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Cover photography by Ken Formanek
Back Cover, "Butterfly Milkweed"
by Ken Formanek

THE IOWA CONSERVATION COMMISSION

All persons are entitled to full and equal enjoyment of the recreational opportunities, privileges and advantages available in Iowa's outdoors.

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The Pasture Creek

by Thomas J. Neal
WILDLIFE BIOLOGIST

The farm had been in the family for over 100 years. The current owner's family was the fourth generation that had farmed the land and he was proud of it. Still, times were changing.

The old pasture creek wasn't quite the same anymore. The man could remember swimming in the creek in the shade of a huge maple. Under the tree the water was six feet deep and he could see to the bottom. He remembered watching small fish nibble at his toes as he stood neck deep in the cool water.

The creek meandered lazily across the pasture, scampering over riffles and slowing through deep holes. He had caught crayfish in the riffles and fished for suckers, chubs and catfish in the deep holes.

Muskrats swam up and down the stream, and an occasional heron stopped by for a fish dinner. As a boy he had trapped muskrats, skunks and mink along the creek. He still remembered the thrill of catching his first mink, and how proud he had been.

He had spent countless hours along the creek looking for rocks, swimming, fishing or just fooling around. He had watched frogs, snakes and dragon flies by the hour. The creek had taught him many things about life and death and Nature's ways.

The old willow thicket always had pheasants, even in the worst blizzard. Every summer a doe deer raised her twin fawns in the shelter of that thicket. There was always a family of muskrats living under the roots of the big maple, and once he

had seen a huge snapping turtle in the swimming hole. Redwings, bobolinks and meadowlarks nested in the creek pasture and their songs brightened many a day's work on the farm.

Yes, times had changed. After his father died, the man had taken out the old terraces that kept the soil in place on the hillsides. It was hard to work around them with modern equipment. The creek wasn't quite so clear anymore.

The old-fashioned crop rotation of corn-oats-meadow was replaced with a corn-soybeans rotation. No longer was any of the soil protected by a blanket of grass. Now the creek carried a load of insecticide, herbicide and fertilizer as well as silt.

A few years back he had straightened the creek and tilled the pasture. Now he could farm right up to the bank. Yes, he had made lots of "improvements". The prairie hillside raised soybeans now instead of bees and flowers. True, the deer and her twin fawns weren't around anymore and he seldom saw a pheasant. Songbirds and rabbits had pretty well disappeared from the farm. No one fished or swam in the creek anymore.

The old creek was now just an eroding ditch with thistle-covered banks. In Nature's desperate attempt to heal the ugly scar of the ditch, she used the toughest plant she knew. Of course, the thistles had to be sprayed, and part of the spray ended up in the water. The dirty water hurried down the arrow straight

ditch to add its load of pollutants to the river below.

Muskrats, fish and birds had left when the creek was polluted and destroyed. Other than a few carp that wallowed in the muddy water each spring and an occasional raccoon that left his footprints on the eroding banks, the wildlife was gone.

True, the man now had every acre of the farm producing corn and soybeans. Every field was square (even if it meant plowing up and down hill) and he could really work the ground with his big equipment.

But now and then a nagging worry tugged at him. His own son was reaching the age of wonder and curiosity. Would he ever wade a clear stream and marvel at the tiny creatures under every rock? Would he ever watch a bee gather pollen from the prairie flowers? Or a snake swallow a frog? Would he ever find a "doodle-bug" or see a garden spider catch the fat green grasshoppers? Or dangle his feet in the water as he dreamed of growing up? Would he ever know the boyhood pleasures of skipping stones, swinging from a rope into a deep pool or having a secret place all his own? Would he wonder at the mysteries of life and death? Would he ever learn the ways of wild creatures and how nature provides for each of her own?

Oh well, maybe he can go fishing someday with his dad. If he wants to go swimming, there's a nice pool in town. And if he wants to learn about nature, he can watch "Wild Kingdom" on his new color television. ■



Picnic at George Wyth State Park

It's That Season Again!

by Jim Farnsworth

PARK RANGER, DOLLIVER STATE PARK

FOR MANY PEOPLE, picnics in state, county, or municipal parks are a summer ritual. Getting away from the city, a change in scenery, and something to break the monotony of the day to day routine is good for the body and mind.

For many people, Sunday is the day to go to the parks. But is that really the best time? You probably go to the park to get away from city life; to relax. But on Sunday the parks are always crowded, parking spaces are hard to find, beaches crammed, lakes overrun with boats, picnic tables scarce and all your favorite fishing spots taken. Why put up with the hassle? I've got several alternatives that might appeal to you.

Each week has seven days so why not use numbers one through six? If you are

lucky enough to live within 30 miles of a park you can easily have a nice week-night picnic. During the summer, the sun stays around till 9 p.m., that's five chances each week to visit a park — without the crowds and problems. Day number six is Saturday. If you are lucky, and have Saturdays off, then what better time to go to the park? You will be surprised — Saturday crowds are only one-third to one-half as large as a typical Sunday group.

There are always a few who can't alter their ways too much, so if Sunday has to be the day for a visit, here are some more ideas. Try an early morning breakfast picnic. There is nothing finer than the smell of bacon and coffee in the fresh morning air. And of course, Sun-

day evenings after 6:30 p.m., things begin to quiet down, providing a nice atmosphere for an evening picnic.

Now that you have gotten to the park when the crowds are gone, there is one other thing and it can spoil both your stay and my day — lack of consideration and respect for the property of others. So please think before you act, and if you have questions, ask your park officials. Park regulations are written to preserve the areas and to provide a safe visit for the public. It is your responsibility to become familiar with these regulations and to abide by them. So remember the weekdays. Try a Saturday. Have a Sunday breakfast and help preserve your park. □

They Ride The Thermals

Barbara L. Nelson

WILDLIFE WORKER, RUTHVEN WILDLIFE UNIT

I KNEW that they were over there, behind the hill loafing on the rock island of Mud Lake. And I knew that the time was 9 A.M. and that they would soon be rising into the sky for their morning exercise. But since the ground I was breaking was a rich arrowhead spot I was peering down from the tractor seat more than up. I was watching too for one of those steel eating rocks that could mutilate my ancient plow bottoms and force me to frantically search for more shear pins. Then I glanced up. There, steaming from the water were 200, no, 300 ghosts forming two single lines of a not quite perfect wedge. These "ghosts" with long yellow beaks and 8' wingspans glided low overhead and gradually gained altitude as they rode the thermals over Lost Island Lake. The wings were tipped in black and the long bills supported pouches. This was one of my many encounters with white pelicans.

