



A flash of silver!

AT THE END OF A RAINBOW

Halfway through an ambitious five-year plan, fisheries staff are already meeting the mark: More rainbow trout are returning as wild, wily steelhead.

Michael J. Hansen and Kendra M. Nelson

Good sport and fresh water appeal to Wisconsin anglers and non-anglers alike. Maybe that's why the Great Lakes rainbow trout, *Oncorhynchus mykiss*, enjoys such popularity here. Whether it's the lure of going fishing for this great fighting fish or just the satisfaction of knowing that in environmentally troubled times "there's as good fish in the sea as ever came

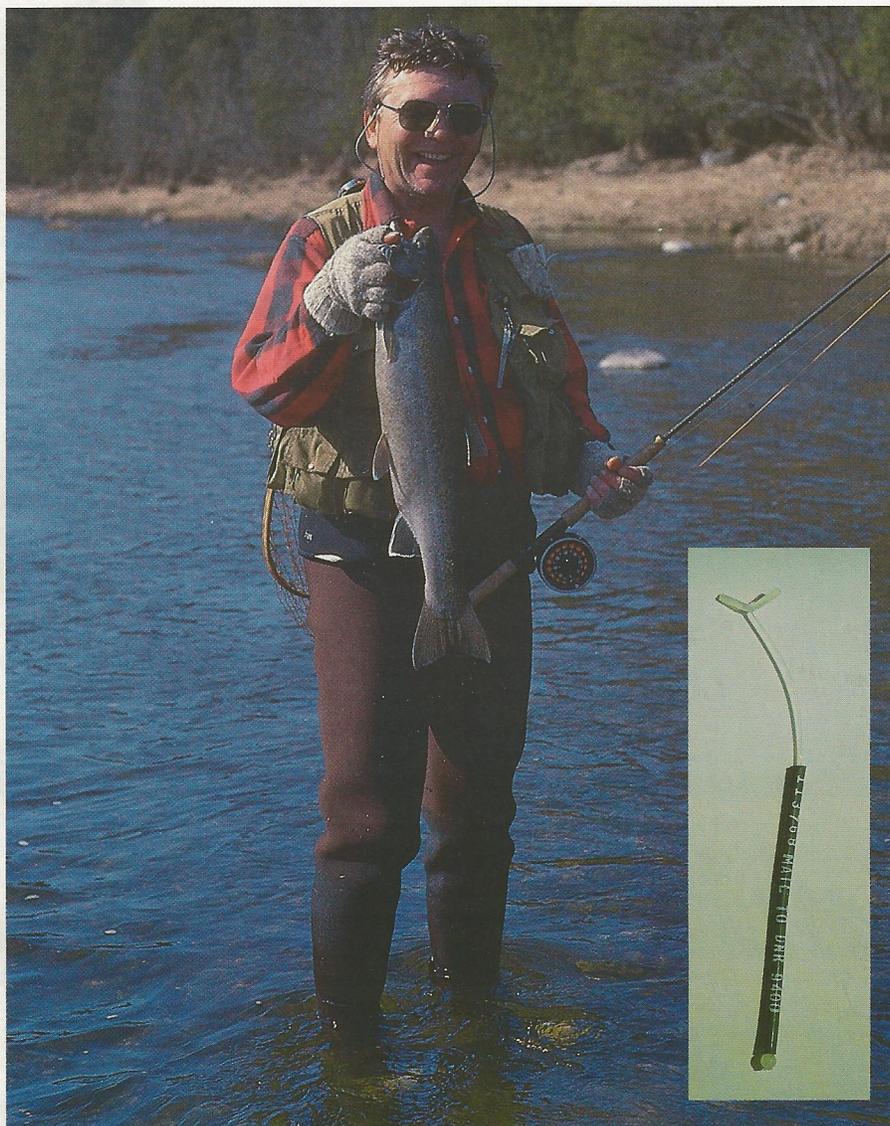
out of it" — the Lake Michigan steelhead shines. In fact, the silver trout is in BIG demand — and the Department of Natural Resources has BIG supply plans.

The steelhead is a rainbow trout that has adapted for life in saltwater, left the freshwater stream where it grew, migrated to the "sea" (either the ocean or the Great Lakes) and returned after several years to spawn in

its home stream.

