Furunculosis at Pequest Trout Hatchery: Managing a trout stocking program

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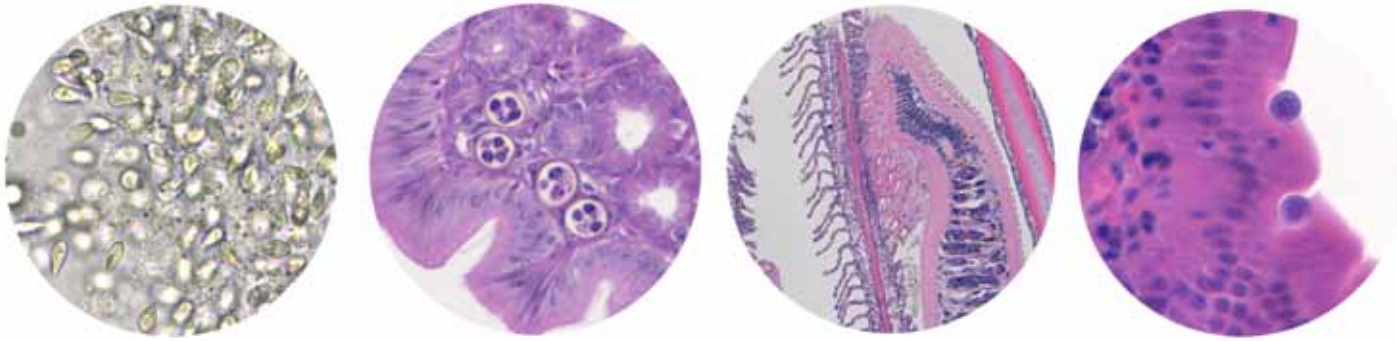
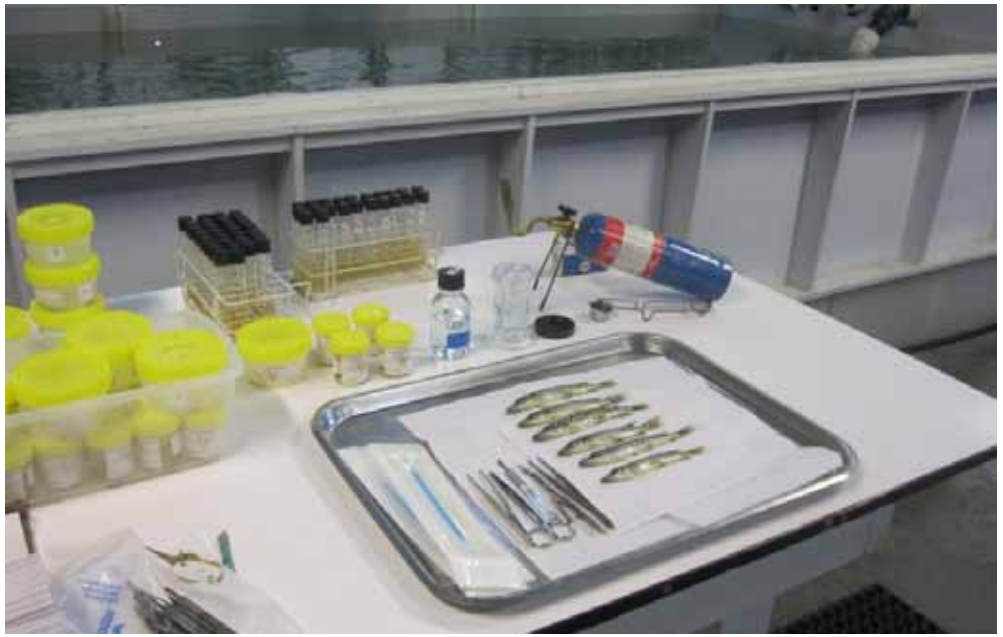


