



MASSWILDLIFE

Massachusetts Coldwater Fisheries Resources

(featuring Blackstone River Watershed)

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Adam Kautza – Coldwater Fisheries Project Leader

What is a CFR?

Massachusetts Division of Fisheries and Wildlife definition:

“A CFR denotes a waterbody that contains Coldwater Fish that reproduced in that waterbody or a tributary thereto and use such waters to meet one or more of their life history requirements”



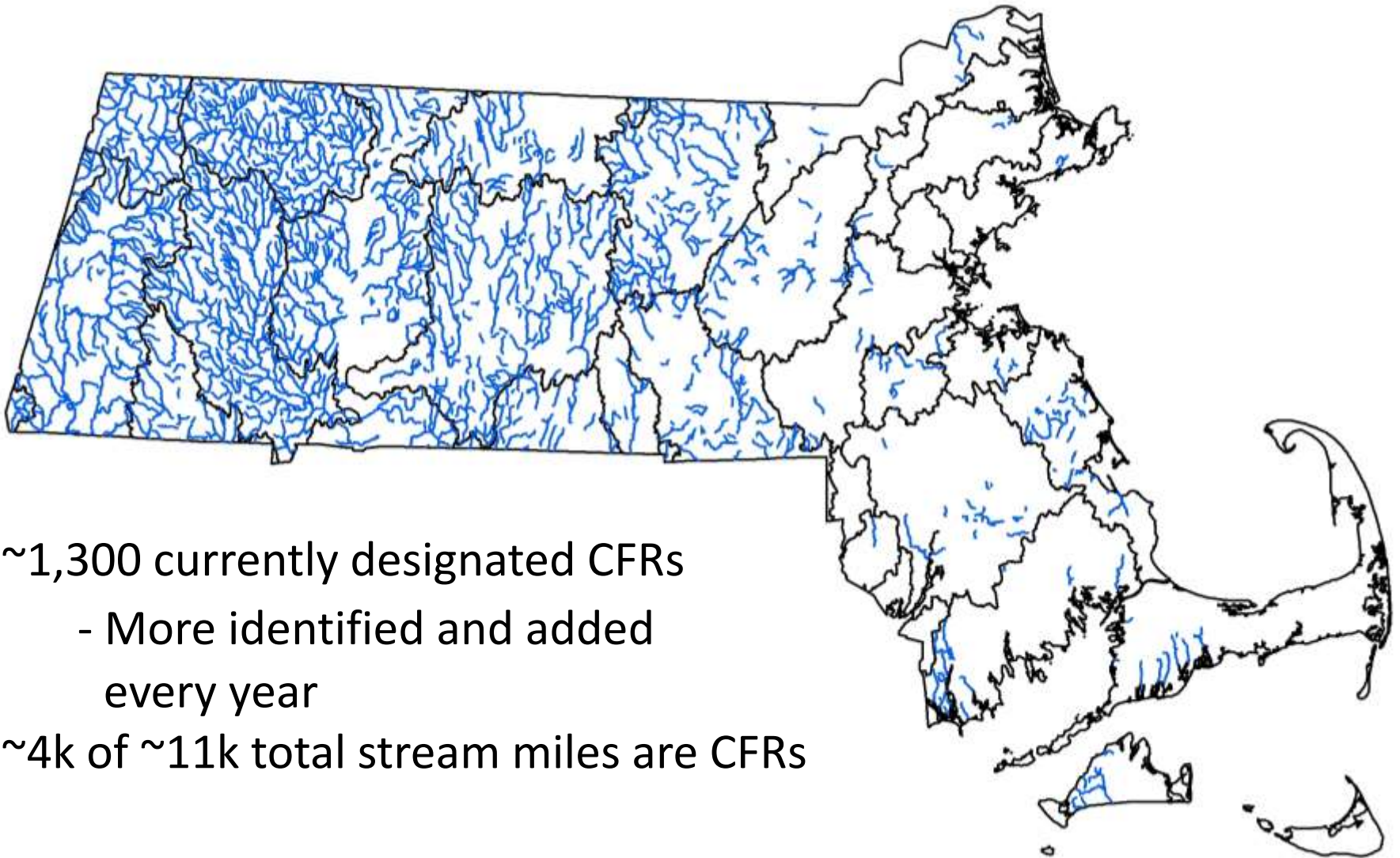
- Slimy Sculpin (*Cottus cognatus*)
- Longnose Sucker (*Catostomus catostomus*)
- Lake Chub (*Couesius plumbeus*)
- American Brook Lamprey (*Lampetra appendix*)
- Burbot (*Lota lota*)
- **Brook Trout (*Salvelinus fontinalis*)**
- **Brown Trout (*Salmo trutta*)**
- **Rainbow Trout (*Oncorhynchus mykiss*)**
- Landlocked Salmon (*Salmo salar*)
- Lake Trout (*Salvelinus namaycush*)
- Rainbow Smelt (*Osmerus mordax*)



