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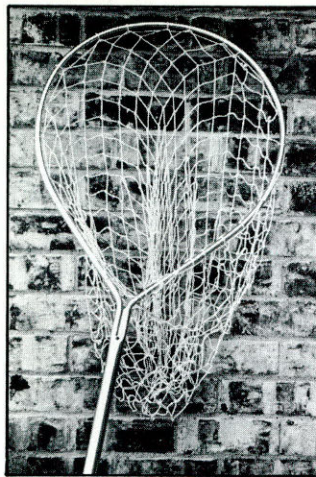
**TEXAS PARKS & WILDLIFE
magazine**

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of Texas fish, game, parks, waters and all
outdoors.

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Front Cover: Screech owls occur in two color phases—red-brown and gray—with no relation to sex or age; however, only gray birds are found in the western half of the state. No other Texas owl is as gray a gray or as bright a red. Photo by Ed Dutch.

Inside Front: Each toe on both the front and hind feet of the tree frog ends in a pad which consists of a complex network of wedge-shaped cells. These cells enable this amphibian to cling to almost any surface. Photo by Jim Whitcomb.

“Oh you virtuous



owle”

Great horned owl by Ed Dutch



by Ilo Hiller

Since ancient times, the poor owl has been associated with bad omens by many people. Our literature is filled with such maligning descriptions as “messenger of death,” “harbinger of evil” and “bird of witchcraft.”

Even in biblical references the owl is listed as an abomination among the fowls (Leviticus) and figures prominently in scenes of destruction and ruination. Isaiah used the owl as a symbol of misery, desolation and decay: “And thorns shall come up in her palaces; nettles and brambles in the fortresses thereof; and it shall be an habitation of dragons, and a court for owls.”

Fortunately, not all writings are unfavorable to the bird. The owl has frequently been associated with the gods and was the special bird of Minerva, Goddess of War and Wisdom of the Romans. When writing of the defeat of the Persians, Aristophanes said:

“Yet we drove their ranks before us,
ere the fall of eventide,
As we closed, an owl flew o’er us, and
the gods were on our side.”

Sir Philip Sidney, in his “Remedy for Love,” wrote:

“O you virtuous owle,
The wise Minerva’s only fowle.”

Owls are also often portrayed as having wisdom as in the following anonymous rhyme:

“A wise old owl sat in an oak,
The more he saw the less he spoke,
The less he spoke the more he heard,
Why can’t we all be like that wise old bird.”

In reality the owl possesses no supernatural powers or exceptional wisdom, but it is probably the most effective mousetrap around.

Owls are primarily birds of the twilight and night; however, some species are diurnal and hunt during the day. Under severe press of hunger or when demanding owlets are in the nest, nocturnal species may also hunt during the day, especially when the day is cloudy or heavily overcast.

Nature has well-equipped the owl for its particular role in life. Its whole body is designed to make it an efficient and deadly night hunter.

First of all, the bird achieves almost noiseless flight and can swoop down on its victim unheard. Two factors work together to accomplish this:



These pitiful-looking little owlets will soon grow to look like the magnificent great horned owl below. Owls are often harrassed by crows, but the crows soon learn not to get too close to the great horned owl.



Great horned owl by Perry Shankle, Jr.

(1) Generously proportioned wings and a light body enable the owl to support itself easily and quietly in flight. A heavy-bodied bird requires hard-working wings which tend to be noisy. If you have ever heard a startled quail take flight, you have some idea of the noise some birds' wings can make.

(2) Most owls' feathers are finely fringed on the edges and covered with a velvetlike pile to help deaden the sound of air movement in flight. However, some, such as the pigmy owls, have hard plumage and their unmuffled wings are not noiseless. Since pigmy owls pounce on their prey from vantage points during the early morning and late afternoon, they do not need the silent flight required by

the nocturnal species.

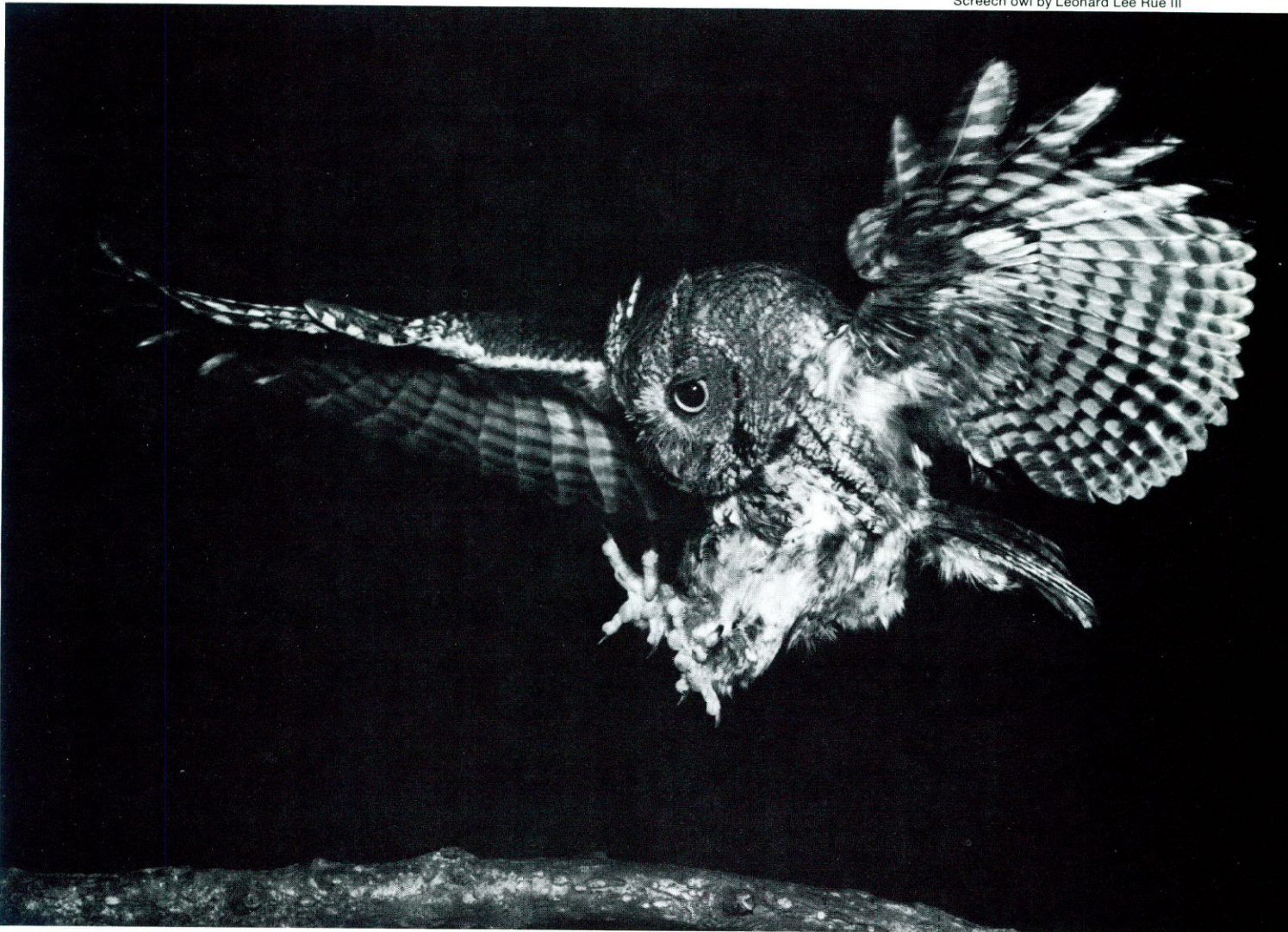
Another advantage nature has bestowed upon the owl is excellent eyesight. An owl's eye is probably the most efficient organ of vision possessed by any animal. It has a visual sensitivity at least 35 times greater than ours, and possibly as much as 100 times greater. But the owl still cannot see in absolute darkness.

Luckily, total darkness, except in deep cave systems, is very rare in nature. On a moonless, cloudy night, which appears to be pitch black to us, the actual level of illumination rarely drops below .004 foot candles. Studies have shown that the long-eared, tawny and barn owls can see their prey from six feet away with as little as .00000073 foot candles of illumination.

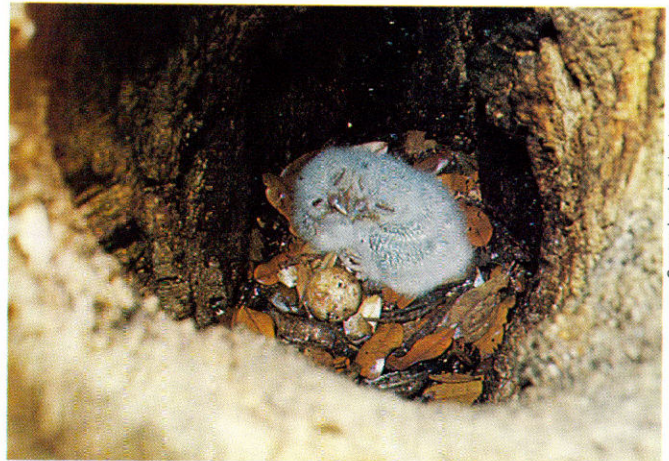
It is no wonder that this fantastic night vision has given rise to so many "old wives' tales" of supernatural ability.

An owl's eyesight is also binocular, providing it with a single field of three-dimensional vision similar to that enjoyed by humans. Although the owl's eyeballs are not capable of rotary movement such as ours, the bird overcomes this drawback by having an extremely flexible neck, enabling it to rotate its head at least 180 degrees and possibly as much as 270 degrees. This ability accounts for the old tale that a person can walk circles around a nesting owl and cause it to twist off its head. It's hard to believe that some people accept this wild idea as fact.

Exceptionally keen hearing completes



Screech owl by Leroy Williamson



Screech owllets by Leroy Williamson

Just before landing or catching prey, the owl extends its feet forward into the flight path followed by its eyes and ears. This maneuver enables it to catch prey by sound alone. The screech owl to the left displays the rufous phase of color as opposed to the gray phase of the owl on the front cover. Since incubation begins with the first egg, owllets in the same nest do not hatch at the same time. However, the two screech owllets above soon should have another nest mate.



Barn owl by John L. Tveten

Abandoned prairie dog burrows provide homes for the small long-legged burrowing owls (above), and they can be seen bobbing and bowing by their burrow entrances. Although the barn owl (right) is probably more numerous around human habitations than most owls, its silent flight and nocturnal habits cause it to go largely unnoticed. Barred owls (extreme right) make their nests in tree cavities or old hawk nests.



the owl's nocturnal design.

Some people have the mistaken idea that the tufts of feathers located on the tops of some owls' heads are ears. These "ear tufts" have nothing to do with the ears or the owl's hearing. They are merely elongated head feathers which can be erected or depressed at will, perhaps to communicate attack, withdrawal, or some other type of owl body language. They also aid the bird in its camouflage efforts. As the owl sits motionless in its alert posture, it looks like a broken upright tree stub, an illusion which is emphasized by the ear tufts.

Protruding external ears, which are so common to mammals, are not found in the bird world. That type of ear would tend to cause air resistance when the bird was in flight.

The owl's actual ears are concealed behind the edges of its facial eye discs. These large ear openings look like concave dishes. By erecting or depressing

the plumage in front of or behind the ear openings, the owl is able to direct its hearing in different directions.

In addition to being efficient receivers of sound, the owl's ears are especially tuned to high-frequency sounds, such as those made by squeaky-voiced rodents. Noises caused as the rodents scurry across dried vegetation, sticks and other debris also contain a great number of high-frequency sounds which give the owl a clue to the whereabouts of its prey.

Studies of barn owls have shown that this bird's excellent hearing enables it to catch living prey in absolute darkness if the rodent squeaks or rustles a leaf to give away its location.

Although rodents make up a large percentage of the owl's diet, they are not the only item on the menu. These efficient predators also eat insects, earthworms, fish, crayfish, amphibians, birds and small mammals.

Food studies of owls can be quite accurate because the bird leaves an involuntary record of what it has eaten. Although an owl sometimes crushes the skull of a mouse or plucks the long wing and tail feathers from a bird, it swallows its prey whole when possible. Larger animals are torn into pieces which can be gulped down. Bones, feathers, fur and entrails are all swallowed. The nourishing

Barred owl by John L. Tveten



parts are digested and the indigestible parts are compressed into a pellet which is coughed up by the owl.

Size, shape and coloring of the pellets may often indicate which species of owl produced them. Those of the barn owl are rounded, blackish and usually will have a varnished look about them. This bird generally ejects two pellets, one at the roost, in a 24-hour period.

