



Purple Unloosed

By Mark Briggs

We hear a lot about the invasion of non-native plant species, especially the ubiquitous purple loosestrife (*Lyth-*

rum salicaria). Introduced from Europe, Holland in particular, as an ornamental plant in the early 1800s, we see it growing everywhere, especially in wetland and low marshy areas with moist, saturated soils. The plants grow from 4-10 feet and may have up to 30 stems, with profuse clusters of magenta/purplish flowers blooming from June through September. Each stem is capable of producing 2-3 million seeds which



Lythrum Virgatum

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President's Message

Summer 2009

By Al Collings, MA COLAP President

Dear members and friends of MACOLAP, Have you have heard of "Six degrees of Separation" also referred to as the "Human Web"? The concept was popularized by a play written by John Guare and suggests that everyone in the world is at most six steps from

any other person on Earth. In the lake association world, we are interconnected in a similar way. There are over 100 lake and pond associations in Massachusetts with many similar lake management issues. In MA, there is one regional

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How the New Dam at Coes Reservoir Came to Be

By Dan Dick

Coes Reservoir is a manmade body of water located in the valley of the Tatnuck Brook that flows along the western edge of Worcester. It was created when the Coes brothers built an earthen dam across the brook over 150 years ago to provide the water power

Brook that flows down the 4 mile length of the Tatnuck valley and watershed.

There are three other smaller ponds in the valley to the north of Coes, whose waters are held in place by smaller oak crib, earthen or stone dams. Those dams were built to



needed by their knife and wrench manufacturing factory at the site.

The dam is 160 feet long and holds back about 90 acres of water supplied by the Tatnuck

turn water wheels for the band saws, drop hammers and grain grinding wheels of the early settlers or, along with Coes Reservoir, to provide ice

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Purple Unloosed

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are dispersed as wind-borne or transported aquatically. They can also reproduce from propagules; for example muskrats are known to eat only the stem pulp and not the tops. Red-winged blackbirds find them appropriate for nesting areas and perching. Bumblebees are quite attracted to them. However, even more pernicious is the fact that the plants also form elongated rootstock, which also propagates vegetatively. There are reported instances where eradication by fire, Hand-pulling and harvesting, herbicide application and biological containment appeared to eradicate them for a season only for the plants to re-emerge as before. Recent experiments beginning in 1997 (16 states have investigative studies underway. Cornell University is deeply involved in a study of the heavily infested 7,068 acre Montezuma National Wildlife Refuge, west of Syracuse, and an important flyway designated in 1938.) employ a weevil (currently used in Providence's Roger Williams Park) and two beetles, all from Europe, but these biological efforts have had limited results, especially considering it takes at least a decade to determine if any treatment is effective.

The range of purple loosestrife is worldwide in one form or another, and there

are 12 genera established in North America. The plant's dominant range is Massachusetts, Connecticut and Rhode Island, which were completely colonized by 1980. One species, (*Lythrum virgatum*) seems to have escaped from Massachusetts and New Hampshire gardens and greenhouses but its spread appears to be static. The Hudson and US Ontario watersheds are more than 1/2 colonized. The first serious infestation appears to have occurred in the 1930s in and around pasture lands of the St. Lawrence floodplain, possibly as a result of heavier transAtlantic ship traffic. It is pervasive primarily today not only throughout the Northeast but the upper Midwest and the Rocky Mountain Northwest as well.

The threat to ecosystems is tremendously significant



Lythrum Virgatum

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Instream Flow Issues

By Ken Wagner, AECOM

It is a fundamental issue for aquatic organisms and water users that stream flows are variable. Organisms living in streams tend to be adapted to an expected pattern of flow. Although natural variation can itself be damaging (floods and droughts), various human endeavors alter flow patterns and potentially disrupt stream ecology on a more regular basis. Water releases from impoundments have potentially great influence on downstream resources. Management of lakes and streams for a variety of uses will create conflicts in some cases. Unfortunately, current laws, regulations and guidance do not adequately address these conflicts. I will provide a little background here to help interested parties move forward with meaningful adjustments to how we manage our water.

