

# Snorkeling Michigan Inland Lakes

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Photographs by the author.

**I**n 1992, when my son was 12, he asked to go camping, an experience no one in our family had ever had. My husband did not want to spend the night in a tent, but I told my son I would be glad to accompany him if I could take my snorkel and mask and explore Michigan's inland lakes. I was surprised that in a state called a "water wonderland" there was no information available on which lakes were best to snorkel. The Department of Natural Resources and Michigan State's Fisheries and Wildlife Department knew the water chemistry and which fish were there, but from a recreational point of view, there was no information. It was soon easy to see why most people snorkel in the Caribbean, México or Hawaii instead of Michigan—there was little or no interest or even any belief that Michigan's inland lakes had anything to offer.

Initially, I thought this was because either the lakes were murky or there was nothing to see in shallow water. Indeed, the first few lakes I sampled were total losers, but then I got on a roll, and the next lakes were clear, colorful and full of excitement. When I saw the infinite variety, I realized that a sampling of lakes would not do; I would not be satisfied or have the necessary knowledge until I checked them all. Since I was not allowed to enter private lakes, this immediately eliminated 10,000 lakes from my list. Still, I was left with approximately 1000 public-access lakes to explore. Snorkeling them all was a daunting task. I was a soggy mess for over five years until I finished the project in the fall of 1997, but what I discovered made me a dedicated freshwater snorkeler.

## Why I Love and Recommend Snorkeling

**ONE:** There is an intimacy found in our inland lakes that is difficult and mostly impossible to find in the ocean.

Each lake is individual and unique—no two lakes are alike. After snorkeling in a lake you can identify its different areas as you would rooms in a house, so that when you return you have an idea of the layout and the fish locations before you enter, which breeds the kind of relaxed familiarity that happens in the ocean. Because fish and turtles live for many years, it is possible to go back every year and recognize your old friends by their locations and markings, which makes the interactions that much more meaningful. The fish welcome you back and invite you to share their environment. You can watch them eat, fight, mate or just mellow out.

There is a new submersible just built for a select few National Geographic Society biologists (such as the famed Silvia Earle). It is a laboratory that allows its occupants to remain underwater in the same location for seven days. The purpose and satisfaction the participants report is the ability to get to know the fish by being in the same environment for so long. Snorkelers have a similar experience. The intimacy and accessibility of our lakes allows you to repeatedly visit the same lakes and stay as long as you like, due to the unlimited air supply a snorkeler is afforded.

**TWO:** Snorkeling allows you to float over underwater gardens and become immersed in a very therapeutic, almost religious experience. It's no wonder so many doctors have aquariums in their offices. Watching fish has an incredibly calming effect.

**THREE:** There are almost no physical requirements. If you can breathe you can snorkel, no matter what your age. No swimming is required; in fact to do so would only scare away the fish. You don't have to be physically fit—fat floats and you simply park your car at the public access, walk to the edge of the water and lie down. Snorkeling is always done along the shore, so you are in shallow water and can frequently stand up

if you feel the need. This makes the sport possible for anyone from age 5 to 75 or older.

FOUR: In Michigan you're always less than an hour's drive away from a great lake to snorkel. This means no planning ahead, no taking days off from work, no saving up big dollars to enjoy the experience. Most lakes have free access and those that are in park areas charge \$20 for a one-year parking sticker, \$5 for seniors. So the thrill of the underwater can be anyone's for a pittance.

FIVE: You don't have to be on constant alert for the sharp spines of sea urchins, so numerous in the ocean. Nor do you need to scan the area for shark, jellyfish, scorpionfish, fire coral, or the myriad of other venomous organisms, the mere touch of which can ruin your vacation. The chances that something in an inland lake is ever going to mess with you or cause you harm in any way are almost non-existent. Therefore, it becomes a completely relaxing experience.

SIX: The only equipment necessary is a snorkel and mask—about \$50, or you can rent both from your local dive shop for about \$5. No fins are necessary or desirable.

