Draft Fishery Management Plan

Cobbosseecontee Stream

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Introduction

The Cobbosseecontee Stream drainage historically supported runs of at least seven species of native diadromous[1] fishes, which were reduced or extirpated by construction of dams without fishways. The American eel is still found throughout the drainage, but the first dam on the river prevents alewife, American shad, Atlantic salmon, blueback herring, rainbow smelt, and striped bass from migrating upstream. In 1997 the Department of Marine Resources (DMR) began stocking alewives in Pleasant Pond in order to restore a run to the drainage. Alewives are an important forage fish, and DMR anticipated that a run of alewives would attract sportfish to the mouth of Cobbosseecontee Stream. This strategy has proved successful. Striped bass congregate in the lower, free-flowing section of the stream in fall to feed on emigrating juvenile alewives, resulting in an exceptional fishery.

This draft plan is being developed to guide future decisions on fisheries management in the Cobbosseecontee Stream drainage. The goals contained in this plan reflect a desire to manage the fisheries within the physical and biological limits of available habitat. This management plan includes DMR's recommendations for fish passage issues that must be addressed for the successful attainment of stated management goals.

Description of Drainage

The Cobbosseecontee Stream drainage encompasses an area of approximately 240 square miles, and spans 15 towns (Bowdoin, Farmingdale, Gardiner, Hallowell, Litchfield, Manchester, Mount Vernon, Monmouth, Readfield, Richmond, Sabattus, Wales, Wayne, West Gardiner, and Winthrop). Twenty-one lakes and ponds with a total surface area of 13,534 acres and 19 dams without fishways are located within the drainage (Fig. 1; Table 1).

Water quality in the drainage is generally good. The Department of Environmental Protection has classified the mainstem of Cobbosseecontee Stream and its tributaries as Class B. All the lakes and ponds in the drainage are classified as GPA.

Each fall Cobbosseecontee Lake **(any others?)** is drawn down to improve or maintain water quality and to provide protection from ice or flood damage. This drawdown usually occurs during the first or second week of September, and often stimulates the downstream migration of American eels and alewives.

Fisheries Resources

Migratory fishes

Historically, the Cobbosseecontee Stream drainage supported runs of alewife, American shad, American eel, Atlantic salmon, blueback herring, rainbow smelt, and striped bass. Construction of a dam in Gardiner, documented as early as 1787, interfered with the upstream movement of alewife, shad, and salmon, and the runs dramatically declined in number. In 1867 the newly appointed Commissioners of Fisheries reported that the Town of Winthrop for several years had appointed a committee to obtain the opening of a fishway in the dam at Gardiner, but they were unsuccessful. By 1867 there were eight dams within one mile of the Kennebec River and 10 dams to the first lake.

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[1] A collective term referring to anadromous and catadromous fishes, i.e., fishes that migrate between the ocean and fresh water during their life cycle. Anadromous fishes spend most of their lives in the ocean, but spawn in fresh water; catadromous fishes spend most of their lives in fresh water, but spawn in the ocean. Alewife, American shad, Atlantic salmon, blueback herring, rainbow smelt, and striped bass are anadromous. The American eel is catadromous.

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Despite the presence of numerous dams, American eels persisted throughout the drainage because of their unusual ability to leave the water for periods of time, and climb rough damp surfaces. The current population is sufficiently robust to support commercial fisheries. During the 1990s, upstream migrating juvenile eels were commercially harvested at the mouth of Cobbosseecontee Stream, and downstream migrating adults were harvested at the outlet of Cobbosseecontee Lake and Annabessacook Lake. The adult eel fishery harvested approximately 3000 eels per year.

Five species of native anadromous fishes currently utilize the short, free-flowing reach from the stream's confluence with the Kennebec River to the first dam. American shad, blueback herring, rainbow smelt, and alewife to some extent, spawn in this reach each spring. Striped bass appear in this area in the spring to feed on spawning adults and in the fall to feed on emigrating juveniles.