Scientific and Management Background:

1. Daily flows can be very high or very low depending on precipitation, but average stream flow in MA (usually considered on a monthly basis) follows a sinusoidal wave (Figure 1), with a peak in April and a nadir in August or September. Breeding, feeding, migration and

other life cycle functions of stream creatures, most notably invertebrates and fish, but also extending to water-dependent birds and mammals, are cued to this flow cycle.

2. Watershed development tends to accentuate the sine wave (higher peaks on daily and monthly basis, lower lows)

3. Waterbodies (natural, enhanced or completely impounded) tend to dampen the monthly and daily fluctuations (storage lowers peaks, facilitates minimum flows) in the absence of any directed discharge or water level management.

4. Drawdown can actually reverse the wave pattern (peaks in fall with drawdown, nadir in early spring with refill).

5. Power production can drastically change the daily pattern, heightening or lowering variability, but may not change the monthly pattern.

6. Water supply withdrawals can depress the wave (lower highs and lows), with greatest impacts on low flows (typically matches period of greatest withdrawal).

7. Instream flows, sometimes called environmental flows, address how much water a stream or river needs to maintain

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New Dam at Coes Reservoir

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for several ice companies operating in the years before refrigeration.

Coes "Reservoir" gets its name from the failure of the Lynde Brook dam of Worcester's main reservoir in 1876. Pumps were placed in Coes Reservoir to replace the water loss until the city's reservoir dam could be rebuilt.

Coes Wrench and Knife Company

Loring and Aury Coes began their tool making and machinery business Worcester in 1836 when they bought out several other machinery businesses. They brought with them their invention of the adjustable or "Monkey" wrench and their resolve to manufacture this mostly timely tool which Loring patented in 1841. By 1895, one industry source stated that there were more "Coes' Knife-handle Wrenches" than all competitors' wrenches combined.

The business started and operated by the two brothers also produced flat and curved knives. As the nuts and bolts of industry became standardized and there was less call for the adjustable square Monkey wrench, the knife business replaced the former in the company's manufacturing and sales.

The founders were replaced by their sons and

then by outside management and the business continued to prosper until at least the early 1980's. Or so we thought.

However, the residents of the Coes Reservoir part of the Tatnuck watershed began to become concerned over the condition of the Coes dam and the related environmental contamination, as well as to the real danger of the dam's failing in a 100 year storm. Inspection by the state's dam safety people showed that the dam was leaking, was in disrepair, and the spillway was not adequate to handle the flow of such heavy storms. A resultant overtopping of the dam would have caused incalculable damage to the largely commercial properties below the dam in the Webster Square area, as well to life and limb of the people living and working there.

Representations to Coes Knife of these conditions failed to elicit the desired response. By the late 1980's and early 1990's matters were at a loggerhead.

These concerns of the residents led to the formation of the Coes Pond Watershed Association, later to join with the resident associations of the ponds to the north to become the Tatnuck Brook Watershed Association.

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New Dam at Coes Reservoir

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The Closing of Coes Knife and the Effort to Place the Dam in Public Hands

Coes Knife had borrowed \$750,000 from the Bank of New England and the Coes CEO told me at the time that they were not in arrears as to their regular payment obligations. However, the Bank of New England was being closed down by the FDIC and all of its loans were being taken over and called in by an arm of the FDIC called RECOLL Management. Since Coes Knife was in no position to come up with the full amount of the principal remaining, the company was forced to close.

We made an effort to have the company remain in business by being bought by another knife company in Illinois because we had had heard that said company was interested in a curved knife machine that Coes had developed, but such effort came to naught.

