

Creatures from

by John R. Copeland

Since my view of water was shaped by “Creature from the Black Lagoon,” a 1950s movie about a humanoid amphibious fish found during a scientific expedition on the Amazon River, I grew up fearing creatures in nearby waters. Fortunately, my children are curious about things that live in water. A few years ago, at a lake near my hometown of Crozet, in Albemarle County, my kids brought me an unusually large snail they found in the lake. The critter we found that day was an exotic species known as the Japanese mysterysnail (*Bellamyja japonica*). This exotic snail, introduced to the United States through Asian food markets during the late 1800s, has spread widely throughout the U.S., resulting in impacts to native species. My experience that day and discussions with Virginia fisheries biologists led me to write an article on fish introductions to Virginia waters.

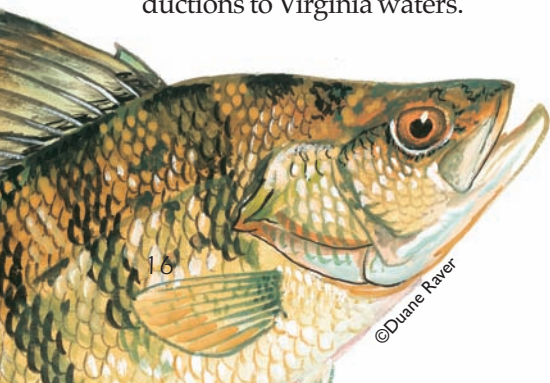


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Carp and yellow perch are two of the many fish species that were introduced into Virginia's waters whose numbers exploded in a short period of time.

According to the U. S. Geological Survey's 2004 Summary Report of Nonindigenous Aquatic Species, in U.S. Fish and Wildlife Service Region 5 (stretching from Virginia to Maine), Virginia has the most introduced fish species, with nearly 100. Within Region 5, stocking is the dominant pathway of fish introductions, accounting for nearly 50 percent of the species.

Bait release is the second most commonly used pathway and aquarium releases (or escapes from tropical fish farms) are third. This article will focus on the latter two pathways, because these are the fish introductions readers of this magazine can help prevent. According to a number of sources, the consequence of stocking non-native (exotic) fish or transplanting native fish to new areas are very similar. When introduced to new waters, these fish typically increase their population exponentially, resulting in the displacement of valuable na-



The Black Lagoon

The second in a series of articles that look at the introduction of exotic species and the threat they pose to Virginia's wildlife and natural resources.



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tive fishes. This article focuses on introducing exotic and native fishes to new locations.

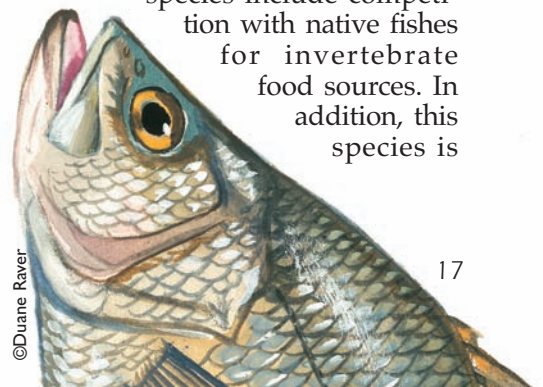
The common carp (*Cyprinus carpio*) is an exotic fish whose spread is facilitated through bait release. This native of Europe and Asia was widely introduced to the United States in the 1800s as a game and food fish. Now, varieties of common carp, known as leather carp, mirror carp, and Israeli carp, are often marketed as baitfish. Fisheries biologist Paul Bugas pointed to the baitfish trade as the introduction source for common

Carp have become one of the most notable of all exotic fish species introduced into the United States. Today they can be found in about every body of warm water in Virginia. An excellent adversary, carp will test your angling skills. Unfortunately, their presence can be very destructive to native fish populations and their habitat.

carp in Lake Moomaw during summer 1997. In that case, common carp were marketed to bait dealers under the trade name "copperside shiners." An unsuspecting angler dumped some of these fish into Lake

Moomaw. The result is an abundant population of carp in a reservoir that previously had none. A number of small reservoirs in Virginia do not contain common carp. Preventing the spread of this exotic to these lakes will ensure better fishing for the future. Common carp impact water clarity by stirring up sediment, using their preferred feeding mode of filtering bottom sediments. They also root out aquatic vegetation that serves as valuable habitat for fish and waterfowl. Anglers purchasing baitfish should be alert to introducing unwanted exotics like common carp to nearby waters that do not contain them.

