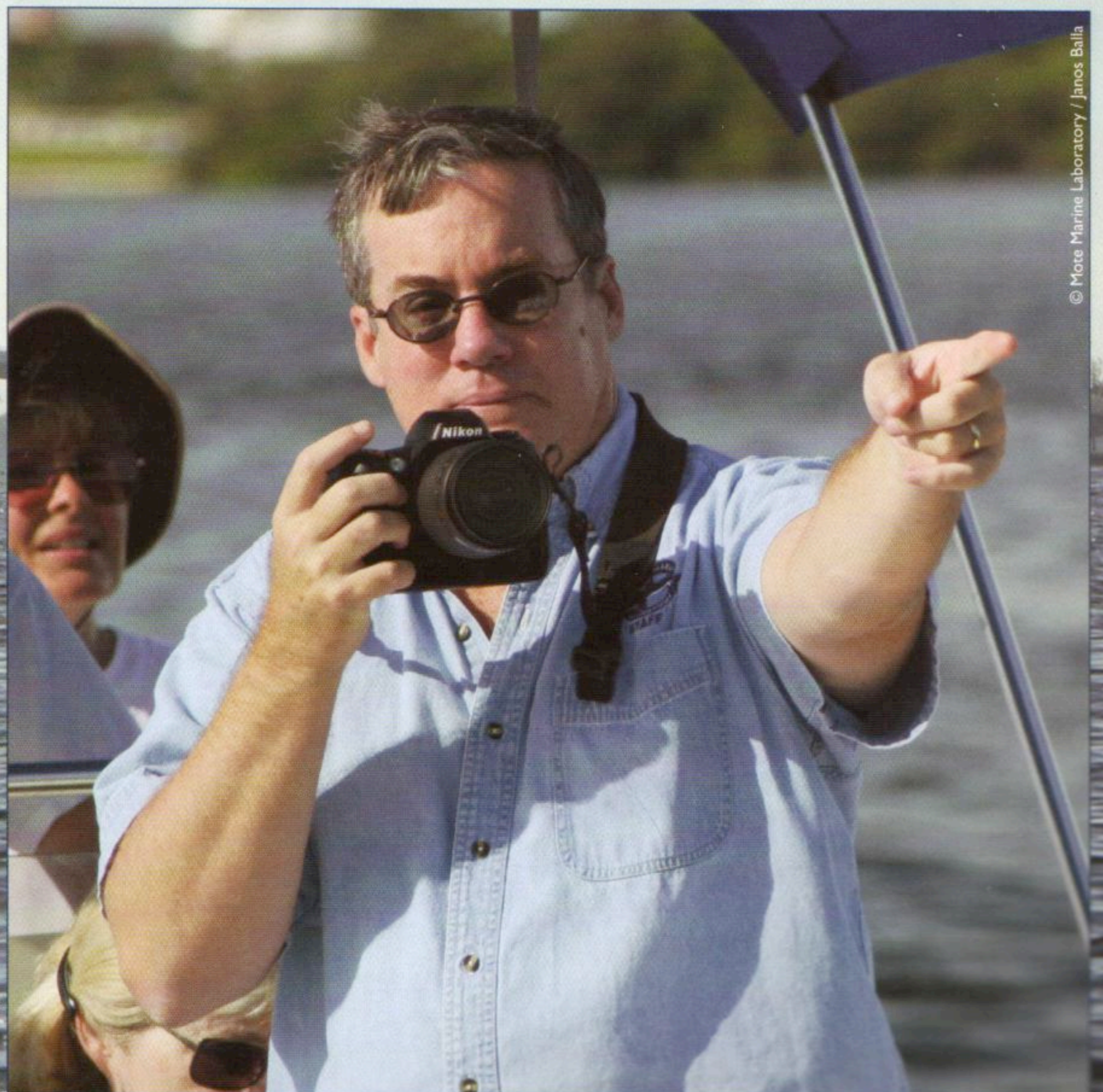


The Sarasota Dolphin Research Program, spearheaded by Dr. Randall Wells, is a 35-year study of the bottlenose dolphins that live in Sarasota Bay. As the world's longest-running dolphin study, the joint Mote Marine Laboratory and Chicago Zoological Society program has set the standard for similar studies throughout the world and shown that dolphins have wilder, more complex and intriguing lives than those of the grinning playful animals shown on TV and in the movies.

---

“A dolphin's smile is deceiving. It's a fact of anatomy, not an indication of attitude. We must remember dolphins are wild animals, with complex behavioral adaptations resulting from many millions of years of evolution,” says Dr. Randall Wells.

