

## KOI AND THE POND



By Karen Hemmeter

*Karen Hemmeter was a guide for both the Washington Park Arboretum and the Seattle Japanese Garden.*

*Pebbles shining clear*

*And clear six silent fishes*

*Deep autumn water*

-Yosa Buson

Flashing colors, hungry mouths, silent passage, and garden favorites. How delightful that "these 'underwater rainbows' were the least of my problems in the garden," according to retired senior gardener Jim Thomas.

Our koi are such low maintenance that they even feed themselves. Their diet is only supplemented for the joy and delight of garden guests; visiting children love to toss in the pellets so avariciously devoured. No wonder there is a fish storm at the moon-viewing platform when we arrive. The little cups of treasure are like manna since their main diet is found foraging on the silty bottom or sucking at weeds along the banks. We feed them for the glorious effect of that rushing red and orange. Koi are omnivores, eating their own eggs and fry, which they do not recognize as fish until grown to an inch or two. The adults feast on any suitable live critters they find that are small enough. They have no teeth in their mouths and cannot bite, although we discourage hand-feeding the koi for health and safety reasons (both people and the fish can pick up nasty bacteria from direct contact.) Because our fish are in a large natural pond they are able to prosper independently, finding an adequate food supply.

Besides being self-sufficient diners, koi, as cold water fish, are known as one of the world's hardiest fish. Able to tolerate a wide range of water temperatures, as long as it is usually below 60°F, in winter they can survive, apparently happily, under an ice-crusting surface. Their thick skin and scales reduce susceptibility to skin disease. The gardeners have never had to call the fish doctor.

What is this fish's story? Koi are carp (*Cyprinus carpio*), members of the Cyprinidae family and as such close relatives to *Carassius auratus*-the goldfish. Carp are larger, tamer and can be bred to produce more brilliant colors. Native to the Middle East and Eurasia, carp have long been a popular food fish and still are. They are the basis of gefilte fish, and are sought by our many eastern European immigrants, including the Russians and Ukrainians in our area. Because of their hardiness, koi have been introduced into waters all over the world and today the wild fish is considered a prize dinner. As a matter of fact, some people in Japan eat their tame koi if they grow too big for the pond!

Wild carp are not colorful. The patterns, vivid reds, orange, gold, on reflective skin are the result of the selective breeding which has proliferated in Japan since the early 1800s and in the western world, particularly Germany and the United States since World War II. They were most likely introduced into Japan and China 700-1000 years ago. There is no consensus on how the first color changes occurred. It was likely the result of mutations arising in the fish-as-food breeding process in China and Japan.

Hobbyists and breeders gave all of our thirty-five to forty fish to us. We have currently have a self-sustaining population and are not accepting any new donations of fish. Our fish are not show quality. They are pond quality. Pretty to look at, but not valuable. What does a show koi look like? It would be judged on three main categories: first, ideal body shape and proportion; second, purity of color-i.e., a red splotch must be all red, not marred with a spot of white; and third, interesting pattern with well-marked edges.

About color and pattern: Find one of our fish with the large red splotch on top of the head and no other red. This pattern is called tancho, referring to a Japanese crane with a cap of red feathers. Or try to identify the all white koi who appears to be our biggest. The various colors and patterns, and sometime reflective or mirror-like appearance, are what make koi such an interesting and captivating industry. The color comes not from scales, which are transparent, but from the underlying layer of skin whose cells contain various chemicals producing the color variations. Some koi have a reflective or a mirror-like look, which comes from a layer of reflective skin cells not always present or present only on certain parts of a particular fish. Koi breeders can manipulate the likelihood of the fry's outcome through selective breeding under controlled circumstances.

Do the colors and patterns differ between male and female? They do not. The easiest identification is made during breeding season when the female is much plumper. Spawning is a springtime passion. What better time to lay 20,000 to 40,000 eggs? In our pond there is much thrashing about as the males ram and knock a female fat with eggs against the rocks and pond edge, causing them to burst out of her body. The male then fertilizes the prize. Many of the eggs will be infertile, but those that are not will hatch within a week. The fry are small at this point, growing, if lucky, to four inches within the first year. Most of the babies are consumed by pond predators, including the adult koi who display no parental interest and indeed, as stated before, do not even recognize them as fellow fish until a few inches long. In our pond apparently none of the fry survive into adulthood because our population is stable.

In addition to dramatic color and ease of maintenance, what else makes koi such a popular garden addition? Age, size, and personality. The average koi lives about twenty years, and longer is not unusual. Some have been reported to be 100 years old and rumor has it that some fantasy fish have made it to over 200 years of age! Maybe. They can reach three feet in length although eighteen inches is average. They do not fight among themselves and can be tamed to eat out of one's hand. If diseases, starvation, snow, and ice will not diminish our adult fleet, what will?

*The sea darkening*

*Oh voices of the wild ducks*

*crying, whirling, white*

-Basho

Have you been lucky enough to sight the great blue heron perched on the rocky peninsula? Other fish eaters visiting our pond include kingfishers, hooded mergansers, bitterns, and infrequent cormorants or bald eagles. Most of our adults are too big to be snatched up by these flying anglers, while the growing fry are much sought after, and frequently eaten. And, the occasional raccoon will still swipe a specimen if he can.

When the pond is icy, how do the koi survive? Even though the depth is about four feet, there are a few big holes ten to twelve feet deep in which the fish burrow into the silty bottom. There is one off the moon-viewing platform and another north of Turtle Island. If we were in the garden on an icy winter day, we might see the fish schooled up under the ice as though a frozen rainbow.

Who else shares this pond habitat?

*Old dark sleepy pool*

*Quick unexpected frog*

*Goes plop! watersplash!*

-Basho

*Military line*

*Of basking sun worshippers*

*The turtle torpor*

-Karen

We have several red-eared slider turtles; frogs silently balanced on lily pads; crayfish and summer tadpoles. The frogs and turtles will eat the baby koi. There seem to be plenty to go around.