Of the seven widely recognized species in the *genus Pelecanus*, the two most well known in North America are the coastal brown and the inland white pelican. Though closely related they occupy dissimilar niches. One is an entertainer of seashore tourists while the other prefers a more solitary life. On Florida's Gulf Coast I have watched the smaller brown pelican mill with people and dive for fish in harbors filled with boats. Though I cannot recall seeing it I have heard that they will even learn to feed from the hand.

In comparison, the white pelicans that I was seeing from my tractor seat are migrants here in Iowa and have a strong aversion to human cohabitation, particularly on their nesting grounds. In their desire to avoid human activity and isolate themselves from predators the white pelicans choose islands to establish their nesting colonies. Recent literature claims that the range of the nurseries extends from western Canada to Mexico and that the estimated population is 30,000 to 40,000 individuals.

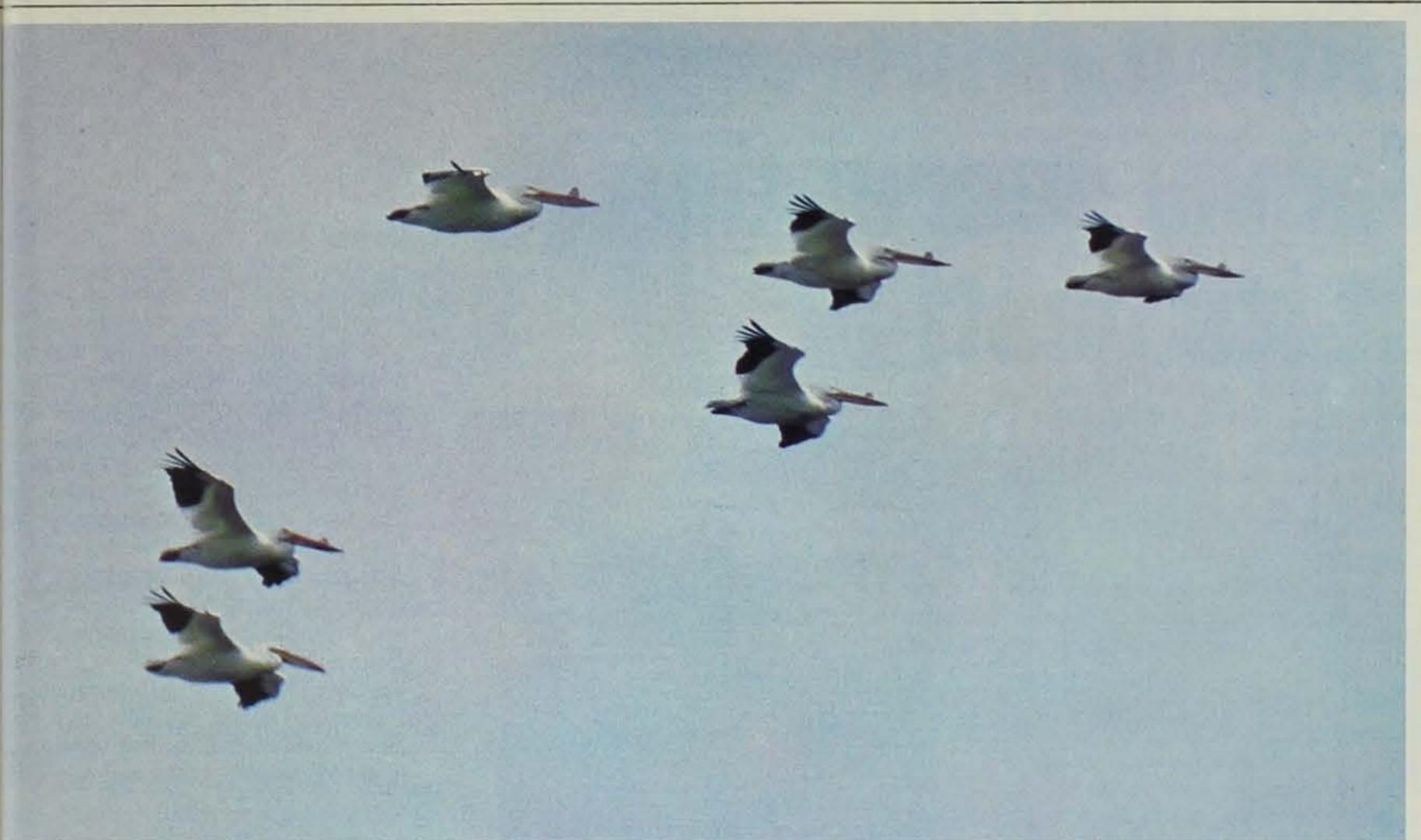
Whether they maintain or increase their numbers will depend on human encroachment, availability of suitable nesting sites, pollution, continued protection of pelican refuges, and the adaptability of the

bird itself. Adaptation will undoubtedly be the key to their survival since in some areas receding water levels are apt to form land bridges to islands, threatening colonies with predation and accessibility. Even the slightest disturbance will cause adults to abandon nesting sites, leaving chicks to die of exposure or be killed by marauding gulls.

Wrapped and held by huge webbed feet, the two eggs are incubated for 30 days. One day the first hatches and later, maybe as much as a few days, the other pips and breaks the mineral shield. If raised by an experienced, older pair both the young may live to the flight stage. If not, the chances are that sibling rivalry and the aggressiveness of adults still incubating will result in the death of the younger chick.

Outside of watching the birds soar, the most intriguing behavior of white pelicans that observers enjoy is their method of food capture. Unlike its coastal relative which dives for food, the white pelican may join with neighbors in fishing formations that herd prey into shallows or greater concentrations that make catching easier. Because of this unique form of food acquisition the pelican has wrongly been accused of consuming fish that some people believe are rightly theirs. The truth is that because of the shallow water fishing technique, most of the food caught consists of rough fish. Despite the fact that on occasion their menu may include some species that we would like to catch ourselves, the thrill of watching these masters of the art of gliding perform their feeding ritual is well worth any small forfeits we may make.

