Executive Summary and Recommendations

The Commission to Study the Needs and Opportunities Associated with the Production of Salmonid Sport Fish in Maine ("Commission"), established in 1999, was directed by the legislature to assess and evaluate recreational salmonid fish production facilities in the State, set salmonid production goals at state-owned fish production facilities over the next 15 to 20 year planning horizon and ensure that these facilities comply with discharge license standards within three years. The Commission was required to complete its work and report its findings and recommendations to the Joint Standing Committee on Inland Fisheries and Wildlife by October 31, 2002.

To complete its mission the Commission met 15 times between September 1999 and November 2002 and worked extensively with the Department of Inland Fisheries and Wildlife ("Department"), the Department's engineering consultant FishPro Consulting Engineers & Scientists[1] ("FishPro"), and Maine's Department of Environmental Protection ("DEP"). As a result of this work, the Commission issued two interim reports dated December 2000 and December 2001, outlining the Commission progress and continuing work plans that culminated in this report.[2]

Recreational sport fishing is not only an important part of Maine's outdoor heritage, it is an important part of Maine's economic vitality. According to the most recent study by the University of Maine, in 1996 alone, recreational fishing activities in Maine generated $292.7 million in total economic activity that resulted in $13.5 million in sales taxes and supported 5230 full and part time jobs that paid more than $5.7 million in state income taxes that year.[3] Despite the significance recreational fishing activities play in Maine's economy, the Commission found there is increasing evidence that the State's recreational salmonid fisheries no longer meet the expectations of many anglers. In addition, other New England states and Canada are heavily competing for the attention of these anglers and may be drawing anglers away from the State.[4] The Commission found that Maine's fish production facilities form the backbone of the sport fishing industry in Maine and if Maine hopes to successfully compete on a national and international level for angler dollars, these facilities must be upgraded and maintained to produce significantly more salmonid fish. Maine's nine State-owned fish production facilities, in total, have been in

[1] The Department contracted with FishPro on April 13, 2001 to conduct a comprehensive engineering study of the State's fish production facilities including effluent issues and to work with and provide technical support to the Commission.

[2] These reports are available for review at the Maine State Law Library in the State House in Augusta, Maine.

[3] Michael Teisl and Kevin J. Boyle. Economic impact of hunting and inland fishing and wildlife-associated recreation in Maine. Rep #479, Maine Agricultural and Forestry Experiment Station, University of Maine, Orono. November 1998.

[4] See Appendix A for fishing license sales data provided by the Department showing static fishing license sales over the past 8 years.

operation for the equivalent of 500 production years and have an average age of 58 years.[5] Over the past 40 years, these facilities have produced nearly 60 million fish that were stocked in over 700 lakes and 100 streams statewide. In its 2000 interim report, the Commission also found that while some upgrades to these facilities have been implemented since the first facility was constructed in 1857 (Grand Lake Stream), inadequate funding has kept maintenance and enhancement projects well below desirable levels.[6] Because many components of the fish production facilities are reaching the end of their useful service life, nearly all of the State's aging facilities require significant capital improvements just to meet effluent license requirements and maintain current fish production levels. The passage of the November 2002, $7 million bond referendum (Private & Special Law 2001, chapter 35) for renovations and upgrades to the State's fish production facilities, will be a first step towards achieving critical capital improvements and improving Maine's recreational salmonid fisheries.

In its 2001 interim report, the Commission found that opportunities for significantly increasing the stocking of salmonid fish are present throughout the State and proposed that the Department increase salmonid production over the next 15 to 20 years to approximately 865,000 pounds per year, including the development of a trophy fish program to provide anglers with more opportunities for catching trophy size fish. However, based on FishPro's cost estimates for implementing the proposed increase, the Commission has revised that recommendation to exclude the trophy fish program.

In addition to addressing the maintenance and upgrade of Maine's fish production facilities, the Commission worked closely with DEP, the Department and FishPro to identify problem areas regarding effluent discharges at the facilities and to develop recommendations to ensure that these facilities comply with discharge license standards within three years. The Commission concluded that a significant portion of the $7 million bond money should go towards upgrading the effluent treatment systems of fish production facilities identified by DEP as having receiving waters[7] in non-attainment while the remainder of those funds should be used to enhance production at the Embden facility. These upgrades and enhancements will allow fish production facilities to simultaneously address current discharge licenses issues and increase fish production levels.

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[5] Data provided in the Commission's 2000 interim report. Maine's nine fish production facilities are Casco, Dry Mills, Embden, Enfield, Governor Hill, Grand Lake Stream, Palermo, Philips and New Gloucester. A map showing the location of these facilities is attached as Appendix B. A tenth facility located at Deblois was closed in the early 1980's for financial reasons and was subsequently placed under a long-term lease to a private aquaculture firm for the production of Atlantic salmon smolts. That leased will expire in 2004 and the Department, at the recommendation of the Commission, is actively seeking a buyer for this facility.

[6] The Adopt-a-Hatchery Program was established to help alleviate chronic funding shortages facing the State's fish production facilities. While the generous efforts of adoptees under this program have provided much needed funding, this program is not designed to provide the financial resources needed to implement large-scale capital improvements recommended in this report.

[7] For this report, "receiving waters," means water bodies that wastewater is discharged into by fish production facilities.