Owl pellets have proven quite valuable to those professionals studying the relationship between predators and prey. There can be no doubt as to which prey species are being eaten by owls. Fossilized pellets have also provided us with one of the few true records of what was actually eaten by animals long dead.

If you happen to come across an owl pellet, you might want to do a bit of detective work on your own to determine what that particular bird ate. The best way to find out what the pellet contains is to soften it in water and then carefully take it apart. You might even want to examine the contents under a magnifying glass or microscope.

Almost everything about the owl is unusual and interesting. Take time to learn more about them and you will agree that this feathered mousetrap is usually beneficial to man. **



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How To:

Make your own nets

Article and photography by Alan Allen

Have you ever thrown away a landing net because the netting was rotten or torn? You shouldn't have, because you can tie your own netting for landing nets, hoop nets, seines, basketball goals, badminton or tennis nets, decorative fish nets and even nets for hanging flowerpots.

The knots are fairly easy to tie, and all you need are two simple tools and some cord. The tools are a needle (shuttle) which holds the cord, and a tying board. Needle and cord may be purchased at many sporting goods stores.

The tying board can be made from sturdy cardboard, plastic, metal or wood, and should be about six inches long, about one-sixteenth to one-eighth inch thick and have a height equal to the mesh size you desire. A mesh is one of the open spaces in the net.

If you use nylon cord for your net, the green or brown kind which has been treated seems to prevent knot slippage best. Each time the cord is cut, tie a knot at each loose end.

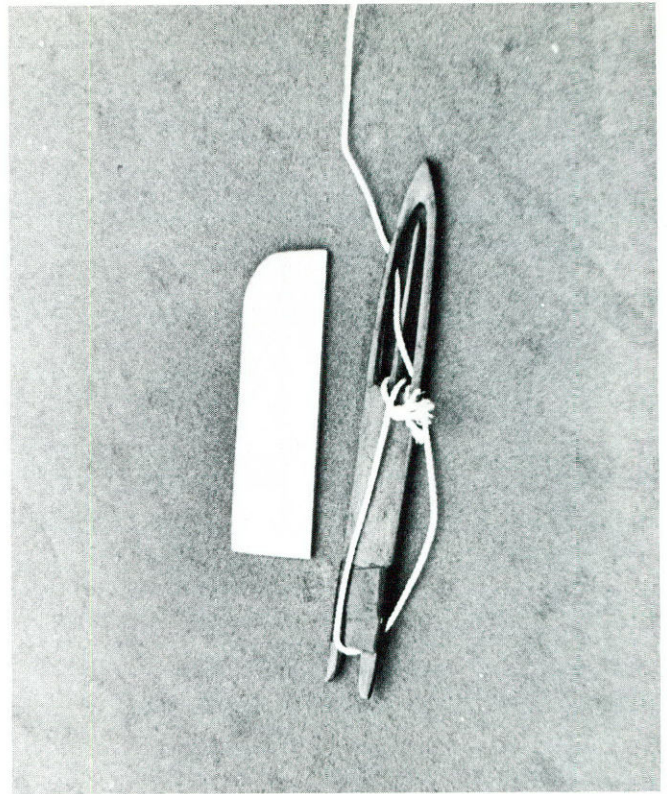
To fill the needle, loop the cord around the slender stem set inside the hollowed out area of the needle. Then wrap the cord down through the notched end of the needle as you flip the needle over. Carry the cord up and around the inset stem again, and repeat this process until the inset stem is almost filled with cord.

The following tying instructions are designed for a right-handed person; however, a left-hander can follow them using the same technique but tying to the left.

Always pull each knot as tight as possible, and when a half-hitch and a love knot are tied together, be sure the love knot is tightened above the half-hitch.

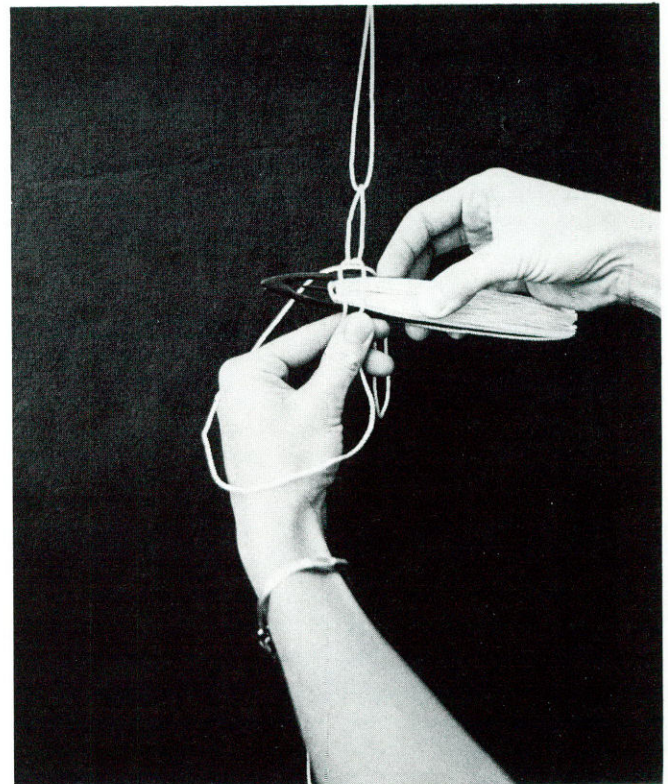
To give you an idea of the relationship between the mesh size and the size of the landing net mouth, 36 meshes of 1 1/2-inch mesh will make a net about 40 inches in circumference.

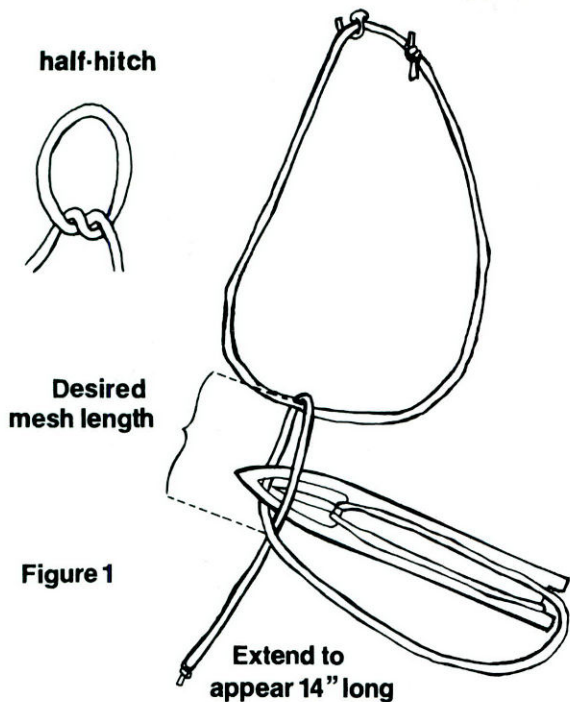
To begin tying your landing net, cut a length of cord about two feet long and tie the ends together to form a circle. Hang or fasten the circle where you can easily reach it. Pull up a chair and your patience. If you're not very good at working with your hands, making your own net will be difficult at the start, but should get easier as you gain more experience.



With this hand-carved needle (shuttle) and aluminum tying board to regulate mesh size, anyone can learn to tie netting.

Make sure the love knot is tightened above the half-hitch when this combination is used together.





Pass needle through small loop and form a half-hitch.

The first two rows of mesh are the most difficult for the beginner because they're tied at the same time. To begin the first two rows, pass the needle through the two-foot circle and leave about 14 inches of the loose end dangling down as in Figure 1.

Follow the instructions in Figures 1 through 5.

When you complete the number of meshes needed to make the circumference you want, tie back into the loose dangling end and start on a new row as shown in Figures 5 and 6. From this point on, you will be tying only one row at a time, not two as in the beginning.

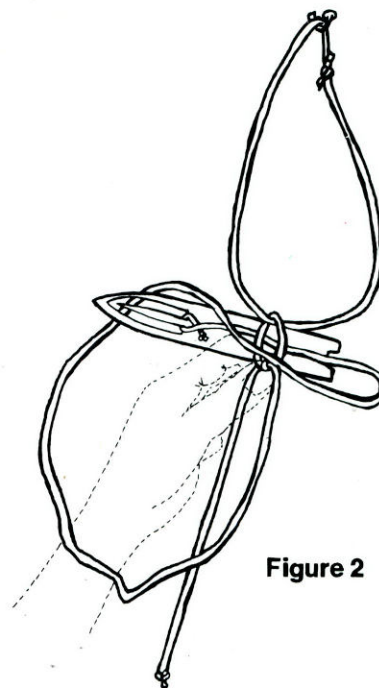
Add rows of mesh until you have three to four feet of netting. When a length of cord is used up, just add some more with a secure knot.

Now you are ready to finish the landing net. Simply begin to catch **two** of the meshes to the upper right, instead of one, and tie the **four** taut strands, instead of the usual two, with a love knot. To gather the bottom even more quickly pass the needle through three meshes. Or, as an alternate method, simply reduce the size of the mesh on each row as you near the end before you begin gathering the bottom meshes.

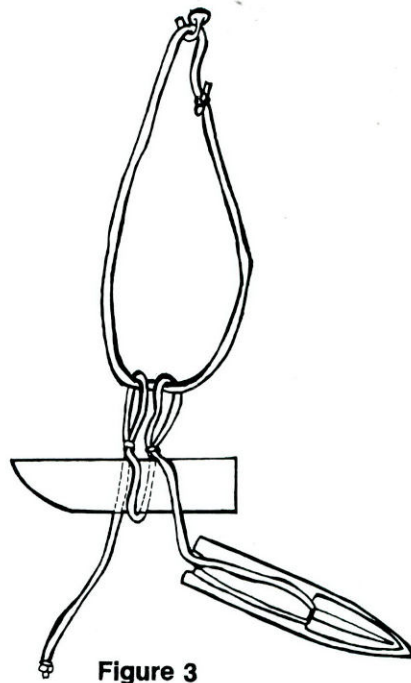
When the bottoms of only three to four meshes are left, cut the needle cord and knot it securely. Then run the needle through each bottom mesh and tie them together securely with the needle cord. You're now ready to attach the landing net to the frame.

Lace the frame through the meshes of the open end of the netting and use the needle cord to half-hitch each mesh to the frame.

These same procedures may be used for basketball



Hold the half-hitch with the left hand and toss a circle of cord onto the left arm. Pass the needle behind the two taut strands and up through the circle on the left arm. Then pull the needle until the knot tightens above the half-hitch. This last tie was a love knot.



Place the top edge of the tying board against the love knot and lay the needle cord over, then around underneath the tying board. Pass the needle through the two-foot loop, cross the two unknotted strands at the top of the tying board and tie a half-hitch and a love knot.

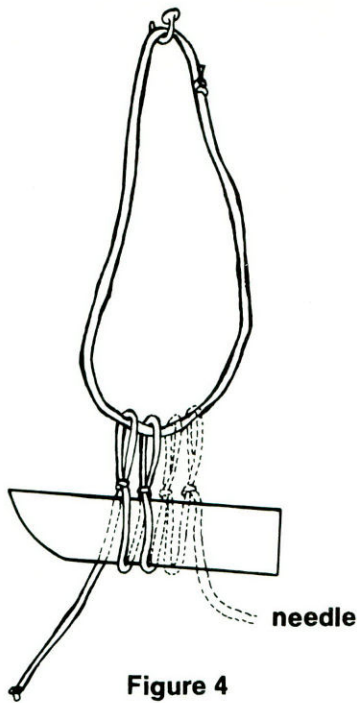


Figure 4

Pass the needle cord down over, then up under the tying board to begin the same series of ties again.

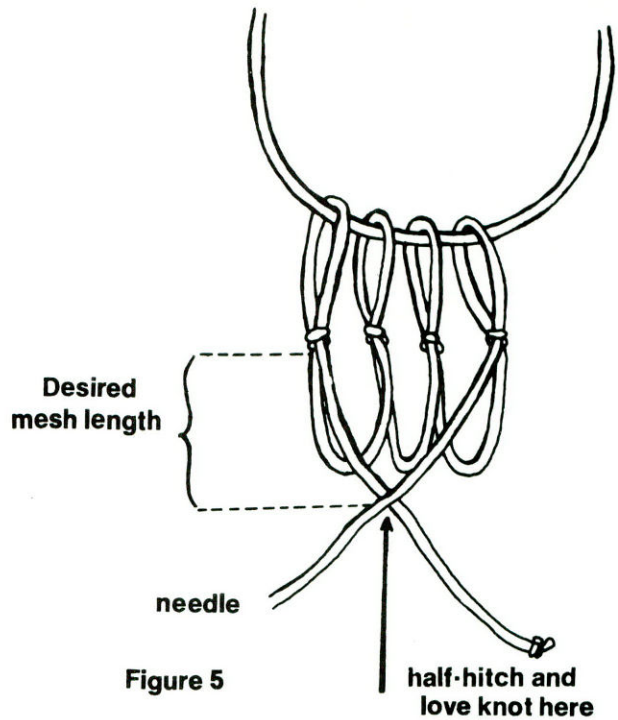


Figure 5

When the number of meshes are tied for the size landing net mouth you desire, tie a half-hitch and love knot on the dangling loose end one mesh length below the last knot on the loose end. This links the netting into circular form and completes the tying of two meshes at once.