The greatest sacrifice will probably be that of restraining ourselves from endangering their privacy should a colony ever attempt to establish itself here. Although whites are not known to be common nesters in Iowa there is some sketchy evidence that a population found in central Minnesota has on occasion split and pioneered south to the border, possibly into Northwest Iowa. That we should welcome them, few can disagree. But to be too optimistic would be foolish since their sensitivity to disturbance precludes much change of their finding consistently remote enough sites for raising young.



Once airborne, the pelican becomes master of graceful, gliding flight.

Photo by Ken Formanek

Photo by Doug Harr

White pelicans feeding at Rush Lake, Osceola County.



LAKE ICARIA- Family recreation at its best!

by Mike McGhee
FISHERIES BIOLOGIST



"WHERE did you catch that stringer of fish?" asked the fisherman at the boat ramp. Two anglers, who had been out fishing, were unloading at the ramp. The fisherman asking the questions was just beginning his trip and exclaimed, "I thought this was a new lake!" On a stringer, in the bottom of the boat were channel catfish weighing several pounds each and one "cat" that weighed nearly ten pounds. A bass that weighed over three pounds and four pan-size bullheads were also part of the anglers' catch. Many people are surprised at their catch from Lake Icaria and it's just the beginning.

Lake Icaria is a 700 acre lake surrounded by 1,245 acres of public land. The lake is located in southwest Iowa five miles north of Corning and was constructed in 1975 as part of a Soil Conservation Service watershed project. It is managed cooperatively by the Adams County Conservation Board and the Iowa Conservation Commission.

Development of the lake as a multiple recreation facility has been in progress for several years and the Adam



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County Conservation Board maintains camping and picnic areas at the lake. Modern camp facilities consist of 50 sites with electrical hookups, restrooms, shower house and a trailer disposal station. The primitive campsite is located on a peninsula that has 80 vehicle campsites and an additional 50 walk in tent sites. Restrooms are also located near these campsites. A beautiful picnic area next to the lake is equipped with picnic tables, grills and two shelter houses. Nearly two miles of nature trails are located on the area.

A managed beach area with concession stand, lifeguard and change house is available at the lake. In a nearby bay is a marina that has boats and motors for rent and tackle, bait and gasoline for sale. Access to the lake for boats consists of two concrete boat ramps and two gravel ramps with parking lots nearby. Lake Icaria boating activities are varied with water skiing in a designated area and *no visible wake restrictions* over the rest of the lake.

Maps showing location of facilities and lakebed contours are available at no charge from the Iowa Conservation Commission, Information and Education Section, Wallace Building, Des Moines, IA. 50319 or at Lake Icaria's marina or park rangers office.

Other than the developed camping areas much of the public land is available for hunting. Timber, brush, cropland and grasslands provide habitat and hunting opportunities for pheasant, quail, rabbit, deer and squirrel. Fall waterfowl hunting should not be overlooked. The north arm of the lake is a refuge during the fall and allows waterfowl numbers to build up around the area. A program is also underway to establish a flock of giant Canada geese. Paired birds will be kept and released at Icaria and hopefully, successful nesting will take place.

Now, back to that stringer of fish at the boat ramp. Preimpoundment renovation of the stream utilized a fish toxicant, antimycin, that removed many of the rough fish (carp, carpsucker, buffalo, and gizzard shad), but left the channel catfish and bullheads. Growth

of these catfish in the new lake has been excellent and some individuals weigh ten pounds, with good numbers of channel catfish in the two to five pound range. Watershed ponds above the lake provided an additional bonus, when many 10-12 inch bass washed into the lake. Many of those bass are now three to four pounds and provide excellent fishing.

Lake Icaria was stocked with bluegill, walleye, and additional channel catfish in 1975. During 1976 bass and crappie were stocked. Yearly stockings of channel catfish and walleye have also taken place. The crappie and bluegill are growing rapidly and many 1/2 to 3/4 pound fish will be available to the angler in 1979. An occasional walleye is caught and some of these fish top three pounds.

To insure continued good fishing at the lake, a fourteen inch length limit on largemouth bass has been established. This prevents bass overharvest and maintains a good predator population to control panfish. An additional bonus to the angler will be stocked in 1979. Tiger musky will grow fast and can reach 30 to 40 pounds in Iowa lakes.

So, grab your fishing pole and camping gear and take the family on a trip to Lake Icaria. There is plenty of time left this summer. □



Photo by the Author

Icaria provides excellent crappie fishing



It wasn't long ago that the word "streaker" was commonplace in American terminology, especially around college campuses and sporting events. People overhearing a conversation concerning "streakers" generally responded with raised eyebrows and demonstrated an immediate interest in the subject. The fad of dashing nude through public places has subsided, but in certain areas the talk of "streakers" still generates a great deal of excitement — particularly in anglers in search of yellow and white bass.

Yellow bass (*Roccus mississippiensis*, Jordon and Eigenmann), and white bass (*Roccus chrysops*, Rafinesgue), are the only true bass native to Iowa waters. Contrary to popular belief, largemouth bass and smallmouth bass are not bass but members of the sunfish family. Although both yellow and white bass are referred to as "streakers", the nickname "streaker" is most commonly used when speaking of yellow bass. Anglers generally refer to white bass as either silver bass, or "stripers".

Yellow Bass Characteristics

The largest concentration of "streakers" in Iowa is found in Clear Lake. Adult yellow bass are easily recognized by their bright, yellow sides with horizontal black stripes. "Streakers" obtain an average length of 8 to 11 inches and an average weight of 8 to 16 ounces. Their small size is very deceiving considering the "streakers" ability to perform on the business end of an ultra-light rod. They are strong and vicious scrappers!

Yellow bass reproduce during May in shallow water, depositing their eggs over gravel or rock reefs. The eggs are extremely small — a one quart container may hold up to two million. "Streakers" reach sexual maturity in three years, with some individuals being able to reproduce in two years. Newly hatched fish grow to approximately four inches during the first year, and up to eight or nine inches by the third year.