CFR Applications

- Regulation
 - Water Quality Standards
 - Critical area status...protect water quality
 - Water Management Act
 - Minimize impact of water withdrawals...protect water quantity
 - River Protection Act and Wetlands Protection Act
 - 200-foot riparian buffer, other protections to riparian

Statewide CFRs

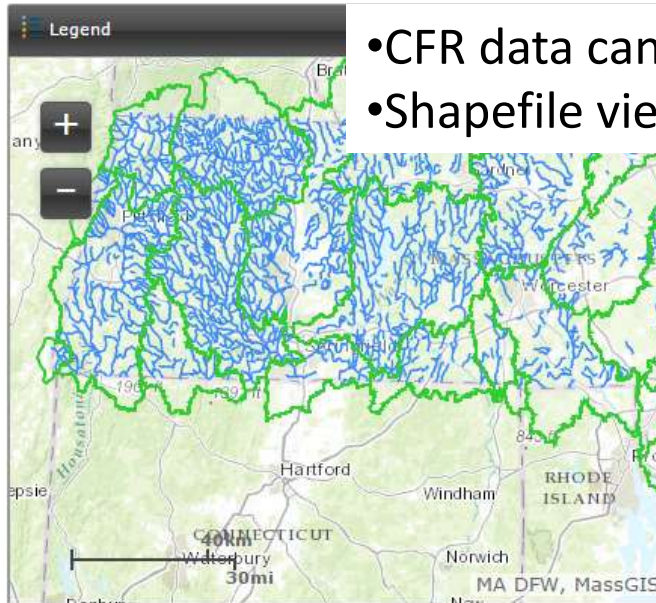


- ~1,300 currently designated CFRs
 - More identified and added every year
- ~4k of ~11k total stream miles are CFRs



Coldwater Fish Resources Map

Below is an interactive map of Coldwater Fish Resources (CFRs) in watersheds across Massachusetts. Zoom in and then click on a stream for its name and unique SARIS code.



- CFR data can be downloaded from Mass GIS (Google “Mass GIS”)
- Shapefile viewed in ARC GIS

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Each digital dataset name below links to a complete datalayer description page which contains metadata and links to free data download. The date below each datalayer title on the individual description pages represents the month and year that the data first appeared in the MassGIS database or the date of the datalayer's most recent update. If additional information is needed, especially at the feature level, review the Maintenance section of the metadata or contact the agency that created the data as listed on the dataset's page.

See the [Data Overview page](#) for data attribution and citation language and the spatial reference of our data. See [this page](#) for other ways to obtain data.