John Beth, a state angler dedicated to fly-fishing the Great Lakes tributaries for trout and salmon, describes the lure of chasing steelhead:

They're sheeny, spooky and sneaky — so elusive, a flash of silver, quicksilver. They have a mystique and pose a real challenge, but an attainable one. No matter how long it takes, catching one more



John Beth

Steelheader Dan Zavadsky proudly displays a tagged fish he caught April 15th on the upper Kewaunee River. This fish, number 113768, was a Chambers Creek strain steelhead stocked in spring 1987 in the Kewaunee River. When stocked, these steelhead weighed an average of 1¼ ounces and were 6½ inches long. On April 6, 1989, about two years later, the fish returned, was netted by a DNR survey crew, tagged and released. It weighed about six pounds and was 25.3 inches long when recaptured. Anglers can help DNR fisheries managers learn how salmon survive and thrive in the Great Lakes by returning tags and describing the fish's length, weight and location when caught. Each tag provides a mailing address.

than repays the wait. How they leap! That fight for freedom is unique. It represents all that's wild.

Steelhead arrived in Lake Michigan more than a century ago but were not stocked systematically until 1963. As part of efforts to rehabilitate the Great Lakes, fisheries managers introduced predatory fish to eat growing alewife populations. The steelhead, a flashy target for anglers, received a sustained welcome.

By 1986, DNR's Bureau of Fisher-

ies Management had stocked nearly 13 million steelhead in Lake Michigan. Anglers thrilled to a 1977 peak catch topping 94,000. Even during these "good years" anglers spent about 40 hours fishing for every steelhead they reeled in. Between 1978-81, fishing slowed down, and the average annual catch dropped to about 34,000; the 1982-85 average dropped further, to 25,000 — and catching one steelhead required about 150 hours!

The poorer catch frustrated an-

glers and fisheries managers alike. DNR fisheries staff pooled a team of field and hatchery biologists to form a plan for doubling the steelhead catch from 25,000 to 50,000 per year by 1991.

The resulting Lake Michigan Steelhead Fishery Management Plan is a blueprint for rebuilding steelhead fishing opportunities. Increasing the quality and quantity of steelhead available for anglers called for changing stocking techniques and developing better fish strains for stocking in the Great Lakes.

Fisheries managers work with strains of fish as dairy farmers work with breeds of cows — to improve the overall quality of the herd by trying different genetic strains and by measuring performance. Shasta steelhead stocked in Lake Michigan in the early 1980s returned so poorly that they were not often caught by anglers. Under the steelhead plan, at least 10 percent of stocked fish must be caught by anglers, so Shasta trout were culled from the stocking program. Wisconsin fisheries managers are evaluating three steelhead strains for Lake Michigan that have survived well elsewhere — Skamania, Chambers Creek and Ganaraska River.

Even working with nature's best, however, fisheries managers must provide careful nurturing to foster a productive fishery. For Lake Michigan steelhead, successful smoltification is the key.

Just before smolting, a steelhead gets its bearings, imprinting on a "home" stream. During its smolt, the steelhead undergoes changes that prepare it for life at sea. Then, the fish migrates into the Great Lakes, only returning to its home stream on spawning runs.

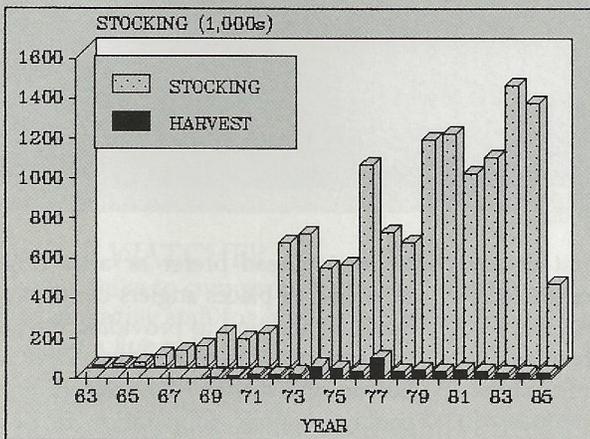
Smolting occurs when rainbows are 7.5 inches long. It's an art for hatchery workers to raise rainbows to the right size at the right time for stocking. Further, to produce an annual catch of 50,000 steelhead (assuming 10 percent are caught), 500,000 juvenile steelhead must be stocked just before smolting time in just the right places.