In 1985, DMR drafted The Strategic Plan for the Restoration of Shad and Alewives to the Kennebec River above Augusta (1985 Plan), which outlined restoration goals for important fishery resources that historically resided in the Kennebec River above Edwards Dam, located in Augusta. Following public hearings, the Strategic Plan was formally adopted in 1986. The plan contained minimal reference to the Cobbosseecontee Stream drainage, because it lies below Augusta, and was blocked by multiple dams without fish passage.

Eleven years after the 1985 Plan was adopted, DMR began stocking adult alewives into Pleasant Pond, Richmond, in order to reestablish a run in the Cobbosseecontee Stream drainage. Stocking has continued each year since 1997 (Table 2). This stocking program was initiated because alewives are an important source of food for many species of fish and wildlife, and DMR anticipated that a run of alewives would attract sportfish to the mouth of Cobbosseecontee Stream. This strategy has proved successful, and there is now an exceptional fishery for striped bass in both spring and fall. In addition to improving recreational fishing, the alewife run ultimately could support a commercial harvest.

Estimates of migratory fish populations

In the 1985 Plan, DMR estimated the number of alewives that could be produced by nine lakes and ponds in the Cobbosseecontee drainage. In this plan, estimates of alewife production have been included for an additional 11 lakes and ponds that were omitted from the 1985 Plan. All estimates of alewife production are calculated by multiplying the surface area, measured in acres, by a unit production of 235 fish/acre[2]. Total production for the drainage is estimated to be approximately 3,180,600 alewives (Table 3).

In order to maintain a run of alewives, approximately 15% of the adults imprinted to a particular lake or pond must be allowed to spawn each year. Total spawning escapement would be about 477,100 adult alewives if no dams existed in the drainage (Table 3). However, fish will have to pass multiple dams to reach spawning habitat in this drainage, and fish passage facilities are never totally 100% efficient. Assuming 90% passage efficiency at each dam, total spawning escapement is approximately 700,000 adult alewives. The remaining 2.48 million fish could support a commercial harvest.

Fish passage

Successful restoration and enhancement of diadromous species currently is hampered by the lack of upstream and downstream fish passage at 16 of the dams within the Cobbosseecontee Stream drainage. Gardiner Paperboard, Incorporated owns the first dam (furthest downstream). The function of this dam

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[2] This unit production value was developed from the commercial harvest in six Maine watersheds for the years 1971-1983. On the basis of these data, commercial yield was assumed to be 100-pounds/surface acre of ponded habitat. Assuming a weight of 0.5 pounds per adult, the commercial yield equals 200-adults/surface acre. The commercial harvest was assumed to represent an exploitation rate of 85%, because most alewife runs are harvested six days per week. Exploitation rates on the Damariscotta River, for example, ranged from 85-97% for the years 1979-1982. When commercial yield is adjusted for the 15% escapement rate, the total production is 235 adult alewives/acre.

was to create an impoundment, from which process water and fire protection water could be removed. The company ceased operations at the mill in 2000. Friends of the Kennebec Salmon, a non-profit environmental organization, in collaboration with Gardiner Paperboard have obtained funding and the necessary permits to remove the dam, anticipated to occur in the summer of 2003.

The second dam on the river, the American Tissue Dam, is a hydropower project, licensed by the Federal Energy Regulatory Commission (FERC) in 1979. The Project's license currently does not contain any requirements for the construction of upstream and downstream fish passage facilities. However, following a fish kill in 2002, DMR agreed to develop a fisheries management plan, and FERC agreed to reopen the license and incorporate fish passage requirements following consultation between the owner and state and federal resource agencies.