---





*Dolphins, which breathe air, are warm-blooded and give birth to live young, get their name from the Ancient Greek delphis meaning "fish with a womb."*

#### GETTING THE REAL PICTURE

The *Mini Mako* — a sturdy, grumbling imp of a boat — cruises off the Anna Maria Island shore near Sarasota, Fla., on a hazy June morning. The mission of the group aboard is simple: Find, photograph and identify bottlenose dolphins.

The team from the Sarasota Dolphin Research Program has spent the last 30 minutes looking for dolphins. Nothing. Nothing. Nothing. Then, from the corner of his eye, Jason Allen, the program's field coordinator, spots a small, black triangle rise above the greenish surf. A "chuffing" noise bursts from the surface accompanied by a rapid ticking.

"Hey, is that you Sparks?" Allen exclaims. Snap! Snap! Snap! In a frenzy, fellow scientist Carolyn Englund has started shooting pictures.

"That's FB94," says Allen to a volunteer who scrambles to record Sparks' official name, along with water salinity, temperature and other scientific measures from the area.

After hundreds of photo surveys, Allen has tried to memorize most of the unique patterns of nicks and notches caused by shark attacks, fighting, line entanglements and the like that pockmark the trailing edge of each animal's dorsal fin. To help with the IDs, he also has a cheat sheet with tracings from photographs of the dorsal fin of every Sarasota Bay dolphin ever recorded.

Making a positive identification isn't always easy. Choppy water can make the *Mini* reel with every swell. And glare from the sun can turn the sea into a blinding expanse of light. So research assistants in the lab check each ID at

least three times. In this case, it turns out Sparks is actually a 33-year-old named Riptorn.

That's why Englund's camera work is so important. "C'mon boy," she says, as if doing so might coax him closer to her camera. Snap! Snap! Through the zoom lens, the fin appears alarmingly mangled, sagging and flapping like a deflated sail. Riptorn's fin was sliced in 1983, probably by a boat propeller and perhaps partly because of this animal's scoliosis, which has twisted his spine. Twenty-two years later — though it still looks bad — the fin is healed and the dolphin appears reasonably healthy.

For bottlenose dolphins — among the ocean's smartest, most sociable and sexual creatures — avoiding boats is just one part of daily life. The rest of the time, there are mullet to whack and devour. Battles to fight. Signature whistles to perfect. Calves to raise. Lifetime bonds to forge. And in between all of that: promiscuous sex to indulge in.

#### DISCOVERING DOLPHINS

There are some 30 to 40 species of dolphins that vary in size from 4 feet and 80 to 100 pounds (franciscana dolphins) to 31 feet and 10 tons (orcas). Dolphins are found worldwide, from coastal waters to the deep, open ocean.

In Florida waters, male bottlenose dolphins (*Tursiops truncatus*) grow to about 9 feet and can weigh some 600 pounds, while females reach 8 feet long and about 400 pounds. It isn't unusual for them to eat more than 15 pounds of fish a day. They are the most common and widespread type of dolphin in the coastal waters of Florida, but they aren't the largest, fiercest, smallest, fastest or slowest of dolphins.

Rather, bottlenose dolphins have attained celebrity because they're common along coastlines, are incredibly adaptive, intelligent and highly trainable. So trainable, in fact, that they have become a mainstay of aquariums, zoos, oceanaria, and, of course, the popular movie and television show from the 1960s, *Flipper*.

But Dr. Randall Wells, who directs dolphin, whale, manatee and sea turtle studies at Mote and has a joint appointment with the Chicago Zoological Society as a conservation biologist, is the first to point out that bottlenose dolphins are anything but friendly little people in wet suits.

While the 160 bottlenose residents that impress boaters and beachgoers along Sarasota waterways are some of the most studied dolphins in the world, who are they really? What do they do? And how do they survive in the midst of Florida's urban coastlines?

#### ANSWERING QUESTIONS

There are no quick answers, no sound bites, according to Wells. "There are exceptions to everything. These animals have been around a long time and they have a lot of different ways of making a living. You will find a tremendous amount of variability in what they do," he said.

On the boat, his point becomes clear.

