JEREMY AND THE DOLPHINS

By

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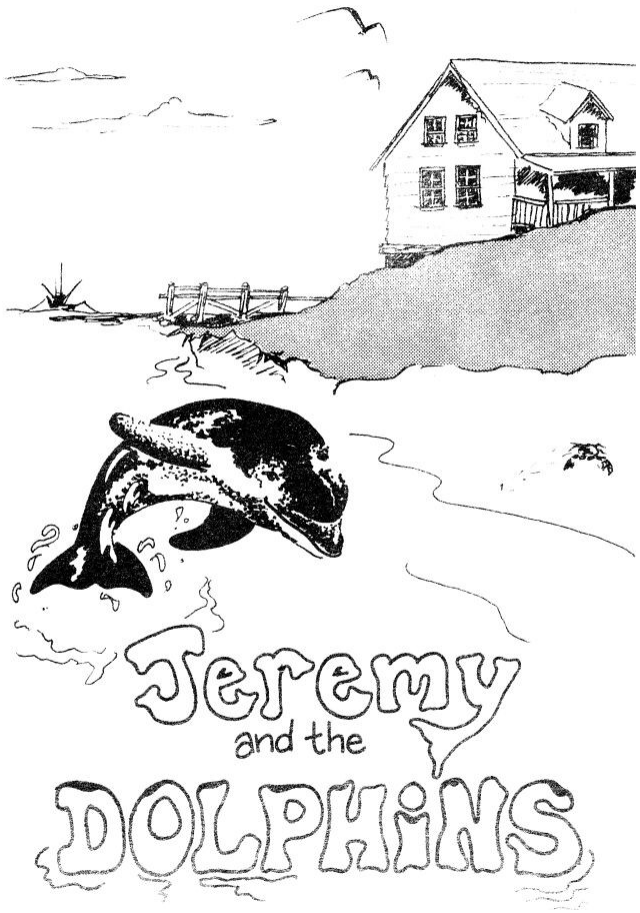
BOOK X

MARINE DISCOVERY SERIES



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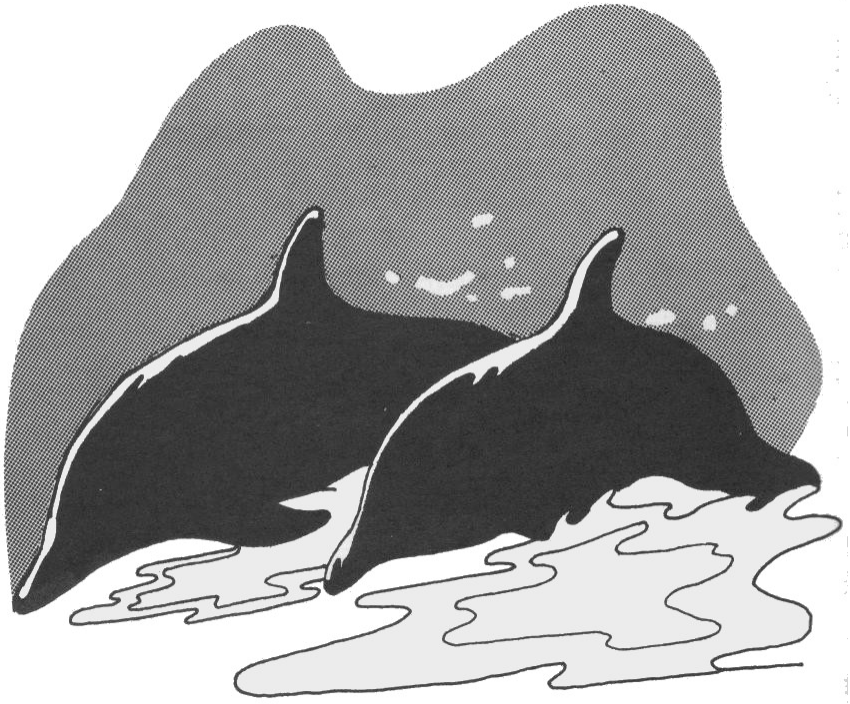


JEREMY AND THE DOLPHINS

Jeremy Lake was eleven years old when his father went to Saudi Arabia. Jeremy's father worked for an oil company opening a new oil field in that faraway country, and the company needed him there for a whole summer.

"I'll be there only a few months," his father told him, "and you'll be with your mother and Aunt Louise and Uncle Walter in Mississippi. I'll take you there before I go and get you settled in," his father said, grinning. "Your uncle and I grew up there, and you'll learn to love it as much as we did."

"Will it be different from--well, from here?" Jeremy asked. He didn't want to sound worried. He knew his father's younger brother, Walter, and his Aunt Louise, because they had visited Jeremy and his family a few times. But he had never been to Mississippi. His parents had moved all over the world, he thought. The last time they had been together, his Uncle Walter had said it was time for Jeremy to visit what he called "the home place."