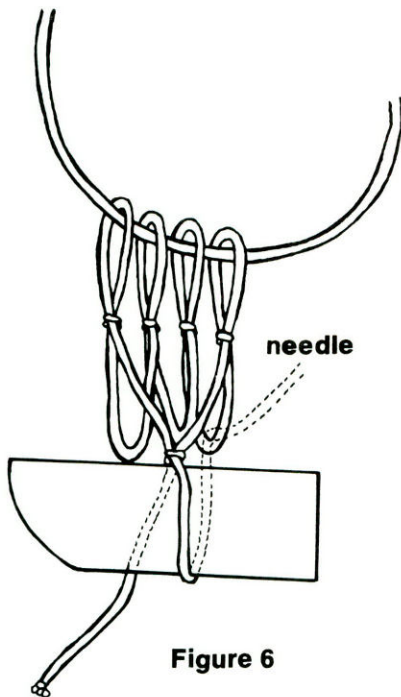


Figure 6

Slip the tying board up against the knot on the loose end, and as before, pass the needle cord down over and up underneath the board. Put the needle through the mesh just to the upper right of the tying board.

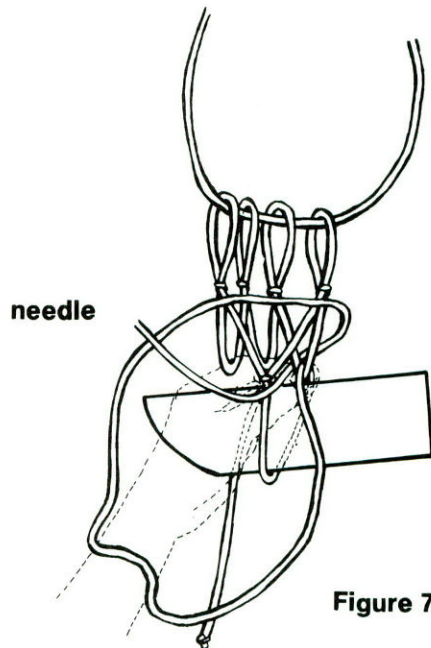


Figure 7

Pull the mesh at the upper right to the top of the tying board and hold it between the left thumb and the board. Tie a love knot around the two mesh strands by tossing a loop onto your left arm (Figure 2) and from the right side, pass the needle behind only the two strands and tighten. From now on the half-hitch is used only on the dangling loose end. Continue to circle the board and catch the next upper right mesh and tie until you wish to close the net.

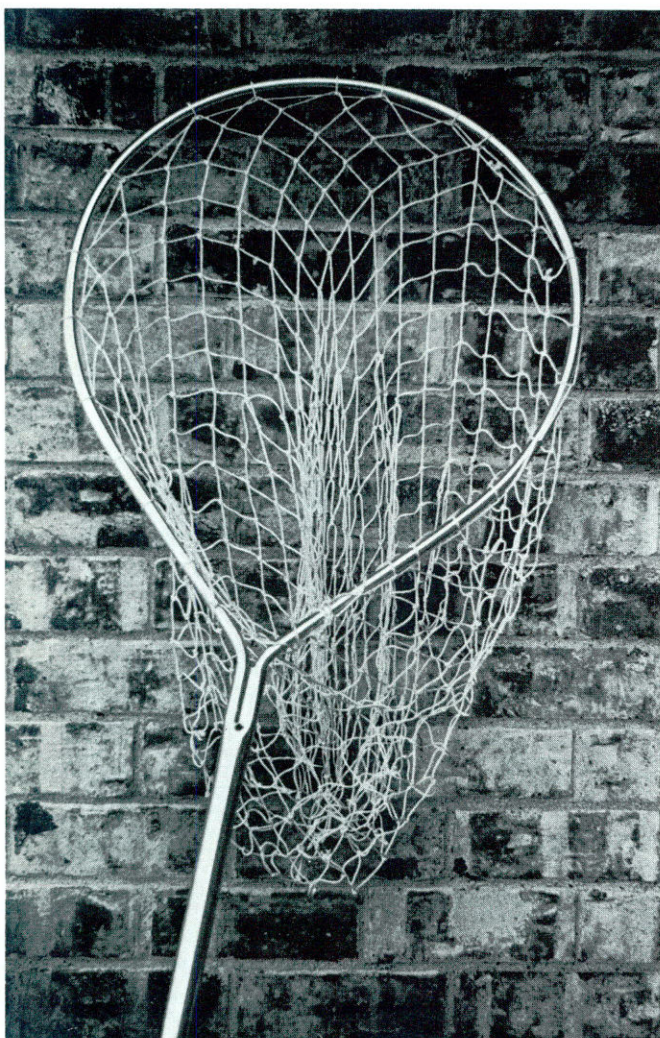
In less than 30 minutes you should be able to tie netting for a hanging pot such as this one.

nets or hanging pots. When tying the netting for hanging pots, determine the circumference and length suitable for each pot and the mesh size which will look best.

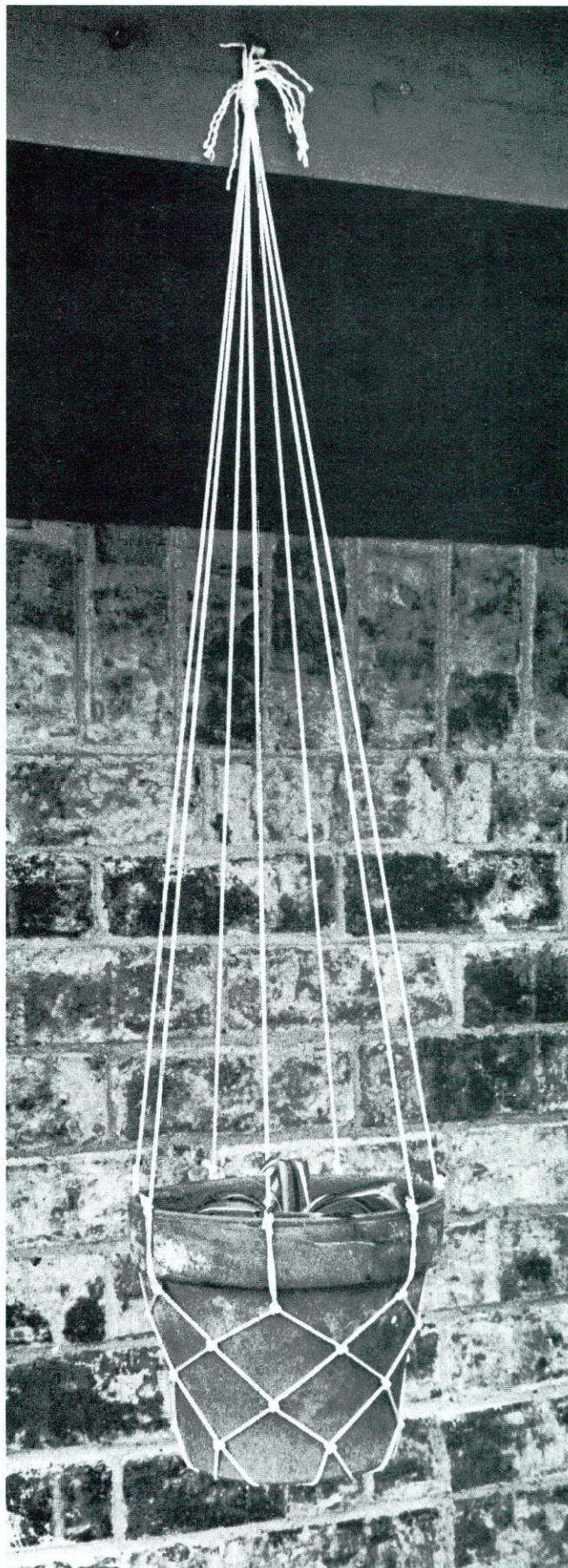
For basketball nets, the number of meshes in the circumference are determined by the number of hooks on the rim for attaching the net. If there are no hooks, tie enough meshes to reach around the rim and half-hitch the top meshes, equally spaced, around the rim.

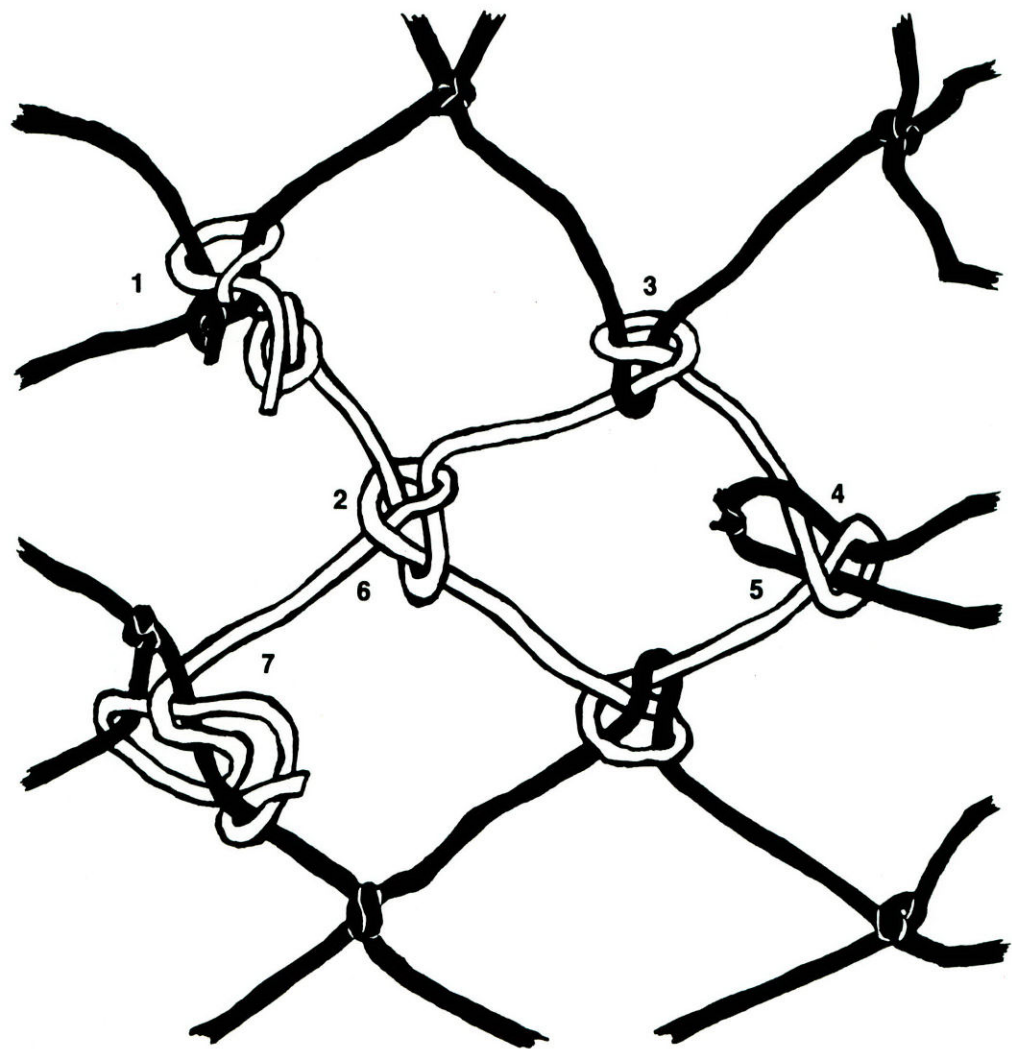
For making seines and badminton or tennis nets, tie meshes on the two-foot circle as in Figure 3 until you have the height of the net desired. Then cut and remove the two-foot strand and lace the top meshes onto a stick a few inches longer than the net height.

On the end with the dangling strand that is attached to the needle, tie another loose end next to it. With the needle cord tie a half-hitch around the new loose end



Size 21 nylon cord was used to tie the one-half inch mesh netting for this landing net.