White Bass Characteristics

The greatest abundance of white bass in Iowa is found in the

Mississippi River system. However, "stripers" are an important game fish species in Clear Lake and other natural lakes of northwest Iowa. "Stripers" sides are silver with horizontal black stripes. The lower jaw of the white bass protrudes slightly beyond the edge of the upper jaw as opposed to the yellow bass whose jaws meet evenly. Silver bass grow larger than "streakers", commonly attaining a length of 12 inches and occasionally 18 inches. They are also known for their aggressive behavior and ability to make the drag of ultra-light tackle sing.

Faster growing than yellows, white bass can reach a length of five inches during the first year and 11 to 13 inches by the end of their third year. White bass share the same spawning habitat with "streakers". White bass may extend their spawning period out over six weeks, beginning as early as the end of April and continuing through the first week of June.

When yellow and white bass are small (3 to 5 inches), and before they reach their full colorations, they can be difficult to tell apart. One sure method to separate the two species is to examine the first 3 spines of the anal fin. The first spine of the anal fin of the yellow bass is very short while the second and third spines are significantly longer and equal in length. The first three anal fin spines of silver bass are evenly graduated, the first one being very short and the second one being approximately one half as long as the third spine.

"Streaker" and "Striper" Food Habits

Favorite meals of "streakers" and "stripers" include insects, small fishes, and crustaceans. Small fishes are their primary food supply. When Mayflies are present in large numbers, both species feed on them almost exclusively. White bass will eat very small bullheads, but prefer meals of yellow perch, crappies, bluegills, or even other silver or yellow bass.

Putting Clear Lake "Streakers" on the String

When angling for these bass it is important to use the lightest tackle available. This enables the fisherman to present the ba

Streakers of Clear Lake: White Bass Yellow Bass

by Stephen L. Schutte

... naturally as possible as well as providing for more action
... fish is hooked. The line should be four pound test or
... and fished from an ultra-light rod and reel without
... slighter.

... Although several angling techniques are successful in hook-
... larger to the scrappy bass, one can improve his chances of leaving
... full stringer if his fishing methods are coordinated with
... the of year and the natural food available to the fish. Small
... tackle spinners, which imitate minnows, shiners and other naturally
... food, can be very effective artificial lures. Gold,
... yellow, or fluorescent orange are productive colors. Jigs,
... known as leadheads, are used by many anglers. They
... be approximately one-eighth ounce size and chosen so
... imitate available forage. Color combinations most likely to
... results during spring fishing are white and yellow,
... and blue, and white and green. "Streakers" can also be
... taken using live bait. Minnows, small crayfish and
... are favorites, and become especially effective when
... in conjunction with spinners or jigs. Nightcrawlers and
... will fool "streakers" if fished near the bottom but
... are excellent that you may put more bullheads on your
... than "streakers".

... Yellow bass usually feed in deep water over rocks or gravel.
... baits should be fished about one foot off the bottom and
... in a moderately slow, jerky manner. Yellow bass hit
... fast and no time should be wasted in setting
... hook.

... Habits
... include insects, the lakes' surface contains large numbers of
... flying insects, the "streakers" resort to surface feeding. This
... provides an excellent fishing opportunity for the fly rod enthus-
... using either wet or dry flies. Spinning rod anglers can also
... by using a small bobber to float their baits near the top.

... Yellow bass are commonly found in schools. This means that
... catch one, more action will follow shortly. In Clear
... springtime yellow bass "hot spots" are Dodges Point,
... land area and any one of the many submerged rock reefs.

One method to locate "streakers" is to troll or float over
submerged rock reefs, anchoring the boat and fishing the
area thoroughly.

Like "streakers", white bass swim in schools. Their feeding
activities are confined mainly to the surface at dusk and during
the night. When the sun rises, they move to deeper water to
feed. Feeding schools of "stripers" usually run fairly uniform
in size. White bass travel just below the surface from sunset
until 8:00 or 10:00 p.m. on the windward side of the lake where
they are searching for large schools of minnows. Upon locating
a school, the "stripers" surround and push the minnows to the
surface. As minnows try to escape they are captured by the
extremely quick white bass. When fishing at dusk or early eve-
ning, it is easy to locate schools of "stripers" feeding in this
manner by simply listening for the splashing caused by their
activity. At these times they will hit virtually any type of bait
presented in their feeding area.

During the day, white bass return to the deep water and may
be fished in the same manner as yellow bass. As with yellows,
white bass should be fished with light tackle. The proven baits
and lure colors used for "streakers" will also work well on
"stripers". In addition, you might try a two and one-half inch
floating Rapala, either silver and white, or gold and white.

Yellow bass are easy to filet and are extremely good eating.
Their flesh is white, firm and flaky, and the taste resembles that
of the walleye and yellow perch.

White bass are very good eating but they don't quite measure
up to the palatability of yellows. Their flesh tends to be a little
softer in texture and occasionally the meat may have a slight
"fishy" taste. Breading the filets with milk, eggs and cracker
crumbs and then pan frying them to a crispy brown, will delight
even fussy fish connoisseurs.

For the latest fishing tips, information and "hot" areas for
catching Clear Lake "streakers" contact the *Fish and Wildlife
Station, 1203 North Shore Drive, Clear Lake, Iowa 50428,
phone 515/357-3517.* ■

Yellow Bass

Bob Runge

White Bass

Ken Formanek



Iowa's protected water areas program



by Kevin Szcodronski

OUTDOOR RECREATION PLANNER

The protected water areas study was introduced in the July issue. This companion article describes the current direction of the program and how the public can become involved.

The Iowa protected water areas study is being conducted to evaluate our water resources based upon their character, significance and vulnerability. Emphasis is being placed on the protection of natural resources, rather than the provision of outdoor recreation facilities. Recreation is considered a by-product of protecting designated water areas and adjacent lands, not the primary purpose of the program. Additionally, high standards will be maintained within the program and only those select areas in Iowa possessing outstanding and unique resource values will be designated for protection. No "blanket coverage" will exist for all of Iowa and an individual management and protection plan will be prepared for an area prior to its permanent designation into the Protected Water Areas System.

The end product of the Protected Water Areas Study will be a report presented to the Iowa State Legislature in the spring of 1980. The report will provide specific recommendations on the revision of the present Scenic Rivers Act and describe the methods available for protecting the designated areas. The "top candidates" for inclusion in the Protected Water Areas System and the staffing and funding required to successfully implement a Protected Water Areas Program will also be identified in the report.