Suddenly, the CEO of Coes left town but not before he sold the deed to the property to a notorious local squatter for \$1,000. This fellow moved his small house trailer to the property and attempted to interest developers in various real estate schemes such as a hotel. None of this bore fruit and, all the while, he was burdened with the back real estate taxes owed to the city of Worcester. He proceed-

ed to file for bankruptcy but, fortunately for us, he failed to file a bankruptcy plan.

This omission allowed the city to take the old Coes Knife property by eminent domain.

While the city was reluctant to do this since it insures itself, it really had no choice, given the threat posed below the dam in a 100 year storm.



This was going to be an expensive proposition since the old dam was loaded with PCB's from the waste lubricants dumped on it that Coes Knife used in its machinery and manufacturing processes. Many, many truckloads of the PCB soaked earth in the dam would have to be trucked out of state to a receiving facility.

First, though, the engineering design of the new dam had to be funded. Thanks especially for the line item insertion, by our then State Sen. Matthew

Amorello, in the state budget, the city received the sum of \$440,000 on top of an earlier \$60,000 for the same purpose. This design assignment was given to Weston & Sampson.

The project was then placed in the hands of our Dept. of Public Works who removed the old dam and its PCB's and had the new dam built on the same site.

To fund this PCB removal and build the new dam, the city council authorized a final total of about \$4,000,000.

This came as somewhat of a very pleasant surprise to us in the watershed. It indicates the significance of this dam in the minds of our city government.

All proceeded on budget and on time and the new dam was dedicated in 2006.

You will notice that there is a footbridge connecting both sections of the dam, funded separately, thanks to the sleuthing of the money by the director of our Greater Worcester Land Trust. The intent here was to allow residents on the east side of

the dam to walk over to the life-guarded public beach on Mill St. on the west side. Without this bridge, the residents would have to walk all the way around the southern end of the dam with some risk of placing themselves close to traffic on public roads without sidewalks and with several intersections to negotiate. However, the head of our public housing and a former mayor fenced this access off because he did not want people from the west side to be able to trespass into the public housing complex on the east side.

Thus, a major public access to much needed, safe summer recreation was blocked. This obstacle has been somewhat overcome by our city manager who provided this access via the busing of the public housing children and parents to a six week summer swimming program at the public beach.

From start to finish, from the early studies of the condition of the Reservoir and the dam to its completion, the involvement required at least a quarter of a century of effort. Now, the same sort of effort to implement the public park below the dam and the recreational areas in Columbus Park adjacent to the public housing on the east end of the dam will need another long period of time and effort. The conceptual plans exist; the question now asks if this local community has the passion to execute them. ~

Be Safe This Summer

Water Quality & Your Health

By Chris Huskey, MA Dept. of Public Health/Bureau of Environmental Health/Environmental Toxicology Program

Swimming is a popular recreational activity during the summer in Massachusetts, especially among children. Safety issues connected with swimming are not limited to the presence of lifeguards, but other health issues should be kept in mind, such as swimming water quality.

Lakes and ponds contain bacteria, some resulting from the presence of human or animal feces. Generally, the concentration of bacteria in beach water is low and does not pose health concerns. However, bacterial levels in water bodies can vary, and occasionally reach concentrations that are more likely to cause illness. Higher levels of fecal bacteria increase a swimmers' risk of gastrointestinal (GI) symptoms (e.g. diarrhea, stomach pain). This is especially true of children, who are more likely to get water in their mouths when swimming and are more susceptible to illness than adults.

In the summer of 2008, there were 196 instances of MA freshwater beaches that were closed briefly due to elevated bacteria levels. This is caused by numerous factors including, leaking sewer pipes, failing septic systems, or combined sewer overflows; animal waste; contamination from swimmers; and,

very often, runoff into the water body resulting from rainfall. When it rains, contaminated water from various sources flows down into the nearest water body. All these factors can contribute to bacteria levels in beach water, increasing risk of GI symptoms.