In mending any torn net one rule always applies, begin tying the replacement section at a three-strand knot. Trim all other knots down each side of the tear so there will be only two-strand knots and loops around the torn section. If you have trimmed correctly, you will end with a three-strand knot at the finishing point.

a mesh size below the first row of love knots.

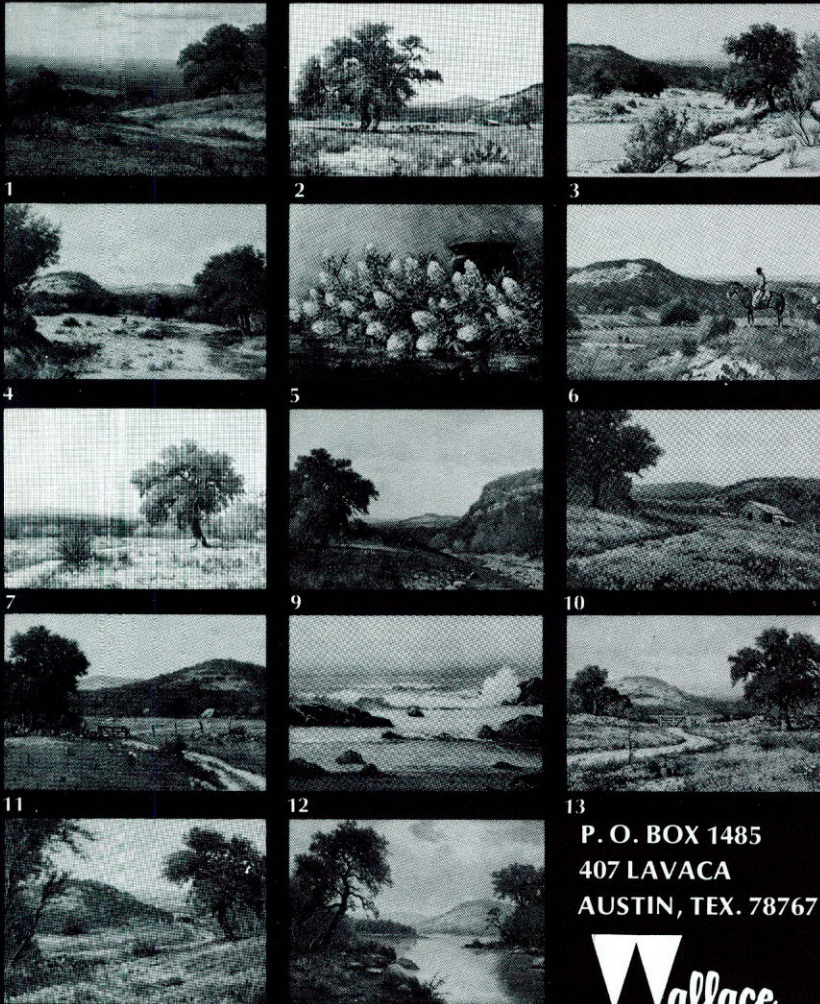
Place the top of the tying board against the knot just tied, with the loose end underneath the board and the needle cord over it. Now either tie to the left toward the old loose end or flip the stick and the netting over and tie to the right as usual. Tie as in Figure 7. Continue to tie back and forth between the loose ends until the net is the length desired.

Tying a hoop net is more difficult, and an entire article would be needed to do it justice. However, with these basic ties and a thorough knowledge of the structure of a hoop net, you could tie your own.

If you don't enjoy using your hands or don't have the time or the inclination to tie your own, netting can be bought from outdoor equipment dealers. Of course, it will cost more than netting you can tie yourself. **



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OUTDOOR BOOKS

BACKPACKING (revised edition) by R. C. Rethmel; Burgess Publishing Company, 426 South Sixth Street, Minneapolis, Minn. 55415, 1972; \$3.95.

THE BEST ABOUT BACKPACKING edited by Denise Van Lear; Sierra Club, 1050 Mills Tower, San Francisco, Calif. 94104, 1974; 384 pages, \$6.95.

THE HIKER'S BIBLE by Robert Elman; Doubleday & Company, Inc., 245 Park Avenue, New York, N.Y. 10017, 1973; 152 pages, \$2.50.

WALKING IN THE WILD by Robert J. Kelsey; Funk & Wagnalls, 666 Fifth Avenue, New York, N.Y. 10019, 1974; 362 pages, \$2.50.

WILDERNESS SURVIVAL MANUALS by Calvin P. Burt, Ronald L. Dawson & Frank G. Heyl; Life Support Technology, Inc., 4320 S. W. Lloyd Ave., Beaverton, Ore. 97005, 1969; 313 pages, 95¢.

When an individual becomes involved in backpacking and hiking, he must consider very seriously the expenses of such a venture. To get an overall view, the prospective equipment buyer needs to do a bit of research in addition to talking with friends or salespersons. The following review books offer suggestions which may help in making decisions. In addition, they offer specialized "how to" information for beginners.

Backpacking is strictly business although the style is light and full of compassion for beginners' mistakes.

The first chapter on camping gear is excellent, especially the table for weight limitations on essential and optional equipment.

On food, Rethmel recommends simplicity and lists a seven-day, 20-menu plan which provides proper nutritional requirements for the average adult.

Naturally, the author includes chapters on safety and preparations for the trip. But a feature which makes this book stand out is the appendix section which includes a table indicating gear suppliers' names and addresses to contact for specific questions and bro-

chures, information on how to make a homemade tent and a list of primitive camping areas in national forests.

Each chapter of *The Best About Backpacking*, published by the Sierra Club, is reprinted from specialized texts written by a variety of authors. For example, the chapter concerning backcountry navigation is based on a detailed book on compasses and maps.

One subject, which many other texts do not cover, deals with taking small children on camping trips. Entitled the "Littlest Camper," this chapter gives insight into accommodating infants and providing for their comfort.

An especially good chapter deals with hypothermia, commonly referred to as exposure to cold. Many people do not realize that hypothermia can develop at average weather conditions of 50 degrees or that the situation can generally be avoided by simply knowing what to do.

This probably isn't one of the best books as far as packing and preparing food or for reference appendixes at the end. But it does give a different twist to camping and it contains some information not discussed in other sources.

The Hiker's Bible is one of a 22-book series on sports and the outdoors. It is a very complete backpacking manual and the author is candid about equipment, costs and ways to cut corners.

One particularly good section not completely discussed in the other hiking books is on portable stoves. Since Elman allows a bit more space in his pack for food and utensils, he covers this subject thoroughly.

Elman also branches off in sections to discuss hiking as combined with other activities such as horseback riding and bike riding.

Probably more than the other books, *The Hiker's Bible* emphasizes conservation and the benefits of joining national clubs. He cites the best known and lists their addresses and membership dues.

This book also concludes with appendixes which list governmental and regional information sources on activities, campsites and food and equipment suppliers. This information

should prove invaluable to the backpacker.

Walking in the Wild is a complete, although fairly lengthy, description of the rudiments of backpacking. Kelsey writes in first person and frequently inserts personal experiences with camping equipment and short-cut tips he has found to be helpful.

In discussing footwear of the backpacker, he makes a common and quite inexpensive suggestion which definitely goes against the grain of many backpackers. He recommends common sneakers for comfort, low cost, arch support and durability as opposed to the expensive hiking boots. However, he agrees that under certain terrain conditions, the boots are unbeatable and lists what to look for before purchasing them.

Although this book probably contains more helpful tips and useful information than most backpacking books, this data could be more tightly organized for the reader's future reference. Some of these tips include care in packaging foodstuffs for the trip, such as carrying salt, pepper and other spices in plastic film containers.

This is an excellent guide to backpacking. It does, however, read more like a novel because of its organization and first person humor.

Actually *Wilderness* should not be classified as a book. The authors call it a "pocket n' pak" library, which consists of five individual manuals on survival, medical aid, edible and poisonous plants.

These booklets slip into individual pockets of a plastic case, which in turn are folded. However, the price of the packet probably reflects this questionable option.

The booklet on survival overlaps some of the material in medical aid. However, it does contain some "how to" information on signals, knots, fires, shelter and food.

There are two volumes on edible plants and one on poisonous plants with black-and-white drawings to illustrate each. Most experts agree that the backpacker should be wary of depending on book illustrations to determine what is edible, but such information could be vital to know in certain emergency situations.

Overall, this packet is fair. Its general purpose seems to be directed towards true survival in crisis or near-crisis situations, not just surviving the elements of nature on a backpacking trip. The unexpected does happen and the backpacker should know how to deal with it.—Terrie Whitehead

PHOTO AND ART CREDITS

Front Cover—Ed Dutch; Nikon F2, 70-210mm Macro Vivitar Zoom; Kodachrome II.

Inside Front—Jim Whitcomb; Nikon F, 55mm Macro Nikkor; Kodachrome 25.

Pages 2-3—Dutch; Nikon F2, 500mm Mirror Nikkor; Kodachrome II.

Page 4 (left)—John L. Tveten; Minolta SRT-101, 50mm, Rokkor Macro; Ektachrome X.—(right)—Perry Shankle, Jr.; Leicaflex SL, 560mm Leitz Telyt; Kodachrome 64.

Page 5 (top)—Leonard Lee Rue III; Technical information not available.—(bottom left)—Leroy Williamson; Mamiya C-33, 80mm Mamiya Sekor; Ektachrome X.—(bottom right)—Williamson; Pentax Spotmatic, 55mm Takumar; Ektachrome X.

Page 6 (top)—Martin T. Fulfer; Nikon F, 400mm Leitz Telyt; Kodachrome II.—(bottom)—Tveten; Minolta SR-7, 55mm Soligor plus Soligor 2X Telextender; Ektachrome X.

Page 7—Tveten; Minolta SR-7, 135mm Soligor; Ektachrome X.

Page 16—Bill Reaves; Nikon F with motordrive, 560mm Leitz Telyt; Kodachrome II.

Page 18 (top and bottom left) Reaves; Nikon F with motordrive, 560mm Leitz Telyt; Kodachrome II.—(bottom right)—Dick DeArment; T.i.n.a.

Page 19 (top)—DeArment; T.i.n.a.—(bottom)—Jim Dillard; Pentax, 200mm Takumar; High Speed Ektachrome.

Page 20 (top and bottom)—Dillard; Pentax, 200mm Takumar; High Speed Ektachrome.

Page 21—J. D. Peer; Nikon F2, 70-210mm Vivitar Zoom; Kodachrome 64.

Page 22 (top right)—Bill Duncan; 4x5 Graphic View Camera; Ektachrome X.—(top left)—Reaves; Nikon FTN, 28mm Auto Nikkor; Kodachrome X.—(bottom right)—Whitcomb; Nikon F2, 400mm Leitz Telyt; Kodachrome 64.—(bottom left)—Williamson; Mamiya C-33, 80mm Mamiya Sekor; Ektachrome X.

Page 27 (top left and bottom left)—Rue; T.i.n.a.—(top right)—Duncan; Hasselblad, 80mm Zeiss Planar; from Ektachrome X.—(bottom right)—Reagan Bradshaw; Nikon F2, 55mm Macro Nikkor; from Kodachrome II.

Page 28 (aerial)—Tim Leifeste; Hasselblad 500-C, 80mm Zeiss Distagon; Ektachrome X.—(inset)—Reaves; Nikon F, 21mm Vivitar; Kodachrome 25.

Pages 29-30—Reaves; Nikon F, 55mm Macro Nikkor; Plus X.

Back Cover—Tveten; Minolta SRT-101, 50mm Rokkor Macro; Ektachrome X.

LONG SHOTS SHORT CASTS

compiled by Neal Cook

It Takes a Lot: With a state as large as ours and a department as diverse as Parks and Wildlife, it takes a lot of mobility. To supply the vehicles for the department, the Transportation Section in 1973-74 had responsibility for a fleet of 558 passenger cars and station wagons; 658 trucks, jeeps and carryalls; 41 inboard boats; 553 outboard boats; 608 outboard motors; and 495 boat trailers.