SEVEN: You have no waves or surf to toss you around or bash you against rocks, something I experienced even in sheltered bays in Acapulco and Cabo San Lucas in Baja, México. The snorkeling was great, but the lack of control was very unsettling. Of course you can have waves in Michigan lakes, but only on windy days, and it is easy to make the decision to stay in when the wind is high.

Despite of all these advantages, people are amazed that snorkeling can be enjoyed right here in our own state.

### So What's Down There That Makes the Effort Worthwhile?

If there were no fish at all, the result would still be worthwhile. In the ocean the fish have a backdrop of coral; in the inland lakes, the backdrop is vegetation of tremendous color and variety from the vivid reds of lilies to the yellows and delicate greens of coontail, watermilfoil, grasses and pondweed, to name only a few of the hundreds of submerged plants in our lakes. I cannot emphasize strongly enough the serenity that overcomes you as you lie face down, totally relaxed, just aimlessly drifting. Nothing lowers the blood pressure faster.

Ah, but there are fish. And plenty of them. Chasing them is futile, though. Instead, just lie still and let them come to you! Fish are curious. (After all, they've never seen anything like *you* before.) They are not afraid of snorkelers and do not



Fig. 1.  
Brown bullheads  
(*Ameiurus nebulosus*).

perceive them as a threat because they are part of the fish's environment. Fish have learned to view shadows from a boat as a real threat. But snorkelers float *among* fish. Lie still and fish will come to investigate, circle around, stare, and make real eye contact.

The famed underwater scientist Silvia Earle has conducted scientific studies that indicate that fish are like cats and dogs and birds; they have individual personalities, even within the same species. I have found this to be true hundreds of times. Some fish will show curiosity. Others will hit the lens of my camera repeatedly as they see their reflection and think they are batting away a rival. Still others will display amazing friendliness—they love people and want to float along with me. Some fish have tried to be my guides around a lake. At one lake, five largemouth bass line up whenever I enter the water. They proceed to show me around, frequently looking back to make sure I am still there. When the tour is over and I prepare to leave the lake, they line up and look so eager to take me out again that I can't resist succumbing to one more tour. Make no mistake about it, there is real interaction here and scientific evidence to back it up.

### What Kinds of Fish Are You Likely To Encounter?

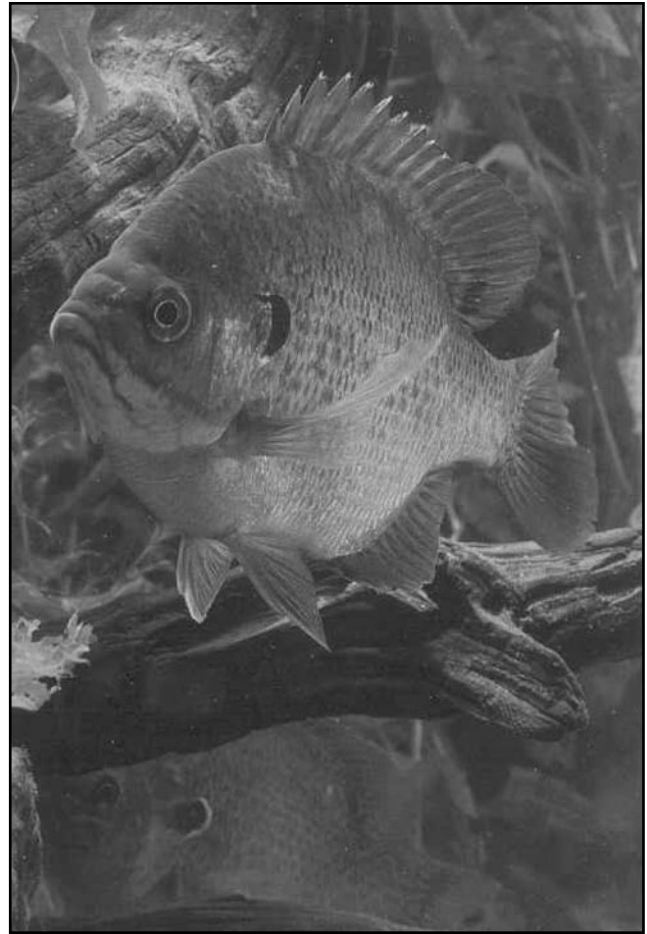
The most common fish is the ubiquitous bluegill, found in every lake in Michigan. The next most frequently seen fish is the largemouth bass, followed by the rock bass, yellow perch, crappies, bowfin, other species of sunfish, northern pike, muskie, suckers, bullhead, walleye, carp, warmouth, garpike, pickerel, and herring. One big surprise was the great variety of turtles: Blandings, snapping, map, musk, painted, and spiny softshell, to name the most common ones.