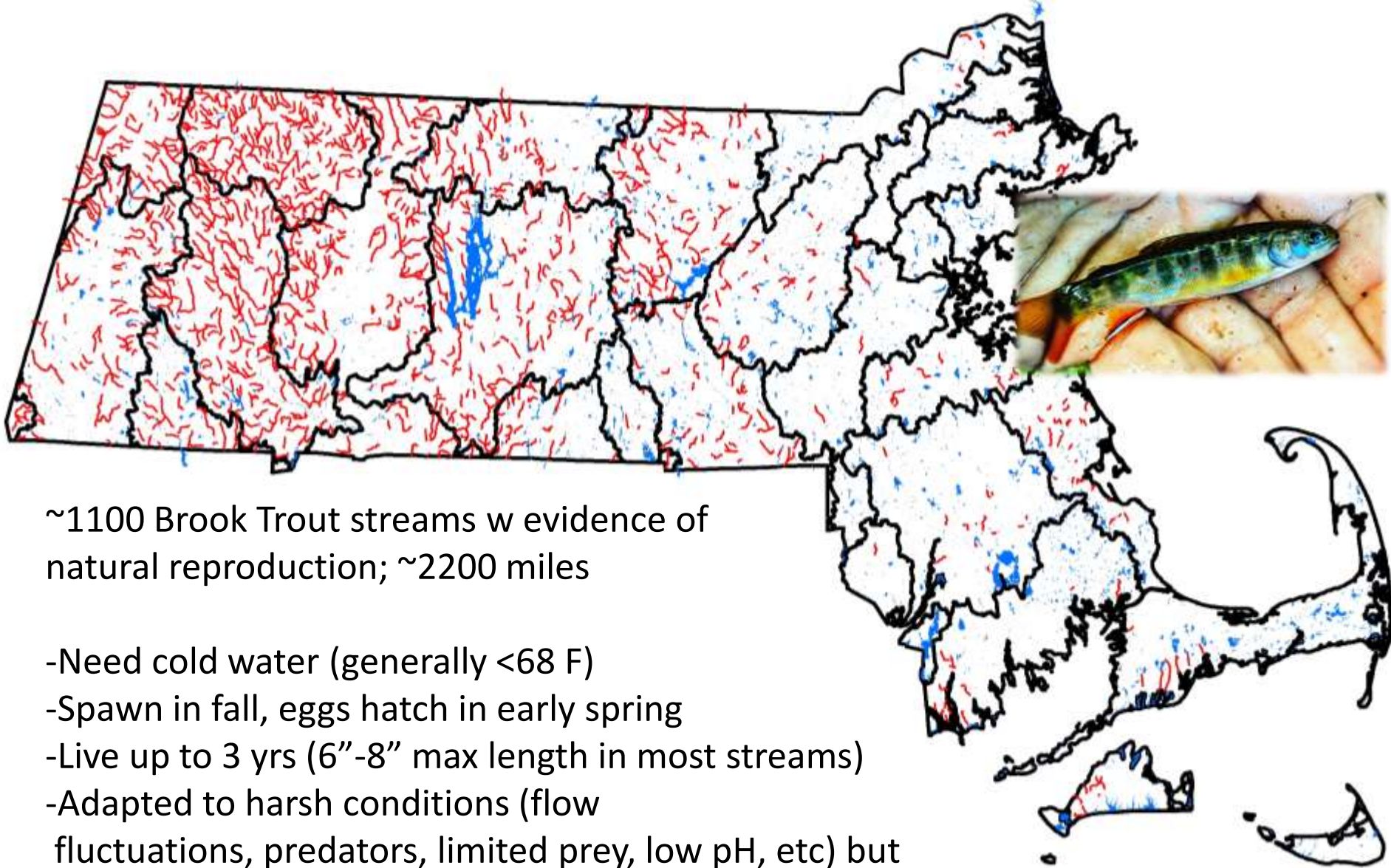
[Contact Us](#) to receive Data Update notices via email, or to let us know about an error or submit questions on MassGIS data. Also follow us on [Twitter](#).

Image Data

Ortho Imagery (Aerial Photography)