It is particularly important to note that although recreational fishing activities in Maine generate nearly $300 million in statewide economic benefits, the facilities themselves operate on an annual budget that is directly related to the revenues generated from the sale of resident and nonresident fishing licenses.[8] To the extent that the fish production facilities support such a broad based economic benefits to the State, the Commission feels that it is appropriate to consider broader based revenue sources to fund the needed improvements at those facilities.

The Commission presents the following unanimous and majority findings and recommendations.[9]

Unanimous Finding #1 The Commission unanimously finds, based on data provided by the Department and by FishPro in its 2002 Final Comprehensive Statewide Fish Hatchery System Engineering Study, ("FishPro Study Report"),[10] that the facility resources needed to establish a trophy fish program with production levels recommended by the Commission in its December 2001 interim report are extensive and not economically feasible.

- **Unanimous Recommendation** The Commission unanimously recommends that the Department should not establish a trophy fish program and should continue to use retired brood stock as a source for stocking trophy size fish. The Commission further recommends that a portion of the fish poundage allotted for trophy fish in its December 2001 interim report, be reallocated to increase two-year-old and spring yearling production for brook trout, landlocked salmon and rainbow trout as indicated in Table I attached as Appendix C of this report.

Unanimous Finding #2: The Commission unanimously finds that the Commission's proposed increase in fish production as stated in its 2001 interim report should be

[8] Although the revenues from fishing licenses are not technically "dedicated" for fish production facilities, Article 9, section 22 of the Maine Constitution requires that the Department revenue annual appropriations that are at least equal to the revenues collected by the Department during a fiscal year.

[9] Members present and voting on these findings and recommendations on October 23, 2002 were Senator Woodcock, Senator Martin, Honorable Leo Kieffer, Representative Bryant, Representative Honey, Harold Brown, Ken Elowe (DIFW), Bill Gilzinis (Trout Unlimited), Richard Neal, Gary Picard (private hatchery), Urban Pierce (private hatchery), George Smith (Sportsman Alliance of Maine), Steve Wilson (DIFW). Representative Mathews was present and voted on Findings and Recommendations 8 and 11. Evelyn Sawyer (private hatchery) was present and voted on Findings and Recommendations 1-7, 9 and10. Richard Solman (private hatchery) was not present and did not vote on the Findings and Recommendations.

[10] A copy of this report is available for review at the Maine State Law Library in the State House in Augusta, Maine

modified to incorporate Finding #1 and to incorporate corrected weight estimates for various age classes of fish as indicated in Appendix C, Table 1 of this report.[11]

- **Unanimous Recommendation:** The Commission unanimously recommends that its 2001 proposed increase in total fish production of 865,748 pounds/year be adjusted to as shown in Appendix C, Table 1 to 865,077 pounds/year. The Commission further unanimously recommends that the Department review its present state-wide distribution of stocked fish and adjust fish allocations within the State to better reflect the amount of appropriate coldwater habitat. The Department's fish allocation adjustments should not include stocking fish over wild salmonid populations in waters not previously stocked.

Unanimous Finding #3: The Commission unanimously finds, based on reports from the Department and the results of the 1999 Open Water Survey[12], that brook trout, landlocked salmon and rainbow trout are species most heavily sought after by anglers and are species that have the most potential for expanding stocking opportunities in waters stocked by the Department. The Commission further unanimously finds that splake and whitefish are not heavily sought after by most anglers.

- **Unanimous recommendation:** The Commission unanimously recommends that the species mix for the 865,077 pounds in total fish production include 700,609 pounds of brook trout, 16,457 pounds of landlocked salmon, 60,125 pounds of rainbow trout, 77,622 pounds of brown trout, and 4,664 pounds of lake trout as shown in Table 1 and Figure 2 attached as Appendix C of this report. The Commission also unanimously recommends that brown trout production not be increased from current levels.

- **Majority recommendation:** The Commission unanimously agrees that current splake production should be dramatically reduced, however, a majority of Commission members (9) recommended that existing splake production be reduced from 2000 levels of 9,517 pounds/year to 5,600 pounds/year while a minority of the Commission recommended the complete removal of the splake stocking program.

Unanimous Finding #4: The Commission unanimously finds that a new fish production facility will be needed to meet the Commission's fish production goals.

- **Unanimous Recommendation:** The Commission unanimously recommends that the Department seek funds from the legislature or other sources, to acquire or construct a new fish production facility in the State. The Commission further

[11] Because FishPro's Study Report was not finalized before this report was printed, weight estimates used for this report may vary slightly from those reported in FishPro's published Study Report.
[12] A brief summary of the 1999 open water fishing survey is attached as Appendix D.

recommends that the Department look at the acquisition or construction of a limited-discharge fish production facility.[13]

Unanimous finding #5: The Commission finds based on data provided by the Department and data in the FishPro Study Report, that operating and maintenance costs associated with fish production facilities will increase as a result of implementing the Commission's increased fish production goals and that additional funding to cover these costs is essential to maintaining the facilities production capabilities.

- **Unanimous recommendation:** The Commission recommends that the Department and the joint standing committee of jurisdiction over fish and wildlife matters seek funding sources to support additional operating and maintenance cost associated with the increase in fish production needed to restore Maine's salmonid fisheries.

Unanimous Finding # 6: The Commission finds, based on review of data provided in the FishPro Study Report, that current wastewater discharge permit levels for fish production facilities in Maine mandates excessive compliance costs to these facilities.

