97-9 Fish Stocking Activities, Department of Natural Resources

Summary

The Department of Natural Resources' fisheries management program is responsible for protecting and developing fish populations and aquatic resources in Wisconsin's lakes, streams, and rivers, as well as portions of the Great Lakes and Mississippi River. Stocking state waters with fish raised in hatcheries has traditionally been the Department's single largest fisheries management activity. In fiscal year (FY) 1995-96, it spent $6.4 million of $18.2 million in fisheries management program expenditures for fish propagation and stocking activities. The remainder of the $18.2 million was spent on habitat development, research and lake surveys, improving boat access to lakes, and other related activities.

Stocking activity is recorded by calendar year: in 1995, the Department stocked a total of 30.0 million fish of varying sizes in 1,062 bodies of water. This was a reduction of 58.9 percent from the 73.0 million fish stocked in 1986. The decline in the Department's stocking activity has been most pronounced in the stocking of fry, which are recently hatched fish that have not started feeding on their own. The species most affected by decreased fry stocking has been the state's most popular game fish, the walleye, for which total stocking decreased 62.8 percent between 1986 and 1995. Changes in the stocking of fingerlings and yearlings, which are larger fish that feed independently, have been more modest. For larger cold-water fish, such as trout and salmon, stocking levels decreased from 7.0 million in 1986 to 6.7 million in 1995. For larger warm-water fish, primarily walleye, northern pike, and muskellunge, stocking levels decreased from 3.7 million to 3.2 million over the same period, although the 1995 stocking level was approximately one-half the 1992 peak of 6.3 million. In 1997, stocking levels for larger warm-water fish are projected to decrease 4.8 percent from 1995 levels. For all sizes of fish, stocking levels are projected to decrease 26.4 percent.

In this report, we compare 1997 production quotas with 1995 actual stocking. While preliminary 1996 stocking information the Department made available after the completion of the audit fieldwork suggests an increase over 1995 stocking activity, this preliminary information differed widely from production quotas the Department had established for 1996 and was internally inconsistent with staff reports of stocking reductions resulting from budget constraints. Because, the preliminary 1996 information could contain significant errors, it has not been used in this report.

Concerns have been raised about the Department's recent and proposed stocking policies, especially by individuals and businesses with an interest in recreational fishing. Some question whether the Department can continue to provide high-quality fishing opportunities while reducing the number of fish it stocks. The United States Fish and Wildlife Service has estimated that fishing trip--related expenditures in Wisconsin were $475 million in 1991. Business owners fear that if fishing opportunities decline, either through fewer fish being caught or through significant decreases in daily bag limits, fewer people may be interested in fishing and vacationing in Wisconsin. A 1995 survey by the Department of approximately 2,000 Wisconsin fishing license holders indicated a belief that fishing quality for walleye, the most popular game fish, has declined. However, while the potential does exist for negative economic effects if fishing quality declines, there are few data available to suggest that tourism has been adversely affected.

A second potential effect of declining fishing opportunities is a decrease in fishing license sales, and a corresponding reduction in revenue from those sales to fund department activities. Our review indicates that the number of fishing licenses and stamps sold has decreased 11.4 percent between FY 1985-86 and FY 1995-96. Declines occurred both in resident and non-resident license sales. However, these declines could be influenced by societal factors, such as changes in leisure time activities, in addition to, or independent of, any changes in perceptions of the quality of fishing opportunities.

Staff in the Department believe that even though stocking is declining in significance as a fish management technique, high-quality fishing opportunities currently exist and can be maintained in the future by increasing emphasis on other management techniques, including more effective stocking practices, improved habitat to encourage natural

reproduction, increased use of regulations restricting bag limits and size of fish taken, and increased efforts to encourage catch-and-release fishing. According to staff in the Department, research has indicated that some past stocking practices were relatively inefficient. Therefore, they argue that reductions in the stocking of fry, which have very low survival rates, may not have significant effects on the overall population of mature fish. Similarly, research on walleye has suggested that for some bodies of water, stocking every two years may provide results similar to annual stocking. Also, staff indicate that improvements to habitat, such as improvements to water quality and spawning beds, encourage natural reproduction, thereby reducing the need for stocking.

In addition to meeting angler demand by supplying fish through stocking and improving natural reproduction, the Department also limits angler pressure through regulation of the number and size of fish taken. Department staff believe regulations can be effective in controlling the number of fish taken from a body of water, ensuring good-quality fishing opportunities for a larger number of anglers. Finally, department staff believe changing attitudes among anglers will help ensure high-quality fishing opportunities without increased stocking as more anglers adopt catch-and-release practices instead of taking home fish.

While the Department's goal is to provide high-quality fishing opportunities for anglers, its constituency is very broad, and perceptions of what constitutes a high-quality fishing experience may vary. While some anglers may support restrictive bag limits to allow more anglers to catch some, though fewer, fish, others believe there should be less regulation and more stocking. Similarly, while some anglers enjoy catch-and-release fishing, others enjoy keeping their fish. The Department's 1995 survey found that 33 percent of anglers believed that between 25 and 75 percent of walleye waters should be managed for keep and eat fishing, and 19 percent of anglers believed more than 75 percent of walleye waters should be managed for keep and eat fishing. The 1995 survey also identified a number of concerns relating to walleye angling, including a belief that fishing quality had declined over time.

While the Department has reduced stocking primarily for policy reasons, some smaller reductions have also occurred in recent years because of fiscal constraints. Reductions to proposed budgets resulted in a production reduction of approximately 400,750 trout, or approximately 12.6 percent of the inland trout stocked in 1996 and 1997.