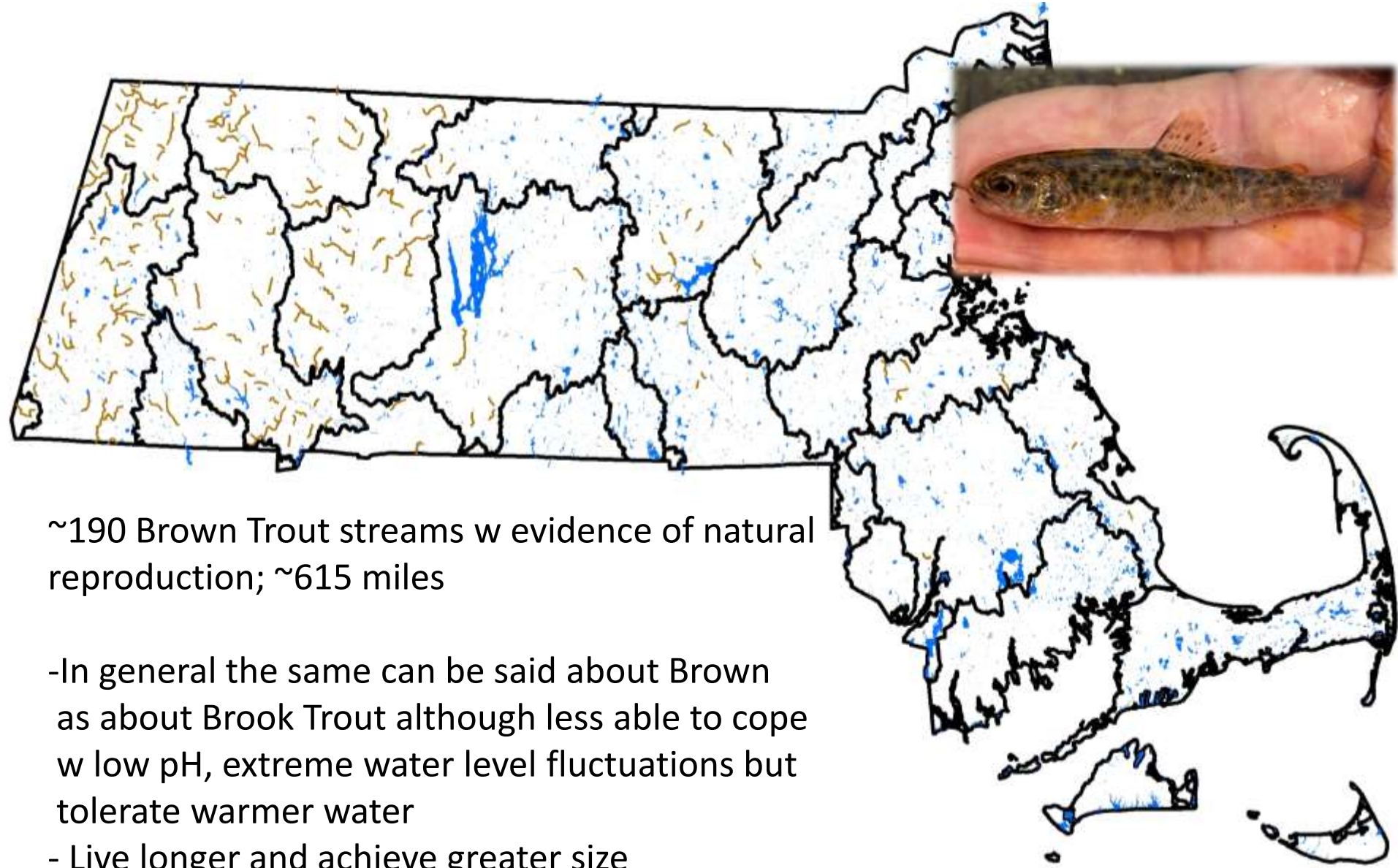
- [2015 WorldView Orthoimagery \(Satellite-based\)](#) **New!** - 12/22/2015
- [1.5,000 Color Ortho Imagery \(2005\)](#)
- [1.5,000 Color Ortho Imagery \(2001-2003\)](#)