"It has belonged to our family for over a hundred years," he said. His uncle was tall, like Jeremy's father, and dark-complexioned. Both of them looked as if they spent a lot of time outdoors. Uncle Walter was a biologist for the Gulf Coast Research Laboratory in Ocean Springs and studied marine life and resources in the Gulf of Mexico.

"Our great-great-grandfather came to Ocean Springs from South Carolina in the 1800s and built his home there," Jeremy's father said. "I've always wanted to take you there, but we were always on the move. It's time for you to learn something about your Mississippi heritage. It's time I took you home."

"I'd rather go with you," Jeremy protested. "You've always taken us with you before, wherever you went. To England--and Tokyo--and Baltimore and Rochester and--" he listed some of the places the Lakes had lived.

"Hold it," his father said, putting up his hand. "I know--I know. We've moved around so much that you haven't lived long enough in any one place to call it home."

"Home," his mother said, "is in Mississippi, Jeremy." She, too, had been born on the Mississippi Gulf Coast, in Biloxi, though none of her family still lived there.

"You'll enjoy it, I know," Jeremy's father said again, sounding more confident than he felt.

And that was why Jeremy Lake spent all of that summer in Ocean Springs, Mississippi, in the big white house that stood on the high southern shore of Biloxi Bay. There were no houses nearby and no people to break the monotony of the sunny days, except, of course, for his mother and Aunt Louise and Uncle Walter.

Jeremy had to admit that from the first he had liked being there. There was a wide, partially screened-in porch around the white-columned house, that his aunt called "the veranda." His bedroom was on the second floor of the house. It was bright and cheerful and looked out across the sloping lawn to a narrow beach bordering the glittering waters of the Mississippi Sounds. And there was a long pier at the back of the house which extended into the narrow inlet that cut into the land to form a quiet bayou.

At first, every day seemed full of activity. His mother took him with her to visit friends, and Aunt Louise and Uncle Walter drove them to Mobile one day and then to New Orleans for a weekend. They often went out to eat in the evenings at one of the good restaurants along the Coast.

Jeremy also learned to fish and how to go crabbing off the pier. He dropped the wire net baskets from the pier into the shallow water. The baskets had bait tied in the center. Once he caught three crabs in one net and his uncle said that must be a record.

One day Uncle Walter took him to the research laboratory where his uncle worked. Jeremy was fascinated by the work of the marine scientists on projects as varied as studying redfish and shrimp aquaculture and the effects of sea grasses on beach erosion.

But sometimes the days seemed very long to Jeremy, because there was no other person nearby to spend time with, to run and play with, to share stories with and explore and laugh and be young with. It was almost as if he were on an island, he told his mother. Sometimes in the early mornings he would take a book down to the pier and walk to the end of it, where there was a wide extension under a covered pavilion with long benches to sit on. Sometimes he would put out his crab nets and then lie down on one of the benches and read. Reading, his mother and father often said, was the best possible way to spend an idle hour or fill a spare moment. He loved to read.

One morning during the third week of that summer he was on the weathered pier, lying on one of the benches and reading. It was cool on the pier, the soft breeze moving pleasantly across the water and making the near-shore wetlands grasses bend gracefully in the wind. It was really a good place to live, Jeremy thought, even if he was sometimes lonesome. No wonder his father had loved it. The Gulf Coast was beautiful, he thought, with its great live oaks and magnolias and a continuous beach from Pass Christian to Biloxi and beautiful old houses that looked as if they had been there forever. He put down his book and stood up, stretching as he looked out across the narrow bayou.

That was when he first saw them--and then he saw only the dorsal fins rising out of the water and gliding silently in a single circular line. There must have been five or them--no, six--eight, maybe.

His first thought was that they were sharks. He remembered seeing "Jaws," and he felt a small shiver of excitement run down his neck. Sharks! He wanted to run back to the

house and tell someone, and he turned just as his uncle started toward him from the end of the pier.

"I though I'd find you here," Uncle Walter said. "Crabbing, again?"

"Not today," Jeremy laughed. "I think I've already caught enough crabs for gumbo for the whole summer. I was just reading. And then when I got up, I looked out there--" he pointed, "and I saw--" there was nothing at all on the surface of the calm water. "Well, they were there just a minute ago. Maybe eight of them. Sharks, I think. I could see their fins. It was like 'Jaws,'" he said, still excited by it.

"Probably not sharks, though," his Uncle Walter said, smiling and sitting down and then looking where Jeremy had pointed. "Yes, now I see. They're moving toward the shore--over there."

And the Jeremy could see them. There must have been even more than he had counted at first. "What are they, then?" he asked.

"Dolphins. Bottlenose dolphins. We see them a lot around here."

"Like Flipper, you mean?"

His uncle laughed. "Well, yes, though Flipper was not really wild any longer. He was trained, I suppose, for television and performing. But they're like him, yes."