NEW JERSEY DIVISION OF
Fish and Wildlife

Annual hatchery health inspections

Surveillance for known problematic diseases

- Ensuring that fish are free of diseases prior to releasing them into the wild



Viral screening

IPNV
IHNV
OMV
SVC
VHSV

Bacterial diseases

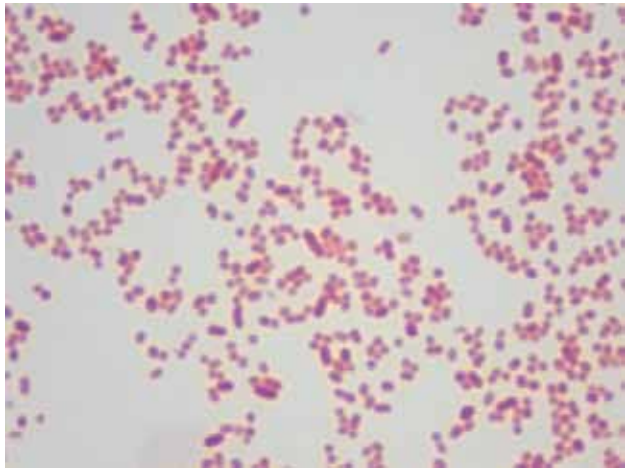
Bacterial kidney disease
Furunculosis
Enteric redmouth

Topics to be discussed

- Furunculosis in Pequest
  - Case presentation
  - Extent of the disease
- Treatment and preventative strategies to avoid the disease in the hatchery
- Impacts to trout stocking program

Furunculosis

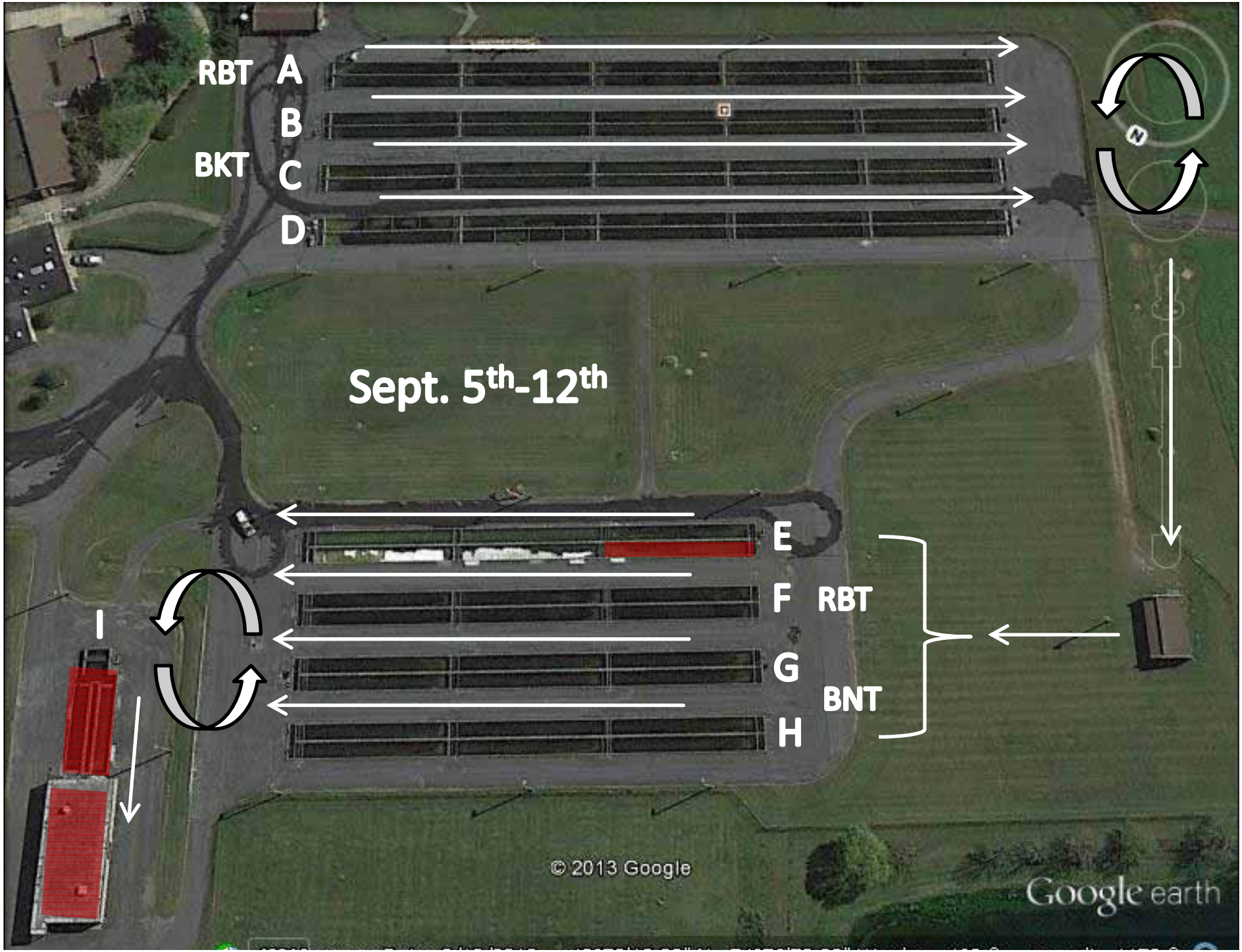
- Disease caused by the bacterium *Aeromonas salmonicida*
- Bacterium is endemic throughout North America and much of the world
- Obligate fish pathogen
  - Must find a fish to survive
  - Thought to survive in environment for up to one month