**Bluegill** Of all the fish you'll encounter, the popular bluegill (Fig. 2) is the one you'll see the most often and in the greatest numbers. This almost round fish, with a distinctive black flap and a vertical chain design, has a variety of names: brim, sun perch, bream and blue sunfish. Bluegills are so prolific that their populations can grow beyond a lake's capacity to support them. As a result their growth may be stunted. Bluegill are a schooling fish, so where you find one you will find others nearby. They are aggressive, but we can be thankful they are not the size of pike, as bluegill are the only fish that likes to say hello by taking a little nip. Because of their size I seldom feel anything. If I wear a skin, they are not tempted to bite at all.

Bluegills look very different from lake to lake. The black flap and the chain design are the only consistent markings, with the male having an orange belly during the spawning period. They range in size from 4 to 10 inches and though ages are inexact, estimates place their life span at 10 years. They are very curious and invariably crowd around me, usually wanting to stay at my side or behind me in order to avoid making eye contact.

The name bluegill is a bit of a misnomer because many are bright orange or yellow, but there is always an outline of a Monet-blue edging on their bodies. The largest bluegills stay in the deepest water and will not normally be seen by the snorkeler except in the early morning and at dusk when they are the most active. The exception is in May, June and early July, when the jumbo males come in to spawn.

Spawning is a very exciting ritual to observe. If you are relaxed and quiet, bluegills will let you come within inches and stay as long as you like; they will completely ignore you. Every snorkeler should make an attempt to see this unique behavior. It occurs every spring and early summer, and bluegill nests are easy to spot. They are extremely close to shore—you're likely to be walking on their beds as you enter the water, but it doesn't phase them a bit. They make round



fairly deep beds extremely close together; in my book *Snorkeling Guide to Michigan Inland Lakes* I give their locations. Their spawning is a spectacular sight. It's like Grand Central Station when they begin, as the males scramble to attract females to their nests, and females indiscriminately flit from nest to nest, laying anywhere from 2,000 to 63,000 eggs, each with different males. It's uproarious entertainment with the water churning with gills of all sizes and colorings. The whole scene lasts about two days, after which time things get more serious and the group thins out as the egg-laying procedure slows down. The males push the females to lie on their sides and hit the bottom to loosen the eggs that sometimes get stuck. The male is always guarding, pushing and prodding. When the eggs are laid, the female takes no interest in nurturing, but disappears into the deep. In most cases, it is the male in the fish kingdom who is the guardian of the babies, and he makes an inspiring commitment to care for his young.

For two-and-a-half weeks, the male circles the nest continuously, frequently standing on his tail to fan the eggs to keep sediment from settling on and suffocating them, and

to keep them oxygenated. In spite of all this effort, predators such as pike and carp will eat the majority of the eggs and there will be only a few survivors.

It is amazing to see the attempts each bluegill will make to see that his nest is distinctive. I invariably see some object in the center of each bed to identify it. In one case orange paper had been dragged in; in other cases, it's a colorful stone, a shiny clam shell, or even a piece of underwear! After the females leave, there is much pushing and shoving among the remaining males if a neighbor tries to invade. The activity, color and behavior make it a sight not to be missed. And the best part is that it takes place in only 2-3 feet of water.