- CFR data can be viewed using
- Google “Mass coldwater fish



~1100 Brook Trout streams w evidence of natural reproduction; ~2200 miles

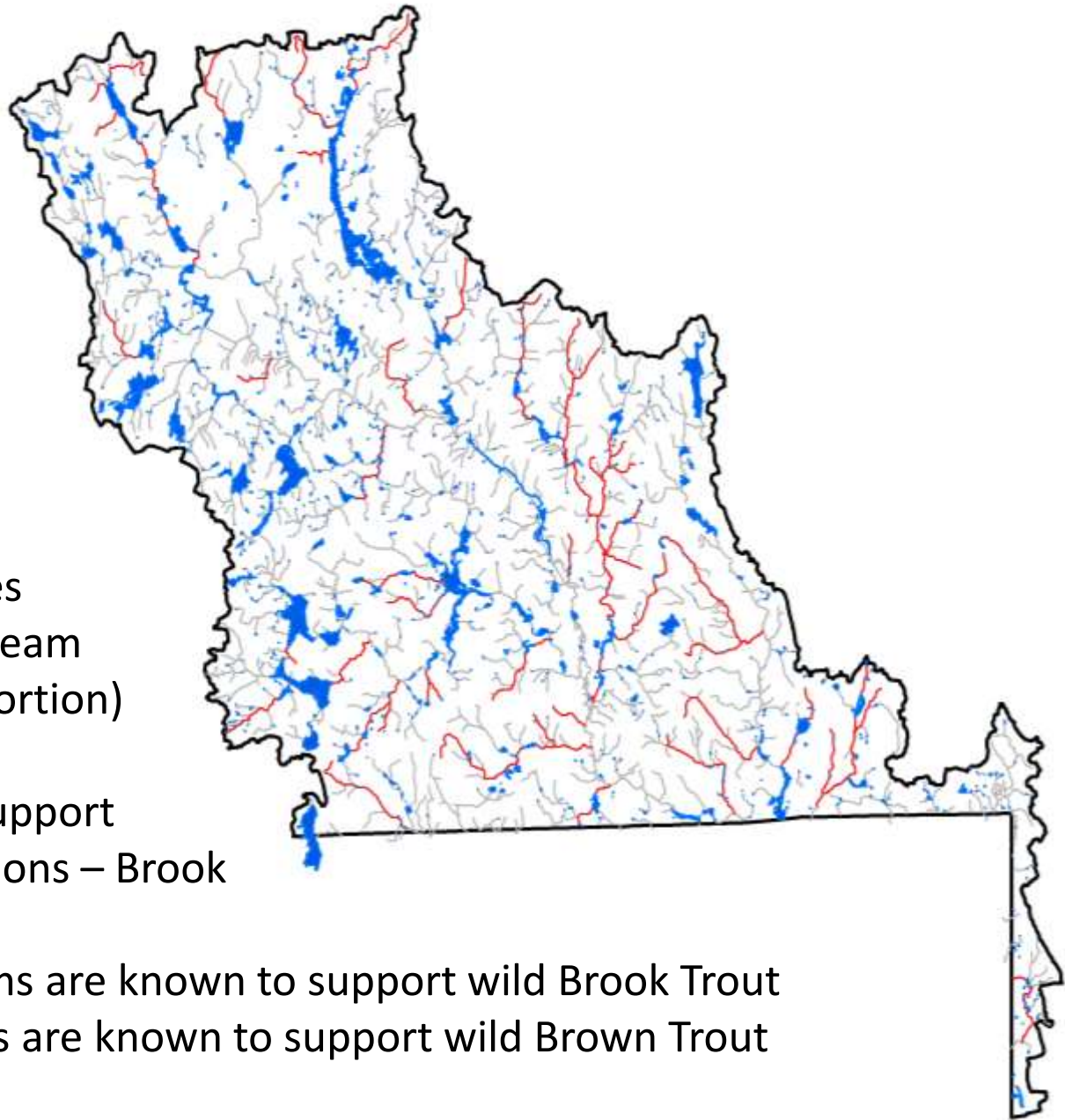
- Need cold water (generally <68 F)
- Spawn in fall, eggs hatch in early spring
- Live up to 3 yrs (6"-8" max length in most streams)
- Adapted to harsh conditions (flow fluctuations, predators, limited prey, low pH, etc) but need cold water, relatively silt-free spawning substrate