- **Unanimous recommendation:** The Commission recommends that the Department and DEP review the wastewater discharge permit levels of fish production facilities located within the State every two years in order to reduce compliance costs by identifying cost reducing alternatives for effluent treatment.

Unanimous Finding #7: The Commission finds that its recommended fish production goals must be implemented as expeditiously as possible to address angler's perception that Maine's recreational salmonid fisheries are in decline. The Commission further finds based on data provided in Figure II-6 (Project Implementation Timeline for $7.0 Million Bond Bill Projects) and Figure II-7 (10-year Full Project Implementation Timeline and Plan) of the FishPro Study Report, that with adequate funding, the implementation of the Commission's fish production goals can be completed within ten years. [14]

- **Unanimous recommendation:** The Commission recommends that upgrades to fish production facilities as provided in Table II-14[15] of the FishPro Study Report be completed prior to November 2005 as shown on Figure II-6. The Commission further recommends that as additional funds become available, the implementation of facility upgrades and the acquisition or construction of a new fish production facility as described in the FishPro Study Report and shown in Table II-14 and Figure II-7, be completed within 10 years in order to expeditiously increase license

[13] A "limited –discharge" facility means a facility that is nearly self contained and discharges low volumes of effluent.
[14] Figure II-6 and Figure II-7 from FishPro's Study Report are attached as Appendix E and F respectively.
[15] Table II-14 from FishPro's Study Report is attached as Appendix G.

sales and boost Maine's sagging economy. While the Commission recommends the Department begin the process of obtaining a new facility after the implementation of upgrades shown on Table II-4, the Department should not supplant efforts to increase fish production through other measures including the continued upgrade of existing facilities.

Unanimous Finding #8: The Commission strongly agrees that it is critical to Maine's recreational salmonid fisheries and to Maine's economy that the Commission's recommendations are attained in the timeframe provided in Figure II-7 of the FishPro Study Report. The Commission finds that a qualified group authorized by the legislature to provide oversight to the Department during the initial implementation of the Commission's recommendations is necessary to address unexpected circumstances and avoid costly delays. The Commission further finds that it is uniquely qualified to provide this oversight function.

- **Unanimous recommendation:** The Commission recommends that the Commission be reestablished for two years and its 2002 membership be reinstated to provide oversight and guidance to the Department during the initial implementation of the Commission's recommendations.

Majority Finding #9: (10 in favor, 3 opposed and 2 abstained) A majority of the Commission finds based on data provided in DEP's September 12, 2002 report ("DEP [16] and data provided in the FishPro Study Report, that the Casco, Embden, Enfield and Palermo facilities will require immediate upgrades to existing effluent treatment systems to help these facilities' conform to the requirements of their current discharge licenses. A majority of the Commission further finds that wastewater improvements and "low-cost" methods, including application of best management practices of effluent treatment as identified by DEP, DIFW and FishPro, are necessary to help those facilities comply with license requirements. Additionally, a majority of the Commission finds that implementing dissolved oxygen improvements at many of the fish production facilities will both improve effluent water quality and allow for some increase in fish production consistent with current discharge license requirements.

- **Majority recommendation:** (10 in favor, 3 opposed and 2 abstained) A majority of the Commission recommends that the Department upgrade the wastewater discharge systems at Casco, Embden, Enfield and Palermo in accordance with the purposes of the effluent improvements provided in the Table II-14 of the FishPro Study Report. Additionally, a majority of the Commission recommends that dissolved oxygen management improvements be implemented at the Casco, Dry Mills, Embden, Enfield, Governor Hill, and Palermo as shown in Table II-14 of the FishPro Study Report.

[16] DEP's September 12, 2002 report is attached as Appendix H.

Majority Finding #10: (10 in favor, 2 opposed and 3 abstaining) A majority of the Commission finds that funding from the November 2002, $7 million bond referendum is sufficient to implement the recommendations under Finding #9 as reflected in Table II-14 of the FishPro Study Report.

- **Majority Recommendation:** (10 in favor, 2 opposed and 3 abstaining) The Commission recommends that funds from the $7 million bond be used to implement the recommendation under Finding #9 as provided in Table II-14 of the FishPro Study Report or should circumstances require, allocate those funds as needed to achieve the purposes reflected in that table.

Majority Finding #11: (14 in favor and 1 opposed) A majority of the Commission finds, based on data presented in the FishPro Study Report and in particular survey results presented in that report, that privatization of fish production could be an important component in meeting the Commission's fish production goals.

- **Majority Recommendation:** (14 in favor and 1 opposed) A majority of the Commission recommends that the Department seek contracts with private fish production facilities to supply egg, fry or fish needed to achieve the Commission's fish production goals that cannot be produced by State-owned facilities.