"He always looked like he was smiling," Jeremy said. "It was like he was smiling right at you--or maybe at a good joke."

"It's the way the mouth curves," his uncle said. "Do you know anything about dolphins, other than Flipper?"

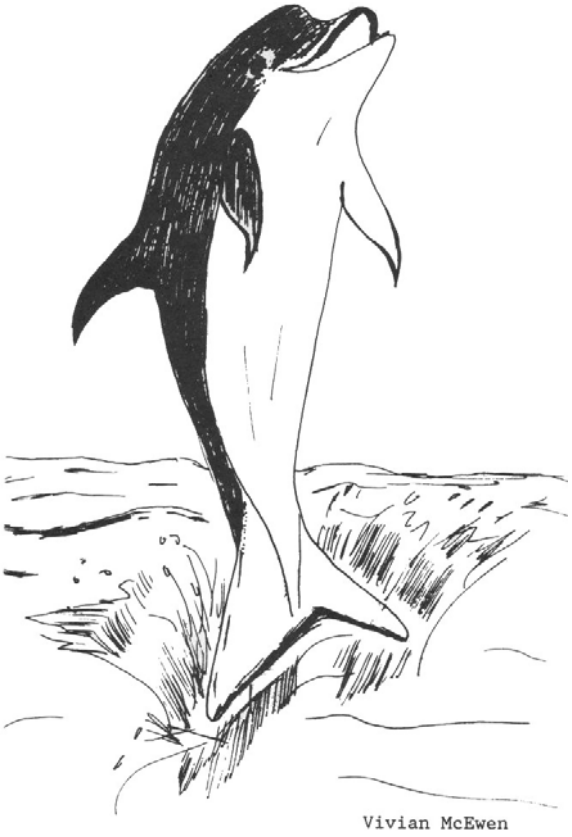
"No. Only what I saw on reruns on TV last year."

"Well, they're as interesting as any animal you're ever going to learn about. If you're really interested--" he began, when Jeremy interrupted him.

"Look!" he pointed. "What's happening?"

It was then that they could see the water darken with hundreds of fish as the dolphins seemed to draw a half-circle around the mass. Fish began jumping out of the water, the sun making silver reflections as they splashed. And then one of the dolphins at the southern end of the crescent leaped high into the air and hit the water again with a loud splash--and then another--and another.

"What's happening?" Jeremy was so excited that he was leaning across the bench, his voice loud and insistent.


Vivian McEwen

"They're feeding."

"What do you mean?"

"It's a way they have of feeding collectively," his uncle said. "They find a school of fish--"

"A school?"

"A large group. That's what it's called. And they begin to swim around them, herding them closer and closer together and forming a half-circle to drive them forward toward shore. It happens like this in the bays and inlets sometimes. It's always fascinating to watch. We've always had dolphins around here. They're native to the Gulf."

Jeremy could see them clearly now, their slender, streamlined bodies cutting through the water with incredible speed and grace. They were mostly gray, in a cape-like effect with lighter undersides.

"They work together?" Jeremy said. "They get together and hunt for their food? That sounds--well, smart," he said.

"They're very intelligent," Uncle Walter said. "Their brains are large and they're social animals that learn from their environment and seem to know how to work together."

"It all sounds--impressive," Jeremy said.

"If you're interested, you can find out much more in the library. And maybe if you work at it, you might even get one of them to come closer."

"How?"

"With fish--or maybe just waiting and seeing what happens. It could happen, you know," his uncle said. "There are stories of dolphins that come back to one place time after time and who almost seem to make friends with people."

"It's hard to believe a fish--"

"That's not really accurate," his uncle said. "They're mammals, not fish."

Jeremy was still watching the activity across the small bay as the fish kept jumping and breaking the water into hundreds of silvery patches and a dolphin occasionally leaped high into the air.

"Mammals?" he questioned.

"Animals that feed their young with milk--warm-blooded animals."

"Do you know a lot about dolphins?" Jeremy asked. "Maybe in your work in the lab--"

"I don't do any work connected directly with dolphins," Uncle Walter said, "but I know some things about them."

"Like what?"

That was when Jeremy got his first lesson about the dolphins he would study that summer--from his Uncle Walter, who had always had a scientist's curiosity and had read a lot about the animals.

Jeremy learned that it was not unusual for dolphins to have a home range that kept them in certain areas over a long period. The animals often inhabited coastal waters, though they were found in all oceans and several fresh water systems.

"Are they all alike?"

"No. The literature I've read is not always in agreement, but there are a large number of different kinds of dolphins; the one you're familiar with is a bottlenose--some people say bottlenosed--dolphin."

"Why the name?"

"Because it has a kind of beaklike snout."

"Well, most dolphins have a pronounced beak."

"Are they the same as porpoises?"