The spawning colors of the male are brilliant. The belly is yellow to orange, the body sides are bronze and green, and the fins are a vivid turquoise. When the male finishes nest-building, he approaches the female from the front, opens his mouth, and protectively seizes the female's snout as if he wanted to kiss her. He attempts to nestle her by head-to-head contact. If the female is not ready to spawn, she turns away and the chasing begins all over again. This pre-spawning behavior may last for hours until the female lies on the floor of the nest, lightly waving her fins. With bodies twitching, the eggs are laid in 15-20 seconds.

As mentioned above, it is the male bluegill that guards the nest and protects the babies. He supplies the eggs with fresh water, keeps them free of mud, and drives off approaching bowfin, which feed on bluegill eggs. When the fry are 10 days old and a half-inch long, they can swim. Forming a dense school, they are led by the father through the water in an impressive display that is called "walking the cloud," because they look like a big black mass moving through the water. One time as I discreetly followed them, the male became aware of me and became even more protective, herding them to a place I could not reach. I followed a safe distance behind, wondering what hiding place would make him feel secure. I knew he would never drive such tiny babies into deep water. Instead he found some very stiff reeds in a small area near the shore where his progeny could not be reached. He then abandoned them and I felt great concern that I had created a thousand orphans. I was immensely relieved the next day to find that they had been reunited.

It is said that bluegills can predict a dry or rainy season. If the season will be rainy, they will build their beds right next to shore. If dry, they will build them farther out.

**Largemouth bass** Next to the bluegill, the fish you are most likely to see in the greatest quantity is the largemouth bass (Fig. 3), the most popular sport-fishing target in North

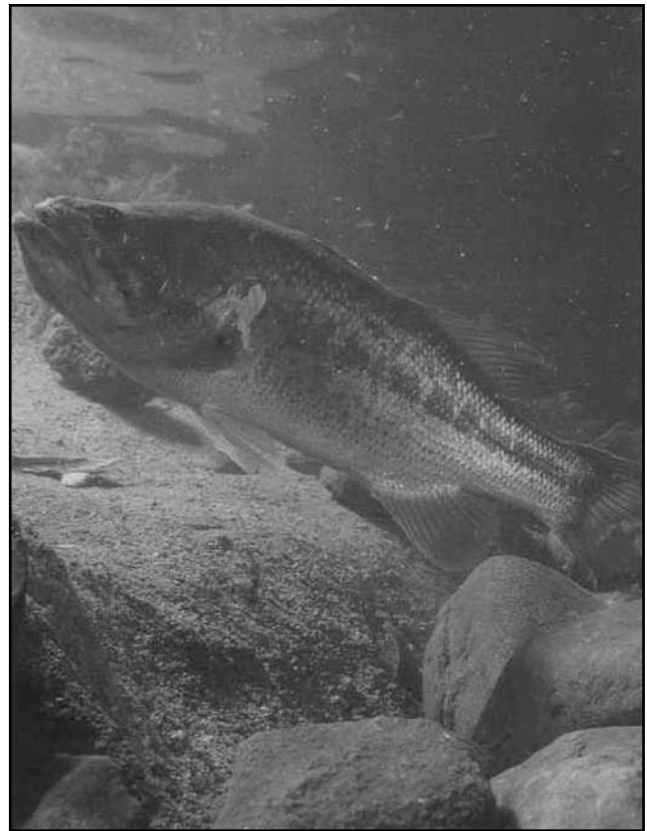


Fig. 3.  
Largemouth bass  
(*Micropterus salmoides*).

America. It is easy to recognize, with its large mouth and long lateral stripe. Color depends on the clarity and color of the water, but is usually creamy with a black stripe the width of its body. Size ranges from 10-16 inches, and they can live up to 15 years, though the average age is 10. They can tolerate warm temperatures and are found in the shallows under weed cover all summer, providing the snorkeler with many opportunities for encounters. They are a curious fish, and on many occasions I found myself facing 4-8 largemouths forming a circle around me, unabashed in their blatant curiosity. Once I had nine big ones facing me while over my shoulder two men in a boat only two feet away were grumbling, "Well, there's certainly nothing around here!" Fortunately, the bass fishing culture is such that most avid bass anglers release even those of trophy size.