Establishment and Duties

The Commission was created by Resolves of 1999, chapter 82 and extended by Public Law of 2001, chapter 462.[17] As enacted, Resolves of 1999, chapter 82, created a 13 member Commission to study the salmonid fish culture facilities in Maine. Public Law 2001, chapter 462 increased the Commission's membership to 16.[18] Additionally, Public Law 2001, chapter 462 directed the Commission to set production goals for the number, size and species mix of recreational sport fish to be stocked within the State over the next 15 to 20 year planning horizon. Public Law 2001, chapter 462 also required the Commission to make recommendations on how to meet the State's future sport fish production and management needs in the most cost-effective manner that may include upgrades to existing facilities, closure of non-economic facilities, building new facilities or the purchasing of fish from privately owned fish production facilities. Finally, Public Law 2001, chapter 462 established a non-lapsing fish hatchery maintenance fund, a non-lapsing fund, in the Department to be used by the commissioner to fund engineering designs for the Embden Hatchery and for the maintenance, repair and capital improvements of other fish hatcheries and feeding stations owned by the State.[19]

Study process and prior findings and recommendations

The Commission met 15 times over a four-year period starting September 28, 1999 and ending on October 23, 2002.[20] The Commission held its first six meetings between September 28, 1999 and December 5, 2000. During those meetings the Commission undertook a comprehensive review of the current condition of the fish production facilities and the current levels and type of fish production at those facilities. In conducting that review, the Commission organized itself into three subcommittees focusing on discharge issues, fish management issues and oversight of FishPro. Those subcommittees each held several meetings to discuss topics related to their area of inquiry. During its first six meetings, the Commission and its subcommittees completed the following substantive tasks:

[17] Enacted during the 1st Regular Session of the 119th Legislature with an effective date of June 17, 1999. Resolves of 1999, c. 82, is derived from LD 986, Resolve, Establishing a Commission to Study the Feasibility of Reestablishing a Brook Trout and Landlocked Salmon Hatchery in Northern Maine, sponsored by Senator Kieffer of Aroostook. A copy of the Resolve, chapter 82 and Public Law 462 are attached as Appendix I.

[18] A list of Commission members is attached as Appendix J.

[19] The 119th Legislature appropriated $500,000 to the Department of Inland Fisheries and Wildlife under Part HHH-1 of Public Laws of 1999, chapter 731, and Public Law 462 placed unexpended funds appropriated by the 119th Legislature into the fish hatchery maintenance fund.

[20] In Brewer on 9/28/99, in Skowhegan on 10/15/99, in Augusta on 2/16/00, 3/8/00, 6/19/00,12/5/00, 6/20/01, 7/20/01, 8/1/01, 10/ 6/01, 10/26/01, 1/16/02, 3/27/02, 9/16/02, 10/23/02.

1). Worked with the Department, DEP, private fish hatchery owners and members of the public during the development and final issuance of waste discharge licenses for the nine state-owned fish hatcheries.[21] The Commission worked with those agencies for over a year to obtain those licenses. Prior to the issuance of these licenses in July 2000, the fish production facilities were operating under licenses last issued in 1983;

2). The Commission in conjunction with the Department and FishPro completed a thorough preliminary strategic fish production facility planning and engineering study which characterizes and documents the condition of those facilities and identifies the needs at each facility as well as possible improvements. FishPro also completed a thorough review of the effluent discharge standards contained in the discharge licenses and identified compliance issues and provided guidance to the Commission with respect to what cost effective wastewater treatment options that are available to the State to meet those effluent discharge standards within the three year compliance window; and

3). Began work to determine the future sport fish management needs and to assess how those needs will be met in the most cost effective manner.

In its December 2000 interim report, the Commission made the following findings and recommendations:

Finding 1. That legislative policy guidance to the Department is essential over the next two years to establish long term fish production and distribution goals, ensure a high quality and economically viable recreational sport fishery in the state and provide for reliable, efficient and cost effective fish production systems.

Recommendation. Reauthorize the Commission for an additional two years to complete its assigned tasks and to accomplish the following tasks:

- Continue to work with the Department and FishPro in evaluating the effluent characteristics of fish hatcheries, including private fish hatcheries, with the purpose of ensuring that the State fish hatcheries will be able to comply with licensed effluent discharge standards within three years and to obtain information relevant to discussions of discharge license standards for unlicensed private fish hatcheries;

- Set statewide production goals for the number, size and species mix of recreational sport fish over a 10 to 20 year planning horizon. Although Commission as a whole has not made a recommendation on production goals, some members of the Commission feel that a reasonable goal would be to

[21] Final discharge licenses were issued by DEP on July 25, 2000.

increase annual production by 5 million fish in the next 10 years with an additional 3 million fish in the following 5 years; and

- Determine how to meet those production goals in the most cost effective manner by evaluating all production options, including investing in cost effective upgrades to existing state owned facilities to produce more fish, closing non-economic state owned facilities, purchasing fish from privately owned hatcheries and building new capacity in other locations. The assessment of other locations will include a statewide search for new locations that meet specific requirements.

Finding 2. The 119th Legislature appropriated $500,000 to the Department for engineering analysis and assessment of state owned fish hatcheries in Part HHHH-1 of Public Laws of 1999, chapter 731.

Recommendation. Unexpended balances appropriated to the Department under Part HHH-1 of Public Laws of 1999, chapter 731 should be allowed to carry forward into Fiscal Year 2002.

Public Law 2001, chapter 426, reauthorized the Commission for an additional two years. The Commission held five meetings between June 20, 2001 and October 26, 2001.[22] Over this time period, the Commission undertook a comprehensive review of the Department's current stocking efforts and identified potential needs for new and enhanced stocking of salmonids within the State. In conducting that review, the Commission invited Department regional biologists representing each of the State's seven regions to provide the Commission with detailed information about the region's stocking program and to identify any future stocking opportunities. Reports provided by regional biologists are attached to the Commission's 2001 interim report. As a result of this review, the Department provided the Commission with a report establishing baseline numbers for increased stocking of salmonids in each region.