Another widely transported exotic baitfish in the United States is the rudd (*Scardinius erythrophthalmus*), sometimes marketed as "rosy reds." This native of western Europe was first transported to the United States in the late 1800s or early 1900s. Since then, it has been widely introduced as a baitfish. Potential impacts of this species include competition with native fishes for invertebrate food sources. In addition, this species is



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able to feed on plants, an advantage that allows it to compete with native fish with less diverse diets. Assistant Director of Fisheries, Ron Southwick, intercepted a shipment of these exotics to a local baitfish dealer in southeastern Virginia a few years ago, thereby limiting an exotic fish introduction.

Native fish species can become a problem when introduced in new locations. The Department's Fisheries Division has sponsored research through Virginia Tech's Department of Fisheries and Wildlife Sciences on the potential impacts of a couple of native species that were transplanted to new waters in Virginia.

One species studied by Virginia Tech researcher Dr. John Ney and his graduate students Ron Small and Craig Bonds was the gizzard shad (*Dorosoma cepedianum*). This hardy species, a native to the Atlantic coast and Mississippi River system, was introduced to Claytor Lake by an angler during the late 1980s. Regarded by anglers as a desirable forage fish for toothy predators like striped bass, it causes problems for sunfish and bass in many southern reservoirs. In many of these reservoirs, gizzard shad reach high densities, causing a zooplankton population crash. Since young sunfish and bass depend on these zooplankton for food, their survival and growth are negatively impacted. This impact has not developed at Claytor Lake, due to the low



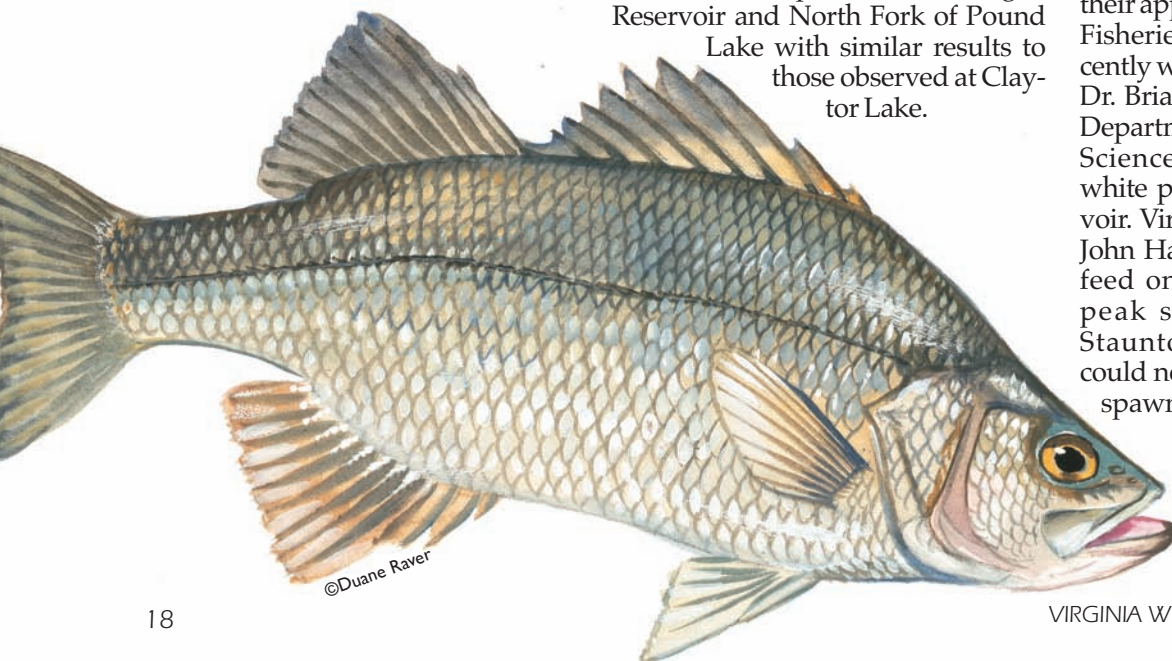
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population density gizzard shad achieve in this mountain reservoir. However, the potential for an impact exists, if any factors controlling gizzard shad populations in this lake change. One drawback of gizzard shad in Claytor Lake is that they grow so quickly striped bass do not typically eat them after they reach 8 inches in length, a feat achieved by these fish within one year! As a result, large gizzard shad swim freely in Claytor Lake, consuming food resources that could be used by other fishes. According to fisheries biologist Tom Hampton, gizzard shad have been transplanted to Flannagan Reservoir and North Fork of Pound