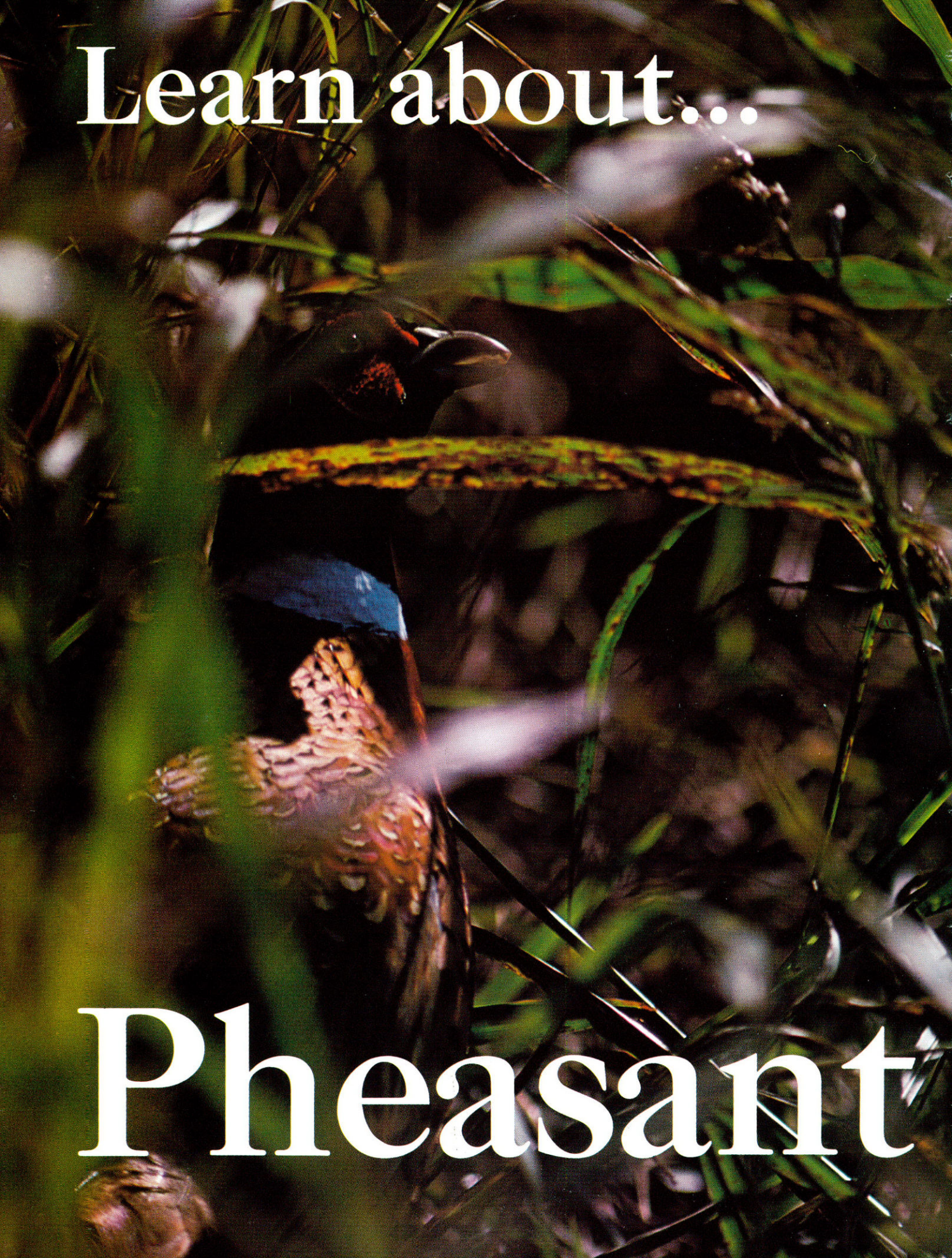
Tagged Mackerel: To study their growth and migrations, kingfish and Spanish mackerel have been caught and tagged throughout the Gulf of Mexico and the South Atlantic Coast. These tags have a code for a reward to the fisherman turning in the tags and information about when, where and at what depth caught, along with the fish's length and weight. The reward varies from \$1 to \$25, but any fisherman who catches one of these fish should turn in the information and tag just to help with the fisheries research as much as for the reward. For Texans, send the tag and the catch information to: Texas Parks and Wildlife, 715 S. Bronte, Rockport 78362 or National Marine Fisheries Service, P.O. Drawer 1208, Port Aransas 78373.

Clean Up Your Trash: This time of year almost all federal, state and local parks become crowded. Extra personnel are hired during these summer months to help clean up the mess left by thoughtless campers; but why not clean up after yourself? Don't consider your park site as a table in a restaurant where a busboy will come along after you leave; think of it as the dining table in your home where you must clean up your plates, paper and then wipe the table for the next meal.

Vicuña Comeback: During the late 1950s the demand for the extremely fine wool of the South American vicuña almost caused the extinction of this cousin to the camel and llama. A wild resident of the Andes Mountains, the vicuña has never responded to attempts to domesticate it and when man finds something unique with either fur, fins or feathers which he can wear and stand out in a crowd, then greed and ego create a market for the product. This demand led to a slaughter which drove the vicuña populations from 500,000 in the 1950s to 10,000 by the mid-1960s. The animals were shot from helicopters until laws protecting them were enacted in Peru, Bolivia, Chile and Argentina. The fleet-footed animals are making a comeback because of the protection afforded by these laws and in one preserve in Peru the herd has grown from 2,000 in 1966 to about 14,000 today.

Learn about...

Pheasant



Prior to 1950, only a scattered few ring-necked pheasant were found in the northwestern portion of the Texas Panhandle, and it is believed that these birds drifted in from Oklahoma, Kansas and Colorado. These original few have multiplied and spread during the past 20 years, however, present locations and populations of these birds in the Panhandle are probably a result of the many pheasant released by land-owners, sportsmen and civic groups.

Although population densities and numbers harvested are low when compared to most of the Northern Plains states, the birds continue to increase.

Since this is a relatively new game bird in Texas, the following questions and answers about this species are being presented.

Where are the pheasant located?

Huntable populations are confined to approximately 18 counties primarily located across the top of the Texas Panhandle and down the western side to Lubbock County.

When was the first pheasant season held in Texas?

Pheasant season was opened for the first time during 1958.

How many birds are harvested each year?

Approximately 12,000 to 15,000 pheasant are harvested annually.

What is the annual turnover for pheasant?

It is estimated that from 65 to 75 percent of the birds hatched during any one year will not live until hunting season the following year. This is called annual turnover and, as with most game birds, this turnover is high. The summer hatch determines the huntable fall population. Pheasant cannot be stockpiled from year to year.

What is the weight of a Texas pheasant?

The average adult rooster weighs $2\frac{1}{4}$ to $2\frac{1}{2}$ pounds. The hen weighs approximately one-half pound less.

How many eggs will a pheasant lay?

Usually a hen will lay from 25 to 30 eggs, starting late in March or April. However, a nest will usually contain only 12 to 15 eggs. Generally, several eggs are laid in many different spots known as dump nests before attempts are made at actual nesting. Often several hens will lay in the same nest, or a hen will even lay in other types of birds' nests.

How long does it take to hatch a brood?

The total time is approximately 39 days. This includes 14 to 15 days to lay an average clutch after the hen decides to nest and 23 to 24 days for the eggs to hatch. The peak of the hatch is generally during June.



Leonard Lee Rue III

Will a hen pheasant renest if her nest is destroyed?

If a hen's first nest is broken up during the early stages of incubation, she will renest under favorable weather conditions and make repeated attempts to produce a brood of chicks.

How many broods will a hen produce per year?

Just one; there are no authentic records of a hen's rearing more.

How many cock pheasant can be harvested from a population?

Records show that a relatively large number of cock pheasant can be harvested without harming the breeding potential. There is nothing harmful in shooting 90 percent of the male birds. Experiments have shown that one cock to 15 hens is adequate for breeding purposes.

What do pheasant eat?

During the first five weeks of their lives, pheasant feed almost entirely on insects. As they grow older, they switch to the seeds of cultivated crops such as grain sorghums, wheat and corn. Other plants are eaten, but are of less importance. One set of tests has shown that a pheasant will consume an average of six pounds of grain in a month. Therefore, it is easy to see that considerable food is needed to carry a good population of birds through the winter months.

How far do pheasant travel?

Although there are exceptions, the general rule is that a pheasant spends its entire life in approximately a one-square-mile area. This is why it is important that food, cover and water be near each other.

Why are there more birds in some areas than in others?

Primarily, it is a matter of habitat, that is, one area



Adequate nesting cover is essential to maintaining healthy pheasant populations. Knee-high or higher cover in the form of grass or weeds that will not be disturbed until after the hatching period will give pheasant hens the best chance to produce.

Pheasant hen by Bill Reaves

Dick DeArment

may have plenty of food, cover and water while there are deficiencies in other areas. Pheasant are mainly located within the irrigated areas of the Texas Panhandle where large amounts of grain are cultivated. A deficiency of any one of the vital parts which make up habitat—food, cover and water—can drastically effect the number of pheasant in a given area. Ordinarily, pheasant numbers are directly related to the carrying capacity of the area.

What is carrying capacity?

Any given area of land contains only so much food and cover and will, therefore, support only a certain number of birds throughout the year. Compare this to livestock operations. A pasture will furnish only enough grazing for a certain number of cattle over

a given period of time. Available forage is depleted if more cattle are placed in the pasture. The cattle must be removed or fed or they will die of starvation. Pheasant cannot be removed, and it is impractical to feed them—many are lost under these conditions.

What can be done to increase pheasant populations?

Pheasant are a crop and must be cultivated and managed just like any other resource such as corn and grain sorghums. They will increase with good land management. Management includes providing the right amount of cover, food and water near each other. All three ingredients must be available. Production depends upon the amount furnished, just as crop production depends primarily upon the type of seed, fertility of the soil and moisture. You can water

Harvesting procedures which leave stalks and stubble on the ground can help winter large numbers of pheasant. Often such residues are burned (right) or plowed under.

infertile soil and grow a poor crop; you can provide abundant cover for pheasant, but if there is a shortage of food, a poor crop is produced.

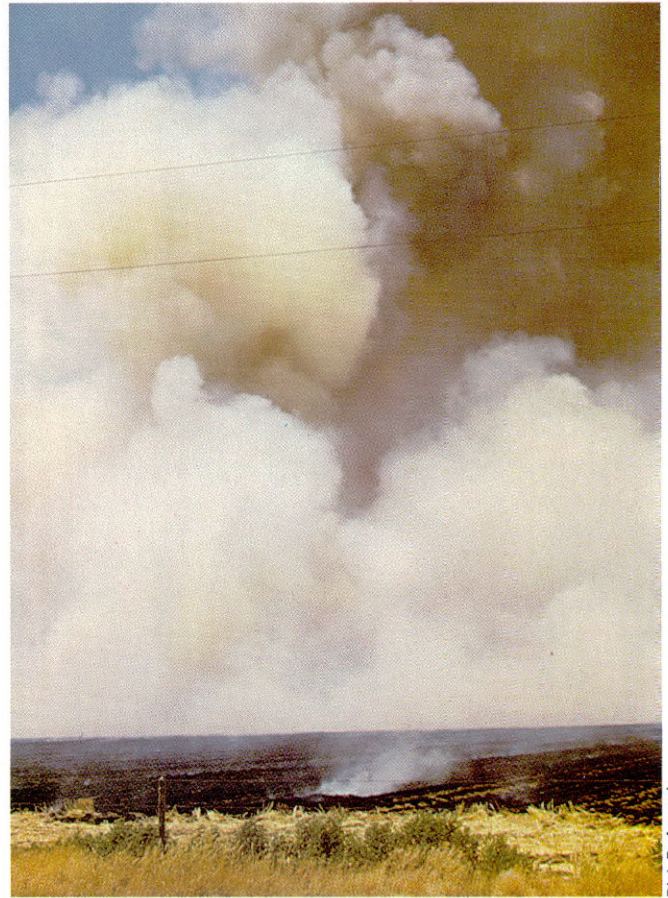
As a general rule, most harvesting procedures leave enough grain in the fields to winter larger numbers of pheasants if the grain is left on top of the ground. It is also very important to the pheasant that the stalks and stubble which provide valuable protection from the elements be left standing. All too frequently such residues are burned or cut and turned under during early winter.

Leaving strips of unharvested corn or grain sorghums through the winter is an excellent way of furnishing both food and cover for this bird.

The benefits to the pheasant from minimum tillage practices in the Panhandle area are considerable since they tend to increase year-round food and cover potentials by leaving a continuous vegetative cover on the ground.

What kind of nesting cover do pheasant require?

At the present time much nesting is done in alfalfa and wheat fields simply because there is little other cover available during late April when the hens begin



Dick DeArment



Jim Dillard



Pheasant need adequate cover during the winter as well as at other times of the year. Exposure to the elements can exact its toll on the birds when winter cover is inadequate. Good habitat is the key to a thriving pheasant population. If it is available, landowners may find the stocking of pheasant (opposite page) can be worthwhile.

nesting. Many nests are destroyed each year in this type of cover because most alfalfa is cut for hay and many times the wheat is harvested before the chicks are hatched. If cover were available in the form of tall grass and weeds, it is probable that less nesting would take place in wheat and alfalfa. Nesting cover is needed until around July 1 within the High Plains area, since at least 35 to 40 days are required during the period of egg laying (April) through hatching (June).