The Commission, after a thorough review and analysis of the data provided by the Department, directed FishPro to provide the Commission with cost estimates for increasing the State's fish production from its current level of nearly 260,000 pounds of fish per year to nearly 866,000 pounds of fish per year phased in over the next 15 to 20 years.[23] Cost estimates were to include options for the upgrade of existing facilities, acquisition or construction of a new facility and the privatization of fish production in whole or in part. Detailed analysis of increased production options and costs can be found in the FishPro Study Report.

[22] Public Law 462 authorized the Commission to meet a total of four times per year for two years, however, the Commission requested and received permission from the presiding officers to hold a fifth meeting in 2001.

[23] One member of the Commission supported an increase in fish production of approximately 1.1 million pounds of fish per year.

During these five meetings, the Commission completed the following substantive tasks:

1) Established a six member subcommittee to study the possibility of constructing a new fish hatchery to meet fish stocking needs.[24] The subcommittee under the policy supervision of the Commission, worked with the Department and FishPro to identify potential new fish production facility locations.[25] The subcommittee identified 3 localities that met baseline requirements for citing a new fish hatchery and the Department and FishPro have made initial site visits to all three locations.[26]

2) Monitored the progress of the Department, FishPro, and the DEP in finding a long-term solution to effluent issues facing the State's fish hatcheries.

3) Endorsed the Department's and FishPro's recommendation that the Department purchase nine composite water samplers to improve effluent sampling at the State's fish production facilities. The Department currently has the samplers in use.

In its December 2001 interim report, the Commission made the following findings and recommendations:

Finding 1:. That salmonid recreational fishing in Maine is generally not meeting the expectations of Maine anglers and that increased stocking in all regions of the State is needed to meet angler expectations and to maintain Maine's national status as a salmonid-sport-fishing vacation destination.

Recommendation. Pending the completion of the cost estimates, the Department should increase its salmonid production from nearly 260,000 pounds of fish per year to 865,748 pounds of fish per year over the next 10 to 15 years.

Finding 2: Anglers strongly desire the opportunity to fish in waters that contain trophy size fish.

Recommendation. The Department develop a trophy fish stocking program that will allow the Department to include trophy size fish each time it stocks a particular body of water. The Department should strive to ensure that at least 1% of each stocking event is comprised of trophy size fish.

Finding 3: The Deblois Fish Hatchery is not economically viable as a state owned fish hatchery.

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[24] Subcommittee members are Senator Leo Kieffer, Representative Bruce Bryant, Gary Picard, Steve Wilson, Bill Gilzinus and Urban Pierce.
[25] The Commission solicited public input from numerous interested groups and received 4 responses.
[26] A locality near Washburn was visited on October 25, 2001 and localities near the Saco River and Rumford Point in Androscoggin County were visited on October 27, 2001.

Recommendation. The Commission recommends that the Deblois fish production facility be sold with proceeds going into the fish hatchery maintenance fund.

The Commission held its final four meetings between January 30, 2002 and October 23, 2002.[27] During that time frame the Commission continued to work with the Department and FishPro to establish the feasibility and cost implications for the Commission's 2001 recommendations. In FishPro's Draft Final Supplement of August 2002, FishPro stated that increases in production in the range of 25% to 850% of present Department levels are theoretically possible if infrastructure improvements identified by FishPro and presented in the FishPro Study Report in Table II-2 through Table II-12 were implemented. Those improvements included upgrades to all nine facilities, the acquisition or construction of a new facility and limited purchase of fish from commercial producers[28] at an estimated cost of $42 million over the next 22 years.[29]

On October 12, 2002, the Commission met with DEP to review and discuss DEP's September 12, 2002 report on its evaluation of the State's fish production facilities. After a lengthy briefing by DEP followed by an intense discussion among all parties at the meeting, the Commission directed FishPro to modify its cost estimates and timelines to reflect those discussions.[30]

Background on fish production in Maine

Since the late 19th century, Maine has been actively involved in the management of fisheries in its thousands of lakes, ponds, rivers, and streams. These efforts have focused on the protection of native self-sustaining populations, as well as the establishment and maintenance of other non-native species throughout the state. Large and smallmouth bass, for example, were introduced to the waters throughout the southern half of the state and today represent a major self-sustaining sport fishery. Other species, such as landlocked salmon, brook trout, brown trout, lake trout and splake, are currently raised in State-owned hatcheries and stocked in over 700 waters throughout the state. Species such as bass, pickerel, perch and other

[27] Meetings were held in Augusta on 1/30/02, 3/27/02, 9/13/02 and 10/23/02.

[28] FishPro conducted a survey of private aquaculture facilities to determine the interest and capability of those facilities to meet the State's fish production needs. Based on survey responses, FishPro reported that private facilities could contribute 8.9% of the number and 6.5% of the pounds of species currently produced by the Department. A copy of the survey and a more detailed analysis of the privatization option can be found in FishPro's Final Report.