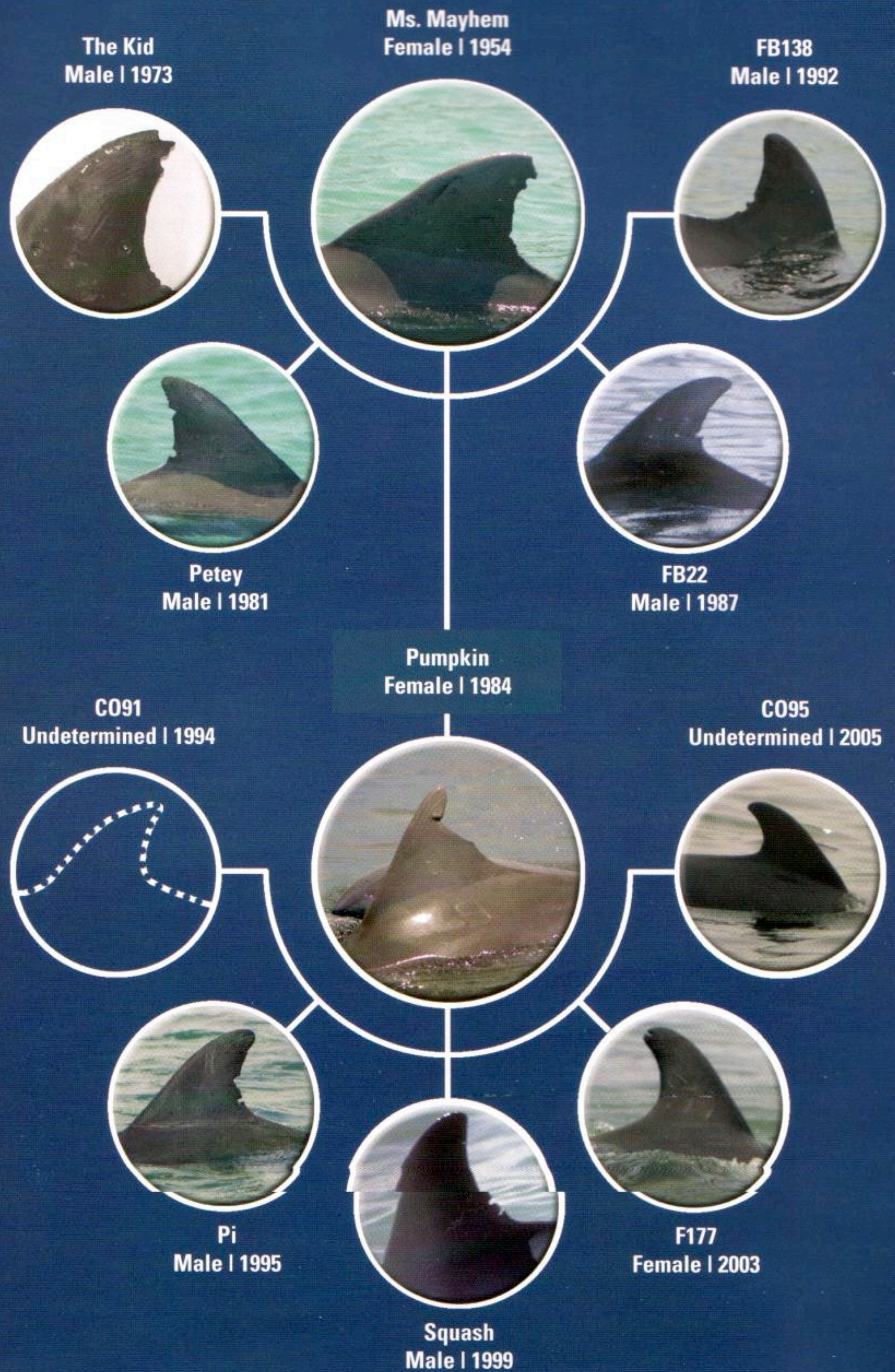
Allen has just popped the *Mini* into gear and he's humming after a dolphin to see where it's headed. Usually, Sarasota dolphins travel in groups of four to seven, but sometimes that number swells to 15 to 30. Like today, for example, when more black triangles emerge in the distance. This time, entire submarine-



Dr. Nélio Barros of Mote's Stranding Investigations Program once hypothesized that dolphins use their power to echolocate only sparingly in the wild. Field work by Mote post-doctoral candidate Damon Gannon in North Carolina and studies by other scientists on Wells' team have shown that Barros' idea was right.



## Ms. Mayhem's Family Tree



Advances in genetics in the 1980s helped Dr. Randall Wells and Debbi Duffield, a Portland State University geneticist, study the relationship links of Sarasota Bay dolphins. These studies, combined with decades of observational data, have allowed for a more detailed look at the local population.