"Some people use the names interchangeably, but porpoises differ from dolphins in their teeth and dorsal fins. Dolphins' teeth are cone-shaped; porpoises' are spade-like. Porpoises have more triangular dorsal fins, without the curvature toward the tail. And porpoises don't have pronounced beaks."

"What do dolphins eat? Just fish?"

"Fish, primarily, but they also eat shrimp and other sea creatures. They're what we call 'opportunistic' feeders. Their feeding habits are fascinating; you just saw them working together to feed, but they also work alone. And they sometimes follow shrimp boats out in the Gulf, eating the trash fish from the trawls. They eat as much as fifteen to twenty-five pounds of fish a day. They have more teeth than any other mammal--up to two-hundred in some kinds of dolphins--but they're incapable of chewing. They swallow the food whole and it goes into a forestomach where it's digested rapidly."

"You know everything about them," Jeremy said admiringly.

"No, I don't," Uncle Walter smiled. "But there are some people at the research lab who do know a lot about them. Some of the people have published studies of the bottlenose dolphin in our waters--"

"The Mississippi Sound," Jeremy said. He had learned that the waters off the Mississippi Coast were called that.

"Yes. And even they don't know everything about dolphins. In fact, they've been studied a great deal, particularly in the last few years, but some things prevent a really definitive study--"

"Definitive?" Jeremy was puzzled.

"Studies that might cover everything about them, answer all the questions," Uncle Walter explained.

"For one thing, their tendency to inhabit murky coastal waters helps prevent good underwater study. And the studies of dolphins in captivity ought to be treated with some caution. Captivity may change behavioral patterns."

"I see," Jeremy was very serious. One thing he liked most about his uncle was that Uncle Walter didn't treat him as if he were too young to be taken seriously. It was always as if he believed Jeremy's questions required thoughtful answers. Jeremy felt somehow older when he was with his uncle.

By the time they finished talking, the dolphins had finished their feeding and were moving toward the opening to the small bayou out into the open waters. Several times one of the dolphins leaped into the air, almost as if it were playing, and one of the very small dolphins tried to imitate it.

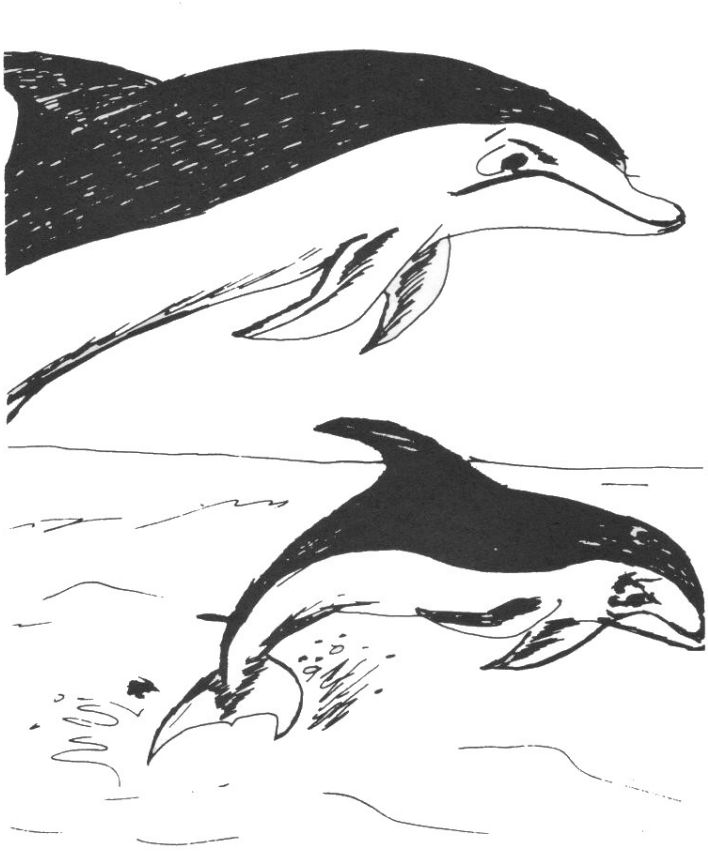
"They're probably cows with their calves."

"Cows? Calves?"

"That's what they're called. The female mother dolphins are commonly called cows and their babies are called calves."

Jeremy couldn't help laughing, remembering the cows and calves he had seen on Texas ranches. "That's funny," he said then.

"You need to check out some of the literature if you're really interested," Uncle Walter said. "I can take you to the library at the Gulf Coast Research Laboratory. You can come with me tomorrow."



Vivian McEwen

And that was how Jeremy began his study of dolphins during the summer he spent on the Mississippi Coast. He was fascinated from the very start as he read and read. The librarian let him watch a videotape on dolphins in captivity and listen to a recording of the sounds dolphins make. He learned about some of the efforts the United States Navy was making to train dolphins for underwater projects involving safety and rescue and retrieval, depending on the high order of intelligence of animals and their ability to locate objects underwater.