The remaining dams within the drainage are not hydropower facilities, and, therefore, are not FERC jurisdictional dams. This plan recommends the installation of upstream and downstream passage facilities at these dams, which are privately owned or owned by municipalities, in a sequential fashion with installation occurring in a specific year or four years after stocking of alewives in upstream spawning habitat. DMR has assisted dam owners in obtaining funds for constructing fish passage for more than 30 years, and intends to continue that tradition in the Cobbosseecontee drainage.

Commercial harvest/sorting

Need some DMR discussion about this

Resident species

Resident fish are those species that are able to fulfill their life history requirements within the river and its tributaries. The species listed below are known resident inhabitants of the Cobbosseecontee drainage. Waiting for info from B. Woodward.

Management Goals, Objectives, and Strategies

The overall goal of the draft fishery management plan is to manage the diadromous fishes of the Cobbosseecontee Stream drainage for optimum habitat utilization, abundance and public benefit. Management objectives (numbers) and strategies (letters) supporting this goal are listed by reach below:

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Reach 1: Mouth of Cobbosseecontee Stream to American Tissue Dam

1. Manage Reach 1 as a migratory pathway for alewife, American eel, American shad, blueback herring, striped bass, and rainbow smelt.

Gardiner Paperboard Dam

a. Remove Gardiner Paperboard Dam (anticipated to occur in the summer of 2003).

American Tissue Dam

b. Beginning in 2002, provide interim downstream passage between September 1 (or when flushing flows arrive from upstream, whichever comes first) and November 15 for American eel at the American Tissue Dam by installing a metal exclusion plate along the bottom of the trashracks, and opening the deep gate furthest from the intake eight inches (8"). If eel mortalities or injuries continue to be observed, reduce generation in 25% increments to the point of total shutdown from dusk to dawn.

c. Beginning in 2002, provide interim downstream passage between September 1 (or when flushing flows arrive from upstream, whichever comes first) and November 30 for alewife by opening a 3' wide notch in the flashboards of the American Tissue dam, and installing a plywood and steel plunge pool below the notch. If alewife mortalities or injuries continue to be observed, reduce generation in 25% increments to the point of total shutdown during daylight hours.

d. Provide permanent upstream and downstream passage for American eel at the American Tissue Dam beginning in 2005. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 (or when flushing flows arrive from upstream, whichever comes first) and November 15.

e. Provide permanent upstream and downstream passage for alewife at the American Tissue Dam beginning in 2005. The upstream passage facility should be operational by May 1, have a trapping/sorting/counting facility, and should be capable of passing at least 627,200 alewives. Downstream passage should be operational between June 1 and November 30.

2. Manage Reach 1 for sustained production of diadromous species consistent with habitat capabilities.

3. Manage species in accordance with the Atlantic States Marine Fisheries Commission's (ASMFC) Interstate Fisheries Management Plan for Striped Bass, Interstate Fisheries Management Plan for American shad and river herring, and Interstate Fisheries Management Plan for American eel.

   a. Implement all regulations, assessment, and reporting requirements found in ASMFC management plans.

4. Promote existing and potential commercial fisheries for alewife and American eel.

5. Promote existing and potential recreational angling opportunities for American shad and striped bass.

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Reach 2. American Tissue Dam to Cobbosseecontee Lake Dam and Tacoma Lakes Dam

1. Manage Reach 2 as a migratory pathway for alewife and American eel.

New Mills Dam

a. Provide permanent upstream and downstream passage for American eel at New Mills Dam beginning in 2005. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

b. Provide permanent upstream and downstream passage for alewife at New Mills Dam beginning in 2005. Upstream passage should be operational by May 1, and should be capable of passing at least 564,500 alewives. Downstream passage should be operational from June 1 through November 30.

Collins Dam

c. Provide permanent upstream and downstream passage for American eel at Collins Dam beginning in 2008. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

d. Provide permanent upstream and downstream passage for alewife at Collins Dam beginning in 2008. Upstream passage should be operational by May 1, and should be capable of passing at least 470,600 alewives. Downstream passage should be operational from June 1 through November 30.