Jim McEvoy



DNR Fisheries Management

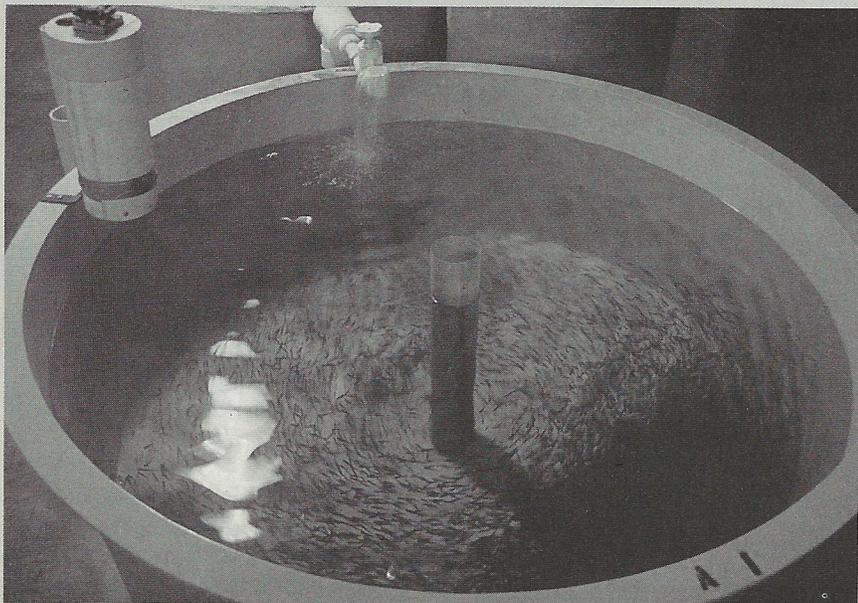


DNR Fisheries Management

Rainbow trout strains currently used in the steelhead project

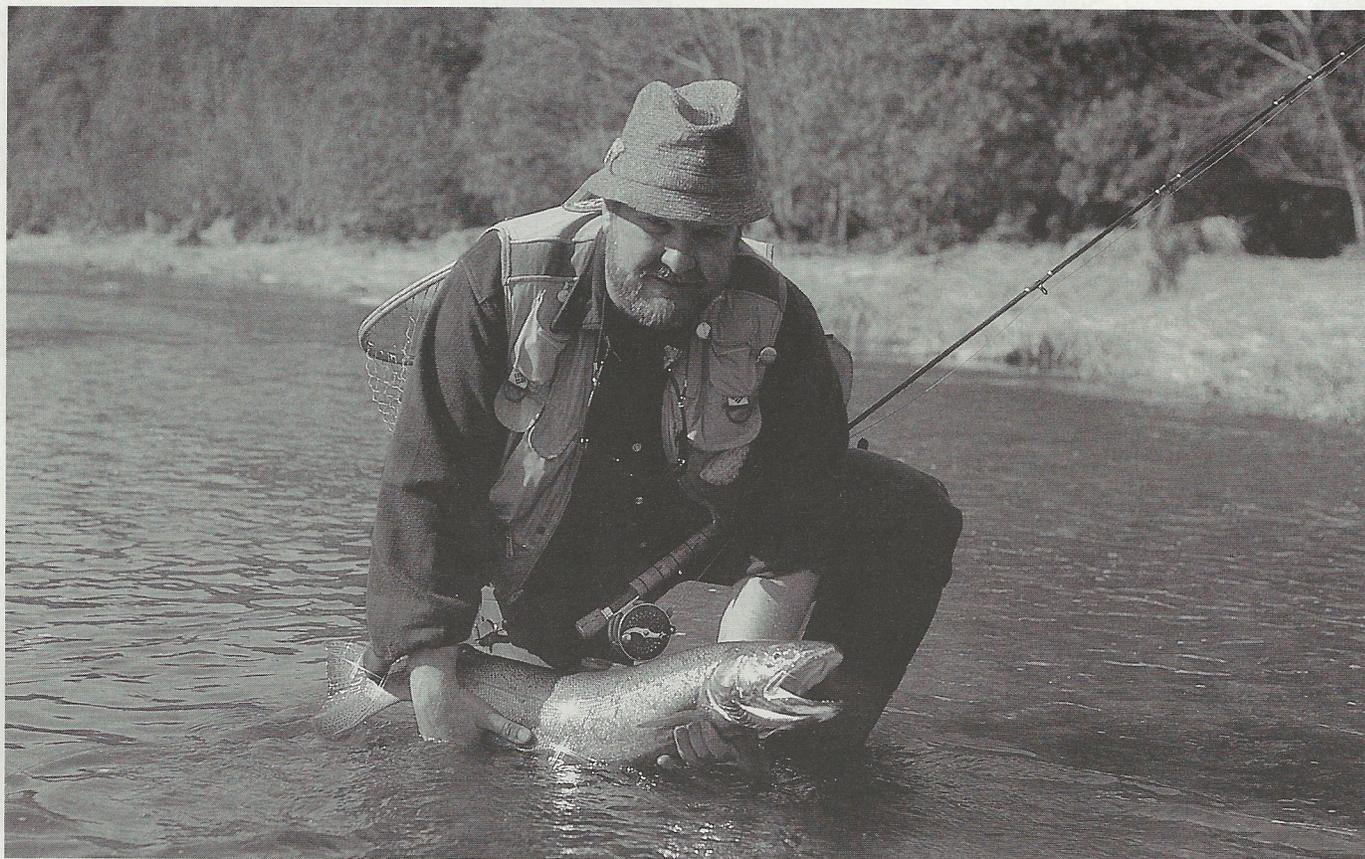
STRAIN AND POINT OF ORIGIN	SIZE	RETURN TIME	PEAK SPAWNING TIME
Skamania <i>(Washougal River, Washington State)</i>	28", eight pounds (four-year-old) 32", 12 pounds (five-year-old)	July through August	January through February
Chambers Creek <i>(South Tacoma, Washington State)</i>	26.5", six pounds (four-year-old) 30", 9.6 pounds (five-year-old)	October through mid-March	March
Ganaraska River, Ontario <i>(West Coast origin uncertain)</i>	21.25", 3.3 pounds (five-year-old)	late March through April	late April