It was his uncle who suggested he make notes.

"Maybe on day you can use all of this in a science project or a paper for your biology class later," Uncle Walter said. "Maybe you'll be a marine scientist one day."

"Like you," Jeremy said. "Or maybe an engineer, like my Dad."

Uncle Walter bought a book on dolphins and gave it to Jeremy on his twelfth birthday, June 28th. It was the present he liked most, and he took it with him to the pier the next morning and began reading. He already knew much of what he read, from his library visits.

He already knew that dolphins were classified by scientists as cetaceans, the order containing whales, dolphins, and porpoises, and given the name Tursiops truncatus, of the class of Mammalia. The general belief seemed to be that there is one species of Tursiops worldwide, separated into a large number of geographical variants based on body size and teeth proportion.

Dolphins, he read, are abundant worldwide in tropical and temperate waters, occasionally moving into colder waters and up rivers. Some studies show that dolphins travel in groups and subgroups, composed of adult males, bachelor young males. and female dolphins and calves. They often seem to maintain home ranges, probably using underwater topography to establish home areas for normal daily activities. There seem to be no reliable estimates on the number of dolphins in North American waters.

The coloring of a dolphin is protective and suited to its environment, with most dolphins a gray or brownish gray with lighter undersides, though color variants do occur.

Bottlenose dolphins are the type most frequently shown in captivity and most familiar to Americans. With its thick beak and chunky head, the bottlenose dolphin has a slim, torpedo-shaped body well-adapted to its water life. Flippers, or pectorals, as the side fins are called, on both sides help the dolphin to steer and are similar in internal structure to a human hand. The tail fins, called flukes, move up and down to propel the dolphin forward.

The bottlenose dolphin may grow to a length of seven to nine feet and weigh as much as three-hundred to six-hundred pounds. It can live to be twenty-five to thirty-five years old.

Jeremy was particularly interested in the dolphins' fitness for their environment and the way they breathed, especially as he watched the small group of dolphins that came often to his own cove. On days they did not come, he waited and waited and would finally leave in disappointment. He never tired of watching them; sometimes it almost seemed to him that they were performing for him. He gradually began to recognize individuals. One of the largest was almost cinnamon-colored and very protective of the young dolphins that swam close to her, the smallest of the herd.

His reading told him so many things he would not have been able to discover for himself: A dolphin has a thick layer of blubber, or fat, to protect it from cold temperatures. Its eyesight in the water is probably better than that of a human, though out of the water, it is much the same. It can swim up to twenty-five miles an hour, its agile body seeming to move effortlessly through the water.

A dolphin breathes through a single nostril, a sickle-shaped opening on the top of its head, called a blowhole. Below the opening is a valve, like a plug, that may be opened for inhaling and exhaling and closed as it dives again. It must surface frequently to breathe and surfaces even when sleeping, though it seems to need little sleep. It can make very deep dives because of the large amounts of oxygen it inhales at one time.

He learned that the dolphin is a prime subject for research in communication. The dolphin makes sounds without vocal cords--squeaks, whistles, and clicks--sounds audible above water and made from a series of nasal air sacs just below the blowhole.

Below the surface of the water, the dolphin also makes sounds which can be projected in any direction and focused into a narrow beam ranging from high to low frequencies. Through a system scientists call echolocation, the dolphins have developed what is, in effect, a sonar system of their own, sending out sounds that hit objects and bounce back to be received by the dolphins, apparently through their lower jaws. The vibrations travel to the inner ear and form sonic images.

From the echolocation, the dolphins are able to tell size, shape, speed, direction, and density of objects they focus on. They are also apparently able to maintain communication with each other, through methods not widely understood.

One of the most fascinating areas of Jeremy's research that summer was about the birth and care of dolphins.

The baby dolphins are about forty inches long and can swim as soon as they are born. They are born tail first and almost immediately surface, to breathe, often assisted by the mother dolphin. In the birth process, there is usually another female dolphin nearby, called an "auntie" dolphin, who appears to be there for assistance and protection. Mothers and calves may remain together up to several years, and the mothers are very protective of their young.

The calves suckle milk secreted by the mother dolphin, up to one year of the rich diet, though most observers are not sure how long the nursing period may be. The mother dolphin gives birth to a single calf, after a gestation period of about twelve months, according to most scientific studies. Pregnant females spend their time alone or with one other adult female during the latter half of their pregnancies.

As Jeremy learned more about the dolphins that summer, and as he continued to watch the small group he came to regard as his own, he also became aware that there were many dangers faced by the beautiful mammals.

In 1972, a Marine Mammal Protection Act was passed by Congress. The legislation protects dolphins and whales and other marine mammals and permits only limited collecting of the animals. Special permits for such collection must be issued by the Department of Commerce's National Marine Fisheries Service, following consultation with the Marine Mammal Commission and its committee of scientific advisors.