Cobbosseecontee Lake Dam

e. Provide permanent upstream and downstream passage for American eel at Cobbosseecontee Lake Dam beginning in 2009. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

f. Provide permanent upstream and downstream passage for alewife at Cobbosseecontee Lake Dam beginning in 2009. Upstream passage should be operational by May 1, and should be capable of passing at least 416,300 alewives. Downstream passage should be operational from June 1 through November 30.

Gilman Dam and Tacoma Lakes Dam

g. Provide permanent upstream and downstream passage for American eel at Gilman Dam and Tacoma Lakes Dam concurrent with alewife passage. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

h. Provide permanent upstream and downstream passage for alewife at Gilman Dam and Tacoma Lakes Dam after four consecutive years of alewife stocking in Woodbury Pond, Sand Pond, Buker Pond, Jimmy Pond, and/or Little Purgatory Pond. Upstream passage at Gilman Dam should be capable of passing at least 37,400 alewives and at Tacoma Lakes Dam should be capable of passing at least 33,700 alewives. Both upstream facilities should be operational by May 1. Downstream passage should be operational from June 1 through November 30.

2. Manage Reach 3 for sustained production of resident and diadromous species consistent with habitat capabilities.

3. Manage species in accordance with the ASMFC Interstate Fisheries Management Plan for American shad and river herring and the Interstate Fisheries Management Plan for American eel.

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a. Implement all regulations, assessment, and reporting requirements found in ASMFC management plans.

4. Promote existing and potential commercial fisheries for alewife and American eel.

Reach 3. Cobbosseecontee Lake Dam to Annabessacook Dam

1. Manage Reach 3 as a migratory pathway for alewife and American eel.

Annabessacook Dam

a. Provide permanent upstream and downstream passage for American eel at Annabessacook Dam beginning in 2010. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

b. Provide permanent upstream and downstream passage for alewife at Annabessacook Dam after four consecutive years of alewife stocking in Annabessacook Lake. Upstream passage should be operation by May 1, and should be capable of passing at least 216,900 alewives. Downstream passage should be operational from June 1 through November 30.

2. Manage Reach 3 for sustained production of resident and diadromous species consistent with habitat capabilities.

3. Manage species in accordance with the ASMFC Interstate Fisheries Management Plan for American shad and river herring and the Interstate Fisheries Management Plan for American eel.

a. Implement all regulations, assessment, and reporting requirements found in ASMFC management plans.

4. Promote existing and potential commercial fisheries for alewife and American eel.

Reach 4. Annabessacook Dam to Marranacook Lake Upper Dam, Cochnewagan Dam, Wilson Pond Dam, and Apple Valley Dam

1. Manage Reach 4 as a migratory pathway for alewife and American eel.

Marranacook Lake Upper Dam

a. Provide permanent upstream and downstream passage for American eel at Marranacook Lake Upper Dam beginning in 2011. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

b. Provide permanent upstream and downstream passage for alewife at Marranacook Lake Upper Dam after four consecutive years of alewife stocking in Marranacook Lake. Upstream passage should be operational by May 1, and should be capable of passing at least 89,100 alewives. Downstream passage should be operational from June 1 through November 30.

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Cochnewagan Dam

c. Provide permanent upstream and downstream passage for American eel at Cocknewagan Dam concurrent with alewife passage. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

d. Provide permanent upstream and downstream passage for alewife at Cocknewagan Dam after four consecutive years of alewife stocking in Cocknewagan Lake. Upstream passage should be operational by May 1, and should be capable of passing at least 13,600 alewives. Downstream passage should be operational from June 1 through November 30.