Knee-high or higher cover in the form of grass and weeds which will not be disturbed until after the hatching period will give the hens the best chance. These areas should be at least one acre or more in size for optimum success.

Shortage of good nesting cover within the Panhandle area is probably one of the major factors suppressing populations.

What can be done to improve nesting cover?

Odd areas such as draws, drainage ways through fields, basins, tailwater recovery pits and other types of uncultivated areas which are not suitable for crop

production can be utilized by just maintaining the present natural cover. The key to creating good nesting cover in these areas is the prevention of grazing, burning or mowing of the natural vegetation.

Roadside ditches are prime nesting areas if not burned or mowed. Farm roads and farm-to-market roads are the best prospects but even main highways need not be completely mowed. Strips could be left on the outside of the rights-of-way, and these would not have to be continuous. One-fourth to one-half mile-long strips every mile would furnish considerable cover. Of course, roadside ditches must be maintained periodically to assure their proper function, but all ditches seldom need to be worked each year. In order to furnish nesting cover such areas should not be worked, burned or mowed after August 15 of the preceding year so that vegetation can reach a height that will conceal a hen and her eggs during the next spring's nesting season.

Railroad rights-of-way, if left undisturbed until at least July 1, can furnish prime nesting cover. As with the public road rights-of-way, vegetation should be allowed to grow during late summer and fall so that

Jim Dillard

Jim Dillard

enough is left for adequate spring nesting.

Field corners could be left or even planted to tall grasses.

What are other sources for ringneck pheasant management advice?

Each tract of land has its own individual potential for the development of pheasant populations, and some recommendations may not be feasible on all lands. However, trained wildlife biologists and state wildlife extension biologists with the Texas Parks and Wildlife Department are available in the various sections of the state and will welcome the chance to assist landowners in determining the practices that could be installed on each individual tract of land which could result in increased pheasant numbers.

Would closing the season for a year or two increase the pheasant population?

Definitely not. We have learned that ordinarily the numbers present for broodstock each spring are directly related to the carrying capacity of the land during the winter, regardless of the fall population.

Closing the season would only mean more birds lost because of overcrowding and overuse of the habitat. Also, we harvest only the male bird and it is almost impossible to overharvest the cock to the point where too few are left for breeding purposes. A lot of recreation would be sacrificed and nothing accomplished by closing the season.

Will stocking pheasant help to increase the population?

Raising pheasant and releasing them will help if there is good habitat available and no birds present. However, if the birds have been in an area for several years, they have probably filled the available habitat to its carrying capacity. In this event, numbers can be increased only by providing more and/or better habitat—food, cover and water.

The key to greater numbers of ring-necked pheasant in the Texas Panhandle is a matter of furnishing more and better habitat.

The Texas Parks and Wildlife Department has professional wildlife biologists located within the Texas Panhandle area who will welcome the opportunity to assist you at any time. **



J. D. Peer

Vacation at a state park



Landmark Inn State Historic Site by Bill Reaves



Goliad State Historic Park by Bill Duncan



Pedernales Falls State Scenic Park by Leroy Williamson



Mustang Island State Recreation Park by Jim Whitcomb

this summer . . .

		Camping	Screened Shelters	Group Facility	Trailer Sewer Fac.	Trailer Water/Elec.	Restrooms	Showers	Cabins	Picnicking	Groceries	Fishing	Swimming	Water Skiing	Boat Ramp	Museum and/or Exhibit	Historic Structure	Day Use Only	Miscellaneous		
RECREATIONAL PARKS																					
Abilene	Buffalo Gap	●	●	GT		●	●	●		●			●		●				L		
Atlanta	Queen City				●	●	●	●		●			●						N		
Balmorhea	Toyahvale	●				●	●	●	●	●			●	○					D		
Big Spring	Big Spring			P		●	●	●		●			●			●			T		
Blanco	Blanco	●	●	P	●	●	●	●		●			●								
Bonham	Bonham	●		C		●	●	●		●			●								
Bryan Beach	Freeport	○					CT			○			○								
Buescher	Smithville		●	H		●	●	●		○			○						D		
Cleburne	Cleburne	●		C		●	●	●		●	●		●						T		
Copano Bay	Rockport					●	●	●		●			●								
Copper Breaks	Quannah	●				●	●	●		●			●			●			L		
Dangerfield	Dangerfield	●			●	●	●	●	●	●			●						T		
Eisenhower	Denison	●	●	S		●	●	●		●			○						N		
Fairfield Lake	Fairfield	●				●	●	●		●			○						T		
Falcon	Falcon Heights	●	●		●	●	●	●		●			○	○					T		
Ft. Parker	Mexia	●	●	C		●	●	●		●			○	○					(Airstrip)		
Galveston Island	Galveston	Area Presently Closed to Public Pending Development																			
Garner	Corican	●		S		●	●	●	●	●			○						M		
Goose Island	Rockport	●				●	●	●	●	●			○						T		
Huntsville	Huntsville	●		P	●	●	●	●	●	●			○						X		
Inks Lake	Burnet	●	●			●	●	●	●	●			○						B		
Kerrville	Kerrville	●	●	S	●	●	●	●	●	●			○						R		
Lake Arrowhead	Wichita Falls	●				●	●	●	●	●			○						G		
Lake Brownwood	Brownwood	●	●	S		●	●	●	●	●			○	○					B		
Lake Colorado City	Colorado City	●				●	●	●	●	●			○	○					T		
Lake Corpus Christi	Mathis	●				●	●	●	●	●			○	○					T		
Lake Livingston	Livingston	Area Presently Closed to Public Pending Development																			
Lake Somerville	Somerville	●				●	●	●	●	●			○	○							
Lake Whitney	Whitney	●	●	S	●	●	●	●	●	●			○	○					(Airstrip)		
Lockhart	Lockhart	●		H	●	●	●	●	●	●			○	○					T		
Mackenzie	Lubbock	●				●	●	●	●	●			○						G		
Martin Dies, Jr.	Woodville	●				●	●	●	●	●			○	○					G		
McKinney Falls	Austin	Area Presently Closed to Public Pending Development																			
Meridian	Meridian	●	●	C	●	●	●	●	●	●			○	○					N		
Mother Neff	Moody	●		X		●	●	●	●	●			○	○							
Mud Island	Freeport	Tideland - Not Accessible by Automobile																			
Mustang Island	Port Aransas	○		Undeveloped Gulf Beach																	
Port Lavaca Causeway	Port Lavaca	●				●	●	●	●	○			○								
Possum Kingdom	Caddo	●				●	●	●	●	●			○	○					T		
Tyler	Tyler	●	●	S	●	●	●	●	●	●			○	○					N		
SCENIC PARKS																					
Bastrop	Bastrop	●		C	●	●	●	●	●	●			○						GD		
Bentsen-Rio Grande	Mission	●				●	●	●	●	●			○	○					N		
Brazos Island	Brownsville	○		Undeveloped Gulf Beach																	
Caddo Lake	Karnack	●	●			●	●	●	●	○			○						T		
Davis Mts.	Ft. Davis	●				●	●	●	●	●			○						N		
Dinosaur Valley	Glen Rose	●		P		●	●	●	●	●			○						D		
Longhorn Cavern	Burnet	Daily Cavern Tours																			
Monahans Sandhills	Monahans	●				●	●	●	●	●			○						T		
Palmetto	Luling	●				●	●	●	●	●			○						T		
Palo Duro Canyon	Canyon	●			●	●	●	●	●	●			○						N		
Pedernales Falls	Johnson City	●				●	●	●	●	●			○						D		
Sabinal Canyon	Vanderpool	Area Presently Closed to Public Pending Development																			
Sea Rim	Sabine Pass	○				●	●	●	●	○			○	○					T		
State Railroad	Maydelle	Area Presently Closed to Public Pending Development																			
HISTORIC PARKS																					
Ft. Griffin	Albany	●		P		●	●	●	●	●			○						T		
Ft. Richardson	Jacksboro	●		P		●	●	●	●	●			○						T		
Goliad	Goliad	●	●	GT	●	●	●	●	●	●			○						T		
Governor Hogg Shrine	Quitman	●		P		●	●	●	●	●			○						T		
Hueco Tanks	El Paso	●				●	●	●	●	●			○						T		
Jim Hogg	Rusk	●				●	●	●	●	●			○						T		
L.B.J.	Stonewall	●		P		●	●	●	●	●			○						L		
Mission Tejas	Weches	●				●	●	●	●	●			○						N		
San Jacinto	Deer Park	●				●	●	●	●	●			○						N		
Stephen F. Austin	San Felipe	●	●	S	●	●	●	●	●	●			○						G		
Varner Hogg	W. Columbia	Guided Tours																			
Washington-on-the-Brazos	Washington	●				●	●	●	●	●			○								
Seminole Canyon	Comstock	Area Presently Closed to Public Pending Development																			
HISTORIC SITES																					
Acton	Granbury	Burial Site of Davy Crockett's Wife																			
Eisenhower Birthplace	Denison	●				●	●	●	●	●			○								
Fannin Battleground	Fannin	●				●	●	●	●	●			○								
Ft. Lancaster	Ozona	●				●	●	●	●	●			○								
Ft. Leaton	Presidio	Closed Pending Development																			
Ft. McKavett	Ft. McKavett	●				●	●	●	●	●			○								
Landmark Inn	Castroville	●		Hotel		●	●	●	●	●			○								
Monument Hill	La Grange	●				●	●	●	●	●			○								
Old Ft. Parker	Groesbeck	●				●	●	●	●	●			○								
Port Isabel Lighthouse	Port Isabel	●				●	●	●	●	●			○								
San Jose Mission	San Antonio	●				●	●	●	●	●			○								
Sabine Pass Battleground	Sabine Pass	●				●	●	●	●	○			○								

NOTE: Many of the parks listed above are undergoing major developments. Certain facilities and services indicated may be temporarily unavailable. You are urged to inquire directly to the park in advance of your visit.

* Facilities Not Operated by Texas Parks and Wildlife Department
 ○ Permitted But No Facilities Provided
 ● Facilities of Service Provided for Activity

A-Auditorium
 B-Baets for Rent
 CT-Chemical Toilets
 C-Group Camp
 D-Scenic Drive
 G-Golf
 H-Group Hall
 L-Texas Longhorn Herd

M-Miniature Golf
 N-Nature Trail
 P-Group Picnic Shelter
 R-Rental Horses
 S-Screened Group Hall
 T-Trailer Rentals
 T-Trailer Dump Station
 X-Open Shelters
 GT-Group Trailer

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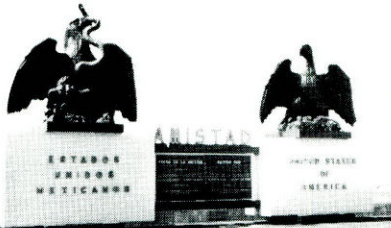
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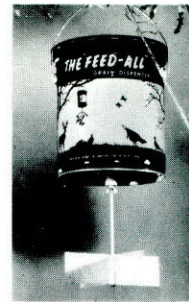
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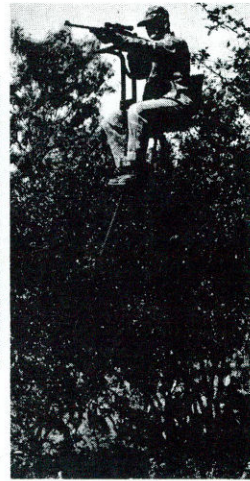
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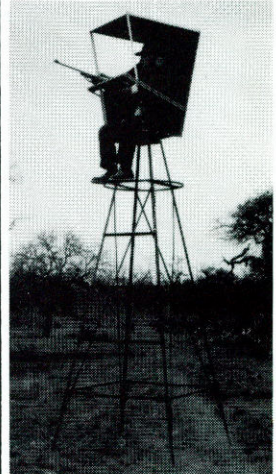
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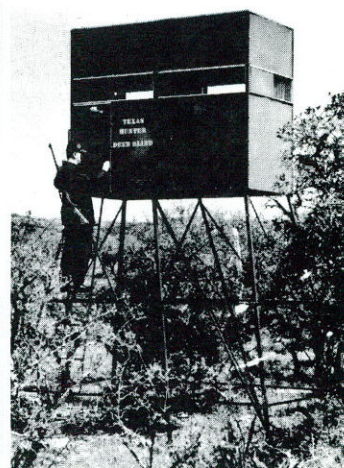


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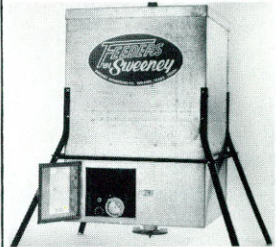
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Young Naturalist

Amphibians and Reptiles

Some 300 million years ago, or possibly more, a class of animals known as Amphibia made its appearance upon the earth. In fact, scientists believe that amphibians were the first land-dwelling vertebrates (animals with backbones).

