



# MAINE DEPARTMENT OF INLAND FISHERIES & WILDLIFE FISHERIES & HATCHERIES ANNUAL REPORT

March 2004

[www.mefishwildlife.com](http://www.mefishwildlife.com)

*This newsletter is intended to provide readers with a glimpse into some of the many projects that our Fishery and Hatchery staff are involved with. Contained in this report, are highlights from each of the seven Fishery Regions, our Fishery Research Unit in Bangor, and the Hatchery Section. We hope it gives you better insight into what we do, and we welcome your comments.*



*John Patriquin snapped this photo of a beautiful brook trout last October.*

## A Growing Threat

Several species of fish not native to Maine, including black bass (largemouth + smallmouths), and more recently black crappie and northern pike are being illegally stocked at an alarming rate. For example, between 1980 and 2000, bass became established in 196 new waters, an increase of about 47%. This expansion resulted almost entirely from illegal stockings. Over a 15 year period between 1985 and 2000 the number of new black crappie populations increased by 500% (from 13 to 64). Over a 4-year period between 2001 and 2004, the number of documented new northern pike populations has increased by 300% (from 9 to 30). Illegal stocking of native species like golden shiners, yellow perch, white perch and cusk are also just as widespread. The table on the back page lists some illegal introductions that were discovered in 2003.

Native, self-sustaining populations of landlocked salmon, lake trout, and brook trout, which are uncommon in the rest of the U.S., are an abundant natural resource in Maine. These unique fisheries provide highly desirable recreational angling opportunities, which are important to the economy of Maine.

Unfortunately, the illegal stocking of private and public waters represents one of the largest threats facing fisheries managers and traditional anglers. Without the support and cooperation of the angling public in addressing this invasion many of our popular stocking and management programs will be destroyed. Furthermore, while the added fishing diversity offered by new species may be enjoyed by some, it usually exists at the expense of established sport fish populations.

Unauthorized stockings of both native and nonnative species are permanently altering the ecology of our waters and the capacity to sustain traditional fisheries. New introductions compete with existing sport fisheries for limited food and space, and may depress or altogether displace desirable native coldwater fisheries. In fact, coldwater fisheries are at greatest risk from illegal fish stockings. One example that has recently received media attention is the illegal introduction of smallmouth bass into the Umbagog Lake watershed, which includes the Rapid River. The Rapid River supports an excellent wild brook trout fishery that is jeopardized by the presence of smallmouth bass, which prey on trout and compete with them for food and space.

Responding to the onslaught of illegal introductions has also drained and diverted limited Departmental resources away from popular proactive fisheries management programs. Unfortunately, once established there is usually little that can actually be done to compensate for the effects of new introductions.

In response to this growing threat, new emergency legislation was recently adopted increasing penalties up to \$10,000 (including suspension of Department-issued licenses) for stocking without a permit, or even for those found in possession of live fish (excluding baitfish) without necessary permits. Operation Game Thief (1-800-253-7887) is also offering a \$2,000 reward for information leading to the apprehension of anyone responsible for the illegal introduction of fish into any Maine water. Furthermore, fisheries management policies were revised to preclude active



**Trouble by  
the bucketful.**  
Please help fight illegal stocking.

**1-800-ALERT-US**

**There is a \$2000.00 reward  
for information leading to a  
conviction.**



*cont'd on back cover*

# Maine's Experimental Rainbow Trout Stocking Program

Maine stocked rainbows for about a decade beginning in the late 1930's and then again in the late 1960's, but both programs were eventually discontinued. In the fall of 1997, the Fisheries and Hatcheries Division formed a committee to investigate the possibility of resurrecting a rainbow trout stocking program. The committee discussed the pros and cons, and overall our investigation indicated rainbow trout could potentially provide improved fishing opportunities for Maine's anglers. It was decided to begin with a limited stocking of 10 to 12 waters in southern Maine that would be thoroughly evaluated over a 5-6 year period. Beginning in 2001, approximately 10,000 rainbows were stocked into Maine waters in conjunction with equal numbers of either brook or brown trout to compare their relative performance (Table 1).

Table 1. Rainbow Trout Study Waters

<b>Browns &amp; Rainbows</b>
Upper Androscoggin R. (Bethel/Gilead)
Kennebec R. (below Shawmut)
Little Androscoggin R. (Oxford-Auburn)
Swift R. (below Coos Canyon)
Crystal L (Gray)
Middle/Upper Range P. (Poland)
Megunticook L. (Camden)
Norton Pond (Lincolntonville)
L. George (Canaan)

<b>Brookies &amp; Rainbows</b>
Lily Pond (New Gloucester)
Long P. (Denmark)
Jaybird P. (Hiram)
Overset P. (Greenwood)

So, what are the benefits of rainbows and how are they expected to improve fishing opportunity? Brown trout are currently used where other coldwater species have not succeeded in producing a satisfactory fishery due to a variety of limiting factors (i.e. marginal water quality, heavy competition, lack of forage). Brown trout often produce quality fisheries in the face of these conditions, but they tend to be more difficult to catch for most anglers. Rainbows, although not quite as hardy as brown trout, are expected to provide better catch rates and angler returns. In addition, we suspect rainbows might be caught more readily than brown trout during mid-day hours.

In southern Maine, we generally see little growth and holdover (to older ages) with brookies, and fishing opportunities can be limited from mid-summer through fall. The reason for this is that many of our waters have marginal summer water quality and heavy competition from minnows and other fish species. Rainbows are a little hardier when it comes to water quality and competition. As a result, rainbows are expected to provide fishing longer into the season (i.e. late summer and fall) and more holdover potential than brookies. Rainbows, like browns, also tend to be more opportunistic feeders than brookies. If rainbows utilize more of the food

chain including fish species, they may exhibit greater growth potential than brook trout.

Formal evaluations for the project began in the winter of 2002, and we have now collected two full years of data. Although this data has not been completely compiled and analyzed, we are beginning to see some definite patterns and trends. In general, we are seeing that rainbows are providing better catch rates (2-20x higher) than browns. At this point, mid-day catchability information for rainbows vs. browns is highly variable and inconclusive. Rainbow trout growth appears to be similar to browns in most waters, although Lake George has managed to produce some 3-year old bows in the 4-6 pound class.



Dennis Bolduc with a nice rainbow from Central Maine.

Rainbows are also demonstrating excellent growth in all of the brook trout study waters, and are out performing the brookies. Monthly catch rate data, and percentage of brookies vs. rainbows observed

during fall sampling suggests rainbows are providing a longer season of availability as we had hoped. In addition, we have documented older-aged rainbows in two of the four study waters. We have also received anecdotal reports of older-aged rainbows being caught in the other two study waters. Most of the older-aged rainbows being reported are two-year old fish running in the 17-18 inch range.