Lower Dam-Wilson Stream and Wilson Pond Dam

e. Provide permanent upstream and downstream passage for American eel at Lower Dam-Wilson Stream and Wilson Pond Dam concurrent with alewife passage. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

f. Provide permanent upstream and downstream passage for alewife at Lower Dam-Wilson Stream and Wilson Pond Dam after four consecutive years of alewife stocking in Wilson Pond, Dexter Pond, and/or Berry Pond. Upstream passages should be operational by May 1; the facility at Lower Dam-Wilson Stream should be capable of passing at least 33,800 alewives, and the facility at Wilson Pond Dam should be capable of passing at least 30,500 alewives. Downstream passage should be operational from June 1 through November 30.

Apple Valley Dam

g. Provide permanent upstream and downstream passage for American eel at Apple Valley Dam concurrent with alewife passage. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

h. Provide permanent upstream and downstream passage for alewife at Apple Valley Dam after four consecutive years of alewife stocking in Apple Valley Lake. Upstream passage should be operational by May 1, and should be capable of passing at least 3,552 alewives. Downstream passage should be operational from June 1 through November 30.

Carleton Pond

i. Provide permanent upstream and downstream passage for American eel at Carleton Pond Dam concurrent with alewife passage. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

j. Provide permanent upstream and downstream passage for alewife at Carleton Pond Dam after four consecutive years of alewife stocking in Carleton Pond. Upstream passage should be operational by May 1, and should be capable of passing at least 7,866 alewives. Downstream passage should be operational from June 1 through November 30.

2. Manage Reach 4 for sustained production of resident and diadromous species consistent with habitat capabilities.

3. Manage species in accordance with the ASMFC Interstate Fisheries Management Plan for American shad and river herring and the Interstate Fisheries Management Plan for American eel.

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a. Implement all regulations, assessment, and reporting requirements found in ASMFC management plans.

4. Promote existing and potential commercial fisheries for alewife and American eel.

Reach 5. Marranacook Lake Dam to Torsey Lake Dam

1. Manage Reach 5 as a migratory pathway for alewife and American eel.

Grist Mill Pond Dam and Torsey Lake Dam

a. Provide permanent upstream and downstream for American eel passage at Grist Mill Pond Dam and Torsey Lake Dam concurrent with alewife passage. Upstream passage should be operational by May 1, and downstream passage should be operational from dusk to dawn between September 1 and November 15.

b. Provide permanent upstream and downstream passage for alewife at Grist Mill Pond Dam and Torsey Lake Dam after four consecutive years of alewife stocking in Torsey Lake. Upstream passages should be operational by May 1; the facility at Grist Mill Pond Dam should be capable of passing at least 30,200 alewives, and the facility at Torsey Lake Dam should be capable of passing at least 27,100 alewives. Downstream passage should be operational from June 1 through November 30.

2. Manage Reach 5 for sustained production of resident and diadromous species consistent with habitat capabilities.

3. Manage species in accordance with the ASMFC Interstate Fisheries Management Plan for American shad and river herring and the Interstate Fisheries Management Plan for American eel.

a. Implement all regulations, assessment, and reporting requirements found in ASMFC management plans.

4. Promote existing and potential commercial fisheries for alewife and American eel.

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Table 1. Location and description of dams in Cobbosseecontee Stream drainage, and number of alewives to be passed at each dam.

Map code	Name of dam	Number of fish to pass	Location	Built	Length (ft)	Height (ft)
1	Gardiner Paper Company Dam		Gardiner			
2	American Tissue Dam	627,200	Gardiner	1911	430	24
3	New Mills Dam	564,500	Gardiner	1885	200	13
4	Collins Dam	470,600	Gardiner	1900	200	15
5	Cobbosseecontee Lake Dam	416,300	Gardiner	1900	191	14
6	Mill Pond Dam	0	Winthrop	1850	240	14
7	Gilman Dam	37,400	Litchfield	1900	120	14
8	Tacoma Lakes Dam	33,700	Litchfield	1900	130	12
9	Annabessacook Dam	216,900	Monmouth	1900	195	11
10	Marranacook Lake Upper Dam	89,100	Winthrop	1820	95	10
11	Grist Mill Pond Dam	30,200	Readfield	1900	125	15
12	Torsey Lake Dam	27,100	Readfield	1944	520	11
13	Carleton Pond Dam	7,900	Monmouth	1904	1800	10
14	Mill Pond Dam	0	Litchfield	1850	110	17
15	Cochnewagan Dam	13,600	Monmouth	1900	40	9
16	Lower Dam-Wilson Stream	33,800	Monmouth	1890	135	16
17	Wilson Pond Dam	30,500	Monmouth	1900	110	14
19	Apple Valley Lake	3,600	N. Monmouth	1970	220	20