Public input and involvement is viewed by the Conservation Commission as a necessity in the overall success of a Protected Water Areas Program. In fact, roughly half of the funds and staff time available for the project is being used to provide Iowans the opportunity to be involved in the development of the program. The conclusions and recommendations in the report will take into account the public's interests and concerns as expressed to the Conservation Commission.

to give landowners and other interested local citizens a chance to become familiar with the Protected Water Areas Study and to express their concerns and ideas to the Conservation Commission. These meetings will be well publicized ahead of time and held at convenient times and places to allow as many people as possible the chance to be involved in developing Iowa's Protected Water Areas Program. The Iowa Conservation Commission will also welcome any direct comments, questions, ideas, or whatever in regards

To gather preliminary input, the Iowa Conservation Commission conducted a statewide survey to identify general attitudes and concerns Iowans have toward the idea of preserving water and associated land areas. Participants in the survey included representatives from state, county, and local agencies, the State Legislature, and many diverse special interest groups involved or interested in land use management decisions in Iowa. Two statewide public meetings were held in Des Moines last spring to discuss the survey findings and to begin laying down some groundwork for the Protected Water Areas Program.

Beginning this July, a series of two or three additional meetings will be held in a number of communities throughout Iowa

(Continued on Page 13)



An increasing number of water and associated land areas in Iowa are being subjected to drastic resource destruction.

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Canoeing is among the finest forms of recreation on earth. It is an excellent way to find solitude and perhaps a good fish or two. This ancient mode of travel relaxes the mind while exercising the body and more and more folks are becoming interested in it. There are several points that all would-be canoeists should observe before plunging bow first into the current.

First, getting the canoe to the stream requires the installation of a car top carrier or the use of a fully equipped trailer. If it's right, don't just throw the canoe into the back of a pickup.

Once at the stream access, put on the personal flotation devices. A person can be dumped out of a rolling or pitching canoe. The canoe can drift away at a speed no swimmer can match, so don't just carry that PFD, wear it.

If possible, put in at a shallow, quiet water area. When getting into the canoe, keep a low profile and slide hands along the gunwales for balance. Move slowly and have your partner stabilize the craft while you get to your seat.

It is important that the load be evenly distributed. On rough waters, sit on the bottom of the canoe to lower the center of gravity and increase stability.

Propelling the canoe with the paddles can be awkward at first. A canoe is not propelled by pulling the paddle through the water; it is propelled by sticking the paddle in the water and pulling the canoe up to the paddle. The canoe moves several feet through the water while the paddle slips only a few inches. Learn several strokes, as shown in the illustrations.

Learn when to lean downstream. A strong downstream current can save a swamping under many circumstances. If you are hung up on a rock, quickly lean downstream and the water pressure on the bottom may lift you off.

There are many dangers to avoid while canoeing. Fallen trees, log jams, pilings, willow thickets and anything else in the water that can run through or under the canoe should be avoided.

Cold water and hypothermia resulting from it can kill, so if the air and water temperature do not add up to 100, then don't go canoeing without wet suits.

Stay out of flood water situations. No shallows are available to recover in and obstructions in the water can cause serious accidents.

Avoid storms. Lightning is always dangerous. If you are caught out on a lake with heavy winds, stay close to shore.

Know the area if you are on a stream. Do some checking and find out where any low head dams may be. Low head dams have a way of sneaking up on the canoeist and can cause an accident. Even with a PFD, the water in the plunge pool below the dam can be lethal.

If you should upset the canoe, stay with it. If you are on a fast moving stream, stay upstream of the canoe, hang onto the end of the rope that you wisely tied to the canoe.

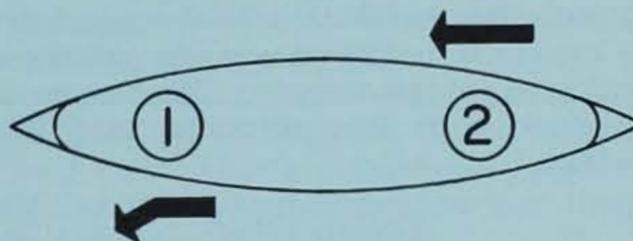
If there are other boats on the water, be sure you know all of the right-of-way rules. If you are sharing the water with motorcraft, approach their wakes at a 45 to 90 degree angle.

Canoeing is a great sport and it can be done safely. It is always a good idea to be a confident swimmer in good physical condition, however, and all equipment should be in good repair. Include a spare paddle, a bailer, some common sense, and enjoy yourself on your next canoe outing. □

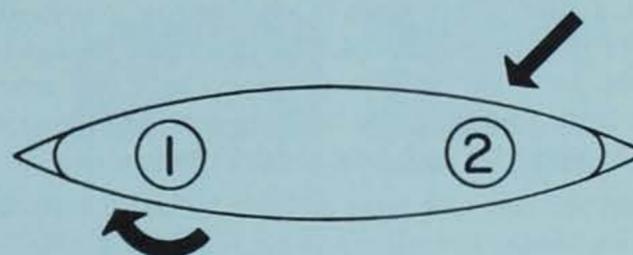
Tips on Safe Canoeing

by Betsy Malueg,
RECREATION SAFETY COORDINATOR

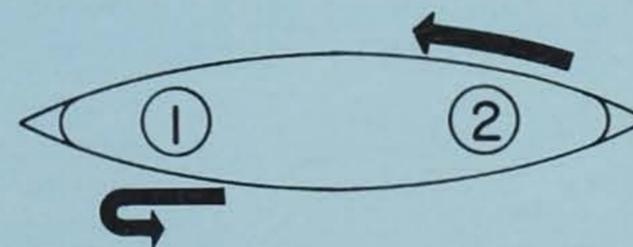
BASIC STROKES FOR ALL FOLKS



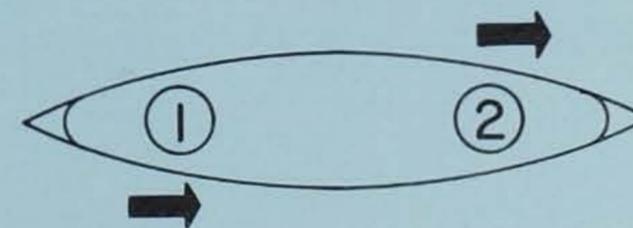
Forward: A simple cruising stroke in the bow and a hook stroke in the stern will send you straight ahead. To hook, twist the paddle throughout most of the stroke. As you pull back on the paddle, point the thumb of your upper hand forward.