~190 Brown Trout streams w evidence of natural reproduction; ~615 miles

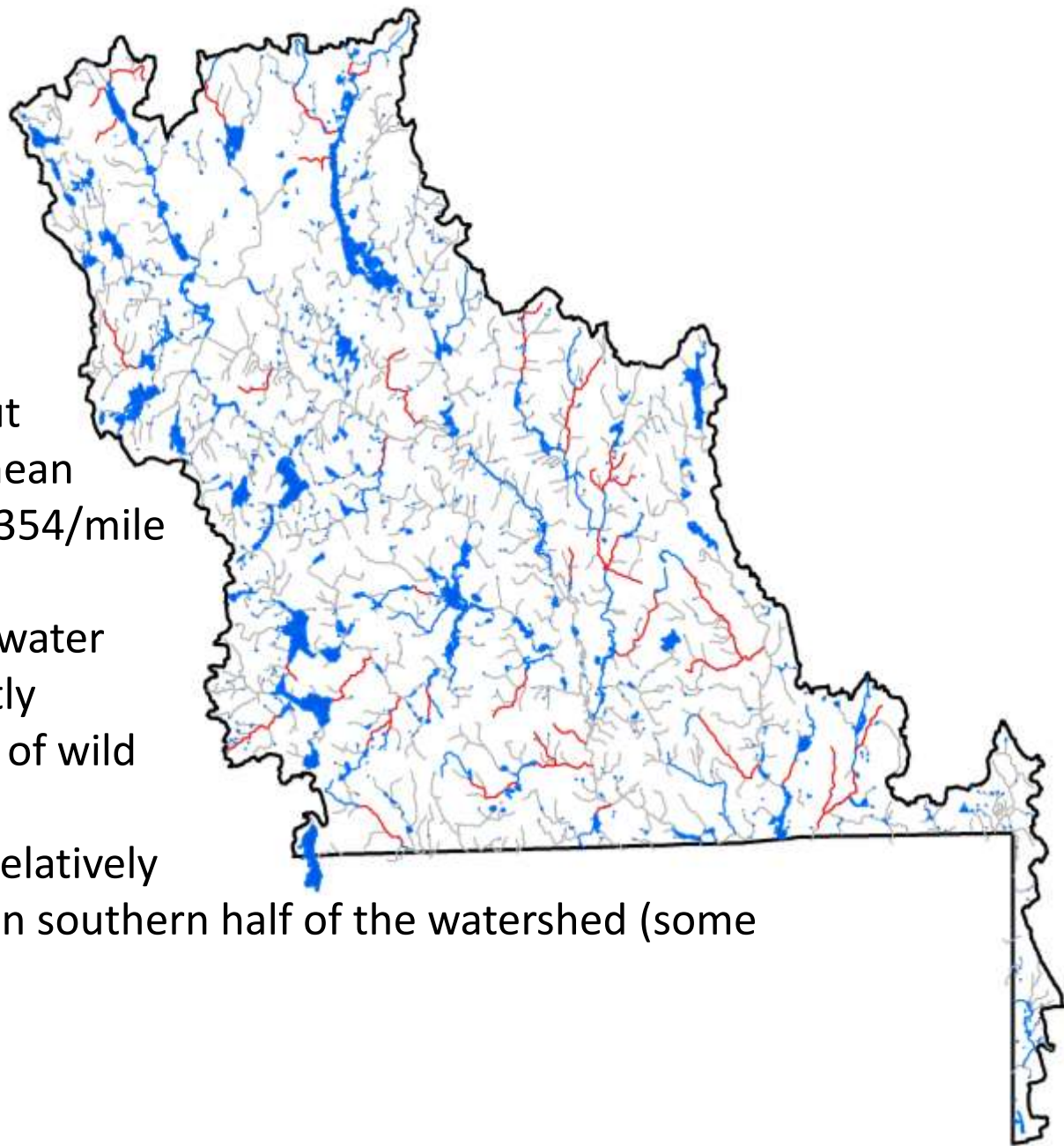
- In general the same can be said about Brown as about Brook Trout although less able to cope w low pH, extreme water level fluctuations but tolerate warmer water
- Live longer and achieve greater size

Blackstone River Watershed Coldwater Streams



- ~690 total miles of streams in the Blackstone River Watershed (BRW)
- 53 CFRs stretching 110 miles (only about 16% of total stream miles; a relatively low proportion)
 - > A fraction of CFR miles support viable wild trout populations – Brook Trout dominate
 - > 62 miles across 47 streams are known to support wild Brook Trout
 - > 14 miles across 6 streams are known to support wild Brown Trout