Vertebrae from a dolphin

The Act alone, however, does not always protect dolphins from the dangers of irresponsible actions by human beings, and a large number of dolphins die each year as a result of those actions.

The dolphins have few natural enemies, with sharks probably the most important predator they have to fear. There is some evidence of group reaction to defend against certain kinds of sharks, though the evidence is sketchy at best about the ways in which dolphins and sharks co-exist.

Probably the most important dangers to dolphins come from man himself, as many dolphins are caught in nets of fishing boats or become entangled with fishing gear or menhaden seines in the Gulf or float lines of crab nets or lobster traps. Some fishermen who misunderstand dolphins have even been known to shoot and kill them, which is also illegal.

Another danger comes from parasitic worms which may affect the dolphins' ability to navigate and cause them to beach themselves and die.

In addition, Jeremy read, dolphins are subject to whatever alters their habitat, and manmade pollution of oceans and rivers poses an ever-growing danger to the dolphin population--though studies do not yet show such habitat alteration to be an overwhelming danger to dolphins worldwide. Some studies have shown dramatic changes in dolphin population and behavior because of habitat alteration, but Jeremy read that the studies were not yet definitive.

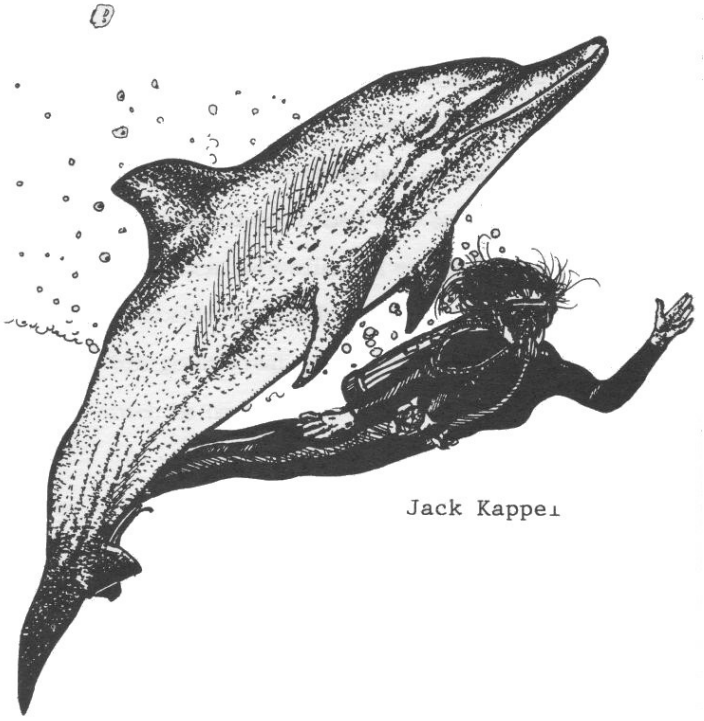
Reading about the dolphins made Jeremy wish that everybody would learn to care more about the environment and not thoughtlessly misuse the gifts of Nature which had created such wonderful creatures.

Every day for the rest of the summer was an adventure for Jeremy, because he found himself trying to observe in "his" dolphins the behavior and characteristics he had read about.

And by the time the summer was nearly over, he had become familiar with every dolphin in the small group--sixteen by his latest count. He did not try to give them names or make them seem like pets, though he thought he could easily have done so.

No, he was certain that it was better to think of them as very special inhabitants of the small planet Earth who occupied their own space and were perfect just as they were.

His father had sent him a pair of powerful binoculars, which he used to watch the dolphins, following them out into the open waters as long as he could see, sometimes feeling a certain sense of pride in having learned so much about them and understanding their behavior. Sometimes he found himself laughing at the antics of two of the dolphins that seemed especially acrobatic. And he would smile to see the way the mother dolphins appeared to protect their small babies, who grew larger as the summer went on and who were beginning to take part in the feeding process, learning quickly to act with the group and sometimes leaping into the air in exuberant play, making small splashes as they fell back into the water.



All too soon the summer faded, and it was time for Jeremy to leave Ocean Springs and travel to New Orleans, where he and his mother would join his father and travel back to their home in Houston. He was excited about seeing his father again--and happy that the family would be together. But he was sorry to be leaving Ocean Springs. He had enjoyed the slowly passing days and the open warmth of the people he had come to know. He had liked the sunny weather and the seafood that was the best in the entire world, he was convinced--and he especially liked the big, open house that his great-great-grandfather had built and which he now thought of as "the home place."