DNR Fisheries Management



DNR Fisheries Management

- 
 Prime stocking waters identified in the steelhead plan.
- 
 Fisheries crews trap steelhead for transport to the Kettle Moraine State Fish Hatchery for spawning later. Strong homing instincts ensure the return of adult steelhead to urban areas like the Root River in Racine.
- 
 Despite the fact that DNR managers stocked millions of rainbows from 1963 through 1985, the return to anglers' creels was poor. New stocking techniques with stronger rainbow trout strains aim to produce at least a 10 percent catch.
- 
 Vital statistics of the trout selected to rebuild the steelhead program.
- 
 Hatchery workers at the Kettle Moraine State Fish Hatchery in Sheboygan County raise wilder, healthier steelhead in circular tanks equipped with automated feeders to minimize human contact.



Courtesy of John Beth

Inveterate trout angler John Beth releases a silvery steelhead to flash and fight another day.

For the fish to survive, stocking sites should match the specific requirements of each steelhead strain. For example, summer-returning Skamania and winter-returning Chambers Creek steelhead overwinter in home streams before spawning, whereas the spring-returning Ganaraska River strain overwinters in the lake.

Streams with sufficient overwintering depth, flow, and other favorable characteristics to support Skamania and Chambers Creek steelhead are, in order of stocking priority: the Kewaunee, Root, Oconto, Manitowoc, Menominee, Milwaukee, East Twin, Peshtigo, Ahnapee, and West Twin rivers — also the Sheboygan when PCB levels are reduced. Streams suitable for the Ganaraska River strain are, again in order of stocking priority: the Pigeon River; Stony, Oak, Heins, and Sauk creeks; Little River; Whitefish Bay Creek; Pike River; Fischer, Hibbards, Silver, and Riebolts creeks; and the Menominee and Kinnickinnic rivers.

Satisfactory stocking sites are available, but getting the right-sized steelhead there at the right time requires the right stuff at fish hatcheries: facilities that can hold larger fish at reduced densities for longer periods of time in warmer water and a well-trained staff. Steelhead are wild, finicky fish that do not adapt to humans; instead, fisheries managers must adapt to them.

To accommodate steelhead, the hatchery system needs to make substitutions, modifications and expansions. For instance, steelhead rather than other trout species or rainbow strains can be raised in existing facilities. To raise wilder strains of steelhead, hatchery workers are rearing fish in lower densities and are feeding the fish using automated equipment to minimize human contact. Building additional facilities, including more raceways, would also bolster steelhead propagation.

The changes do not end there. Improving anglers' catches means either getting anglers better access to loca-

tions steelhead prefer or attracting steelhead to places anglers can easily reach. In addition to providing maps, parking lots and boat ramps, DNR's Bureau of Fisheries Management encourages public cooperation to develop and maintain good habitat that will sustain stocked, imprinting, smolting, returning and even naturally reproducing steelhead.

So far, so good! Since 1986 when the plan began, the catch has been going up. Just two years into the effort, the catch had exceeded the five-year goal. Total catch figures for last year haven't been fully calculated, but fisheries managers are encouraged as the upward trend continues. Angler enthusiasm for the wilder rainbow strains is rising and the environment that sustains these fish is better for all of us. ■

Michael J. Hansen, DNR's Great Lakes sport fisheries specialist, coordinated the steelhead fishery plan. Kendra M. Nelson is a publications editor with DNR's fisheries management program.