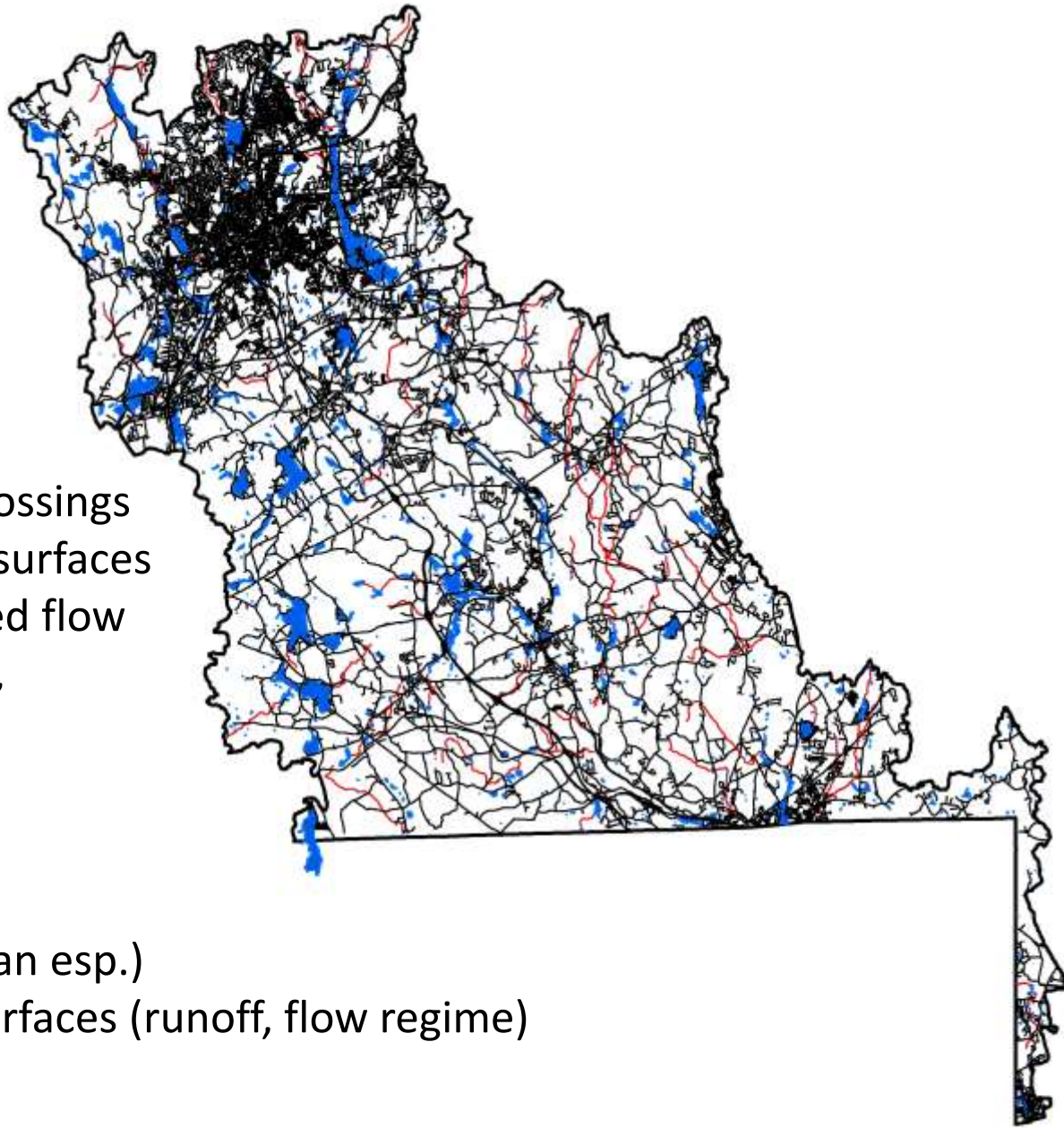
Blackstone River Watershed Coldwater Fisheries



- Statewide mean Brook Trout density is 603/mile; BRW mean Brook Trout density is only 354/mile
- Relatively few miles of coldwater streams in the BRW currently support *robust* populations of wild Brook Trout
 - Those that do: no dams, relatively undeveloped landscapes in southern half of the watershed (some exceptions)