Lake with similar results to those observed at Claytor Lake.

Good fisheries management can be a delicate balancing act. Too many of one species of fish or not enough of another could make the difference between trophy fish or a stringer filled with stunted fish.

Kerr Reservoir (locally known as Bugg's Island Lake), in southside Virginia, is overrun by an introduced population of white perch (*Morone americana*). This species is native to estuaries of the eastern United States and Canada. When introduced to inland reservoirs, juvenile white perch impact resident fish species through direct competition for zooplankton and insects, and as they grow so does their appetite for fish eggs and larvae. Fisheries biologist Vic DiCenzo recently worked with Dr. John Ney and Dr. Brian Murphy in Virginia Tech's Department of Fisheries and Wildlife Sciences to study the impacts of white perch in this important reservoir. Virginia Tech graduate student, John Harris, found that white perch feed on striped bass eggs during peak spawning periods in the Staunton River, suggesting they could negatively impact striped bass spawning success. This finding is

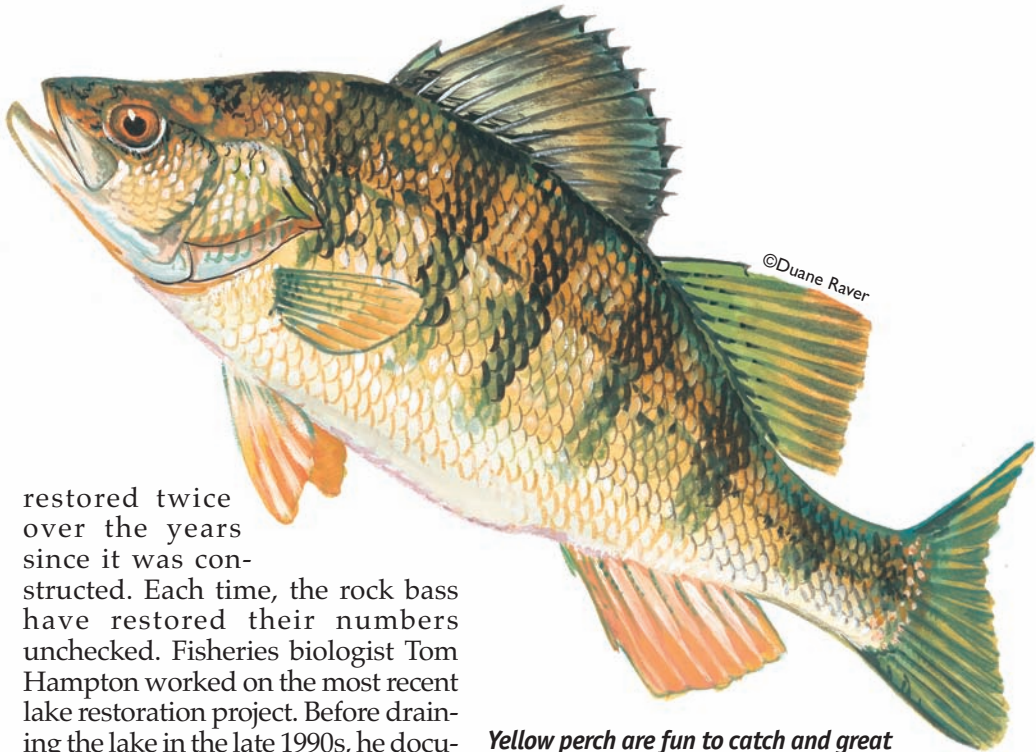


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White perch

significant, since Kerr Reservoir contains one of a handful of naturally reproducing striped bass populations in inland reservoirs in the country. Mr. Harris also documented significant dietary competition between juvenile and adult white perch and crappie, a finding that could result in future impacts to the leading crappie fishery in Virginia.

One compelling tale of a fish introduction is valuable to note. One of southwest Virginia's leading brook trout fisheries is a small reservoir near the top of the Department's Clinch Mountain Wildlife Management Area near Saltville. During the 1970s and 1980s, this fishery produced quality trout fishing opportunities in a unique setting for Virginia anglers. At some point during these years, a visiting angler decided they



Yellow perch are fun to catch and great eating, but when introduced improperly to a well managed body of water, such as Douthat Lake, could spell disaster.

restored twice over the years since it was constructed. Each time, the rock bass have restored their numbers unchecked. Fisheries biologist Tom Hampton worked on the most recent lake restoration project. Before draining the lake in the late 1990s, he documented rock bass that achieved the enviable size of 5 inches in length. The stunted rock bass in Laurel Bed Lake obviously failed to create the fishery desired by whoever put the rock bass in this lake. Each time Department fisheries biologists restore this lake fishery, it costs Virginia's anglers unnecessary expense. During the most recent restoration effort, Hampton successfully introduced smallmouth bass to the lake as a rock bass predator, a measure which is controlling their population growth.

Since the time I began writing this article in summer 2006, additional fish introductions have occurred in Virginia's inland waters. Paul Bugas