To address this issue, Massachusetts requires that bacteria levels be monitored in all public and semi-public beaches (both marine and freshwater). MA Regulations, require all freshwater beaches to test their water quality at least weekly during the beach season, measuring the level of the bacteria *E. coli* or *Enterococcus* to determine the likelihood of elevated GI risk. When the bacteria level is above the designated standard, the beach must be closed to swimming until further testing shows an acceptable level.

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President's Message

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association of lakes and ponds known as LAPA West. This is the Western Mass. chapter of our state organization, the Congress of Lake and Pond Associations, Inc. or MA COLAP for short. There is also in our state, the Lake and Pond Advisory Committee that brings together a variety of state agencies and water body advocates to discuss issues of common interest impacting our rivers, lakes and ponds. In North America, there is the North American Lake Management Society or NALMS. What do all these organizations do for you? They provide local lake and pond associations access to the issues confronting other associations through annual day long workshops, newsletters, and web sites. Local officials can become aware of potential problems that could

be their problems in the future like the migration of zebra mussels or rock snot. They also provide a clearing house for issues that others are dealing with such as lake draw-down proposals, herbicide use or limitations, and state and federal regulatory and legislative initiatives. Check out www.macolap.org for current information and links to other sites. MA COLAP is a member of the Lake and Pond Advisory Committee and NALMS and we regularly attend their meetings and workshops.

Have a safe and enjoyable season on the water.



~ Al Collings, President

CONTRIBUTIONS ARE WELCOME

If you have any material that you feel would be of interest or value to others for our newsletter or our website, please send it to our Newsletter Editor, Frank Lyons at franktlyons@verizon.net. Please be advised: There is no guarantee of publication; all submissions are subject to editing for content and or length. Do not send valuable, one of a kind, original, sentimental or legally important photos, slides, or documents by mail as there can be no guarantee of their safe return.

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Instream Flow Issues

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its ecological functions. MA has now developed a sense for what is “natural” across the Commonwealth, from decades of data collection, with variability based on regions like the Cape vs. the Berkshires.

Figure 1. A rational but hypothetical pattern of monthly flow values in MA, put on a flow per square mile of watershed area basis; note spring peak and summer nadir.

Regulatory Issues:

1. The Water Management Act, Wetlands Protection Act, Riverways Act, and GEIR for Lake Management do not adequately address instream flow issues and do not provide a mechanism for optimizing flows for the range of uses or resolving conflicts, although the door is open for such a process under these laws and associated regulations and guidance.

2. There is no differentiation of natural waterbodies, enhanced flowage lakes, and human-created impoundments under the current laws and regulations. We may or may not need regulatory differentiation, but acknowledgment of lake origin and purposes is essential in management planning.

3. We have a lot of groups advocating for particular uses of water, ranging from agencies charged with responsibility for fish, rare species and water supply to lake associations interested in water levels, recreation, and property value. Everyone needs to understand the big picture before we can have meaningful discussions of how best to

of control where applicable, and provides control where most needed (shallow areas). Minimizing drawdown impacts on non-target species, including those in the downstream environment, requires lake-specific consideration and a carefully crafted drawdown plan that incorporates flexibility within and among years (e.g., start and stop dates, rates of lowering and raising, variation in target depths, adjustment

structure on a multi-year basis, with acknowledgment of both natural and human-induced variability and extending operational responsibility to all times of year. However, compliance needs to be on a multi-year basis, as events in any year are not completely controllable. This creates problems under the normal 3-year basis of most Orders, as most flow data assessments include at least 8 years and often 20+ years