Left: Turning takes a diagonal draw stroke in the bow and a sweep stroke in the stern.



Right: The bow paddler does a sweep while the sternman does a cruising stroke with a pry outward at the end.



Stop, backpaddle: Both paddlers do a simple cruising stroke in reverse.

Three common parasites of Iowa game fish

by Joseph J. Schwartz

Photos by the Author

PROBABLY THE MOST FREQUENT questions asked by Iowa anglers this time of year concern wormy fish. "Why were those yellow worms imbedded in the flesh of that bass?" "What causes the black spots found on some bluegill?" "Are these fish safe to eat?"

Fish, like all other animals, are parasitized by other living things. A parasite is an animal living in, on or with some other living organism (its host) at whose expense it obtains food and shelter. Every parasite does the fish some harm, but, they usually have to be very numerous to actually kill the fish.

There are many different fish parasites found on the surface, imbedded under the skin or in internal organs but those of immediate concern to the fishermen are the yellow grub, black spot or black grub and bass tapeworm. These are the ones most frequently observed by Iowa fishermen and result in the most questions.

Yellow Grub

THE TERMS "wormy" or "grubby" are most frequently applied to fish infected by a worm-like creature called a fluke with the fancy name *Clinostomum marginatum* or more commonly the yellow grub. This parasite infests a great variety of fresh water fish but not the trout. When found by fishermen in the catch, the yellow grub is enclosed in a cyst which frequently lies just beneath the skin. Many times a bulge is noticeable at the base of the fins or tail. The living worm when squeezed from this bulge or cyst is light yellow or white in color and is about 1/4 inch long and 1/20 inch wide.

Yellow Grub



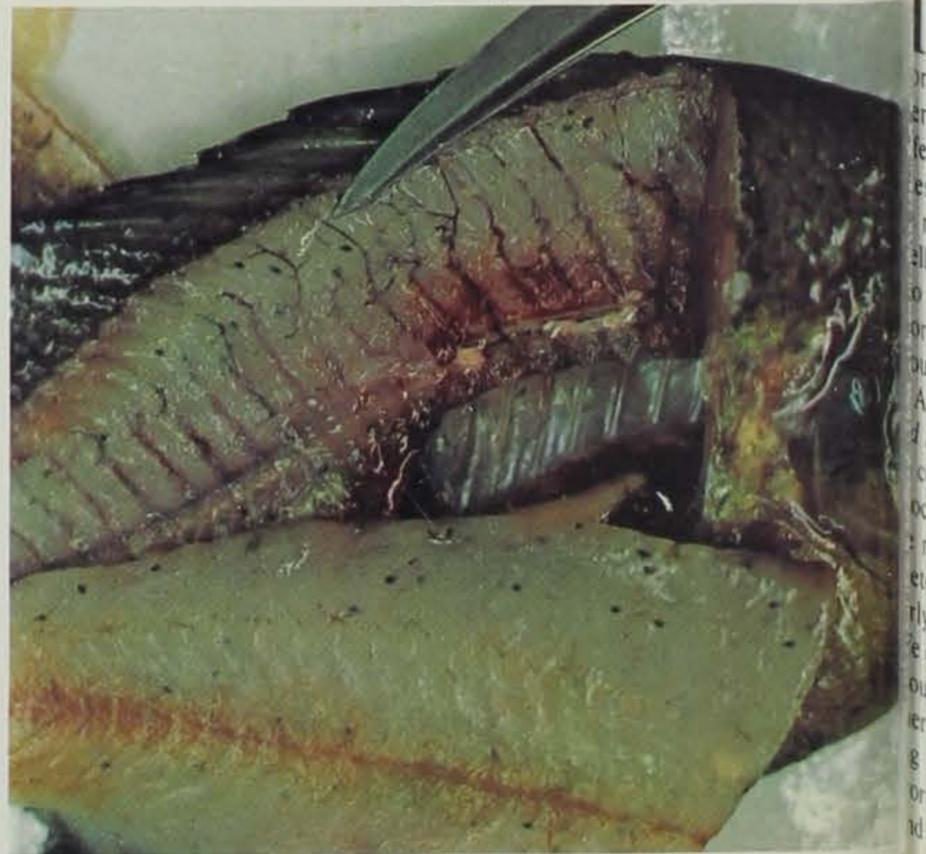
The yellow grub, like many other parasites, goes through a long and complicated life cycle in which it lives in different hosts during different times of its life (see diagram). The adult form of the grub lives in the mouth and throat of fish eating birds like the blue heron. It sheds eggs which fall into the water when the bird is feeding and these eggs hatch into tiny larvae which swim around until they find a snail. This snail will act as the next host and a larva bores its way into the snail and sets up housekeeping. While in the snail it undergoes several changes in form and eventually leaves to find its next host — a fish. This final form, called a *cercaria* by zoologists, penetrates the skin of the fish and becomes encysted. Here it changes form again, this time into a yellow grub. If this fish is eaten by a bird, the grub is released, it changes form into an adult which begins producing eggs and the life cycle starts over again.

Black Spot

ANGLERS may have seen black spots in the skin of bass, sunfish, minnows or other fishes. These black spots are due to a small fluke. The black spot so obvious to the angler is pigment deposited around the worm which is actually white.

The life cycle of black spot or black grub is similar to the one given for yellow grub; however, several differences do occur. An infected fish is eaten by a bird and the parasites are released into the intestine; there the parasites mature and produce eggs which pass out in the droppings of the host. The eggs hatch and from this point on, the life cycle is very similar to the yellow grub with a fish ultimately being infected.

Black Spot



Bass Tapeworm

MANY PEOPLE are aware that tapeworms are found in mammals but few realize fish sometimes have tapeworms. The adult tapeworm is located inside the intestine of its host and looks like a white ribbon made up of a series of individual segments. The adult tapeworm infects several species of fish but the largemouth, smallmouth and rock basses are the species most frequently parasitized. These worms have been found to reach a length of up to 2 1/2 feet.