Favorite bass haunts are among lily pads. I once watched a group of 44 bass emerge forming a line one behind the other. It was an amazing and definitely unusual sight, since they are not a schooling fish. They love cover, be it logs, stumps, rocky shores, boulders, weedline, edges or dropoffs.

Bass spawn in May. Males prepare a nest in very shallow water and guard the eggs and newborns for 1-2 weeks. I can always spot the large groups of newborns by the lone male



Fig. 4.  
Spawning black crappie  
(*Pomoxis nigromaculatus*),  
male above, female below.

patrolling the area and viewing me with suspicion and concern. I obviously don't hang around to irritate him. Their life is simple:

eat, ambush, and eat some more. They are not roamers; their area is fairly small and they don't migrate. Like the pike, they are sight feeders when the water clarity permits; otherwise, they use their lateral line to detect vibrations and locate prey. They're a very gentle, slow-moving fish, which makes them easy and relaxing to view.

**Yellow perch** From an esthetic viewpoint, my favorite fish is the yellow perch (front cover photo), one of the most loved and pursued of all freshwater fishes. They never attain large sizes—only 6-10 inches in length—but their vertical brown stripes, yellow or green body color, and orange paired fins give them great eye appeal. They are a schooling fish and on a number of occasions I have found myself swimming amidst several hundred of them. I have seen a few jumbos, up to 16 inches. They can live up to 12 years. Yellow perch spawn in early spring in the shallows, where the female lays up to

300,000 eggs, spreading them in gelatinous ribbons up to seven feet long. There is no parental care, so the odds of survival are only one in 5000 in the first year as they are preyed on mostly by walleye. Newly hatched yellow perch live in the open areas of most lakes feeding on plankton. Juveniles move closer to shore. There is one lake I frequently visit where I can count on seeing several thousand juvenile yellow perch feeding upside down in the sand and in sparse vegetation along the shore.

**Black crappie** One of the most spectacular fishes a snorkeler can see—although not quite as common as bass, perch or bluegill—is the black crappie (Fig. 4), sometimes called the calico bass. An oblong fish with oversized dorsal and anal fins, it appears to have *wings* rather than fins; they are so large in proportion to the rest of the fish. They are striking with their broad tail and black spots, and in direct sunlight they have a thick silver sheen that makes them look like a piece of sculpture. With lengths up to 13 inches it is thought they live to be about 10 years of age. They spawn in May in large open areas, standing on their tails and vibrating.

**Suckers** One of the least desirable fish from a fisherman's viewpoint but one of the most exciting encounters for a snorkeler is the sucker. There are over 65 species in North America, ranging from six inches to three-feet in length. They are bottom feeders, and their large lips and protruding mouths identify them immediately.

I remember an encounter in Littlefield Lake in Isabella County where I was startled to find great clarity but not a single living organism, not even a minnow. I kept looking, scouring the bay area for some sign of life. I finally headed back to shore when I spotted something that is blessedly rare—a huge mound of cigarette butts near the shore. No sooner had I felt disappointed with this garbage when two two-foot-long white suckers sailed past my arm, one of them sucking up the entire mound in literally an *instant*. Never mind my trying to photograph an event like this—no finger is fast enough to react to that kind of speed. They usually travel in groups, and I once found myself in deeper water floating around with 47 of these cream-colored creatures, a really awesome experience.

Because of their large size, suckers don't need to seek cover from predators. Many congregate in big schools. I seldom see a solitary one. They are moderately long lived—most have a life span of 8-15 years. Suckers spawn in early spring on clean gravel in large groups. Several males may spawn with the same female at the same time. Many times it's a trio with a female flanked by two smaller males. As with the crappies, they shake violently as the sperm and eggs are released. Although they are considered trash fish, their real

value is in eating snails, detritus and algae that would otherwise go largely unused.