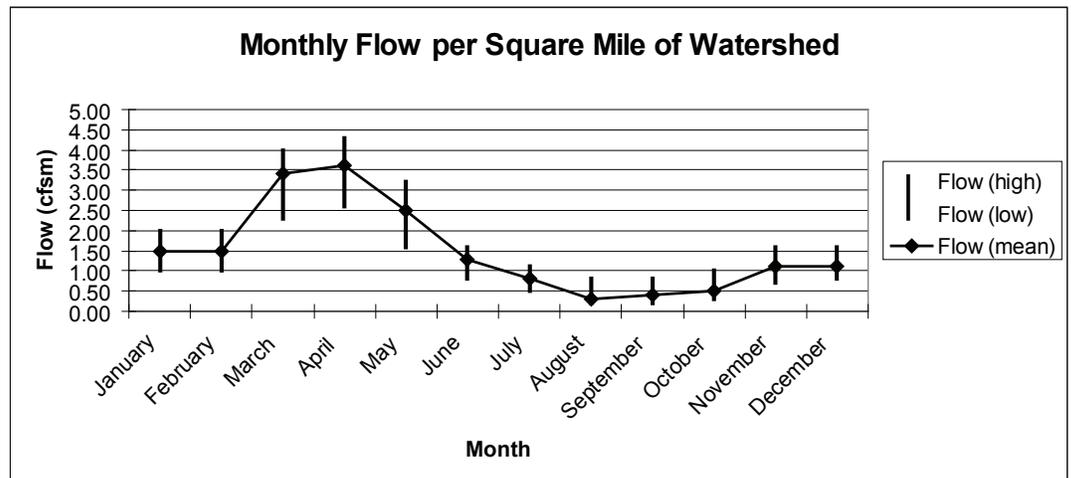


Figure 1

manage in a regulatory context.

4. Most state programs focus on individual species, often as populations. We need to shift the emphasis to communities and water uses to make real progress. Management of flows to meet all related goals can cause conflict.

5. The control of invasive plants susceptible to drawdown is by far the least expensive method

to weather patterns and forecasts). The GEIR, however, is overly restrictive with regard to drawdown management and needs revision.

6. Orders of Conditions under the Wetlands Protection Act tend to provide direction for a portion of the year with regard to water level management, especially as applies to drawdown. Orders could be issued for overall operation of an outlet

of data to properly represent natural variation.

Solutions:

1. Reconvene a task force much like that which developed the GEIR to consider its revision in light of the above considerations. The DCR is the logical lead agency, but all relevant agencies must actively participate and advocacy roles need to be put aside in favor of a “big

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Instream Flow Issues

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picture” approach.

2. Discourage advocacy programs within agencies; promote a big picture view first, then the specific program interests within the larger context. Emphasize good science and adaptive management. Avoid “one size fits all” solutions.

3. Encourage Conservation Commissions to issue Orders of Conditions relating to water level or flow management that expand responsibility to the whole year but assess compliance on no less than the 3-year term of the conditions. Look to expand the term of an Order with regard to water flow and level management.

4. Elevate the status

of control of invasive species to the same level currently allocated to protection of rare species. In many cases the failure to control invasive species represents a threat to those rare species, yet any impact to a rare species can prevent control of the invasive species. With regard to flow management, this will affect drawdown and possible water level management to maximize exposure of target plant species to herbicide applications. A more site-specific and holistic aquatic community view should be encouraged, rather than a species-centric regulatory approach. ~

Purple Unloosed

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as the extremely hearty plants have shown simply to take over important flora and fauna habitats creating their own monoculture; especially susceptible are certain types of endangered orchids and waterfowl in general and reducing the variety of pollen producing plants so vital to bees and in particular honey bees. Enough cannot be said

for maintaining biodiversity. So-called “Guaranteed Sterile” cultivars are still sold in Wisconsin and Minnesota and have proven to be capable of cross-fertilizing with stock in the ‘wild’. Aside from being quite aesthetically pleasing, the only redeeming value seems to be that it’s a distant cousin to the pomegranate. ~