Rainbow trout evaluations will continue for two to three more years, and the data will be presented to the Fishery and Hatchery Division to determine if rainbows have a future in Maine.

## Classic Landlocked Salmon Program

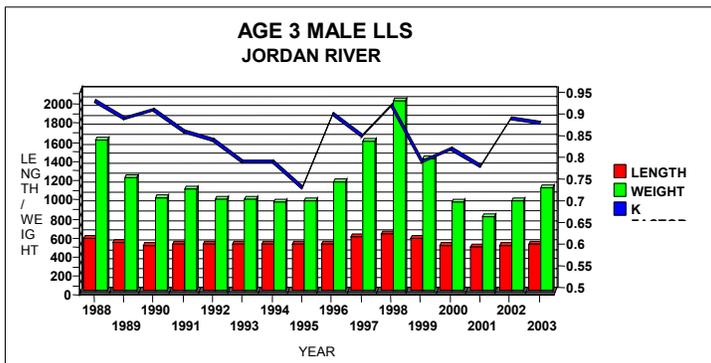
Readers should be advised that The Maine Department of Inland Fisheries and Wildlife (IFW) is partnering with The Sportsman's Alliance of Maine (SAM) on an effort to improve the size quality of landlocked salmon in certain Maine lakes and ponds. IFW and SAM will soon identify specific waters where new initiatives may be proposed. For more information on this program, check out SAM's website at [www.SAMCEF.org](http://www.SAMCEF.org)



## Fishery Region A

**Sebago Lake Update** There has been a slow, but steady improvement in the condition of the salmon fishery since 2001, as evidenced by the adult salmon that enter the Jordan River fish collection facility. Length and weight data were collected from 152 salmon during the fall run in 2003. Not only was the run this year 30% larger than last year, but we were also encouraged by a noticeable improvement in size quality. Three-year old male salmon are 1 inch longer and 5 ounces heavier than in 2002 (Figure 1).

Figure 1. Average Length, Weight, and Condition (relative fatness) of Age 3 Landlocked Salmon Collected at the Jordan River Fish Trap between 1988 and 2003.



Although this modest gain is promising, we must continue to exercise restraint with regard to public interest in increased salmon stocking. The condition of the salmon observed in 2003 is significantly below more optimal growth levels observed in 1988, when 3-year old male salmon were 2.4 inches longer and a pound heavier than observed in 2003. The smelt population has not recovered to levels that can sustain an increased annual stocking of additional smelt predators.

### Moose Pond (Denmark)

Moose Pond was also trap-netted this fall to monitor the salmon fishery for regional needs, and to collect statewide data needed for the new landlocked salmon species plan. We were pleasantly surprised; in one tending we captured 43 healthy landlocks!

We observed 3 age classes of salmon (2-4 year olds), but 63% of the catch was comprised of two-year-old salmon. The mean length and weight was 19.4 inches and 2.8 pounds, respectively. These were nice robust salmon in very good condition!

### Thompson Lake (Oxford)

Thompson Lake had another great year for landlocks! Anglers reported good fishing for salmon in the 2 ½ to 3 ½ pound class from ice-out until about mid June. Ed Leonard of Thompson lake Marina also reported anglers catching several salmon in the 5-6 pound class. Anglers continued to pick up salmon throughout the summer and even into the fall, but the action was much slower than during the spring flurry. The summer fishery for lake trout continues to be lightly utilized

due to a preference for salmon fishing and the availability of better lake trout fishing opportunities nearby.

Table 3. Mean lengths, weights, and condition for landlocked salmon netted at Thompson Lake, 1999-2002.

Mean	1999	2000	2001	2002	2003
Length (in)	18.7	18.6	18.7	20.4	19.0
Weight (lbs)	2.5	2.2	2.6	3.3	2.6
Condition (K)	1.05	0.91	1.08	1.06	1.04

Adult landlocked salmon were captured this fall as part of an ongoing monitoring program to assess the health of this important regional fishery. Two members of the Sportsman Alliance of Maine's Fishing Initiative Committee (SAM FIC), Greg Ponte and Larry Fiori, joined us on Thompson to observe our trap-netting operations. They got to observe us at work and saw first hand one of the region's quality salmon waters. In addition, it was a great opportunity to exchange information and ideas.

Salmon observed in the fall of 2003 showed a slight decline in length, weight, and condition over last year (Table 3). However, we also noted a substantial drop in the number of 3-year old fish in this year's sample, which accounts for some of the drop in mean size over 2002 data. Several years of quality fishing has resulted in an increase in angler use and harvest, resulting in fewer older aged salmon. We anticipate another good season next year.

### Auburn Lake (Auburn)

Basin Pond Outlet Stream was sampled with electrofishing equipment again this year to monitor the landlocked salmon fishery at Auburn Lake. High flows in November attracted large numbers of adult salmon from Auburn Lake, but these conditions made sampling a little more difficult than usual. Greg Ponte of Trout Unlimited/SAM FIC assisted us with our collection efforts and was a great help, we suspect he also enjoyed netting and handling several salmon in excess of 5 pounds. Thirty salmon were collected: 18 two-year-olds, 10 three-year-olds, and 2 four-year-olds. These salmon were in exceptional condition, the largest fish sampled was a 4-year old male salmon that measured 26.4 inches long and weighed a whopping 7.7 pounds! Table 4 provides a summary of the data, and it's hard to believe that this year's salmon were larger than in 2002.



Regional biologist Francis Brautigam holds a nice landlocked salmon at Auburn Lake.

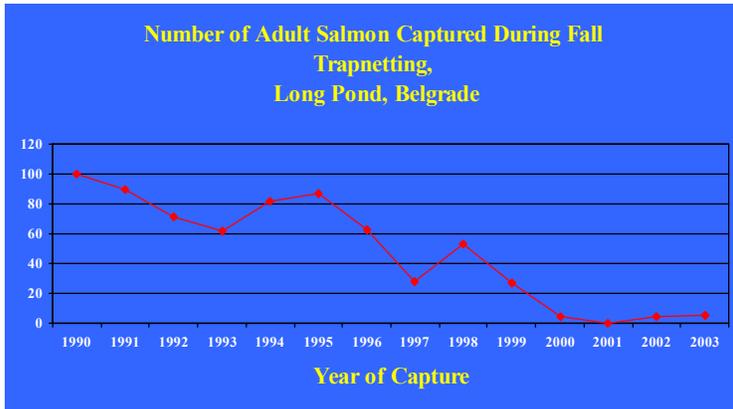
Table 4. Mean Length, Weight, and Condition of Adult Landlocked Salmon netted at Basin Pond Outlet Stream.