In fact, the Sarasota Dolphin Research Program often pairs with researchers at other institutions. In one case, Wells, the program's graduate students and colleagues from Woods Hole Oceanographic Institution in Massachusetts created a remote control camera attached to a blimp to better observe dolphin behavior.

like bodies appear. "There's FB05. Got her? And FB63," Allen says.

FB63, or Ms. Mayhem, is one of the oldest dolphins in the Sarasota area. At 51, she's grandmother to Pi, a calf born to Ms. Mayhem's daughter, Pumpkin, in 1995.

The sea around the boat is swarming with fins. They're popping in and out of view like cardboard targets in an arcade game. Five or six cruise calmly past the boat in close formation. In the distance, another dolphin flings itself some 5 feet into the air and claps the surface with a loud splash. "Wow, I hope you got that," Allen says to Englund. In all, Allen counts 18 dolphins.

Eighteen is a large group for dolphins living in the shallow waters of Sarasota, but compared to other species of dolphins from around the world, it's piddly. Hawaiian spinner dolphins live in deep water and travel in groups of dozens to hundreds. This is likely because deep water dolphins risk shark attacks from below and hunt schools of fish, while shallow water offers natural protection from sharks and is generally home to more fish scattered among seagrass meadows and along the edges of mangrove-fringing forests.

Sarasota dolphins live in what Wells and other behavioral ecologists call a fission-fusion society. They form groups, but unlike orcas that have tightly-knit pods, Sarasota's groups are ever changing and incredibly fluid.

The mother-calf bond is one of the strongest in bottlenose dolphin society, exceeded only by the lifetime pair bonds that form between adult males. Children stay with mothers for an average of three to six years. It can be captivating to see them together. "Look, a YOY! A YOY!" exclaims a volunteer on the team who points to a pint-sized youngster. This "young-of-the-year" is traveling in synch with its mother.

Just as with humans, parenting isn't always easy. Allen points to a 23-year-old female in the distance. "I think that's Saida Beth," he says. "She's had a heck of a lot of trouble keeping her kids alive. Out of seven births, only one survived (more than three years)."

A little later, Allen and the *Mini Mako* finds one of two small orphans known to live in the bay looking for fish. "No (females have) picked them up. They've been on their own for a year," Allen says of the pair. It's hard not to feel some sympathy for them upon realizing how intricately the Sarasota team understands the inner workings of this particular dolphin society.

It's a society that would have remained veiled without the efforts of Wells and his program's research team of staff, students and colleagues.



*In 35 years, Randy Wells has watched four generations of dolphins live and prosper. Forty percent of the animals tagged in the early stages of the study are still around today — the oldest is now 55.*

#### A LIFETIME OF STUDY

Wells first came to Mote as a 16-year-old volunteer intern, and despite forays for undergraduate, master's and doctoral degrees, he's been at Mote ever since. While many studies have tracked dolphins for a year or two in what are called latitudinal studies, Wells' program is the most ambitious long-term, or longitudinal, study ever conducted on a group of marine mammals.

"There's no doubt he was the first one out there doing this. He's shown people that long-term studies can work," says Dr. Denise Herzing of the Wild Dolphin Project, an organization that has been working on its own longitudinal study of spotted dolphins since 1985.

"His work is top notch," says Dr. Kenneth Balcomb of the Center for Whale Research, a scientist who went to graduate school with Wells and is in the midst of his own 30-year longitudinal study of killer whales that was recently featured in *National Geographic* magazine.

Wells' study, which has utilized cutting-edge and innovative tracking technologies, has shown other researchers that although longitudinal studies can be difficult, they are possible. "Back in the early days, Randy would go to meetings and I would go to meetings and we'd talk, and the other people would say

'Gosh, I could do this in my own backyard,'" Balcomb says.

Wells has always been acutely aware of the limitations of latitudinal studies and that's partially what has motivated him in Sarasota. "Snapshot surveys don't necessarily tell you the whole story," he says.

When Wells first came to Mote in 1970, he wanted to study sharks and worked with Blair Irvine as part of a small effort to understand whether bottlenose dolphins and sharks were "mortal enemies" and whether dolphins could be trained to protect divers from dangerous sharks (they aren't and they can't).

At that point, nobody knew whether bottlenose dolphins moved through the Gulf of Mexico or remained year-round residents of bays. To find out, Irvine arranged to go out with a local commercial dolphin collector to tag animals. Wells went along as Irvine's assistant.

When the pair discovered that the same dolphins could be found pretty regularly in local waters, Wells was hooked.