informed me that yellow perch (*Perca flavescens*) were recently introduced to Douthat Lake, a small impoundment of Wilson Creek in Douthat State Park, near the Bath and Alleghany County line. This heavily used lake is a popular trout fishery much of each year. However, during the season when trout stocking is suspended, this lake provides good fishing for largemouth bass, sunfish and black crappie. The yellow perch introduction is likely to change this fishery significantly.



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should help Department fisheries biologists diversify the Laurel Bed Lake fishery by stocking rock bass (*Ambloplites rupestris*) into this mountain reservoir. Rock bass, native to the northeast and upper Midwest areas of the United States, were widely introduced as a game fish during the late 1800s. When rock bass were introduced to Laurel Bed Lake, they multiplied unchecked by the presence of a suitable predator. As a result, this lake has been drained and

Many of the popular exotic baitfish species used throughout the United States and Virginia have now taken up permanent residence competing with other native fish.



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During annual fish sampling on Claytor Lake in October 2006, I collected three adult white perch, the same species introduced to Kerr Reservoir a few years ago. Although this is a low number of adults, it may indicate a larger population yet undetected in this 4,500-acre reservoir on the New River. This potential fish introduction in a reservoir that features good sunfish and bass fishing, as well as the best striped bass and hybrid striped bass fishing in southwestern Virginia, could have far-reaching impacts. Time and more studies by Department fisheries biologists will tell the tale of this fish introduction.

Lest you think Virginia's fish introduction tales are limited to the inland reservoirs that provide fishing recreation, I close with a story of an important Virginia river. Streams in the Tennessee River system in southwest Virginia are home to a number of unique, native endemic fish species. Endemic species are ones that only occur in limited areas or, in the case of fish, within specific river systems. One native endemic fish species in the upper Tennessee River system is the yellowfin madtom (*Noturus flavipinnis*). This smaller cousin of the large catfishes that roam Virginia waters is only known from a few streams in Southwest Virginia. One stream that was home to this species historically is the North Fork Holston River. While this unique catfish is not found in the North Fork today, our Department is working to restore unique species like this one in Virginia's inland waters. Future



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Anglers can play a big role in helping to manage Virginia's fisheries by not transporting fish to other lakes or rivers, not disposing of unwanted bait and aquarium fish, and reporting anything that looks like it came from the Black Lagoon.

restoration efforts for this species may be hindered by a baitfish introduction. At some point, anglers likely introduced another madtom species to this river, the margined madtom (*Noturus insignis*), since this native to the New River and eastern Virginia rivers is widely used as a baitfish for smallmouth bass. Since these two madtoms eat similar food items, successful reintroduction of yellowfin madtom to their historical habitat in this river may be hindered by competition with margined madtom.