This parasite has a very complicated life history and fish act as hosts twice during its cycle from egg to adult. Eggs released by the adult worms are passed from the host fish in the feces. One in the water many of the eggs are eaten by water fleas. Inside the flea, eggs hatch and larvae are formed. Water fleas make up part of the diet of small fish and if one is eaten this fish then becomes the host. These larvae move through the intestinal wall and invade many of the internal organs such as the liver, spleen and reproductive organs. Here they may cause slight damage, or if the fish is seriously infested sterility or death may result. Should this fish be eaten by another fish the larvae change within the larger fishes intestine and develop into the adult tapeworm.

Since the larvae develop in certain species of water fleas which do not usually occur in streams in any numbers, it is not surprising to find that bass in lakes and ponds are much more heavily parasitized than those from streams. In fact stream bass are often entirely free of these parasites. It is in small lakes and ponds that the water fleas find conditions most congenial, and consequently the bass tapeworm is seen mostly in fish caught from ponds.

Are the fish safe to eat?

INVARIABLY a conversation about fish found infested with parasites contains a question if the fish are safe to eat. None of the parasites discussed here have man as a host, and therefore are completely safe to eat. If you want to feel really safe, cook all of your fish thoroughly as cooking kills the parasites. Any parasite found in the internal organs of the fish will be removed when the fish is cleaned and present no problem. Yellow and black grubs can be cut from the flesh if there aren't too many. Hogs probably carry more parasites and certainly more dangerous ones than any Iowa fish, yet few fishermen would ever think of giving up ham or pork chops.

Another question frequently asked is, "What can be done to control these worms in a small lake or pond of these parasites?" It is possible to control these worms in a small lake or pond by eliminating or breaking part of the life cycle. For example, if all snails could be removed from a pond then the yellow grub could not complete its life cycle and it would disappear from the pond. Similarly, if fish eating birds could be kept away from the pond the life cycle would end. Both of these remedies, although possible, would be very difficult and are not practical. Fishermen must therefore be resigned to the fact that occasionally they are going to catch a fish containing one of these parasites. These worms are generally not a problem, and after a fish is cleaned and cooked the fish flesh is completely safe to eat. □

Protected Water Areas Program (Continued)

to the Protected Water Areas Study. Public input is very important; therefore, feel free to phone or write the Commission at any time and let us know how you think we can best go about protecting some of Iowa's truly unique and outstanding lake shorelines, river corridors, and marsh areas.

As a closing thought, consider all the components that can make Iowa truly a good "Place to Grow". Our productive base is firm and our economy is as sound as anyones. Amidst this solid economic foundation, we are witnessing rapid inroads on our natural resource base ... those "extras" that we've grown up with ... wooded valleys, natural lakes and marshes. It is within our power to virtually eliminate these amenities, and past trends would indicate we're going to do so. The Protected Water Areas Program is one way to help assure that we don't; to help guarantee that future generations can enjoy the same degree of natural resource diversity that we've enjoyed in the past. □

New Commissioners

John D. Field, 55, of Hamburg, and Donald K. Knudsen, 51, of Eagle Grove, were recently appointed as members of the Iowa Conservation Commission by Governor Robert D. Ray. The appointments become effective July 1 with their six-year terms running to June 30, 1985.

Field is a newspaper publisher and has served as past president of the Iowa Press Association. He was the charter director of the Fremont County Conservation Board. He also is presently chairman of the Hamburg Low Rent Housing Agency for the Elderly.



John D. Field



Donald K. Knudsen

Knudsen is a realtor and has served as past president of the Wright County Board of Realtors. He has served on the Eagle Grove city council and school board. Knudsen also has served on the Board of Directors of Friendship Haven located in Fort Dodge, Area Health Planning Council, and the Eagle Grove Historical Society.

Field and Knudsen have interests in many facets of conservation. They will replace John C. Thompson of Forest City and Herbert T. Reed of Winterset who each served six-year terms on the Commission.

Brabham Named Director



William C. "Bill" Brabham, 57, of West Des Moines, was named director of the Iowa Conservation Commission effective immediately at the Commission's June 19 meeting. He has served as acting director since March 1 after former director Fred A. Prierwert resigned to become Iowa regional director of Ducks Unlimited Inc.

Brabham has been employed with the Commission for 29 years. He served as Deputy Director with the Commission since October, 1971.

A native of Elkader, Iowa, Brabham lives in West Des Moines with his wife, the former Dorothy Tieden of Elkader.

Classroom Corner



by Robert Rye

ADMINISTRATOR,
CONSERVATION EDUCATION CENTER

SOONER or later, most every farmer or homesteader runs smack up against the problem of one or more marauding groundhogs. They are also known as woodchucks or marmots. These burrowing busy bodies, once they have decided upon a home area, can carve their way through your vegetable garden, flower bed or hayfield.

The groundhog is a vegetarian — feeding primarily on leaves, flowers and stems of clover and alfalfa. Garden crops such as peas, beans and corn are used for food along with fruits like apples.

Solitary living is the preference of the groundhog. Only one adult per burrow is found, although the burrows may be as close as 100 yards in some cases. They are more often located widely separated.

Digging is done primarily with the front feet and claws of the animal. The hind feet are used for propulsion of the body while the dirt is pushed forward with the face and chest. The amount of subsoil removed in the course of digging a burrow averages about 700 pounds. This digging is done so rapidly that a small burrow can be finished in one day. One animal may have several burrows which are used at different times.

The head of a groundhog is broad with large and showy front teeth, a blunt nose and small round ears which can be closed at will over the inner ear. This keeps the dirt out as the burrow is dug. Its hair color is a grayish brown with a yellowish or reddish cast.

These animals will come out of their burrows, usually found in woodland edges, fence rows and meadows, and sit on their haunches as though at attention. Groundhogs have excellent sight and hearing. If disturbed they give a loud, shrill whistle and dart into their burrows.

Their natural predators are fox, coyote, dogs, weasels and mink. The groundhog's burrows serve as homes for animals which are their predators, as well as rabbits, opossums and skunks.

The above information and facts about other animals are presented at the Conservation Education Center. Often it is included in the subject area of protective coloration.

Along with real animals this activity involves students in inventing animals which can live in a prescribed habitat.