**Common carp** The fish that gets the least respect is at the top of my snorkeling list, the common carp. For a snorkeler, this is big game and definitely gets the heart pounding just from its sheer size and weight. They are members of the minnow family, but the resemblance ends there, as they are the largest minnow you are likely to see. A very social animal, carp travel in groups and *love* people. They are 2-3 feet long, thick in girth, usually slow moving, and very friendly. Since many carp are in the 15-25 pound class, it is startling, to say the least, to have 15 or 20 of them swimming on all sides of you. Wild carp live about 15 years, although a Swiss naturalist cited one that was 150 years old in captivity.

Carp spawn in May to mid-June, but you don't even have to go into the water to see them since they churn so violently and frequently leap out of the water like dolphins. A large female broadcasts her eggs as she swims over a wide area of shallows, laying more than a million eggs. (A 20-pounder can lay 10 million eggs!) Neither the eggs nor the young get attention from the parents, but the population is increasing rapidly because of the quantity of eggs produced. The senses of carp are extremely well developed, more so than most other species. They have highly developed senses of smell and taste and can taste food *before* ingesting it. One carp caught in England and kept in an aquarium ate all the food offered *except* for the bread paste that was mixed into the bait that had originally caught him.

**Northern pike** One denizen of the deep that always gives me an adrenaline rush is the northern pike (Fig. 5), sometimes referred to as the water wolf. With its alligator-like head and spear-shaped body with kidney-shaped spots, it presents an intimidating and menacing sight, reminding one very much of the ocean barracuda. Pike are voracious predators from the time they are only inches long. They will attack another fish or duck up to a third of their size. With our size advantage, there is absolutely nothing to fear, as a pike strikes only other fish and small animals that it can eat in one chunk. They are lazy and lie in absolute stillness at the edge of the weed beds, often in shallow areas, to suddenly ambush a passing fish. Pike are generally 16-30 inches in length and can actually live to the age of 65, with females living longer than males.

And oh, those jaws have a life of their own. A Russian, excited at catching a pike at a reservoir outside Moscow, tried to celebrate by kissing his catch. The pike clamped the man's nose, and even cutting the pike's head off would not release the jaws—they had to be pried off at the local hospital.



Fig. 5.  
Northern pike  
(*Esox lucius*).

Although I've never come within kissing distance, I have approached pike dozens of times at a distance of a little over a foot. As long as I make no abrupt movement, they will remain dead-still and stare me down, looking malevolent but usually moving slowly away after a few minutes. Although they are considered to be solitary, I've come upon them in groups of 4 or 5 and had them accept my presence naturally.

Pike are very early spawners, attempting to mate right after the first ice out and in very marshy areas, moving into meadows that have been flooded by high spring waters. Surprisingly, it is the female pike that is larger, and the mating begins with 2-3 smaller males swimming on each side of the considerably larger female, competing for the chance to mate. Anywhere from 100,000 to one million eggs are laid, depending on the size of the female. They build no nests and are broadcast spawners, scattering their adhesive eggs on the bottom. Unlike the bluegill, the young are given no parental attention.

Pike are cannibalistic. A group of young pike in an aquarium will soon be just one, the lone survivor having eaten all its brothers and sisters. One fisherman told of hooking a



Fig. 6.  
Male green sunfish  
(*Lepomis cyanellus*).

one-foot pike and when he tried to land the fish a still larger pike appeared and swallowed the hooked specimen.

A snorkeler can see many 2-3 foot pike near shore, but as the water gets warmer, only the smaller ones stay, as larger pike do not tolerate extreme warm conditions and retreat to deeper, cooler waters.