Furunculosis

Characteristics of the bacterium

- Transmission by contact with the bacterium
  - Fish to fish transmission
  - Contaminated water
  - Transferred by a bird- most likely at Pequest
- Disease is triggered by environmental stress:
  (temp., DO, water quality, handling)
- Fish surviving an epizootic may become carriers of the bacterium
  - 40-80% carrier rate may be expected in highly susceptible species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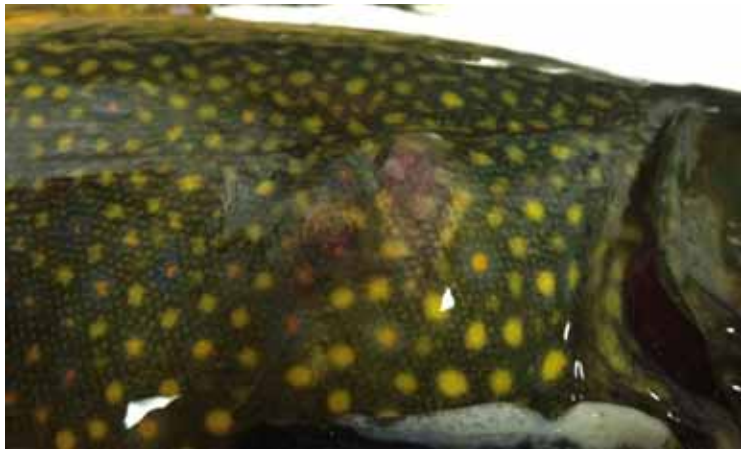
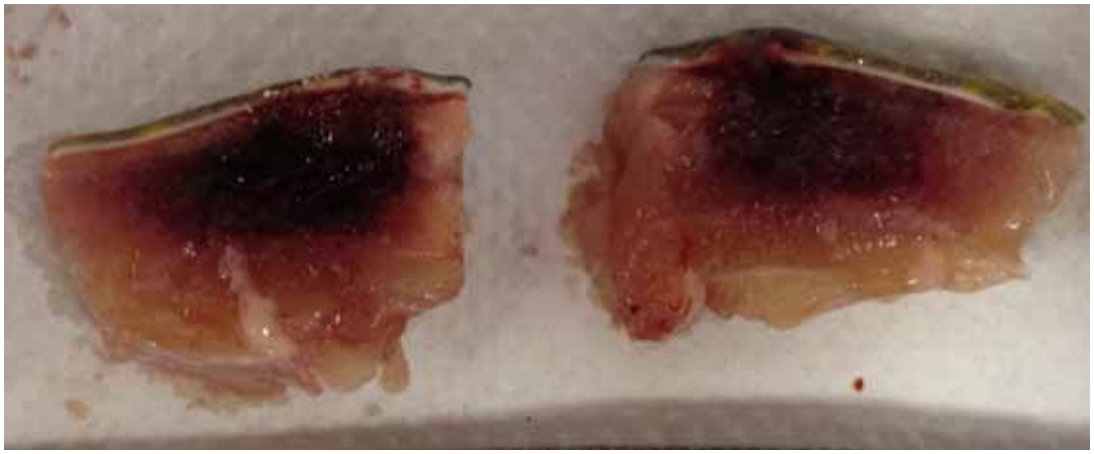
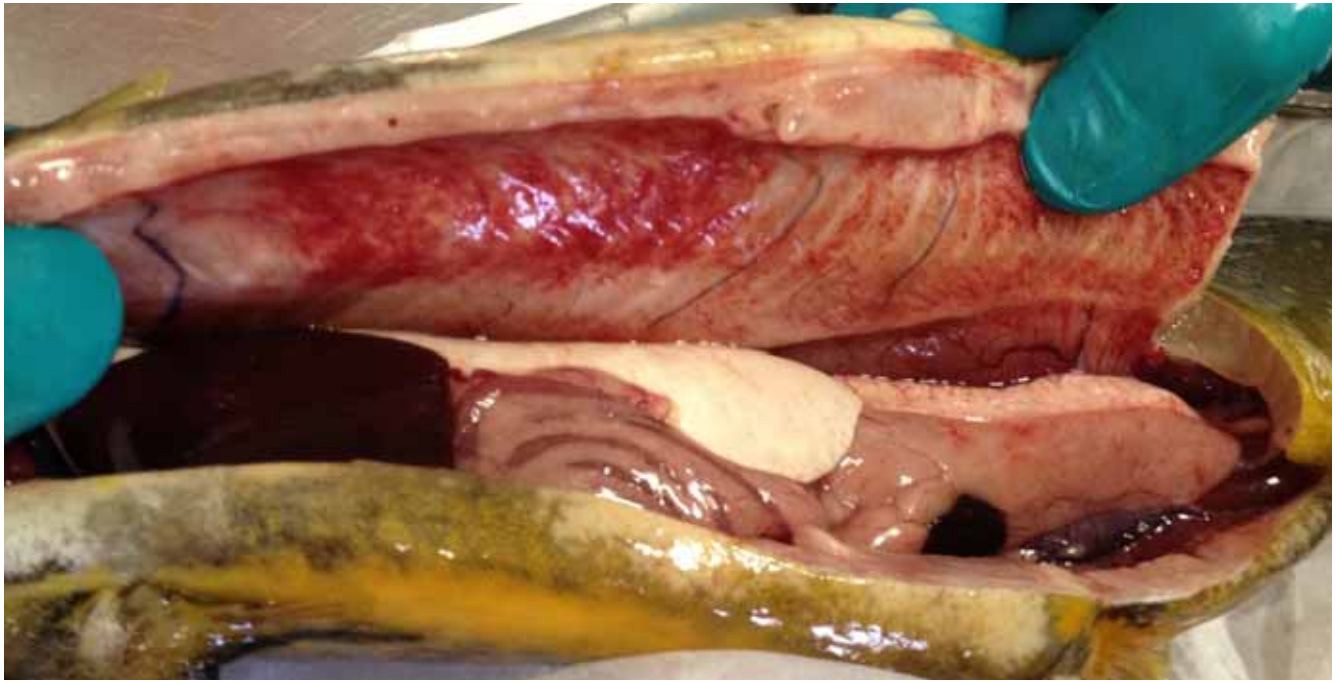
Two-year old brown trout