Students, young and/or old, are given a part of their animal and told to construct the rest of it. The animal part they are given includes a white cup, an orange carrot, or some similar item which

will stand out in the habitat. Glue, masking tape and red or green magic markers, plus anything found in the prescribed habitat are available to add for camouflage.

The animals are then put to a test. In the contest the students are predators trying to find the other participants' "animals". Always some of the invented objects go undetected.

The class summation involves a discussion of why the undetected ones weren't found. Recently an additional activity has followed the invention of animals.

Students are now made visitors to the planet Earth. Earth has undergone a terrible change. It is found with all vegetation destroyed, yet all animal bodies are completely intact. The students are to work backwards from their previous exercise and determine what the habitat was like when the animals lived on earth.

The color of the habitat is often easy to determine. Blue or red birds are exceptions. The temperature is solved by the thickness of the coat but sometimes confused by scales or feathers. Food is determined by teeth and stomach analysis.

The end result is a greater appreciation of the variety of plants and animals found in nature and the considerations that man must have in working with nature trying to conserve our natural resources.

Try this activity as you observe nature's many plants and animals. Try and determine what makes the animal suitable for its particular habitat and how the habitat is suited for the animal.

LOOKIN' BACK

Ten years ago

the Iowa Conservationist featured an article explaining the new and experimental teal season which would be tried that year. The nine day season ran from September 13 through the 21st. Only blue

and green-wing teal were legal.

This type of season did not prove totally satisfactory and was discontinued.



Twenty years ago

the magazine ran a cover story on the modernization of the game farm near Boone. Originally the farm was used to hatch and raise pheasants and quail. The new design incorporated this function with the idea that visitors be given a better opportunity to view Iowa wildlife which was kept there for the traveling exhibit.

A 208,000 acre lake in Iowa? Yes, in east-central Iowa south of Iowa City. It is now known as Lake Calvin, named after the first director of the

Iowa Geological Survey. Since Lake Calvin dried up 30,000 years ago it is doubtful that Calvin ever saw it.



Thirty years ago

the Conservationist was teaching its readers to catch smallmouth bass. It is interesting to note how little the sport has changed in comparison to largemouth bass fishing. Worthy of note was a study that showed a spinner which readily took fish in the spring was outfished 8 to 1 by a streamer fly in late summer.

It says here that anglers fishing the Wapsipinicon River during a storm saw all the cat-

fish come to the surface after lightning struck something in the water. Do you believe that?



Warden's Diary

By Rex Emerson

While working the river by boat we stopped in to see my old friend who lives down by the river. He was wound up like an eight day clock and wanting to talk to someone. He was wondering what this world was coming to.

"It seems like everyone thinks they have to have something to protest. For some it's nuclear power, some want to burn their draft card that they don't have, and some want Conservation Officers fired because they are doing their jobs. They want you guys to enforce the laws, providing it's someone else who gets the ticket. Once someone gets a little publicity about his complaint regarding an officer, other people want to get their two cents worth in, even if it was a trivial thing that happened fifteen or twenty years ago."

We knew he was leading up to something, and sure enough he came up with his usual bit of philosophy for the day.

He said, "You know, the people we have in this world now are just like a bowl of granola. If you take out all of the nuts and fruits, all you have left is the flakes."

I couldn't totally agree with him on that one. We had to get back to work. As we were leaving, he said, "If you want a petition signed by a lot of people just let me know and I'll take it to the taverns some Saturday night."

On down the river we shut the motor off and drifted for awhile to save on gas. We talked about some of the complaints people have. One person called in and complained about being embarrassed because an officer came in and asked, in front of a customer, to check the bait dealer license of his establishment. Well, maybe the officer should have introduced the customer who was an officer in plain clothes. The same day another complaint was phoned in when a person found out the customer who had just

bought some minnows was an officer in plain clothes. His complaint was one that is not too uncommon. "It wasn't fair." Since when has law enforcement become a game?

As we rounded a bend in the river we could see a boat with two people in it. A quick check was made with the aid of binoculars to determine if both people in the boat were fishing. Probably not a "fair" practice, but quite often by the time we get to them only one would be fishing with two poles and the person without a license is just along for the ride.

We started the motor and pulled alongside their boat. Both fishermen had licenses, but there was only one life preserver in the boat. The one who was getting the citation became quite indignant and suggested that we go catch some of the people who were really breaking the law, like the ones using fish traps. He didn't know where any fish traps were, because he hadn't actually seen any, but "everyone knows this river is full of them".

He said, "That's the reason they call this the river with an oak floor. That's also the reason we are not catching any fish."

Next he came up with something we hear quite often. "Why don't you just give me a warning ticket?"

We explained that warning tickets really do not accomplish anything. It would be unusual if they get checked more than once a year and for some people it's once in a lifetime. If we could check each fisherman every time they went out and could keep a record of warning tickets it might be different.

When we were ready to leave, he said, "I'll bet you guys really enjoy giving people tickets, don't you?"

My reply was, "Compared to dragging for your body, it's enjoyable."

Now he probably will send in a letter complaining that I was not polite, but you

can bet he won't tell how obnoxious he was.

Some complaints are justified, and others are from people who get hurt by a fine and just want to bite back at someone. They don't want to blame the laws or the courts; it's always the officer. Above all, they don't blame themselves.

The officers can make mistakes in their judgment sometimes. I learned something in my early years as a warden. While working in a boat one day with Officer Marlowe Ray, we pulled up alongside a boat with three men fishing. While they were looking for their license I, being a young and eager officer, was looking for other possible violations. The man on the middle seat of their boat was right even with me. His seat cushion caught my eye. It looked like the oldest, beat up, worn out life preserver cushion I had ever seen. He was still looking for his fishing license, and as I took hold of the cushion and pulled, he raised up and let me take the cushion. Neither of us said a word. He stopped looking for the license for a moment as he watched me push the cushion under the water, then still without a word continued his search. He stopped again as I dunked it the second time, and just watched. That time if I hadn't held onto it I think it would have sunk. When I pulled it up with gallons of water running out of it, I said, "Do you think that thing would hold you up and save you from drowning?"

He said, "No, that's just my cushion. My life preserver is over there."

Now, that was not the most intelligent thing I ever did.

There was never a letter of complaint from this man. Maybe he was good-natured, or maybe he appreciated having his cushion washed! However, the way things are going we may still hear from him. That was only twenty-four years ago.