**Bowfin** Without a doubt, a close encounter with a big pike is a snorkeler's thrill. But just as exciting in a different way is the much more common meeting with a big bowfin, a primitive fish dating back to the Cretaceous period more than 100 million years ago. As living fossils, they have obviously been able to survive under conditions that would kill other fish. They are unusual in their ability to surface and breathe air when water gets too polluted or stagnant. I once saw a bowfin do this five times in just one minute, a most unusual sight. Farmers have reportedly plowed their fields where water has receded and have come upon bowfin that are dormant and can be revived. An ancient fish in design, it looks more like a serpent than a fish except for being much thicker. They are my favorite fish for their smiley face and friendly manner. They love people and will swim alongside you, never too close, but just curious to see you and watch your movements. From 2 to 3 feet long, they're light brown or gray in color and live to be about 12 years old in the wild, 30 in captivity.

Bowfin spawn in May and June with the male moving into the weedy shallows after dark to build bowl-shaped nests of plant material among tree roots. A single male may try to mate with more than one female and sometimes several pairs of bowfin will use the same nests.

Bowfins are found in a great many lakes in Michigan. With their very individual markings, I am able to revisit my old friends year after year.

**Rock bass** At the opposite end of the size spectrum is the rock bass, or the red eye, as it is sometimes called for its oversized goggle orange eye. Usually less than eight inches long, rock bass are spectacular with striking dark stripes on a brilliant white or yellow background. They're almost as plentiful as the bluegill, so if you paddle through the shallows, you're almost guaranteed to see them.

Like the bluegill, the male rock bass moves in first to make the nest. After the female has joined him and laid her eggs, he stays on for a couple of weeks to nurture and protect them. The only time anything has ever attacked me was when I got too close in attempting to video a rock bass guarding a nest. He first jumped at my lens, but realized it was not the camera that was the problem, but the hand holding it. He then amazed me by jumping high in the water, scrambling behind the lens and grabbing my gloved hand. This took a split second and was the only time I ever dropped my camera in surprise. I learned my lesson and kept my distance. (A somewhat similar occurrence took place when I was photographing a black bullhead guarding his large spread of gold eggs in the shape of a large diamond. He made a pass at me as a warning, and when I immediately left the scene, he was at the shore waiting for me, abandoning his own eggs in the process.)

**Turtles** One of the biggest surprises in my snorkeling forays is the presence of turtles. I was both startled and amazed by their size and variety. Initially I thought that they were extremely friendly, as they would head directly toward my mask (until I learned they had poor eyesight), but upon discovering I was such an alien species, they could not swim away fast enough. Most of the turtles are small, maybe 8-10 inches across, but snappers can be quite large at around 30 pounds. Some of the smaller ones are long lived—up to 60 or 70 years. Surprisingly, big snappers only live to be about 30.

A snapper will *never* bother or attack you in the water. On land, he is vicious, but underwater he's a pussycat, never to be feared. One June, it was comical when, on different occasions, three snappers with faces only a mother could love attempted to mate with me. They saw something large (me, that is), and because June is the mating season and their

vision is so poor, they excitedly approached me, only to be shocked at close range to discover I was not mating material. They are excellent swimmers so they quickly moved out of range for better prospects.

A Blanding's turtle, smaller than the snapper, did not move on but attempted to embrace me seven or eight times with his front claws and, I swear, an amorous look in his eyes. He refused to believe I was scorning his advances and did not wish to admit defeat. This behavior was so unprecedented that I telephoned a turtle expert at Michigan State and told him of my unusual encounter.

He asked, "By any chance were you wearing yellow?"

I said, "Why yes, I had just put on my new yellow snorkel skin."

"Well, for a Blanding's turtle," he responded, "yellow is their mating color!"

So now I know if I am wearing yellow, I might expect to be propositioned!

The gray musk turtle and the colorful painted turtle are the turtles you are most likely to see, and though they are fast swimmers and could lose you in a second, they'll let you tag along if you float without abrupt movements. All turtles have to surface for air, usually once about every 7-11 minutes, depending on how active they have been, how warm it is, and how much oxygen is in the water. There is no question that turtles add an extra dimension to the snorkeling experience.