Mean	1999	2002	2003
Length (in)	20.3	21.1	21.7
Weight (lbs)	3.1	3.5	3.8
Condition (K)	0.98	1.03	1.00

## Fishery Region B

### Long Pond (Belgrade):

Long Pond's salmon fishery has declined dramatically since the 80's and 90's as evidenced in the Fishery Division's declining trap net catches. The accompanying chart provides a stunning look at the impact non-native species can have on a landlocked salmon population. A change in stocking strategy



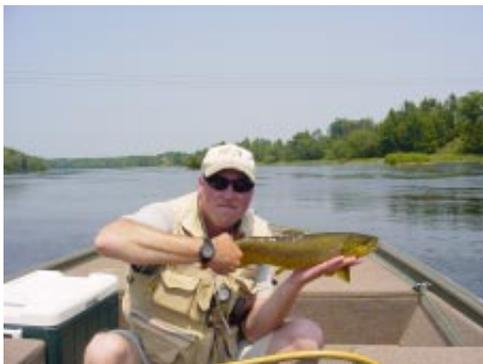
from the smaller spring yearling salmon to a larger fall yearling salmon was instituted at Long Pond in the fall of 2001. The intent of stocking the larger fall yearlings is to decrease predation by northern pike on the freshly stocked salmon and thereby improving salmon survival to older ages.

The results of our fall trap netting operations have not yet revealed any significant improvement in the pond's salmon population. For instance, in 2002 one trap net was set at Great Pond outlet in Belgrade village for a total of 24 days. A total of 4 salmon were caught of which 2 were from the fall stocking of 2001. These fish averaged 17.6 inches and 1.9 pounds. The largest salmon was a 4-year-old 25.5 inch female weighing 5 pounds. Nineteen brown trout were caught in 2002 with at least 5 year classes represented. In 2003 a trap net was placed at the same location for a total of 27 days. Five salmon were caught of

which 3 were from the 2001 fall stocking and 2 from the 2002 fall stocking. The 3 salmon from the 2001 stocking averaged 23.7 inches and weighed in at 3.4 pounds. Eleven brown trout were caught in 2003 and continue to exhibit excellent

growth, but it is unknown if the growth occurs in Long Pond or in the lake from which they emigrated. The largest brown caught in 2003 was a 26.5-inch, 6.5-pound female.

Walleye "pike", another illegally stocked species were first captured in our trapnets in 1996. Although the numbers have declined, a few are still showing up. To date there is still no



*Scott Davis, a fishery biologist for IFW, releases a nice brown trout on the Kennebec River*

sign of natural recruitment and the ages of the walleye continue to increase with each passing year giving us hope that this non-native will disappear.

Anglers petitioned the DIFW in 2003 to open Long Pond to winter fishing for pike as a means of, perhaps, harvesting sufficient pike to reduce the species' impact on Long Pond's salmon fishery. The measure was adopted and the pond will be experimentally open to the harvest of pike for three years, beginning in 2004. Gamefish such as salmon, trout and bass that are captured in the winter must be released at once. There is no bag or length limit on pike and anglers are encouraged to keep all pike, regardless of size. Spring trap netting will be utilized to determine the influence of winter harvest on the lake's pike population. Fall trap netting will continue to be employed to monitor any changes in the lake's salmon population.

### A Summary of Walleye Trapnet Captures, Long Pond, Belgrade

Year Captured	No. of Fish	Average Length(in)	Average Weight(lb)	Age
1996	1	18	2.2	3
1997	5	20	3.0	4
1998	14	23	5.0	5
1999	4	24	5.7	6
2000	3	24	6.0	7
2001	None captured			
2002	2	25	6.5	9
2003	2	26	6.7	10

## Fishery Region C, the Grand Lakes Region

### Landlocked Salmon Management:

#### Tunk Lake:

The 2003 open water salmon season at Tunk Lake was the best in quite awhile. This lake is one of two (Alligator Lake is the other) Downeast salmon waters with a slot limit wherein all fish between 16-20 inches (the "slot") must be immediately released. Anglers enjoyed a productive fishery for "keepers", i.e. salmon >20-inches, as well as for fish in the "slot". An added "plus" was the fact that most salmon were in excellent shape, having benefited from a substantially increased smelt population in 2002. In the previous 2-3 years, smelt abundance was relatively low, resulting in merely adequate salmon growth. Part of this problem was, and is, an abundant population of wild togue that competes strongly with salmon for smelt.

However, over the past 2 years, most salmon have eaten numerous smelts despite the competition from togue. To help foster a continuation of the favorable salmon growth rate, biologists proposed, and the Department adopted, a new regulation which became effective January 1, 2004: Minimum length limit on togue: 14 inches; daily bag limit on togue: 3 fish. We encourage anglers to help "thin out" the togue by taking advantage of the newly liberalized regulation.

Our fall trap netting was an excellent follow-up to the productive open water season, confirming the presence of some exceptional salmon. We sampled salmon up to 5 lbs; nine age III+ stocked salmon averaged 22.5 inches long and 4 lb, 1 oz in weight. These fish were part of the May 9, 2001 stocking, averaging about 7.6 inches in length. Thus, they had tripled in length after spending 2 ½ years in the lake! Also noteworthy was our capture of a good number of wild salmon; these fish, born and reared in the outlet, comprised about 40% of our sample for the fourth consecutive year. The low stocking rate has permitted wild salmon to attain their maximum potential.

### West Grand Lake:

We obtained our annual sample from the fall salmon spawning run at West Grand Lake. Each October, personnel from the Grand Lake Stream hatchery capture hundreds of sexually mature salmon in two trap nets set above the dam. Eggs are collected from these fish, and 1 1/2 years later, tens of thousands of spring yearling salmon are stocked in numerous lakes throughout eastern, western and northern Maine. Due to recent declines in the number of Sebago Lake salmon available for stripping, West Grand fish have played an increasingly important role in the state's salmon program. Happily, the fish we sampled this fall once again attained a high standard. Age III+ fish, most of which were in excellent condition, averaged 19.1 inches long...the third best of the past 30 years! About 9% of the 106 salmon we sampled weighed 3 lbs or more. West Grand remains one of the best salmon lakes in the state, in part due to its remarkable ability to consistently sustain above average growth rates. Anglers can look forward in 2004 to yet another good year for salmon augmented by healthy populations of wild togue and lake whitefish.



*A nice landlocked salmon from West Grand.*

### Smallmouth Bass Management in the Downeast Region:

Some of Maine's finest and fastest smallmouth bass fishing is found in Downeast Maine's Washington and Hancock Counties, managed by regional fisheries biologists from the Department's Jonesboro Headquarters. Both resident and nonresident anglers spend countless hours casting lures ranging from popping bass bugs to spinners, jig and plastic combinations, topwater lures, and crankbaits in pursuit of bronzebacks.

- Smallmouth bass inhabit 85 of 276 surveyed lakes and ponds in Washington and Hancock Counties.
- Since 1987, fisheries biologists from the Downeast Region have intensively sampled and studied bass populations in 25 of 85 bass waters.
- More than 6,000 smallmouths have been caught and released alive, after being weighed, measured, and providing scale samples for aging purposes.