By 1975, the small study had morphed into a major tagging and tracking effort. Irvine, Wells and Michael Scott incorporated the latest technology into the study as it became available. Radio tags complemented plastic tags commonly used for cattle. In the 1980s, advances in genetics allowed Wells to overlay detailed genetic analyses on his observational data. And he even helped develop an innovative

system with a remote control camera attached to a blimp to observe dolphin behavior without the distraction of a researcher's motorboat.

#### FLIPPER REALLY WAS ACTING

Wells is quick to emphasize that much of his research swims in the face of stereotypes of dolphins as the cuddly, smiling, wholesome creatures of *Flipper* fame. After 35 years of study, Wells knows that beneath the "smile" of a dolphin's upturned jaw sit two rows of sharp teeth used to grasp prey, which is usually swallowed whole or in large chunks. And it isn't unheard of for dolphins to fight — sometimes to the death. Tooth raking, ramming, and striking with flukes are common dolphin tools of aggression. Wells has watched mothers disciplining their calves by lifting them out of the water on their flukes, or even holding them underwater. Sometimes male dolphins even kill calves.

Another common misconception scientists working with the Sarasota Dolphin Research Program have debunked is that dolphins must use echolocation to hunt. The high frequency dolphin sensory system has served as a model for sonar and allows dolphins to detect objects the size of a Ping-Pong ball more than a football field away. Wells and his team have shown that dolphins use their sophisticated sensory systems only sparingly in the wild. Instead,



One question the Sarasota Dolphin Research Program hopes to answer is how problems caused by human-dolphin interactions can be lessened. This dolphin, a 7-year-old male nicknamed Bud, leaps and displays a relatively unscathed dorsal fin. Many of Bud's peers have noticeable nicks and notches on their fins that help scientists identify them.



Sarasota's bottlenose dolphins tend to forage by listening passively for sounds from soniferous, or noise-emitting, fish. Once the dolphins have detected fish noises by passive means, they can activate their echolocation system to aid in the pursuit and capture of their victims.

Sometimes the chase can get wild. Sarasota dolphins have been observed herding schools of fish into concrete barriers, whacking them with their powerful tails and smashing their flukes against the water to scare fish out of hiding.

#### UNUSUAL BONDS THAT TIE

Another aspect of dolphin behavior that didn't come up much in *Flipper* is that dolphins are intensely promiscuous animals and use sex like a handshake. Dolphins engage in both homosexual and heterosexual behavior during all seasons, regardless of whether reproduction is possible. Dolphins mate occasionally with other dolphin species and researchers have even observed copulation among dolphins just a few days old, sometimes with their own mothers. Male dolphins boast disproportionately large testes and have the highest recorded sperm count of any mammal—some 300 times higher than the mean concentration of humans and 100 times that of chimpanzees.

Unsurprisingly, sex seems to be a primary motivation behind one of the more unusual

features of dolphin social systems: the male pair bond. The male pair bond, first reported by Wells in 1987, refers to the intense bonds that form between males as they mature. It's the longest-lasting social tie in dolphin society and the bonds often last until the loss of one partner.

At any time, some 58 percent of males are part of a pair bond, which means statistically that researchers find two particular males together more than 80 percent of the time. This buddying up likely results in a variety of benefits, such as protection against sharks and help with fishing. But being part of a pair seems especially useful when it comes to sex.

Typically, a pair of dolphins will identify a receptive female and swim with her for periods of days to weeks, sometimes with each male flanking her closely and forming what scientists call a "consortship." It seems most likely that this is a strategy to ensure good access when the time comes to mate and to keep other males away.

Despite all that Wells and his team have uncovered, some questions remain unanswered.

■ Why do 85 percent of first-born dolphins die? While Wells' studies have shown clear correlations between first-born dolphin deaths and environmental contaminant concentrations in tissues,

the answer is likely more complicated. First-time mothers are often not yet fully grown, and they do not provide the same quality of care in rearing their young as do more experienced mothers.