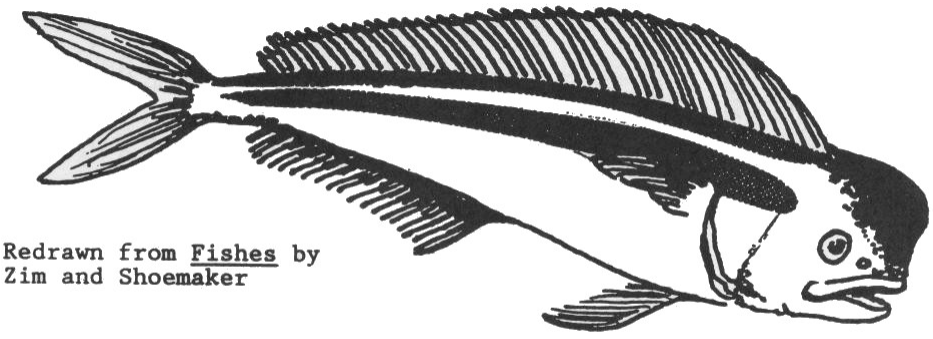
He was sorry to leave Ocean Springs--and he was sorry to leave his dolphins!

They had helped to make his summer a happy one. He had learned so much about them; and for the first time, he found himself thinking of life in larger terms then he had ever thought of before.

He found himself thinking of the creatures that inhabited other parts of the earth and their needs and of man' responsibility to keep the earth clean and safe, not simply for human beings but for all living things.

It was something he had not really thought of before--and somehow, to Jeremy, it seemed that he had grown so very much during the summer he went back home to Ocean Springs.

The summer he would always remember as the time he met the dolphins.



A dolphin fish, not to be confused with the dolphin mammal.

VOCABULARY

aquaculture	cultivation and growth of water plants and animals for human consumption
bayou	marshy inlet, usually small
blowhole	nostril in the top of the head for breathing by certain cetaceans
blubber	the fat of a whale or other sea mammals
cetaceans	fishlike water mammals like whales, porpoises, and dolphins
definitive	decisive and conclusive
density	mass, thickness
dorsal	of or near the back, as of top fins of a dolphin
echolocation	determining where something is located through using sound waves that bounce back to the sender
environment	conditions and circumstances surrounding and affecting the growth and development of an organism
flukes	lobes of the tail of a dolphin or whale or similar mammal or fish
gestation	the period of carrying the young through pregnancy
habitat	place where a person or animal lives
mammals	any of a large class of warm-blooded animals whose young are fed by milk secreted by the female
nasal	pertaining to the nose
opportunistic	adapting to and taking advantage of whatever circumstances exist at a given time
parasitic	living on or off others
pectoral	of or associated with the chest or breast
predator	enemy; one that lives by capturing and feeding on or using others
sac	pouch-like part of a plant or animal
secrete	to form and release or give off
sickle-shaped	crescent-like
sonar	system of sound using high frequency sound waves transmitted through water and registering vibrations reflected back; used in locating objects
temperate	moderate; neither hot nor cold
tendency	inclination to act or move in a certain way
topography	accurate description of a place; shape, size, position, etc.
variant	differing in some way from others of the same class or kind or from some standard or type
wetlands	swampy or marshy area, lowlands, influenced by water

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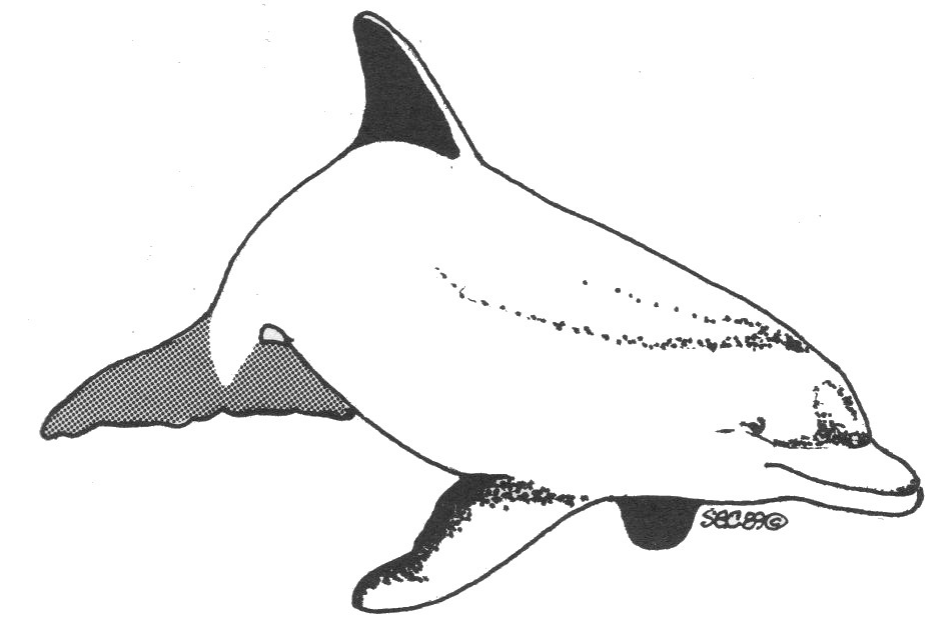
ENRICHMENT ACTIVITIES

The following topics can be assigned for classroom discussions, small group discussions, or for individual reports. The teacher may recommend books for the students to read.