The first ones probably crawled out of their watery world onto the land for only short periods of time. It took many years for them to develop lungs so they could remove oxygen from the air to breathe, but they finally evolved into creatures which lived part of their lives in the water and part of their lives on land.

Their name, Amphibia, comes from

the Greek word *amphibios* which means "double life." Modern-day amphibians — frogs, toads and salamanders — start their lives as aquatic animals breathing underwater with gills. They then go through a metamorphosis, or change, and become land animals breathing air with lungs.

There are about 2,700 living species of amphibians on the earth today. The largest is the Japanese giant salamander which grows to a length in excess of five feet. The largest frog is the goliath frog of West Africa which has a body length of about one foot, not including the legs. However, most amphibians are much smaller. The

largest North American salamander, the hellbender, is only 30 inches long and the largest frog, the bullfrog, has a body length of about eight inches.

The best way to describe an amphibian is to say that it is an egg-laying vertebrate with naked skin (no visible scales, no hair and no feathers) which lays its gelatinous-covered eggs in a moist environment, usually water.

A gilled larva with legs and tail hatches from the salamander egg and both the tail and legs remain in its adult stage. Salamander larvae living in quiet, poorly aerated pools with low oxygen levels may develop large plumelike gills, while those living in

(Answer on page 30)

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- | | |
|---------------|----------------|
| ALLIGATOR | NEWT |
| BOA | PEEPER |
| BULLFROG | PYTHON |
| COACHWHIP | RACER |
| COPPERHEAD | RATTLER |
| CORAL | RIDLEY |
| CROCODILE | SIDEWINDER |
| DIAMONDBACK | SKINK |
| GARTER SNAKE | SLIDER |
| GECKO | SNAPPINGTURTLE |
| GILA MONSTER | SOFTSHELL |
| HOGNOSE | SPADEFoot |
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| IGUANA | TORTOISE |
| LEATHERBACK | TREE FROG |
| LIZARD | TURTLE |
| LOGGERHEAD | WHIPSNAKE |
| MOCCASIN | WHIPTAIL |

well-aerated pools with plenty of oxygen may have short, stubby gills. Whatever the size or shape, the gills are absorbed during metamorphosis and replaced with lungs.

Tadpoles hatch from the frog and toad eggs. In the beginning the tadpole has a tail, but no legs. However, the hind legs soon develop, to be shortly followed by the front legs. As the legs grow, the tail shrinks in size until it is completely absorbed into the body. The gills change into lungs and the frog or toad is able to hop about on the land. This changing process may take a few weeks or as long as two years, depending on the species.

All amphibians are ectothermic, which means that their body temperature changes with their environment. In order to control their body temperatures, they must move from place to place, seeking shade when it's too warm or sunlit areas when it's too cool. They prefer moist areas with temperatures ranging from cool to moderate, and usually cannot stand temperatures above 100°F. During extremely hot, dry weather, they disappear underground.

The Age of Amphibians lasted until reptiles came on the scene. Reptiles appeared about 150 million years ago and soon dominated the earth. Dino-

saur, which means "terrible lizards," are probably the best known of the ancient ones; however, all but a few reptiles — turtles, lizards, snakes, crocodiles and alligators — passed into extinction about 70 million years ago.

Today there are about 6,000 living reptile species. Of these, about 5,700 are lizards and snakes.

There is no one characteristic, such as the hair of mammals or the feathers of birds, which will identify reptiles. Although all reptiles have scales or bony plates, we learned last month that birds also have scales on their feet and legs. Anyone who has ever caught a fish knows that most fish species have scales on their bodies too.

All reptiles have lungs; but then so do we, and we're mammals. We have also just learned that amphibians develop lungs for the second stage of their lives, so lungs are not unique to the reptiles.

Like amphibians, reptiles are ectothermic; however, reptiles are most active at temperatures between 80° and 100°F. When the temperatures rise above this level, some reptiles stay cool in the water while others seek the cooling shade of a burrow, rock crevice or bush. Reptiles bask in the sun or lie on warm surfaces to raise their body

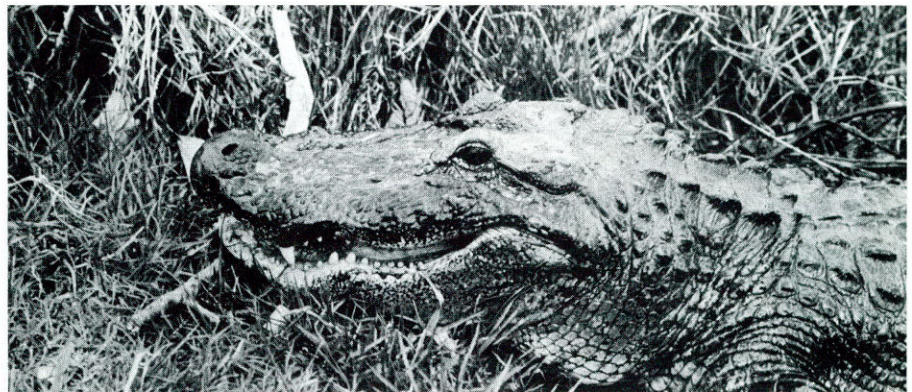
temperatures when the weather is cooler.

Most reptiles are egg-layers, but some lizards and snakes hold their eggs inside their bodies until the young are ready to be born. Since these internally-held eggs usually do not form a shell, the young develop inside membranous sacs. Although they are born alive, some may still be enclosed in their sacs for a few moments after birth.

Reptiles tend to grow for as long as they live, but their growth rate slows down as they get older. To give you an idea of some reptile sizes, here are some statistics on our North American species. The smallest lizard, the reef gecko of Florida, is only two inches long while the longest lizard, misnamed the "glass snake," is 40 inches long. The heaviest lizard is the gila monster which may weigh as much as four pounds. The indigo, probably the longest snake, has been measured at eight feet, 7½ inches, and the longest American alligator at 19 feet, two inches. Turtles vary greatly in size, but an eight-foot marine leatherback was caught which weighed 1,900 pounds.

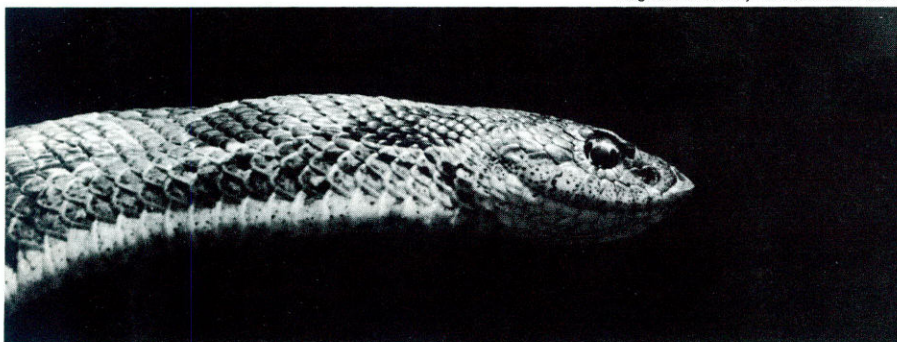
Hidden in this month's seek-and-find puzzle are the names of several reptiles and amphibians. See how many of them you can find. **

American toad by Leonard Lee Rue III



American alligator by Bill Duncan

Hognose snake by Leonard Lee Rue III



Salamander by Reagan Bradshaw



JUGFISHING along the RIO

For the adventurous angler looking for a unique approach to catching fish, perhaps no other activity offers more than jugfishing along the Rio Grande.

All that is required is an innertube, some bait, 50 or so jugfishing rigs and a lot of stamina.

One other thing—if you have an aversion to getting wet, forget jugfishing. It's not a high-and-dry sport.

If you're an old hand at jugfishing, you probably shy away from all that store-bought gear most anglers normally carry around with them; it usually gets in the way more than it helps. This includes rafts, motorboats or those fancy float fishing outfits equipped with waders. Such amenities are shunned in favor of a plain, old truck tire innertube, which is a sufficient enough "boat" for jugfishing.

An innertube is easy to handle and, should you have to step ashore during your jugfishing foray (usually to take a fish off a hook) or portage downstream, it's a simple matter to just sling the tube over your shoulder. Note: Be wary of stepping ashore on the Mexicans' side of the Rio Grande; they've been known to be disagreeable with trespassers.

While floating, either sit in the tube, feet dangling over the side, or slip your body, feet first, through the tube's centerhole and support yourself with your

arms. The first method seems to be the most preferred. However, if you should choose the other method, be sure to wear some type of protection for your feet and a long sleeve shirt to keep from getting rubbed raw by the friction of the rubber against bare skin.

You may also find it useful to tie a stringer to your belt or a tow sack to the tube.

Jugfishing rigs are of a special type and have to be constructed by the angler. In the past, everything from glass and ceramic jugs (hence the sport's name) to foam blocks and plastic containers were used to support hook and line. Today, however, just anything won't do.

Through the years, the avid jugfisherman along the Rio Grande has become a specialist and is very narrow-minded about his approach to this unique sport. To him, there's only one way to make a jugfishing rig, and this is what separates the amateurs from the pros.

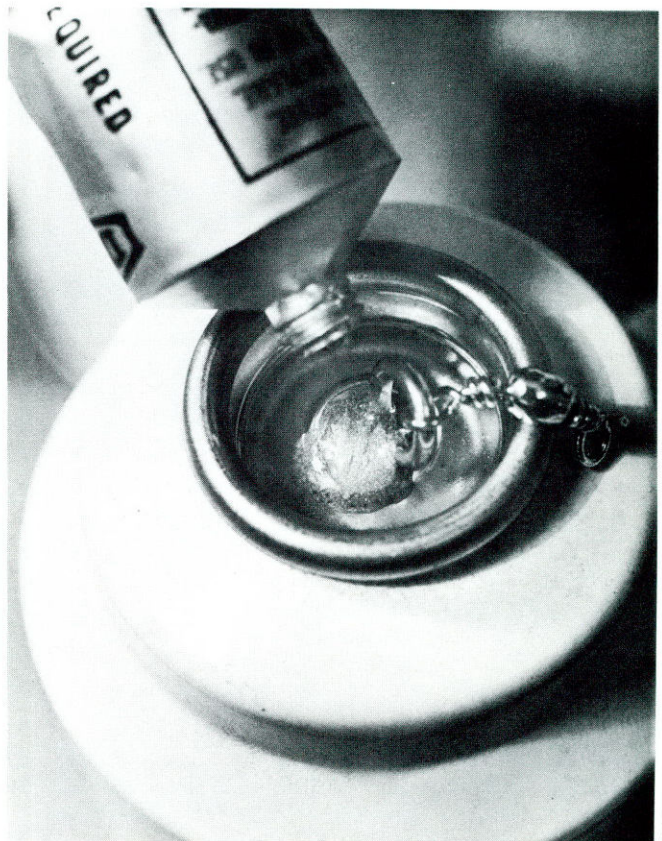
First, collect as many empty refrigerant (freon) cans as possible (50 to 100 cans should be adequate). Good sources are service stations, auto service centers, auto dealers or others who service auto air-conditioning systems.

These "jugs" are light, easily managed and



Bill Reaves

To make a jugfishing rig, begin by attaching a barrel swivel to a screw eye (left) and then liquid solder the eye into the top of an empty refrigerant can (right).



Bill Reaves

eventually bio-degradable, should you lose one along the river.

Next, insert a small screw eye, available where hardware is sold, into the small hole in the top of the can and solder it in place. Liquid solder can be used.