- Bass in eastern Maine grow slowly. Average lengths and ages for bass in eastern Maine are as follows:
- Age 4: 8-9 inches. Onset of sexual maturity and spawning occurs.
- Age 5: 10 inches
- Age 6: 12 inches
- Ages 8 and older: 14" and larger
- A few Maine bass reach ages from 15-20.
- When 15-20 inch bass are harvested from Downeast lakes, it takes from 10-15 years or more to replace them.
- Appropriate regulations have been applied to most of these waters to maintain high quality fisheries in terms of each water's ability to produce either fast action fisheries, average fisheries, or high size quality and trophy fisheries.
- Of the waters studied, the following types of fisheries have been documented:
- Fast action fisheries for bass can be found at: Beech Hill Pond, Big Lake, Branch Lake, Cathance and Little Cathance Lakes, Hatcase Pond, Meddybemps Lake, Pocomoonshine Lake, Rocky Lake, the St. Croix River, West Grand Lake, Woodland Flowage, and Schoodic Lake.
- High size quality fisheries: Alamoosook Lake, Boyden Lake, Graham Lake, Grand Falls Flowage, Green Lake, Silver Pug Lake, Third Machias Lake, Wabassus Lake, Pleasant Lake, and Clifford Lake.
- Maine's fisheries biologists and members of a public working group recently completed a 15-year management plan for the state's black bass species, with the following goals and objectives to guide future work:

#### • Goal

- Maintain black bass populations and fishing opportunities in 613 lakes and ponds, in existing rivers and streams, and provide for limited introductions in appropriate waters.
- Maintain, acquire, and improve angler access sites as necessary.

#### • Objective

- Maintain fishing quality objectives, and improve size quality as appropriate.



*Rick Jordan, Fishery Biologist in Jonesboro, holds a nice smallmouth bass from one of Downeast Maine's lakes.*

## Fishery Region D

### Rapid River Investigations:

Region D staff continued their evaluation of the effects of an illegal smallmouth bass introduction on brook trout in the Rapid River. Work in 2003 focused on locating trout nursery habitat, assessing how young smallmouth bass and landlocked salmon interact with trout in these areas, and determining seasonal movements and habitat use of adult bass and salmon. In addition, staff from FPL Energy completed an intensive angler survey, a genetic study of Rapid River trout was initiated, and barrier dam surveys were completed on several nearby streams as part of a long-term effort to prevent the migration of bass into adjacent trout waters.



Biologists implant radio tags into a landlocked salmon on the Rapid River.

A more detailed summary of this project, including work priorities for 2004-2005, is available on the Department's website <http://www.mefishwildlife.com/>

### Rangley Lake Fall Trapnetting Summary:

Each Fall Rangley Lake is trapnetted near its outlet to monitor salmon growth. In 2003 we sampled a total of 207 salmon and 11 brook trout. The average salmon was 18.3 inches long and weighed 2 pounds, 6 ounces. The largest salmon handled was a 25½-inch, 6 pound, 2 ounce, 5 year-old male of hatchery origin. About 54% of the salmon handled were of hatchery origin. Of the hatchery-reared salmon, 72% were 3 years old or greater, demonstrating good holdover to older ages. Nearly 25% of the salmon examined had scars from being previously hooked and released by anglers. The average brook trout was 12.8 inches and weighed 1 pound. The largest trout was 20 inches long and weighed 3 pounds, 8 ounces.

Rangley's salmon were in excellent condition and should provide good fishing in the spring. A complete summary of the catch and comparisons with previous years will be available on the Department's website listed above.

### South Branch of the Dead River Survey:

The entire 23.4 miles of the South Branch of the Dead River were surveyed in three days in late July by Fisheries Division staff assisted by members of the Rangeley Guides Association and the Maine Chapter of the Izaak Walton League of America. The survey began at the outlet of Saddleback Lake in Dallas Plantation and ended at Flagstaff Lake near Stratton. The width, depth, substrate type, riparian habitat type, and flow type are some of the data fields that were collected at numerous points along the river. Additional measurements were taken at each pool encountered. This data will allow for better fisheries management as well as provide a historical base for the future.

## Fishery Region E

### New Public Access – More Trout:

Public access to waters in the relatively undeveloped northwestern part of Maine may not appear to be a major concern at the present time. However, in the Moosehead Region fishery biologists take nothing for granted when it comes to the future. Since 1997 the Fish and Wildlife Department has owned a 2-acre parcel of land with 200 feet of frontage on Mountain View Pond, a 550-acre body of water just west of Route 6/15 between Greenville Junction and Moosehead Lake's East Outlet. Located at the base of Big Moose

Mountain, the pond is an exceptionally scenic body of water with a lot of potential to increase fishing and boating opportunities in the Greenville-Rockwood



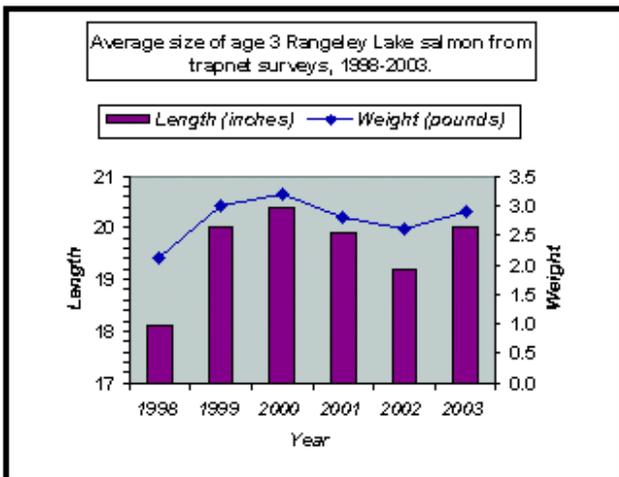
IF&W's public access on Mountain View Pond (photo courtesy of Moosehead Messenger).

area. In recent years the pond has not been easily accessible, but that has changed. In September 2003, a driveway, parking area, and launching ramp were constructed to provide safe and convenient access to launch a watercraft.

To enhance fishing prospects, brook trout were stocked in the fall of 2003, and it will be added to the list of Moosehead Region waters stocked each spring with catchable (9"-11") brook trout. Beginning in 2004, Mountain View Pond will be open to ice fishing, and open to fishing in October with a new regulation that will allow keeping 2 trout throughout the entire open water season.

### Family Fishing

Southern Piscataquis County is not especially noted for its trout waters. Therefore in recent years fishery management efforts in the Moosehead Region have been aimed at improving the opportunity to catch brook trout in the most heavily populated part of the County. In September 2003 an



existing man-made pond located on Dunham Brook in the Town of Dover-Foxcroft was enlarged to enhance the habitat in the pond, improve the opportunity to fish from the shore, and create another location where catchable yearling brook trout can be stocked each spring. The Dover-Foxcroft Kiwanis Club sponsored the project, with cooperation from the Town of Dover Foxcroft, and regional fishery biologists.