[29] In that report FishPro stated that the proposed trophy fish program would not be feasible because it would require the holding of 3 to 4 concurrent year classes of fish at a trout biomass of over 500,000 pounds per year. To accommodate the proposed trophy program would require a large investment of facility space and resources making the trophy program excessively costly. FishPro also noted that no other state currently produces trophy fish in quantities proposed by the Commission

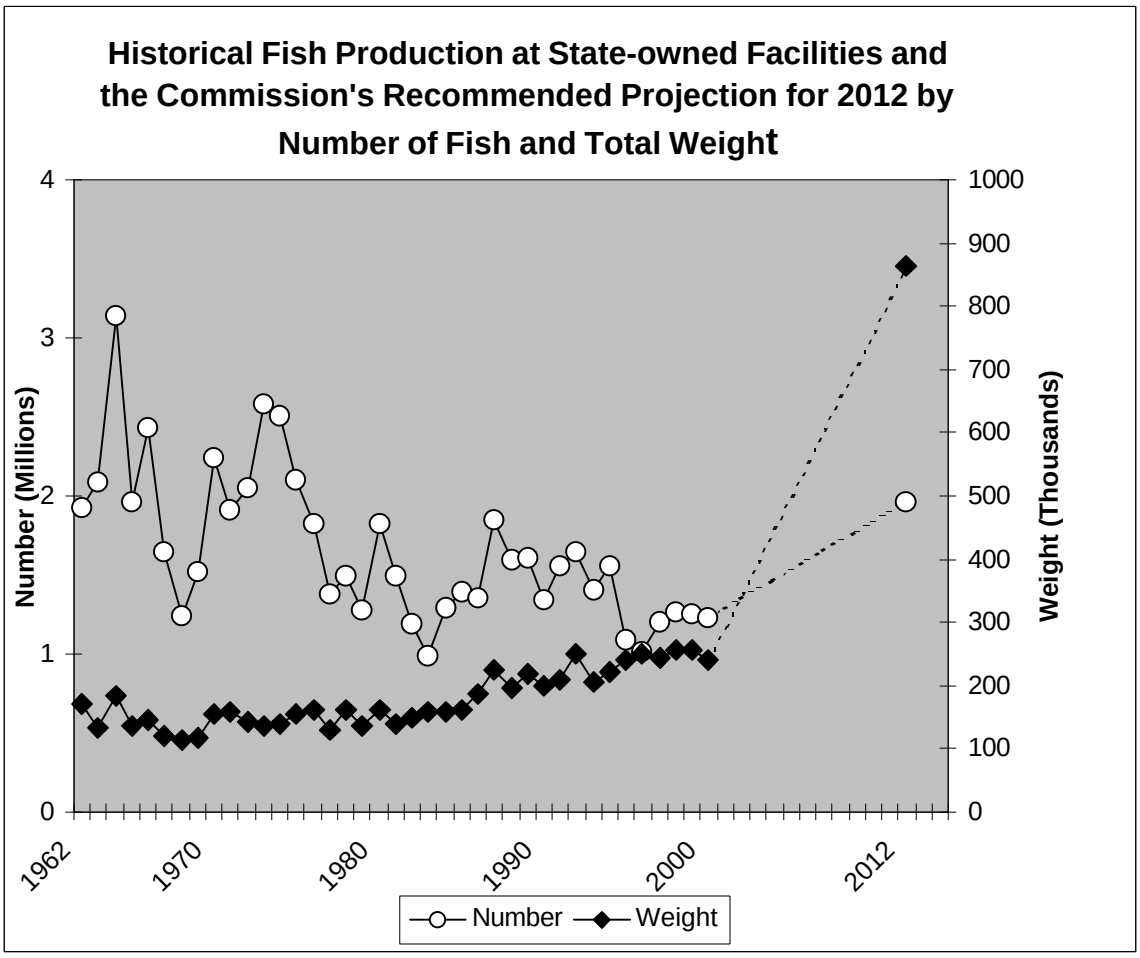
[30] See DEP's September 12, 2002 report, FishPro's Study Report and the section in this report dealing with effluent issues for additional information.

"warm water" species are perpetuated by natural reproduction, so no stocking program for these species is considered necessary.

The production of fish from State-owned facilities play a vital role in the maintenance of the salmonid angling opportunities that are highly valued by Maine anglers and thousands of others who visit our State to enjoy its outdoor heritage. According to the Department, over 60 percent of the state's landlocked salmon waters have inadequate spawning habitat and are maintained by stocking. For example, only about four natural populations of landlocked salmon existed historically within the state. Now there are over 200 lake salmon fisheries statewide.

In recent years, greater reliance has been placed on size, health, and genetic makeup of the Department's fish stock to maximize survival in the wild. Although the number of fish stocked has been declining over the years, the size of fish stocked has been steadily increasing. As shown in Figure 1, the overall average weight of fish raised in Maine's fish production facilities has increased approximately 41% since 1962 and is currently at the greatest average weight ever produced by the State. With the implementation of the Commission's recommendations, the weight of fish produced by the Department will increase 409% from 1962 levels by 2012. Interestingly, the number of fish produced over this same period of time will increase only by 2%.

Figure 1



Dotted line represents increase in fish production over the next 10 years expected to result from the implementation of the Commission's recommendations.

Aging fish production infrastructure

The nine facilities currently operated by the State were initially constructed between 1857 (Grand Lake Stream) and 1958 (Enfield). In total, these nine hatcheries have been operation for the overall equivalent of 500 production years and have an average age of 58 years. According to the Department's consultant, many components of those facilities are reaching the end of their useful service life.