Independent of the Department's policies of decreasing emphasis on stocking, we noted several areas in which the Department could improve its management of fish propagation and stocking activities. First, the Department has indicated it is moving toward raising fish to a larger size before stocking, to improve survivability. In addition, the Department is planning to raise more trout with wild characteristics, rather than domesticated hatchery-raised trout, also to improve survivability. However, while research indicates survival rates are improved for larger fish of all species and for trout with wild characteristics, the Department has made relatively few efforts to determine the cost of stocking such fish within current budgets. For example, "wild trout" must be raised at much lower densities than domesticated trout, making them more costly to raise. In addition, our analysis of current hatchery production costs for walleye, the most commonly stocked fish, indicates the cost of 1,000 fry is $.56, the cost of a single large fingerling is $.18, and the cost of one extended-growth fingerling is $4.47. Consequently, if walleye fry hypothetically had only a 1.0 percent survival rate in a particular lake, and large fingerlings had a 33.0 percent survival rate, it would still be considerably more cost-effective to stock fry rather than fingerlings in that body of water. Between fry and extended-growth fingerlings, the cost differential is even more extreme: the cost of a single extended-growth fingerling, which is a fish less than one year old that has begun to feed on forage minnows, is approximately equal to the cost of 8,000 fry. Therefore, we include a recommendation that the Department consider production costs as well as survival rates when making stocking decisions.

Second, the Department has not made comprehensive long-range stocking plans that would allow it to use existing hatchery capacity and develop future facilities plans more effectively. While the total production capacity of the Department's facilities is difficult to determine precisely because capacity can change based on the size and species of fish raised, reasonable estimates can be made based on past production levels. In 1992, which was the peak production year for large warm-water fish since 1986, the Department produced 28.7 million fry and 6.3 million fingerlings and larger fish. Since that time, major renovations at two hatcheries have added additional capacity for 2.7 million more fingerlings and larger warm-water fish, primarily walleye and muskellunge. However, the 1997 production quota for warm-water fish is 12.6 million fry and 3.0 million fingerlings, suggesting nearly 60 percent unused capacity at the warm-water facilities.

At cold-water facilities, the most recent peak production year for larger fish since 1986 was 1990, when the Department produced 7.3 million fingerlings and larger fish. Since that time, renovations have increased capacity at the Bayfield Hatchery, one of the largest cold-water facilities, by 33 percent, and additional renovations are being considered for two other large facilities. However, the 1997 quota for larger cold-water fish is 6.2 million, or approximately 15.1 percent less than the number produced in 1990, excluding added capacity since 1990.

Currently, it is difficult to predict whether stocking will increase or decrease in the future. For example, new stocking guidelines for walleye, the most widely stocked game fish, suggest that stocking may increase on some lakes because previous artificial per water stocking limits have been removed. However, walleye stocking may decrease on other lakes because the types of lakes which will be allowed to be stocked have been further restricted, as has been the stocking of fry. Furthermore, although the Department's final report on genetic differences among walleye populations has yet to be completed, new guidelines impose additional genetic-based stocking restrictions. Consequently, we have included recommendations for the Department to establish comprehensive long-range stocking goals and to use those goals to evaluate the full extent of unused capacity and overall facility needs, and to determine whether any hatcheries should be closed.

In response to the Department's statements that stocking has been reduced because of budget constraints, private fish hatcheries have questioned the efficiency of department-run facilities and suggested the private sector could help meet the State's stocking needs. Since 1986, the Department has been guided by two major policy documents--Fish Wisconsin 2000 and the State Aquaculture Plan--which direct the Department to improve its relationship with private hatcheries and to increase the private sector's role in state stocking activities. Staff have been reluctant to purchase large numbers of privately raised fish for stocking because they believe it would be more expensive than rearing the fish in department hatcheries. However, the Department traditionally has purchased a small number of privately raised fish each year, primarily to feed growing game fish. The value of contracts for privately raised fish has fluctuated, but it generally decreased from $96,816 in 1993 to $69,053 in 1996.

The Department's efforts to improve relations with the aquaculture industry have focused primarily on improving communications. Starting in 1996, it has held a series of workshops to identify concerns relating to fisheries management policies and its regulatory actions toward private hatcheries. However, it is not clear whether workshops will be effective for developing strategies to address these concerns.

We have identified a number of strategies the Department could pursue to increase private hatchery involvement in stocking activities. For example, it could enter into contracts to provide private fish hatcheries with eggs, with the agreement that it would receive a certain percentage of fry or fingerlings for state stocking, while the remaining fish could be sold by the private hatchery to lake associations or sporting clubs for private stocking. Such an arrangement could increase the stock of fish available to the Department at relatively little cost. The Department could also purchase privately raised fish for stocking in waters where genetic qualities and long-term survival concerns are minimal. For example, private fish hatcheries could provide trout for certain waters where the Department expects most fish will be caught within a relatively short period of time.

To evaluate private contract bids to provide fish for stocking, the Department will need first to determine its own cost of raising fish. We developed cost estimates for all species of fish raised by the Department's 14 primary fish propagation facilities in FY 1995-96; however, an ongoing analysis of production costs could track individual fish species as well as more discrete size distinctions. In addition, such a system could enable the Department to improve hatchery efficiency monitoring, track indirect production costs, and make decisions about which species should be raised in which hatcheries.

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