The pond is an integral part of Kiwanis Park, an urban



Kiwanis Park Pond in Dover-Foxcroft (photo courtesy of Moosehead Messenger).

recreation area for residents in the Dover-Foxcroft area. It provides an ideal location for parents to bring their children for an evening or weekend picnic and an opportunity to fish together. It also provides an excellent location for organizations to

hold fishing clinics and other special programs to encourage fishing as a healthy outdoor recreational activity. Over the past several years the Piscataquis County Sheriff's Department has sponsored a morning of fishing at the pond as a part of its DARE Program. In 2003, 148 children registered to participate in this program, for which the pond was well stocked with trout.

## Fisheries Region F

### Matagamon Lake:

In the late 1990's, Bangor Hydro-Electric Co., majority owners of the East Branch Improvement Co., chose to divest itself of a series of dams in Northern Maine in the Penobscot and St. John drainages. The dam on the outlet of Grand Lake Matagamon was given to a newly formed group of interested sportsmen, campowners and local citizens, the Matagamon Lake Association. Their primary interest was the continued operation of the dam for downstream flood control, lake water levels, and maintenance of fish and wildlife values in the lake and river.



Nels Kramer handles a nice brook trout from a water in Region F.

Since taking ownership of the dam at the outlet of Grand Lake Matagamon, the Matagamon Lake Association needed to deal with some maintenance issues on the dam. The first challenge for the Association was the fishway, as repairs were necessary to continue to pass fish. In July, a group of about 20 volunteers dismantled the existing structure and installed all new frames and baffles, as well as completed some concrete work and gate repairs. Biologists and Game Wardens from the Maine Dept. of Inland Fisheries & Wildlife, Maine Atlantic Salmon Commission, and National Marine Fisheries Service assisted volunteers from the Matagamon Dam Association, Matagamon Boy Scout High Adventure

Base, and other interested sportsmen and campers for four days repairing the fishway. Grand Lake Matagamon and the East Branch of the Penobscot River are managed for wild populations of landlocked salmon and brook trout. IF&W is currently stocking the lake with hatchery-reared lake trout in hopes of establishing a self-sustaining population. At present, there is light to moderate angler use of the lake and during both the summer and winter seasons. Since management has shifted to restoring wild populations of both species, fish size quality is improving for both brook trout and landlocked salmon. Catch rates are at or above the state average for both species as well.



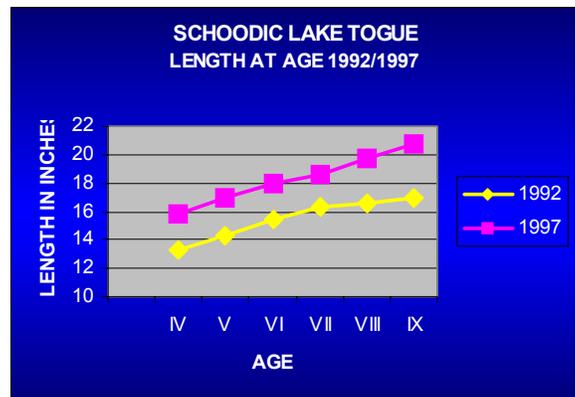
Quality lake trout from Region F.

The continued operation of Matagamon Dam is considered essential to the cold-water sport fishery in the East Branch system. The regulated flow in the East Branch has been critical to the rehabilitation of the wild brook trout and landlocked salmon populations in East Branch. Stable, regulated water levels in the lake are necessary for the establishment of a self-sustaining lake trout population (as well as for other fisheries and wildlife values such as loon nesting, etc.).

### Schoodic Lake:

One of the regions best success stories has got to be the Schoodic Lake fishery in Brownville and Lakeview Plt. Area anglers can remember how poor the fishing was in the 1980's and early 1990's, with an abundance of thin and unattractive stocked salmon and wild lake trout. In spite of liberal length and bag limits, as well as continued smelt egg transfers for forage, the smelt population was not improving. In 1992, we was decided to forgo any additional landlocked salmon stocking and to continue the smelt egg transfers to try to jump start the smelt population.

In 1985, the average length and weight of adult, mature lake trout netted on the spawning beds was 17.8" and 1.9 lb., and by 1992 the size and condition reached a new low at 16.1" and 1.2 lb. By 1997 the lake trout size and condition improved dramatically to 20.5" and 3.2 lb. Four years later in 2001, the size and condition had achieved a new high at 23.1" and 4.7 lb. While we are impressed with the rapid recovery, we are closely monitoring the situation at Schoodic.



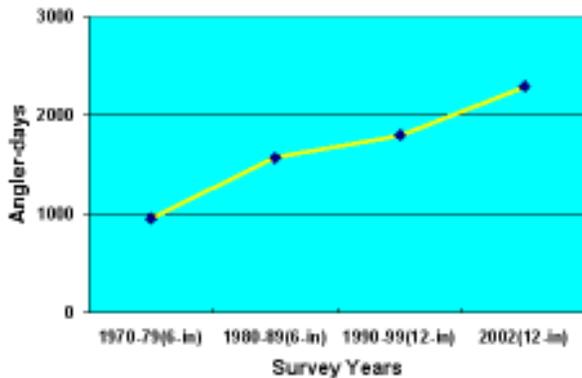
## Fisheries Region G

### Big Eagle and Churchill Lakes Sport Fishery:

Both of these lakes support fisheries for wild brook trout and lake trout. Additionally, lake whitefish continue to be taken in each water, albeit in low numbers. Since 1970 the status of the lakes' fisheries have been evaluated through numerous winter sport fishery surveys. The results of these surveys are presented here as averages for each 10 year period: 1970-79, 1980-89, 1990-99 and, the results of our 2002 creel survey.

Average annual winter angler use at Big Eagle has

Angler Effort at Big Eagle Lake

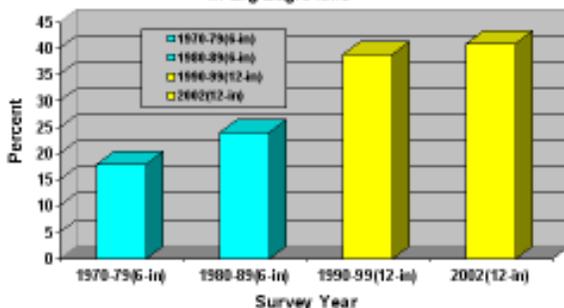


increased from a low of 952 angler-days in the 70's to almost 1800 angler-days in the decade of the 90's. Our 2002 estimate of 2,292 angler-days was the highest winter effort ever recorded for this water.