1. Why does the dolphin have such a difficult name like Tursiops truncatus?
2. How does one know what two words or names are put together to form the scientific name?
3. How can elementary students help to protect dolphins?
4. What steps should I take if I find a dead or beached dolphin?

RESPONSES

1. This is the dolphin's scientific name. Common names are given by people of local areas. There are no rules to determine what a common name should be. This is why one animal can have numerous common names. Sometimes people in Mississippi may confuse the dolphin fish for the dolphin mammal. Scientific names are the same all over the world. Latin and Greek words are used because these classical languages do not change.

2. The first name, Tursiops, is called the genus and is written with a capital letter. The second name, truncatus, is the species name. the species name is not written with a capital letter. the two names, genus and species, clearly identify the bottlenose dolphin. There is a proper way tot get a scientific name by suing the classification scheme. You know that the dolphin is an animal and is in the kingdom Animalia. The dolphin is in a large group known as phylum Chordata--the same as humans. All animals in phylum Chrodata must have the following characteristics at some time or another in their life cycle:

    - Gill slits--the dolphin breathes air which indicates this characteristic could only be during the embryological or developing stage.
    - Notochord--the notochord is a cartilage tissue which serves as a dorsal, supporting structure that is later replaced by backbone in higher vertebrates. The dolphins have backbones (vertebrae) as adults.
    - Hollow dorsal nerve cord--the dolphins have a nervous system characteristic of all chordates.
    - Certain type of tail during the early embryological stages or as an adult.

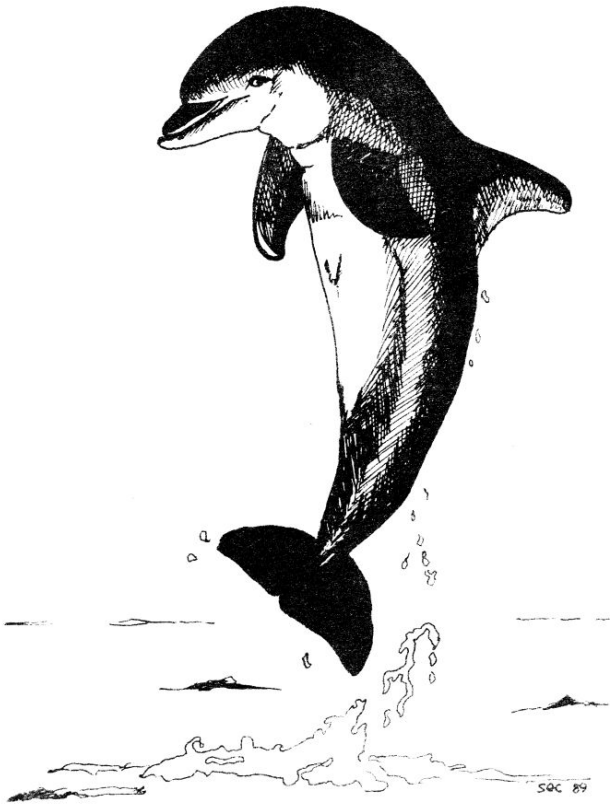
The dolphin is in subphylum Vertebrata because it has vertebrae--a backbone. The dolphin is in class Mammalia because it gives milk to the young. Dolphins are in order Cetacea and in the family Delphinidae. The genus is Tursiops and the species is truncatus. As you look at the classification system consisting of various groups (taxa), each group or rank contains fewer animals as you proceed down from the kingdom. The classification for the dolphin is written as follows:

Kingdom..... Animalia
Phylum..... Chordata
Subphylum..... Vertebrata
Class..... Mammalia
Order..... Cetacea
Family..... Delphinidae
Genus..... Tursiops
Species..... truncatus

To get the scientific name of an animal, which two ranks (taxa) do you select? This two-naming classification is called binomial nomenclature--two names, the genus and the species. These words, genus and species, frequently describe a prominent feature of the organism or honor a scientist. For example: truncatus means shortened or cut off which describes the bottlenose.

3. Students and citizens should become informed about various types of pollution that could harm dolphins. Become familiar with state and federal agencies for pollution control. Notify the proper authorities of mistreatment of dolphins: shooting, capturing illegally.

4. You must not carry off, destroy, or bury the dolphin. Instead, you should notify state or federal authorities about the death of a dolphin or a dolphin that is beached. Give the location and description of your findings. Agencies that deal with wildlife will assist you with reaching the proper authorities: Department of Wildlife Conservation, Bureau of Marine Resources, U.S. Fish and Wildlife, National Park Service, National Marine Fisheries, Gulf Coast Research Laboratory, J.L. Scott Marine Education Center, and others. The people in the agencies also respect the dolphins. They can advise you of the proper actions to take.



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