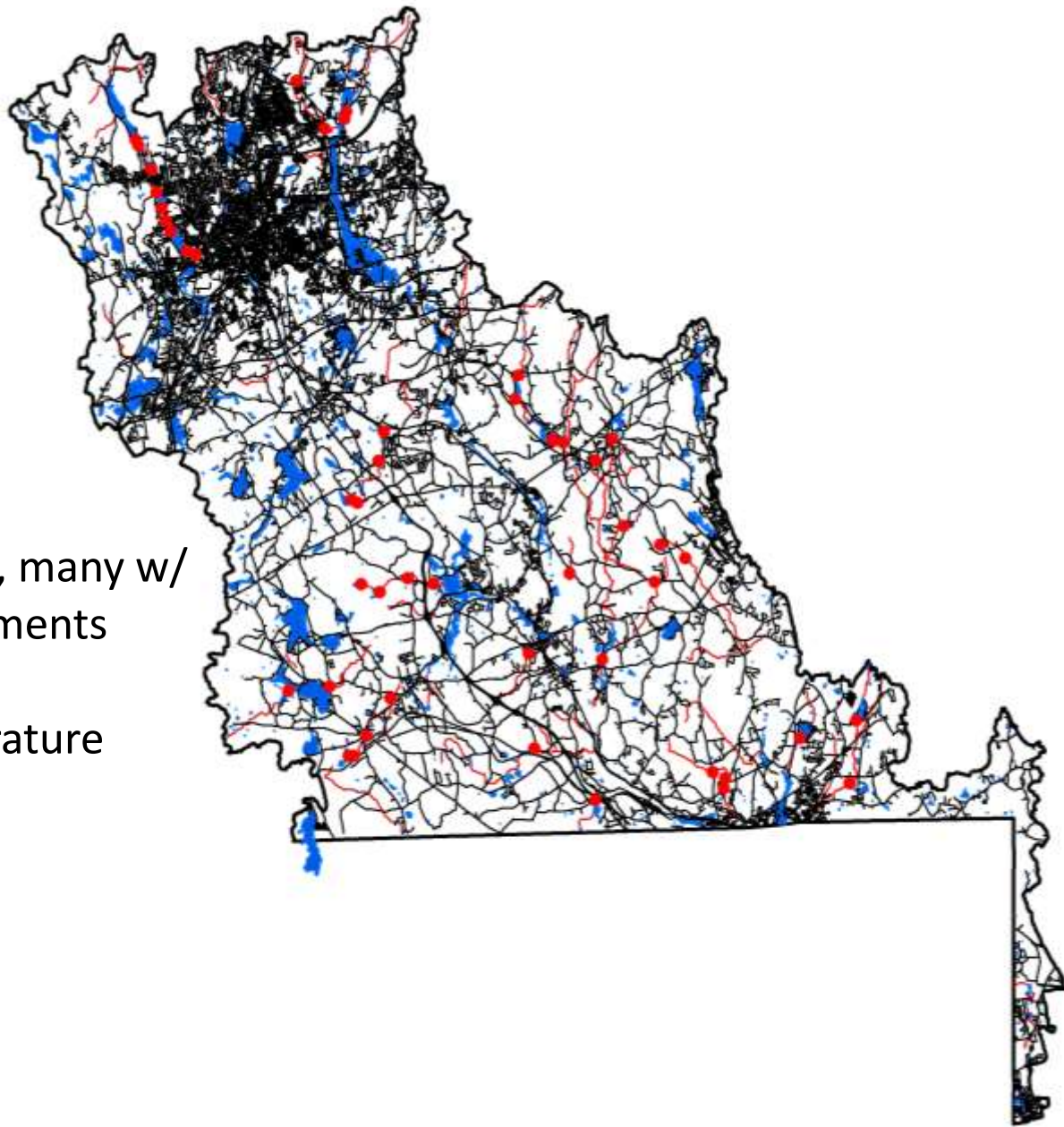
Threats to Coldwater Fisheries

- Roads
 - >2200 miles of roads in the BRW alone
 - 1000's of road-stream crossings
 - Runoff from impervious surfaces (thermal pollution, altered flow regimes, road chemicals, sediment,...)
- Development
 - GW withdrawal
 - Habitat alteration (riparian esp.)
 - Additional impervious surfaces (runoff, flow regime)
 - Nutrients, pollutants



Threats to Coldwater Fisheries

- Roads
- Development
- Dams
 - 48 known dams on CFRs, many w/ corresponding impoundments
 - Barriers to movement
 - Altered flow and temperature regime



What can be done

- Protect remaining high-quality wild trout streams
 - Only 10% of known wild trout water
 - Work w local groups to limit development, esp in riparian buffer and wetlands (or at least mitigate w sediment traps, retention basins, bankside vegetation, etc)
- Identify and remedy negative impacts to marginalized coldwater fisheries
 - Majority of known wild trout water in BSRW is marginal, esp on the few larger rivers
 - Dam removals, culvert replacements
 - Habitat improvements, restoration

- Extend surveys into previously unsurveyed sections of coldwater streams
 - Unsure of wild trout population status in 30% of designated coldwater stream miles, esp headwater streams and sections of larger rivers; strategic surveys to fill in gaps
 - Dozens of unsurveyed, potential CFRs; working through one-by-one, notify DFW of potential unrecorded coldwater fisheries or wild trout populations

Key to conservation is developing a strong working relationship



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Adam Kautza | PhD

Coldwater Fisheries Project Leader

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581

p: (508) 389-6302 | e: adam.kautza@state.ma.us

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