Whether measured as catch per angler or in terms of the number of hours to capture a legal-size fish, the catch rate of legal trout has improved, even as use has increased. Furthermore, this improvement in catch rates occurred despite the fact that, the minimum legal length limit for trout was increased from 6 inches in the 1970's & 80's to 12 inches in the 90s.

Furthermore, even with increasing fishing pressure and an increase in size of legal trout to 12 inches, the percent of anglers successful in catching a legal trout has climbed dramatically!

Angler Success in catching Legal-length Brook Trout in Big Eagle lake



Churchill Lake has seen a similar increased use during the 3 decades. Pressure was low in 2002 because of poor ice conditions at the start of the season.

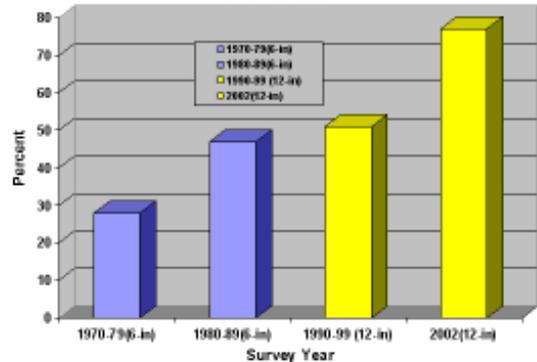
The trend for improved trout fishing is even more dramatic at Churchill where the catch of legal trout per angler increased from 0.23 to 0.83, and the hours to catch a legal trout went

from 14.0 to 8.4. For fish caught of all sizes, the improvement increased even more dramatically to 1.12 trout per angler and 6.3 hours. The percent of anglers catching a legal trout has increased substantially

The only facet of the sport fishery that has seen little change is the percentage of brook trout caught by anglers 16 inches or greater in length. Trap net results from Big Eagle, however, have shown a steady increase in the percentage of these trout from 2% in 1991 to 9% in 1996 to 13% in 2001. The regulation that allows only 1 trout to be kept over 14 inches is intended to improve the percentage of larger trout in the fishery. This regulation continues to be evaluated.

The quality of lake trout fishing at Big Eagle as measured

Angler Success in catching Legal-length Brook Trout in Churchill Lake



by catch rates and percent successful catching a legal togue has declined since the 1970's but has been on an improving trend the last 10 years even as use has increased. The 18-inch minimum length limit has been effective in maintaining the average size of togue harvested at 22.0 inches. Contrary to angler belief, the number of togue at or exceeding 24-inches has not diminished over the years but has actually seen a modest increase from 26% in the 1970's to 39% in the 1990's..

At Churchill, togue fishing has experienced a serious decline in quality. The amount of togue habitat in the lake is marginal during summer months. Deterioration of Churchill Dam may have had great impact on togue reproduction in this lake thereby curtailing recruitment of juvenile fish to the adult population. Togue are capable of traveling between the two lakes under cold water conditions, but in recent years this movement has not been sufficient to maintain an attractive sport fishery. In the spring of 2002, numerous togue were captured in the Churchill Dam fishway as they were making their way up-stream from the river below. The sport fishery may improve in future years with more favorable water depths behind Churchill Dam that may result in increased recruitment of juvenile togue.



Fred Gallant holds a 6 1/2 lb lake whitefish from Sebago.

## Hatchery Section

The past year has been a very productive year for the hatchery section. 1,408,879 fish of various species and sizes were released into over 700 bodies of water during the past stocking season. The total weight of 291,417 pounds was an all time record shattering the previous high in 2002 of 273,397 pounds.

The increase in weight reflects the necessity of providing ever larger fish for stocking programs to maintain recreational sport fishing opportunities. Over the past few years the Fisheries and Hatcheries Division has been gearing up to meet this need by improving our egg/fry producing facilities to enable them to produce larger and more robust fry for rearing stock. Governor Hill, New Gloucester and the Phillips Hatcheries have developed well water rearing systems to accelerate fry development. These facilities, combined with the spring fed Dry Mills Hatchery, incubate and provide the bulk of the salmonid fry for our hatchery program.

The benefit of this advanced fry rearing program, when combined with an optimum rearing environment, high quality feeds and the expertise and motivation of our fish cultural staff, create a potent formula for producing high quality fish for stocking programs.



*A hatchery raised landlocked salmon*

More major improvements are about to occur to the state fish hatchery system. Last year voters approved a \$7 million bond to enhance and make renovations at six of the nine hatcheries. The improvements will be in these areas:

1. Oxygenation systems will be added to the Casco, Dry Mills, Enfield, Governor Hill and Palermo hatcheries. Injection of liquid oxygen into the water sources will improve the water quality of the facilities to ensure a healthy rearing environment and allow rapid fish growth.
2. Construction of hatchery discharge treatment systems at the Casco, Enfield and Palermo facilities will improve the water quality of the hatchery effluent by removing organic waste. This will address concerns of protecting hatchery discharge receiving waters.
3. A complete renovation of the Embden Rearing Station into a modern tank farm rearing system will not only increase fish production at that facility but also make improvements to protect the local environment by upgrading the existing hatchery water discharge system.

The planning and design phase of these projects are near completion, and the construction phase is scheduled to begin in the spring and be completed by the fall of 2005.

As desirable and beneficial as environmental protection and increased fish stocking are to all, they do not come without cost. New mechanized water treatment systems and increased fish production will result in new demands on operating costs. Increased energy demands, manpower, fish

feed, liquid oxygen, materials and equipment will result in cost increases, but these investments will bring recreational rewards and economical benefits throughout the state for many years to come.

## Fish Health Laboratory

This year the MDIF&W Fish Health Laboratory inspected over 80 fish lots from the department's seven fish hatcheries and two fish rearing stations. Fortunately, no trout or salmon pathogens of regulatory concern were found. MDIF&W currently has nine class "A" disease free fish hatcheries. MDIF&W fish were also examined twice during the year for size and fin quality parameters. Fish sizes continue to increase, and fin quality was quite good this year despite some chronic fin parasites at certain hatcheries.

The laboratory also inspected over 30 groups of wild fish from around the state. We were pleased that no spring viremia of carp has been detected in Maine's wild fishes, and no largemouth bass virus has yet to be found in Maine largemouth bass. A male brook trout from Kennebago Lake was diagnosed in November with the bacteria responsible for Furunculosis in trout and salmon. Kennebago brook trout have been used in the Hatchery Division's brook trout program since about 1995. Periodically the hatchery plans to collect male brook trout from the lake to augment the hatchery brook trout's genetic diversity. During the past two years the laboratory has looked at these fish for diseases. It is amazing the number of parasites found in this wild population from Kennebago Lake.