Broodstock brook trout



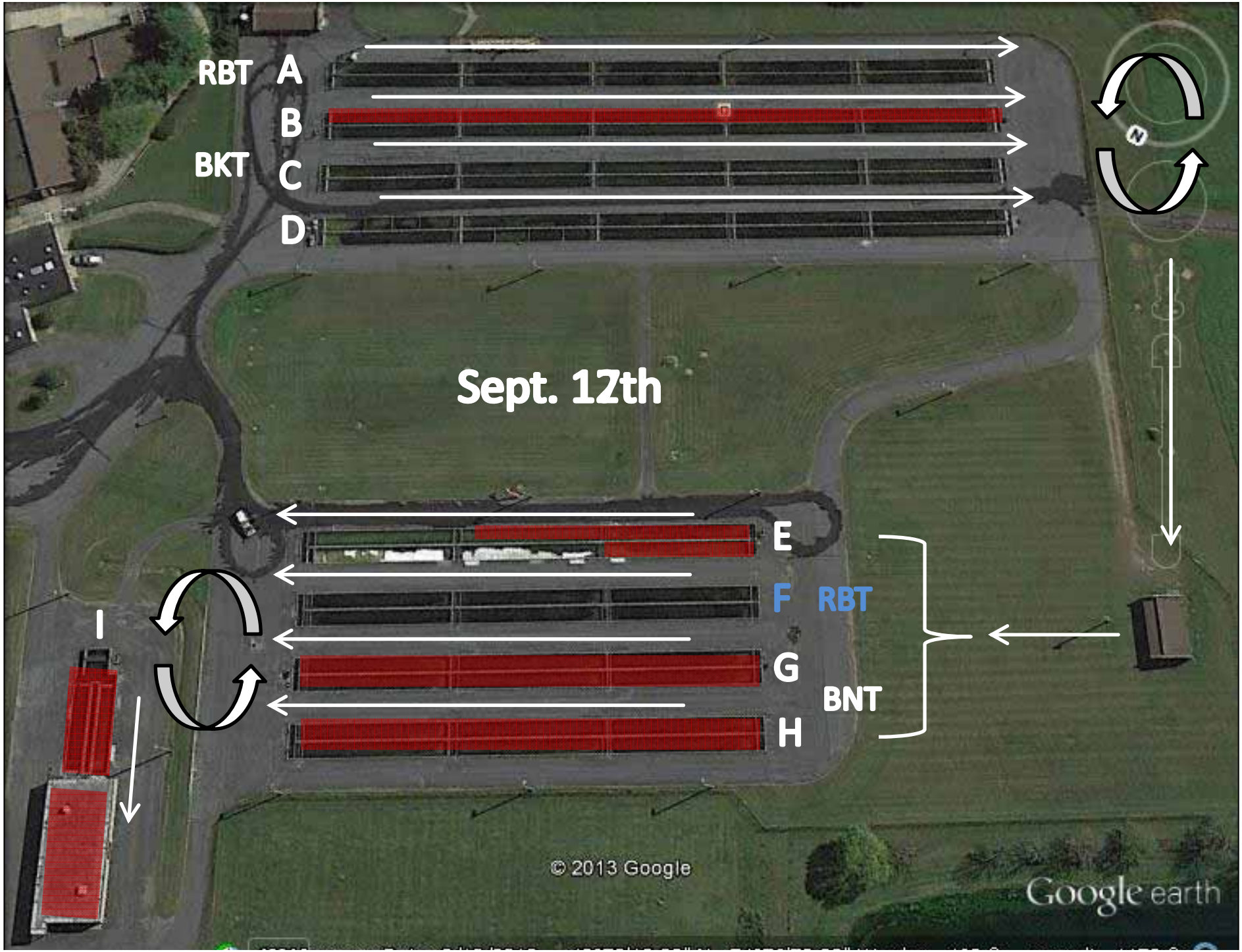




Control of the disease

Immediate action

- Two-year old fish that were scheduled to be stocked in the fall
- Eliminate the source of the bacterium to protect the other hatchery stock
- In best interest of hatchery and environment, eradication of infected fish
  - Humanely euthanized by CO_2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Furunculosis in production trout

- Chronic mortality through October with losses of over 5,000 brown trout
- Rainbow trout are resistant to disease, but can be carriers of bacterium

Control/treatment for furunculosis

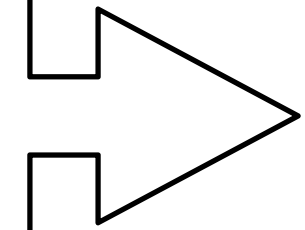
Eliminating the disease from production fish

Treatment

Antibiotic treatment: (reduce bacteria, although will not eliminate carriers)