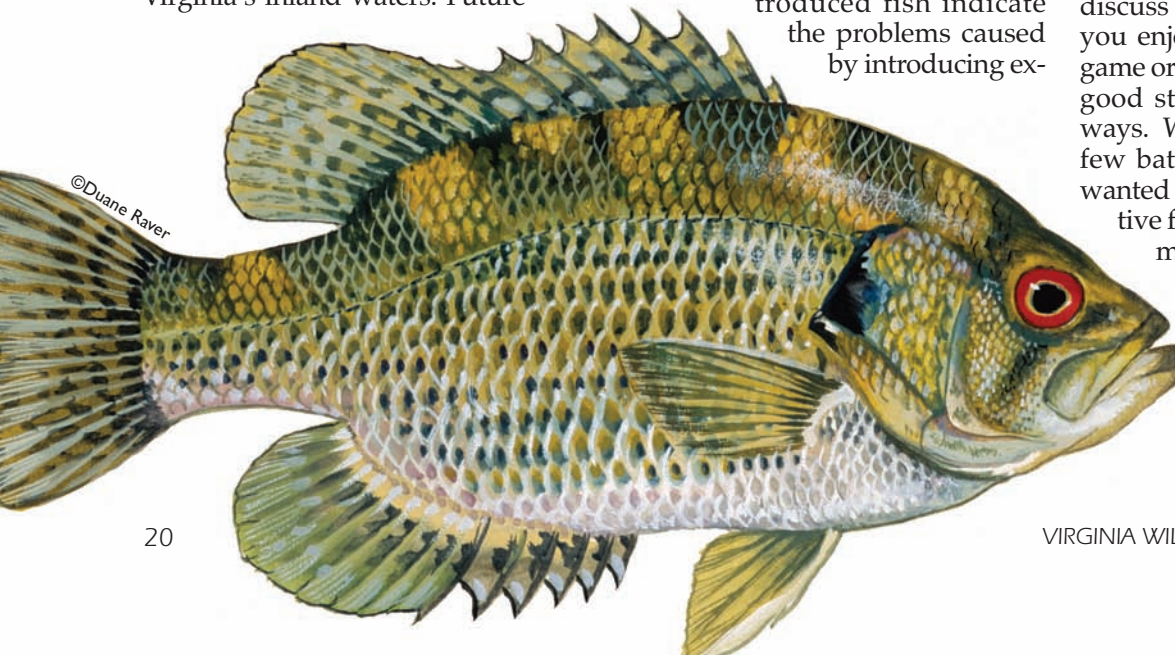
These tales of Virginia's introduced fish indicate the problems caused by introducing ex-

otic or transplanting native fish. When you head out to Virginia's waters, do not fear the *Creature from the Black Lagoon*, that fanciful tale of a humanoid fish. Fear only what havoc you wreak on your local water by introducing new species.

Take steps to reduce the impacts of species introductions. Report the sale of unusual bait fish to local Department personnel. When you use fish as bait, dispose of unused bait in a trash can, not in your local waterway. Don't dump unwanted aquarium species in local waters. Get educated about fish introductions. A good place to start is the U.S. Geological Survey's Nonindigenous Aquatic Species Web site at nas.er.usgs.gov. Contact your local Department fisheries or wildlife diversity biologist to discuss problem fish in the waters you enjoy. Don't transport favorite game or prey fish to new waters. Be a good steward of Virginia's waterways. With your help, we can win a few battles in the war against unwanted exotic and transplanted native fish. The fishery you save just may be your favorite one. □

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Rock Bass



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