

Konrad Schmidt's "The Tail End"

The Carp's Last Laugh

For more than two decades, I have collected, surveyed, and simply watched fish from Alaska to Florida. In all those years and all those places, I have had a few memorable experiences which really stand out. Some directly involve fish while others are encounters with wildlife and people.

Most exotics are incredibly adaptable organisms that usually out compete and displace native species with ease, and not only tolerate, but generally thrive under degraded conditions. In a somewhat perverse way, they are to be admired and respected for their resilience. Unfortunately, once established, they tend to stay.

Among exotics, the common carp (*Cyprinus carpio*) will probably always be North America's fish record holder for its "legendary feats" accomplished over the last century. With few exceptions, attempts to control its spread have been futile.

A few years back I gained an even greater level of appreciation for this almost invincible foe while assisting in fish surveys at Wisconsin's Horicon Marsh National Wildlife Refuge. In previous years the carp population had exploded, causing a major decline of the aquatic plants that several waterfowl species depended on for food. So a decision was made to treat the refuge with a fish toxicant called rotenone, which blocks the intake of oxygen through the gills, to eliminate the carp. A year later, in 1988, while setting large nets, everyone commented that the water hadn't been so clear in years. We also observed large, dense mats of submerged vegetation. And not a single carp. There were many whispers expressing hopes a complete kill had been achieved, but the carp had the last laugh.

When the final net was set and the boat planed out for the trip back to the landing, tens of thousands of four inch carp "porpoised" into the wake. I had never witnessed this behavior before, but this surface agitation continually triggered the same response. I also noticed something odd about these "Flying Walendas" even at thirty miles an hour. They were all mirror carp, which have a distinctive, but irregular scale pattern.

The mystery thickened the next day when we pulled the nets. There were only 100 or so adult carp, and they were all normal, with typical carp scales. Most of the carp, some 3,000 specimens, were young-of-the-year or "yoy"—a term fisheries biologists use to describe fish from the time of hatching to the first year of life. They all showed the irregular mirror scale pattern.

We scratched our collective heads. What was going on here?

The senior fisheries biologist soon replied with a plausible hypothesis: The few surviving adult carp carried a recessive (instead of dominant) gene for the mirror scales. That would explain why the mirror scales did not show in them, but did so in the offspring when the parents' recessive genes merged during fertilization. He further suggested that the carp which carry the recessive mirror gene for some unknown reason had a greater tolerance to rotenone than carp carrying only "normal" genes. Perhaps the recessive carriers had a different metabolism or special enzymes which allowed a small number to survive.

This is all very cerebral and academic, and will probably never be tried and tested. But I will always marvel at what appears to be the "human induced evolution" of a unique and resourceful survival skill.