In 1987, the Department assessed the status of these facilities in a comprehensive manner, and updated a plan to address a variety of maintenance needs. Although some of these needs have been addressed since that time, inadequate funds have kept maintenance and enhancement projects at less then desired levels. Raceway renovations were completed at several facilities (Grand Lake Stream, Palermo, Governor Hill, and Dry Mills), and production increased at

Dry Mills by increasing water supplies and reclaiming previously unused raceways. Recent renovations to the water supply dam, construction of a new hatchery facility, and development of underground well water supplies have greatly enhanced the operation of the New Gloucester facility. At Governor Hill, new sources of well water have been located that will allow a significant expansion in both brood rearing and fry production, while also allowing for a modest increase in fish for stocking. In addition, voluntary assistance from some or the larger paper companies, through an "Adopt-A-Hatchery" program, is providing technical support and assistance needed to address many ongoing maintenance needs at each facility. All of the nine facilities have been adopted and will be benefiting from significant corporate/employee contributions resulting in major improvements. The Department is also committing significant resources (up to $250,000 annually over the next few years) to support this effort.

During the 1990's, considerable effort was spent on two initiatives to fund improvements at state hatcheries. The first attempt was in 1994 when the Legislature approved a $10 million bond referendum that, if passed by the voters, would have funded improvements and expansions of state fish hatcheries.[31] That referendum failed to receive a majority vote in the general election of November 1994.[32] A second fish hatchery bond issue for $5 million was contemplated two years later in 1996. At that time, the Department's proposal was to use funds from a bond issue to incorporate new fish rearing technology into the existing facilities, expand and protect their water supplies and upgrade effluent treatment facilities to meet new discharge requirements associated with expanded production. That proposal was withdrawn before going before the voters; however, because of the lack of a detailed long-range plan upon which the use of such funds could be based.

In November 2002, voters passed a $24.1million bond package referendum that included $7 million to make renovations and enhance wastewater treatment at the Department's fish production facilities. That bond money will be provided to the department in periodic allotments, as needed to carryout the purposes of the bond.

Effluent issues at fish production facilities

The primary sources of waste matter in discharge waters from fish production facilities are unconsumed feed and the by-products or wastes produced by fish. The amount of waste produced by a fish depends on the mass of the fish and the amount of food utilized by the fish. Therefore, the water quality impacts are in direct proportion to the amount of fish food introduced into the system. Detailed analysis of fish production effluents are presented in the Fish Hatchery Effluent Study, FishPro, November 2000,[33] and in the FishPro Study Report.

[31] Private and Special 993, chapter 90 (LD 1756).
[32] That referendum was supported by 238,092 voters (48.9%) and rejected by 249,142 voters (51.1%).
[33] A copy of this report is available for review at the Maine State Law Library in the State House in Augusta, Maine

Maine has had a water classification system since the 1950's. This classification system establishes water quality goals for the State and is used to direct the State in the management of its surface waters, protect the quality of those waters for their intended management purposes, and where standards are not achieved, direct the State to enhance the quality to achieve those purposes. The classification standards establish designated uses, related characteristics of those uses, and criteria necessary to protect the uses, and specific conditions for certain activities such as the discharge of wastewater.

All surface waters in Maine have been classified by the legislature and once a classification assignment is made, and the uses and criteria are achieved, that achievement is protected by the antidegradation provisions of the water quality statute (36 MRSA § 464(4)(F)). Thus, the law provides a mechanism for the State to continually move forward in the improvement and protection of water quality. While downgrades to classification have been made, it is infrequent and is limited to situations where existing conditions do not afford the possibility to achieve the higher class.

The State has four classes for freshwater rivers, three classes for marine and estuarine waters, and one class for lakes and ponds. DEP views the classification systems as more representative of a hierarchy of risk rather than an indicator of water use or quality. The risk to the water body is the possibility of a breakdown of the ecosystem and loss of use due to either natural or human-caused events. Classes AA, GPA and SA involve little risk since activities such as waste discharge and impoundment are prohibited in these waters. Class A waters allow impoundments and very restricted discharges, so the risk of degradation while quite small, does increase since there is some small human intervention in the maintenance of the ecosystem. Classes B and SB have fewer restrictions on activities but still maintain high water quality criteria. Finally, Classes C and SC have the least restrictions on use and lower water quality criteria. Classes C and SC waters are still good quality, but the margin for error before significant degradation might occur in these waters in the event of an additional stress being introduced (such as a spill or a drought) is the least.

The reclassification of waters of the State is governed by 38 MRSA §§ 464(2), 464(2-A) and 464(3). This statute requires DEP to conduct water quality studies, and the Board of Environmental Protection to hold hearings and propose changes to the water classification system to the Legislature for final approval. This is to be conducted from time to time, but at least every three years. The last reclassification resulted in changes enacted in 1999 and a classification review may be done in 2003.

Three of the state-owned fish production facilities' receiving waters are Class A waters and six are Class B waters. DEP is mandated with ensuring that facility discharges do not cause non-attainment of these receiving waters classification. In assessing the attainment status of receiving waters, DEP conducts monitoring and observations to determine the condition of those criteria.