The laboratory has been involved in several research projects this year, including looking at the etiology of poor brook trout egg survival at the Phillips Fish Hatchery. In June 2003, the Morris Animal Foundation awarded MDIF&W a \$62,500 three year grant to study if adding calcium to the hatchery's water would improve brook trout egg survival. Preliminary results from adding calcium to other MDIF&W hatchery water supplies has improved brook trout egg survival three fold.

Whitefish were raised this year at the Enfield Fish Hatchery. Between October 2002 and June 2003, fish hatchery staff collected samples of developing whitefish. The laboratory now has a complete development record of whitefish development from egg to 4 inch fingerling. This winter, we will finish photographing each development stage. This systematic collection of development stages of lake whitefish will help the Fisheries and Hatchery Division predict whitefish growth rates and timing of developmental.

In August 2003, I attended the American Fisheries Society Meeting in Quebec, Canada. I presented a 15-minute talk at the conference on brook trout egg development and survival. The conference was an excellent educational and professional development experience.

In December I completed 5 years as state fish pathologist, and MDIF&W microbiologist II, Zubaidah Sargent completed 15 years with the department in October.

*- G. R. Danner MS, DVM, Fish Pathologist.*

## Fishery Research

### Volunteer Stream Survey Program

As we all are well aware, the state of Maine is largely a mosaic of aquatic habitats. However, our running waters are mostly unsurveyed and garnering just baseline information on these habitats and their fisheries is a monumental task of the Fisheries and Hatchery Division.

Hence, the Research Section instituted a Volunteer based Stream Habitat Survey Program in 2003 to assist the Division while providing volunteers with a 'crash course' in fisheries stream ecology. This fledgling program, while still working out a few kinks, provides an opportunity for anglers and other interested folks to get out and explore their streams while providing MDIFW with valuable basic fisheries habitat information.



Volunteers are initiated into the program by spending a day with Research Section staff for instruction in protocol data collection and identification of important fisheries habitat features. We then add this data to our growing stream habitat database for mapping applications and identifying valuable fishery resources or problem areas.

### Sucker Movements In A Large River

In conjunction with research related to the restoration of anadromous Atlantic salmon, the Research Section began investigating the movements of white suckers in the Penobscot main stem. The Maine Atlantic Salmon Commission has been tagging returning adult Atlantic salmon with Passive Integrated Transponders (PIT tags) to assess riverine movements and the effectiveness of salmon passage at fishways. In 2003, the Research Section began PIT tagging suckers in collaboration with these efforts in order to gain a better understanding of their ecological role, associated movements and abilities to use fishways in a large river. Last spring, we inserted the tiny PIT tags into the muscle of thirty suckers and whenever a tagged fish gets within range of one of the data collection stations, the date, time and location of the individual fish is recorded. We will continue to monitor the movements of these tagged suckers for many years to come. This collaborative opportunity is a great way to address some inland fishery concerns by piggybacking with existing research programs and mutual data exchange. This information will enable us to better manage the commercial utilization of this species.

### Investigating The Intensive Culture of Rainbow Smelt

The Research Section initiated collaborative research with University of Maine aquaculture staff into the feasibility of rearing rainbow smelt as an additional source for the live bait industry. Our project goal is to provide a feasible method for local growers to rear their own smelt to sell as live bait. To date, there are two major stumbling blocks in smelt culture that have largely prevented this. First, larval smelt are

notoriously difficult to feed and require live zooplankton as their primary food source. Therefore, we are investigating culture techniques for zooplankton organisms that are necessary for larval smelt early diets. We feel that by optimizing the nutritional aspects of the zooplankton, we can accelerate larval smelt growth so they can be weaned onto a prepared food source, such as a pellet, in as short a timeframe as possible. Second, smelt are very specific in their environmental and water quality needs. Therefore we have to design a system specific for smelt culture that is economical and easy to build and maintain, as well as provide the necessary environment for smelt survival and growth.

Last spring, adult smelt were spawned in a University lab where we attained a 90% hatch success rate. We tested various egg disinfection protocols to prevent bacterial and fungal contamination from hindering incubation and hatch. After hatching, larval smelt were used in various experimental protocols to test various live zooplankton diets and at the feeding levels needed to optimize growth and overall survival. Although significant survival to market size has yet



*Three year classes of smelt from a southern Maine water.*

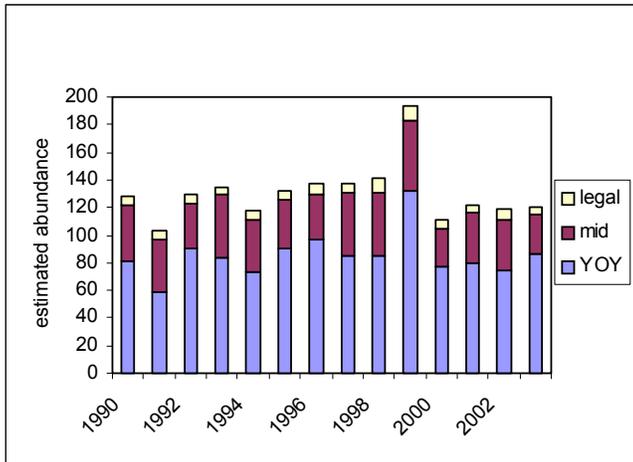
to be attained, we have made considerable progress toward our goal of producing a four-inch smelt reared within a tank system. We are continuing this line of research in 2004. We will continue fine-tuning the larval feeding aspects by testing additional live food diets and feeding protocols. In addition, we are refining the design of the tank system to better meet economic and routine maintenance goals.

### Brook Trout Monitoring Project

In 1990, the Fisheries Division initiated the Brook Trout Monitoring Project. Since that time, we revisit specific stream index sites annually and collect data on the fishery and its habitat. There are seven stream sites scattered statewide that have been visited at least 10 years of this ongoing study. Each year, the same stream section is electrofished and all captured fish are identified to species and we also assess brook trout to determine population size and overall condition by size categories.

Since 1990, an average number of 119 brook trout are annually captured and used to determine the population size and fish condition for the respective stream section. All of these stream sites are known wild populations with no recent stocking history and are open to general law fishing regulations. The graph below illustrates that 'typical' Maine brook trout streams annually support about 130 individual fish per section (about 6500 sq. ft) with about seven of those being legal size. The annual size has also remained somewhat consistent with the average brook trout caught in this study being about 3.5 inches in length.

Average population sizes by size category for Maine stream brook trout as determined from seven randomly distributed index sites. LEGAL are at least 6 inches in length.



Although these streams are considered to be typical brook trout streams and there is some degree of usefulness in determining statewide averages, it is important to remember that not all regions of the state are the same. Patterns for climate, co-habiting species, local watershed conditions, and angler pressure vary throughout the state. Therefore, long-term studies using a standard data collection protocol, such as this, are useful for determining what factors are most likely to affect our wild brook trout and to what level. Understanding the effects that multiple factors, often out of our control, have on our wild trout will greatly contribute to better stream fishery management.