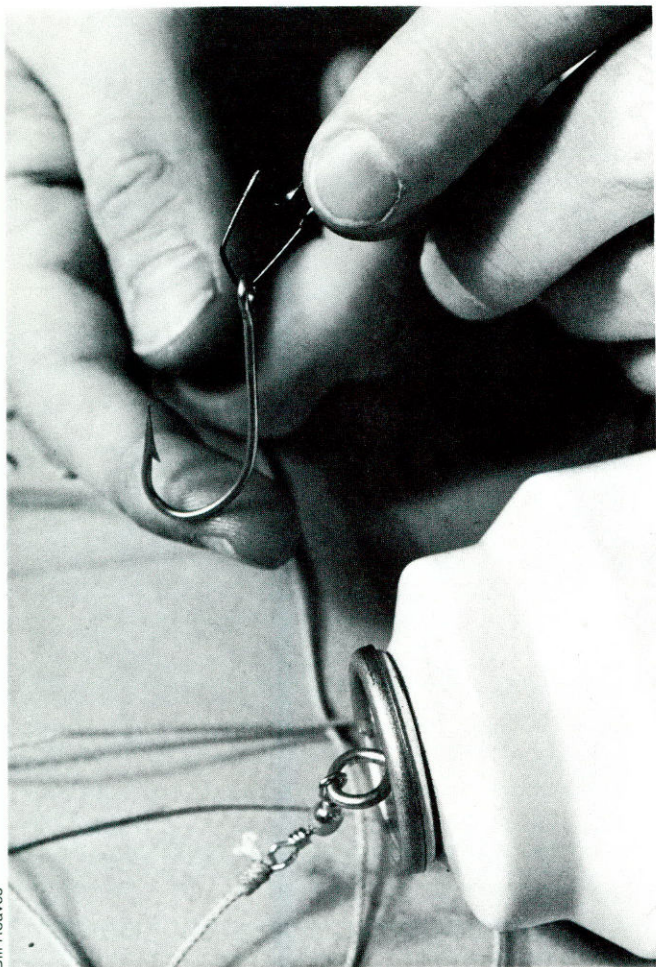
To the eye, attach a swivel; to the swivel, tie three to four feet of nylon fishing line with a 1/0, 2/0 or 3/0 hook attached. Do not use treble hooks.

It may also be a good idea to attach a snap swivel at the end of the line for easy removal of hooks when transporting your rigs to and from the river.

Make about 50 of these and you're ready to head for the river. The Rio Grande is the river in this instance, but there's no reason why jugfishing methods can't be used on other Texas rivers as well.

It is wise to check with the National Weather Service about river flow information before heading for any river. Otherwise you may find only a small trickle of water or a river too high and treacherous to float. This information is available from subscribers to this service, usually local weather bureaus, every Friday afternoon for the weekend. Houston, Dallas and Fort

After the liquid solder has had time to harden, tie three to four feet of nylon line to the barrel swivel. On the other end of the line, attach a snap swivel; to this tie a 1/0, 2/0, or 3/0 hook and you're in business.



Bill Reaves

Worth newspapers currently print river flow information, however, it is only for the Rio Grande, Guadalupe, Colorado, Brazos, Trinity and Neches rivers.

Also, be sure to check the regulations in the county where you'll be doing your fishing. Some counties prohibit jugfishing and others limit the number of hooks you can use, thereby limiting the number of jugs you can have in the river at any one time. So be sure and check.

On the way to the river, pick up a couple of the toughest old beef hearts you can buy. Cut them into small chunks for bait. If those Rio Grande catfish or big alligator gar are biting, the oldtimers say beef hearts will do the job.

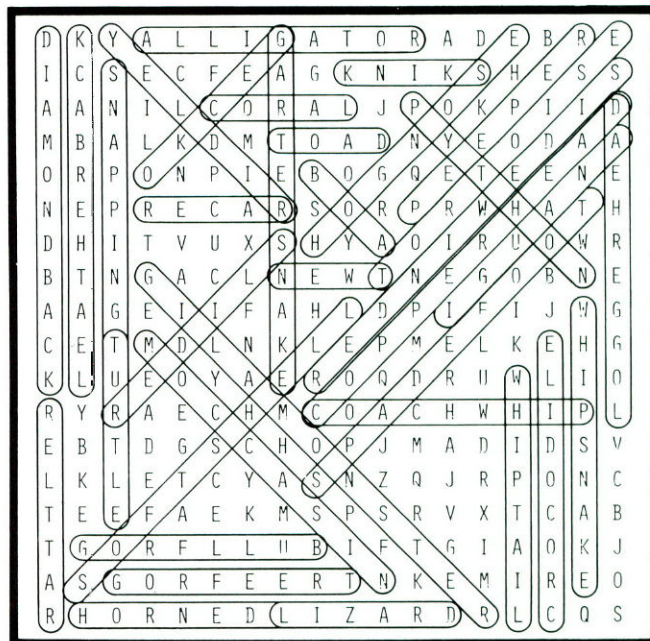
On reaching the Rio Grande, survey the section of river you plan to float and choose put-in and take-out points. Throw your baited jugs in the water and then yourself, with innertube, of course. Watch out for those hooks, though. You may be some distance from medical assistance and many a jugfishing trip has been ruined because of such carelessness.

Now, sit back and relax for a while. But keep your eyes on those jugs. Enjoy this brief period of relaxation; it's probably the only one you'll get until you reach your take-out point. Once the fish start hitting the bait and your jugs start hanging up, you'll be busier than a service station attendant during the energy crunch.

If one of your jugs goes under, look for it to pop up close to shore. Usually, that's where a fish will head once it's hooked.

If your luck and stamina hold out and the fish are biting, you should have a mess of fish on your stringer at day's end; and nothing is quite as satisfying as having your efforts and preparations rewarded. **

Answer to Young Naturalist page 26



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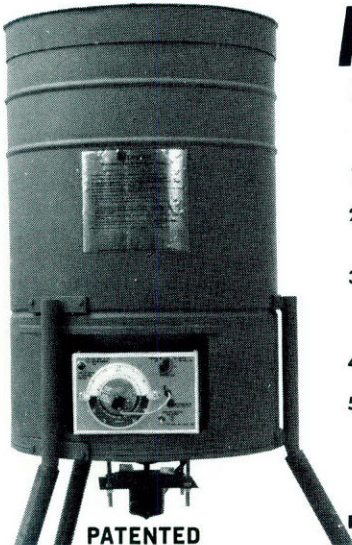
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LETTERS TO THE EDITOR

Eskimo Curlew

I am interested in the Eskimo curlew and would like to know of any recent sightings on Galveston Island. Is a curlew watch kept by park employees and ornithologists during the spring migration time?

Eve Iversen
Passaic, New Jersey

■ The last photographically documented sighting of the Eskimo curlew, *Numenius borealis*, on Galveston Island was made by D. L. Bleitz on March 29, 1962. His photographs were widely published at that time.

The latest sighting, which was not documented by photographs, was made by Mrs. J. A. Snider and some friends from Wisconsin. This undocumented sighting was made during the first week of April in 1972. No subsequent sightings have been reported.

For up-to-date information on any rare bird sightings in South Texas, contact Mr. Fred S. Webster, Jr., 4926 Strass Drive, Austin 78731 or in North Texas

contact Mrs. Frances C. Williams, 3307 Neely, Midland 79701. They are regional editors of *American Birds*, published by the National Audubon Society.

You might also want to read the article "Did a Barbados hunter shoot the last Eskimo curlew?" by Mary W. Bond, published in the *Audubon Magazine* 1965: pages 314-316.

Since the last sighting of the Eskimo curlew was made within three miles of the Galveston Island State Recreation Park, birders as well as park employees search the area for the bird each year during its migration time, but lately to no avail.

The park is undertaking a five-year rotation burn management plan. Under this plan, 200 acres in 30-acre plots will be burned yearly to control weed species and encourage the habitat to revert to its natural coastal grass vegetation. The 30 acres which have been test burned currently show an abundance of bird life. The Eskimo curlew utilizes a short grass habitat and should find areas of the park to its liking should it ever return to Texas.

Carrying Handguns

Friends have invited me to join them on a mule deer hunt in West Texas this coming season. Since I would like to bring my handgun along, please familiarize me with the Texas laws on carrying handguns. Does the State of Texas honor a New York State pistol license?

William B. Davis
Hempstead, New York

■ When transporting a handgun across the state, you should carry it unloaded (preferably encased) in the trunk of your car.

A handgun may be carried while engaged in hunting or fishing activities; however, it is illegal to take or attempt to take a wild deer with any firearm which utilizes .22 caliber rimfire ammunition, a jet gun or rocket gun.

A New York pistol license does not apply in Texas.

Boiling Live Crabs

I have always dumped crabs in boiling water—partly to kill them and partly to cook them. Is there a more humane way to kill them?

Jim DeWitt
Alvin

■ The most common practice in cooking blue crabs is to dump them alive into the boiling water. However, they can be killed with a knife or ice pick immediately prior to boiling if you desire. One article states that crabs placed in warm water which is being heated become anesthetized from the increasing temperature of the water and die peacefully. Others report that the crabs will leave the pot when the water becomes too hot, and this could create havoc in the kitchen.

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BACK COVER

The long-legged, knock-kneed, pale, monkey-faced barn owl is probably the easiest owl for most people to correctly identify. Its white, heart-shaped face distinguishes it from all other species. Its voice can be described as an eerie rasping hiss or snore. These owls can kill their weight in rats and mice in one night, especially if there are young awaiting food in the nest. Photo by John Tveten.

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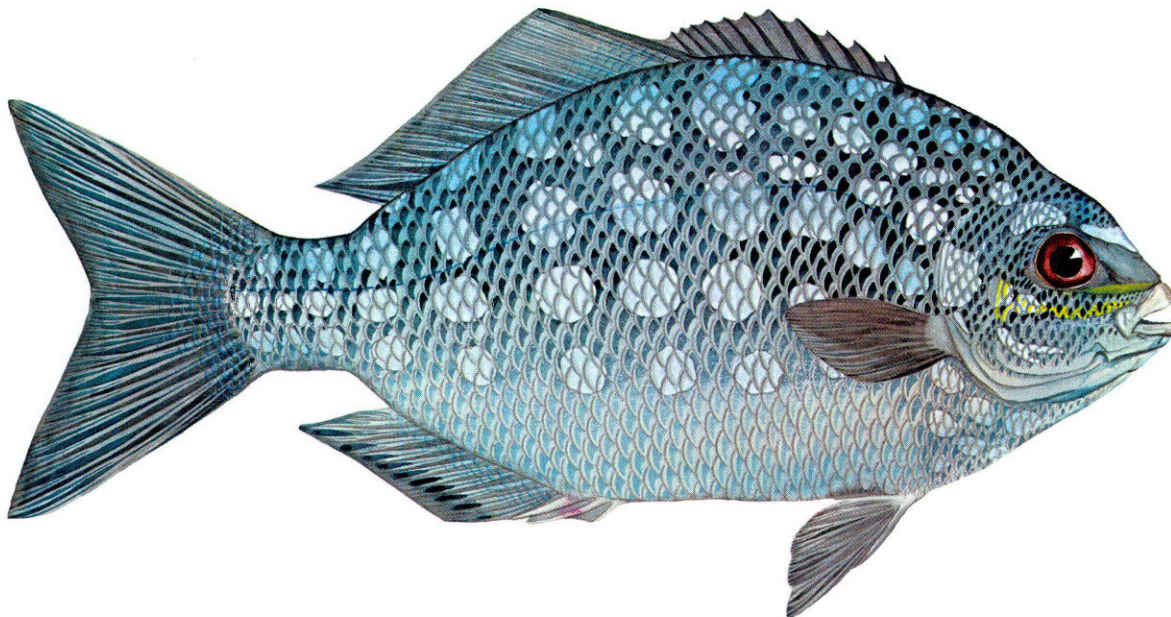
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TEXAS SALTWATER FISHES

Cownose rays, *Rhinoptera bonasus*, (top) range along the Atlantic coast from New England to the Gulf. They can be found in the bays and along the Gulf beaches, and in May are quite numerous in the Laguna Madre. However, the cownose is considered relatively harmless since its stinging barb is located so close to the base of its tail that little room for a thrusting motion is allowed.

They often travel in large schools, gliding along the bottom stirring up food with their pectoral fins. They feed on snails, clams, oysters, lobsters and crabs, crushing them with strong teeth.

This ray can grow to a width of seven feet and a weight of 100 pounds; however, average specimens are usually only two feet wide.

Commonly called the rudderfish by Texans, the Bermuda chub, *Kyphosus sectatrix*, (bottom) ranges from Cape Cod to Florida and the Gulf of Mexico.

Although the fish can attain a length of 30 inches and a weight of 20 pounds, in Texas waters these chubs are small with an average weight of one pound. They are usually found offshore around floating drifts where they swim in large schools. They feed on small fish, algae, marine worms, shrimp and decaying matter. Their small mouths and short, strong teeth can easily strip a baited hook, so small hooks and small pieces of cut bait may produce the best results. The flesh is edible, but some individual fish may have an undesirable flavor due to their feeding habits.

Artwork by Henry Compton.