On July 25, 2000, DEP issued 5-year waste discharge licenses to the nine state-owned fish production facilities. The licenses established technology based and receiving water quality based discharge limits and monitoring requirements for biological oxygen demands, total suspended sediment and total phosphorous. Those licenses impose monthly and yearly effluent limits on phosphorus, suspended solids and dissolved oxygen, although each of the licenses includes a provision allowing the facilities three years to comply with the effluent limits. At the request of the Commission, the Department contracted with FishPro to conduct an effluent study of those fish production facilities to determine how the discharge characteristics compared to the effluent limits in the discharge licenses, whether or not compliance was achievable within the 3 year compliance window and, if compliance could not be guaranteed, what effluent treatment options were available to the hatcheries that would allow them to meet their discharge limits when those limits take effect in 2003. That analysis was completed in December 2000 and presented to the Commission on December 5, 2000. [34]

FishPro's analysis indicated that five of the fish production facilities were in compliance with all their numeric effluent limits in the discharge licenses. Those facilities are Casco, Embden, Grand Lake Stream and New Gloucester. Effluent from three other hatcheries, Dry Mills, Governor Hill and Phillips, may not have met the license limits for phosphorus and dissolved oxygen at the time of the FishPro's analysis, and were potentially at risk of being in noncompliance with their discharge license in 2003 unless some steps were taken to further treat the effluent from those facilities. It was unclear if the Palermo facility was meeting its phosphorus limits at the time FishPro conducted its analysis because of technical concerns about how the phosphorus license limit was initially calculated for this facility.

As a result of this analysis, the Commission endorsed recommendations by FishPro, and the Department to meet with the DEP to discuss the discharge license to address the Palermo phosphorus limit and the limits applicable to rearing unit cleaning. The Commission also encouraged the Department to undertake immediate measures to implement improved solids recovery and management of existing treatment basins at the three fish production facilities that may have been operating above limits established in their discharge permits. Additionally, the Commission encouraged the Department to give a high priority to improvements of solids collection and disposal systems at facilities with solids recovery systems and to evaluate the costs of constructing effluent treatment systems at those fish production facilities without solids recovery systems. Furthermore, the Commission recommended that the Department purchase nine composite water samplers to monitor effluent levels at the State's nine fish production facilities. As of the date of this report, the Department in conjunction with FishPro and DEP has implemented or begun to implement these recommendations.

In 2002, DEP analyzed the condition of the receiving waters for the nine-state-owned fish production facilities and discharge data collected by the Department for these facilities to reevaluate the 2000 license limits. DEP conducted monitoring for aquatic macro-invertebrates

[34] A copy this report is available for review at the Maine State Law Library in the State House in Augusta, Maine.

in fish production facilities' receiving waters and made specific observations of conditions impacting class attainment such as the presence of certain types of fungus and algae[35].

In its 2002 report, DEP maintains that the effluent limits for biological oxygen demand, total suspended solids and phosphorous as set in 2000 for the State's fish production facilities permits are appropriate, except DEP agreed that the phosphorous limit for Palermo should be revised to make it less restrictive. DEP found that the receiving waters for Dry Mills, New Gloucester, Governor Hill and Phillips fish production facilities are currently meeting or exceeding their assigned classes for micro-invertebrates. DEP tentatively identified the receiving waters for Enfield and Grand Lake Stream fish production facilities as not meeting their assigned classifications for macro-invertebrates but stated that this may be due to adjacent lake effects on rock baskets used to sample aquatic insect faunas, and that the receiving water for these facilities may actually attain their classifications. DEP identified the receiving waters for Casco, Embden and Palermo as not meeting the classification for micro-invertebrates.

In its report to the Commission, DEP stressed that receiving waters currently in non-attainment of classification standards must be brought into attainment and that any facility expansion must produce better quality effluent than current effluent for any receiving water currently in non-attainment. In addition to compliance with current license limits, facility upgrades must address receiving water class attainment issues such as discharges into Class A waters,[36] dissolved oxygen, the presence of fungus and excess algae, and macro-invertebrate impacts. DEP also recommended the Department exhaust any low cost options including best management practices, elimination of non-treated effluent discharges and regular cleaning of sediment basins to see how receiving waters respond before implementing larger scale upgrades to treatment systems.

As a result of DEP's report, the Commission directed FishPro to design wastewater effluent treatment recommendations that include best management practices to ensure the State's fish production facilities comply with discharge license requirements. As indicated in Table II-14 of the FishPro Study Report, Casco, Embden, Enfield and Palermo fish production facilities should be fitted with Tier I and Tier II wastewater treatment system improvements. Additionally, dissolved oxygen management should be implemented at all but three facilities which will help maintain dissolved oxygen levels and increase the ability of fish to metabolize feed more efficiently. Because discharge license compliance also includes factors such as

[35] DEP uses macro-invertebrates as indicators because changes to macro-invertebrate communities are typically caused by factors that are likely to affect the entire receiving water ecosystem. Excessive algae or fungus can also indicate elevated levels of certain pollutants.

[36] In order to protect Maine's Class A waters, 38 MRSA 465.2(C) states that new or expanded discharges into Class A waters are permitted only if, in addition to satisfying all the requirements of the article, the discharged effluent will be equal to or better than the existing water quality of the receiving water. This includes demonstrating that the proposed expansion is necessary and that there are no reasonable alternatives available.

insect community health, fungus and algae conditions, future effluent analysis by DEP may require additional upgrades to effluent treatment systems in order to attain class assignments.