### Brook Trout Strain Evaluation

This fall the Research Section continued work to evaluate the performance of two strains of brook trout stocked in Maine waters. The study involves trapnetting and angler surveys on several study waters where the goal is to provide some carry-over of hatchery brook trout to older ages. Our work was conducted on Frost Pond and Ten-Forty Pond, both located in the Moosehead Lake Region near Chesuncook Lake. Preliminary results show that the Kennebago Strain trout have a better rate of survival than the Maine Hatchery Strain. For example, at Ten-Forty Pond, equal numbers (475 fish) of each strain are stocked annually in the fall. The total estimated number of Kennebago strain fish left in the pond by the end of the 2003 fishing season was 152 fish. Therefore, survival to age 1 was 23% and just 9% to age 2. For Maine Hatchery Strain the survival rate to age 1 was only 9% and 3% to age 2. The results also indicate that growth rates are nearly identical for both strains. It is interesting to note that in this 25 acre pond, a total of 219 trout were left at the end of the fishing season. Twenty-eight percent (30 fish) were greater than 12 inches. The oldest hatchery trout taken at Ten-Forty Pond were 3 years old and averaged 13.7 inches and 1 pound.



### Splake Assessments

The Research Section also continued to evaluate the State's splake program. This work included trapnetting several splake waters in northern Maine.



Biologist Tim Obrey weighs a nice splake from one of the study waters.

Splake continue to provide quality fisheries in many waters in Maine. In one study water, splake were stocked just twice. In 2003, these fish were age 4 and 6 and were quite abundant. We estimated 155 age 4 splake averaging 19.7 inches and 2.4 lbs remained in this 198 acre pond at the close of the fishing season. We also estimated 44 age 6 splake that averaged 21.8 inches and 3.7 lbs!

It is interesting to compare the rate of survival for splake to hatchery brook trout in this pond. We estimated that 46% of the splake stocked in 2000 were still alive at age 4. An additional 6% of the splake stocked in 1997 were also available to anglers as 6 year old fish. Survival of Kennebago brook trout in this same pond was just 1% to age 2. We have not taken any hatchery brook trout older than age 3.

This is a good example of how splake can provide additional opportunities to catch high quality gamefish in Maine.



Steve Day prepares to release a "trophy" brown trout in Central Maine.



Check out this free new service for Maine anglers! Track your fishing Trips online in a personal private logbook, and provide valuable data that will help manage Maine's fisheries for the future. Visit us on the web today to find out how you can help.

[www.triptracks.com](http://www.triptracks.com)

## Noteworthy Fish Taken From Maine Waters in 2003

Coffin, Sr., Aaron, Bath, ME	8.26 lb. Largemouth bass	Three Mile Pond	3/16
Douglas, Derrick	7.2 lb Largemouth bass	Moose Pond	Winter
Elsaesser, Rick, Brunswick, ME	15 lb. 1 oz Lake trout	Schoodic Lake	3/1
Gallant, Fred Jr., Windham	6.4 lb. Whitefish	Sebago Lake	Openwater
Gammon, Don, Poland, ME	6.42 lb Salmon	Rangeley Lake	5/10
Gile, Erika, North Monmouth, ME	15 lb. 1 oz. Lake trout	Big Eagle Lake	2/21
Grant, Bowman, Camden, ME	8.64 lb. Landlocked salmon	Long Lake	6/7
Higgins, George, Fairfield, ME	18 lb. 8 oz. Togue	Nameless	8/9
Kane, Chris, Bar Harbor, ME	7 lb. 1 oz. Landlocked salmon	Eagle Lake	1/1
LaBreck, Richard, Sinclair, ME	8.12 lb. Salmon	Long Lake	6/14
Ladd, Bob, Sebago, ME	6.86 lb Brown trout	Great Pond	2/6
Manard, Timothy, Sanford	15.0 lb Togue	Mousam Lake	Winter
Marelli, Lyle, Hampton Falls, NH	22 lb. 12 oz. Lake trout	Sebec Lake	3/13
Massey, Greg, Poland, ME	9.25 lb. Brown trout	Upper Range Pond	7/13
Motta, Jr., Bob, Camden, ME	27 lb. Northern Pike	Messalonskee Lake	1/27
Murphy, Joe J., Sebago, ME	6.67 lb Salmon	Trickey Pond	1/1
Nadeau Lionel, Ft Kent, ME	10 lb Salmon	Long Lake	7/8
Nadeau, Ed	6.3 lb Splake	Trickey Pond	Winter
Osmond, Richard Gorham, ME	16.43 lb Togue	Sebago Lake	2/10
Picard, Scott, Madawaska, ME	7.84 lb. Salmon	Long Lake	7/7
Pomeroy, Deborah, Fairfield, ME	4 lb. 5 oz Brook trout	Secret Pond	7/27
Reid, Roger	22 lb Lake trout	Sebago Lake	Openwater
Saucier, Frenchie	14.4 lb Togue	Sebago Lake	Winter
Sherman, Richard, Springvale, ME	9 lb Brown trout	Square Pond	1/5
Sites, Ron, Mapleton, ME	4 lb. 9 oz. Brook trout	Long Lake	6/21
Smith, Paul Sinclair, ME	11.1 lb. Salmon	Long Lake	7/10
Veilleux, Steve, Belgrade, ME	24.73 lb. Northern Pike	Belgrade	3/8

## A Growing Threat *cont'd*

management and encourage management practices that increase exploitation of any illegally stocked fish.

### A Partial List of Illegal Fish Introductions into Maine Waters in 2003

Name of Water	Township	County	Species of Fish Reported	Presence Confirmed?
Estes Lake	Sanford	York	Northern Pike	YES
Sebago Lake	Casco, etc.	Cumberland	Northern Pike	YES
Wat Tuh Pond	Phippsburg	Sagadahoc	Northern Pike	YES
Pushaw Lake	Glenburn	Penobscot	Northern Pike	NO
Lovejoy Pond	Albion	Kennebec	Northern Pike	YES
Parker Pond	Mt. Vernon	Kennebec	Northern Pike	NO
Torsey Pond	Mt. Vernon	Kennebec	Northern Pike	YES
Thompson Lake	Poland, etc.	Oxford	White perch	YES
Saddle Pond	T7R9 WELS	Piscataquis	Smallmouth Bass	NO
Silver Lake	Lee	Penobscot	Smallmouth Bass	NO
Basin Pond	Fayette	Kennebec	Largemouth Bass	YES
Savade Pond	Windsor	Kennebec	Largemouth Bass	NO
China Lake	China	Kennebec	Searun Alewives	YES
East Pond	Smithfield	Somerset	Walleye Pike	NO
Great Moose Lake	Hartland	Somerset	Green Sunfish	YES
Great Moose Lake	Hartland	Somerset	Blue Gill Sunfish	YES