Be Safe This Summer

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E. coli and *Enterococcus* are the standard indicator organisms used for freshwater beach testing: each beach should be tested using one or the other. This approach was established by the US Environmental Protection Agency in 2000, based on the findings of numerous studies demonstrating a correlation between their levels and GI symptoms in the swimmers exposed to them. For *E. coli*, the EPA standard is 235 colony-forming units (CFU) per 100 milliliter (100 ml) of water; for *Enterococcus*, the standard is 61 CFU/100 ml. Any beach water sample exceeding the applicable standard indicates an increased risk of GI symptoms, and requires beach closure. Beach operators are responsible for weekly testing, and providing these data to the local board of health—immediately, if the standards are exceeded. Under MA state regulations, the city/town board of health is charged with implementing these requirements at the local level. The MA Department of Public Health (MDPH) is mandated with overseeing testing and data collection across the state. Their activities are performed by staff in the MDPH Bureau of Environmental Health.

Virtually all public and semi-public freshwater beaches in the state are tested, allowing people to use them safely. However,

there are a few freshwater beaches that are not being tested. When MDPH learns of these isolated incidents significant outreach is conducted to get the beach operator to comply. Swimmers, boards of health, and other interested parties are encouraged to ask beach operators in their communities if they perform weekly bacterial testing and, if the answer is no, they should suggest that they contact MDPH to learn more about testing requirements.

Another emerging issue related to swimming water quality is the presence of harmful algae. Harmful algae blooms (HABs) form when cyanobacteria (naturally occurring microscopic bacteria that grow in water) undergo explosive growth and form a scum or mat on the water’s surface. Exposure to a cyanobacteria bloom can cause skin and eye irritation. Ingestion of cyanobacteria can cause GI symptoms. Some types of cyanobacteria produce toxins. Ingestion of these toxins can lead to more serious health effects such as neurological or liver problems. These effects are more serious in children and pets. To prevent illness, people and pets should not swim in areas where algae blooms are present or where signs warn against contact with the water due to the presence of an algae bloom. ~



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SPECIAL ANNOUNCEMENTS

SAVE THESE DATES! WRITE THEM DOWN! DON'T MISS OUT !!!

MACOLAP Potluck Picnic Meeting **Thursday, August 6, 5-8:30, Whitin Reservoir, Douglas**

This year we are resuming (after a long hiatus) a tradition of having a picnic at a Massachusetts Lake for our members and their families and significant others: The event will be held at: Whitin Reservoir, Douglas, MA, Temple Family Camp on the Southeast Shore, 118 NW Main St. Please note that the house numbers on this street are not in order; as a result, both Google Maps and Mapquest do not quite get you there. However, the 118 number is posted on a tree at both driveways that lead to the camp. Telephone number there is 508-476-2453—Please call this number only if you are lost on August 6.

Please RSVP with your potluck offering to:

Carol Temple Hildreth at hildrethcr@comcast.net or 508-429-5085

Boat Rides will be given for a tour of the lake, starting at 5:00

Swimming – Kayaks – Canoe also available

Bring to share Potluck: Something to Grill, or a Casserole, Salad, or Dessert

Soft Drinks, Coffee and Tea will be provided

There will also be a very short business meeting.

Directions from Massachusetts Turnpike (I 90 – Exit 10):

Go south on I 395 (5.3 mi.) to Exit 4A to merge onto Sutton Ave toward Sutton

Go (2.7 mi.) and Turn right at Douglas Rd.

Go (0.8 mi.) and take a Slight right to stay on Douglas Road (Whitney Farm Store here)

Go (0.4 mi.) and Douglas Rd. becomes NW Main St

Go (2.9 mi.) on NW Main St to slight right over Whitin Reservoir dam on NW Main St.

Go about (0.7 mi.) to destination number 118 drive on right.

You can also get there by following I 395 South to Webster then Rte 16 East from Webster (or Route 146 South from Worcester then Rte 16 West from East Douglas) to Douglas Center, where NW Main St. begins on the northwest side of the Common. Follow it for around a mile to a fork: bear right on NW Main about 0.2 mi to 118 driveway on left.