Table 2. Alewife stocking in Pleasant Pond.

Year	Alewives stocked
1997	4,540
1998	4,572
1999	4,724
2000	4,517
2001	3,514
2002	4,559
Total	26,426

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Table 3. Estimate of total alewife production, minimum escapement, and stocking requirements for Cobbosseecontee Stream drainage.

Pond	Surface area (acres)	Total production	Minimum escapement	Stocking (6/acre)
Annabessacook Lake	1420	333,700	50,055	8,520
Apple Valley Lake	101	23,679	3,552	605
Berry Pond	170	39,950	5,993	1,020
Buker Pond	75	17,625	2,644	450
Carleton Pond	223	52,372	7,856	1,337
Cobbosseecontee Lake	5543	1,302,605	195,391	33,258
Cochnewagan Lake	385	90,475	13,571	2,310
Dexter Pond	120	28,200	4,230	720
Hutchinson Pond	100	23,500	3,525	600
Jimmie Pond	107	25,145	3,772	642
Jimmy Pond	44	10,340	1,551	264
Little Cobbosseecontee Lake	74	17,390	2,609	444
Little Purgatory Pond	223	52,372	7,856	1,337
Marranacook Lake	1673	393,155	58,973	10,038
Narrows Pond	537	126,195	18,929	3,222
Pleasant Pond	746	175,310	26,297	4,476
Sand Pond	177	41,595	6,239	1,062
Shed Pond	37	8,695	1,304	222
Torsey Pond	770	180,950	27,143	4,620
Wilson Pond	574	134,890	20,234	3,444
Woodbury (Purgatory) Pond	436	102,460	15,369	2,616
Total	13,534	3,180,602	477,090	81,207

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Table 4. Summary of dates or events that trigger fish passage.

Map code	Name of dam	Trigger date or event for passage
1	Gardiner Paper Company Dam	removal expected in 2003
2	American Tissue Dam	2005
3	New Mills Dam	2005
4	Collins Dam	2008
5	Cobbosseecontee Lake Dam	2009
6	Mill Pond Dam	n/a
7	Gilman Dam	4 consecutive years alewife stocking Woodbury[3]
8	Tacoma Lakes Dam	4 consecutive years alewife stocking Woodbury[4]
9	Annabessacook Dam	2010 (eels) 4 consecutive years alewife stocking Annabessacook Lake
10	Marranacook Lake Upper Dam	2011 (eels) 4 consecutive years alewife stocking Marranacook Lake
11	Grist Mill Pond Dam	4 consecutive years alewife stocking Torsey Lake
12	Torsey Lake Dam	4 consecutive years alewife stocking Torsey Lake
13	Carleton Pond Dam	4 consecutive years alewife stocking Carleton Pond
14	Mill Pond Dam	n/a
15	Cochnewagan Dam	4 consecutive years alewife stocking Cochnewagan Lake
16	Lower Dam-Wilson Stream	4 consecutive years alewife stocking Wilson Pond
17	Wilson Pond Dam	4 consecutive years alewife stocking Wilson Pond
19	Apple Valley Lake	4 consecutive years alewife stocking Apple Valley Lake

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[3] Woodbury Pond, Sand Pond, Buker Pond, Jimmy Pond, and/or Little Purgatory Pond.
[4] Ibid.