**Nuisance Species** And what do I have to say about those nuisance species, the zebra mussel and the blood-sucking sea lamprey? The lamprey is most often seen in lakes that have access to one of the Great Lakes. Zebra mussels, unfortunately, are much more common and have spread to many of our inland lakes. Believe me, when they get started in a lake, they really take over, encrusting every branch and every rock until nothing underneath can be seen. Many studies have been done, and there is not a scintilla of evidence that they do any damage whatsoever to any species of fish or vegetation. (They damage pipes, however, by clogging them.) Zebra mussels actually aid snorkelers, as their presence can pretty much assure you that a lake will be clear and visibility excellent. Surprisingly, of the 480 lakes which are included in my book for interest and visibility, only about eight of them were invaded by zebra mussels.

**Other, Not-So-Pleasant, Sights** People often ask me if I see much trash underwater, and I can fortunately answer that in the negative. On the other hand, I can definitively say that the majority of fishermen drink Bud Lite, but otherwise beer cans are not too common. I was surprised to see a number of



*Fig. 7.* Redear sunfish (*Lepomis microlophus*). golf balls lying around; since none of the lakes were near a golf course their presence remains a mystery. One item I consistently see is the little white plastic container that holds the worms sold in bait shops. Other than that, there is little or no unsightly trash to mar the experience.

One thing that does cause a pang of regret is the sight of quite a number of fish with hooks hanging out of their mouths, or with torn or gashed mouths. I know many fishermen practice catch and release, but when a fish is caught or even taken into a boat for a short time, there are precious seconds where oxygen is lost and the fish seem unable to swim as vigorously and have difficulty recovering. This leads me to ask the question:

### **Do Fish Feel Pain and Suffering?**

Neuroscience and research has clarified this issue and the question can be answered from a large base of factual information. A fish's central nervous system consists of a spinal cord and brainstem, but the cerebral hemispheres of fish lack the regions necessary for conscious awareness of a pain experience. A human's existence is dominated by the



cerebral hemispheres while a fish is a brainstem-dominated organism. Therein lies the answer to whether fish feel pain. Fish don't have the brain development necessary for the unpleasant psychological experience of pain or any other type of awareness. The flight response of a hooked fish is essentially no different from the response of a fish being pursued by a visible predator or a fish startled by a vibration in the water. There is also no brain region in a fish that allows the experience of fear. These responses are simple protective reactions to a range of stimuli associated with predators or threats to which a fish automatically responds. It is very unlikely that fish have the capacity to experience pain or suffering. However, they do react to stimuli and capture by secreting stress hormones that can have undesirable health effects. This stress can be brought on by many jet skis or powerboats on the water just as much as angling.

As humans age so do fish, and they show it in similar ways. They get dark and leathery looking, often go blind, and swim much more slowly. I have actually been able to pet largemouth bass, bluegills and walleye in these dying stages, as they seem to want to come up close for comfort.

So we have come full circle, from birth to old age. As a snorkeler you can observe it all. I hope you will do just that and discover the wonder there is beneath the surface of Michigan's inland lakes. By now you can see that I am completely besotted with fish, and this is what I want to do for the rest of my life!

Readers may purchase an autographed copy of Nancy Washburne's Snorkeling Guide to Michigan Inland Lakes, a survey of all public-access lakes in Michigan, for \$18.95 plus \$3.00 shipping. Order by credit card at [www.snorkelmichigan.com](http://www.snorkelmichigan.com), or send check or money order payable to Nanmar International, to 320 Whitehills Dr., East Lansing, MI 48823. 🐠

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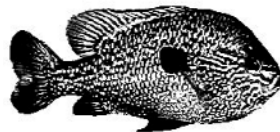
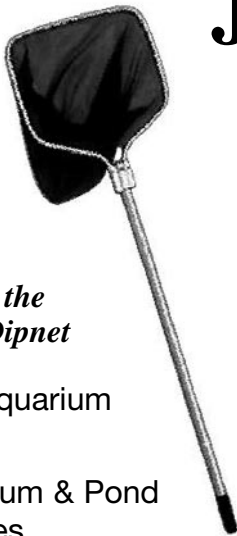
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