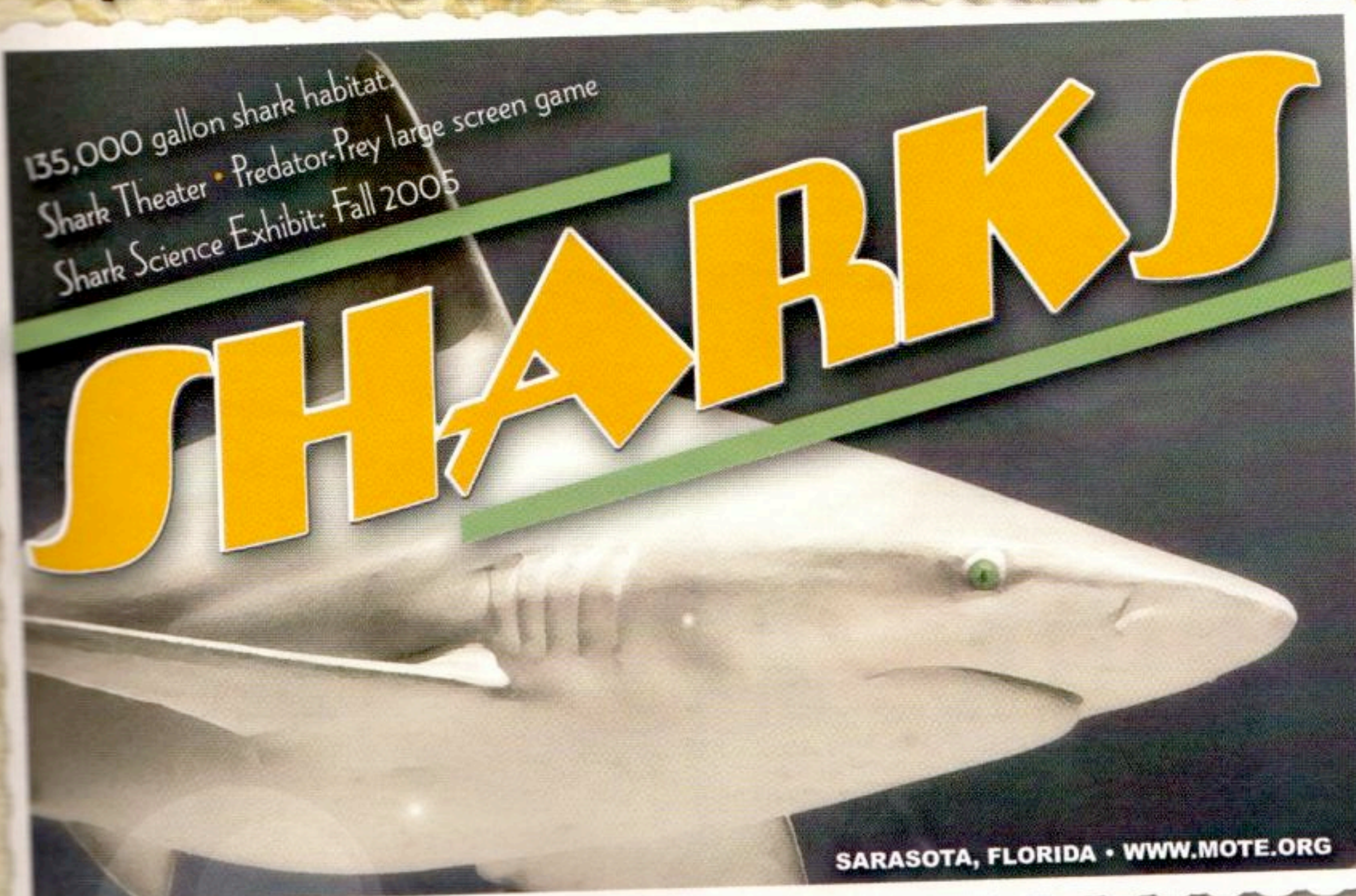
■ What impact do boats have? Sarasota Dolphin Research Program studies have revealed that the dolphins living in Sarasota Bay are passed by boats within 100 yards every six minutes, leading to changes in behavior. Are there cumulative effects from these repeated behavioral changes? If so how do they affect dolphin survival and reproduction?

■ And, of course, since the dolphin that Allen spotted that day in June was Riptorn, where is Sparks?

Wells fears the worst. By the time Sparks was 2, he had already lost half his tail fluke to a shark. And now, 33 years later, human impacts in the bay are intensifying.

"I wish more people understood that these animals consider the waters of their community range to be their home," Wells says. "They have lived there for multiple generations, just like many people live in neighborhoods for multiple generations. People need to understand that we have a choice about where and how we recreate, but dolphins don't have a choice about where they live. But maybe, just maybe, Sparks is still out there. That would really be good news." ■

## Explore the secrets of the sea.



Mote researchers first began revealing shark secrets in 1955. By 1991, the U.S. Congress recognized Mote as a national center for shark research and today, Mote operates the largest independent shark research organization in the world.

**MOTE**  
AQUARIUM