Provide ideal environmental conditions, limit stress

6-month period of monitoring



Re-testing

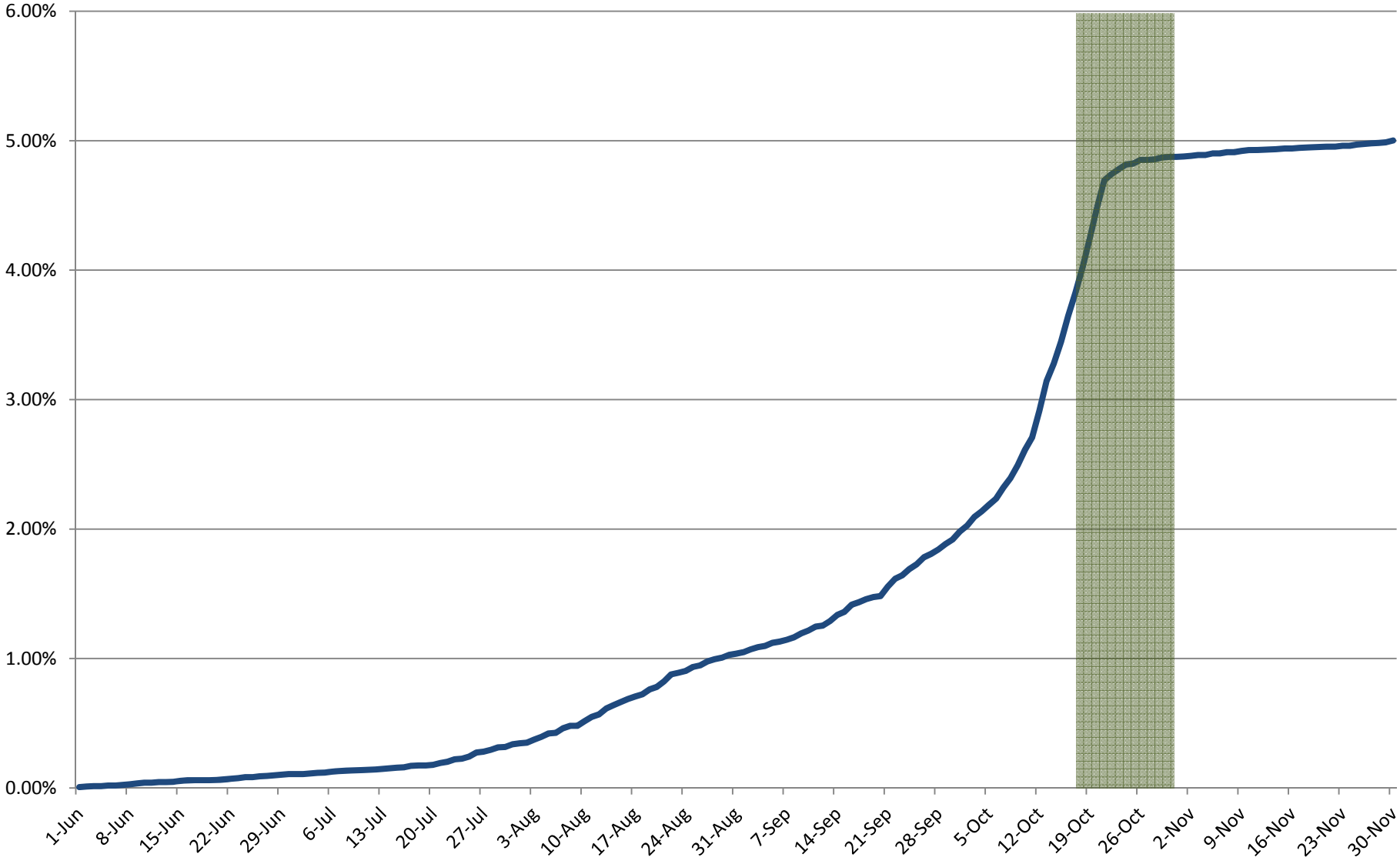
Fish are retested 1W prior to stocking

Goal to get fish clear of clinical disease signs and active infection

Carriers will exist in the population

Cumulative mortality in production brown trout

Florfenicol treatment



Testing of fish prior to stocking

- Fish from each raceway line will be tested for the bacterium roughly 1-2 weeks prior to stocking

- Lethal sample of 60 fish from each line will be tested and examined for disease and presence of bacteria

Treated population of fish that previously went through a furunculosis outbreak

Preventative actions

- Disinfection of hatchery system
- Practice strict biosecurity measures at the hatchery
- Increase rainbow trout production starting this year
- Vaccination of this years brook and brown trout
- Acquire furunculosis-resistant strains of brook and brown trout for future years

Preventative actions

- Birds are a major source for introducing disease

Current bird deterrents

Great Lakes Fish Health Committee

- Situation was presented to the Fish Health Committee
- Recommendations were provided in how to manage our trout stocking program

Great Lakes Fish Health Committee

- Endemic disease in N.J. with little risk of a new introduction
- Overtly infected fish or fish with active bacterial infection should not be stocked in state waters
- Carrier fish (asymptomatic) can be stocked in low risk areas: non-trout waters

Trout stocking program in N.J.

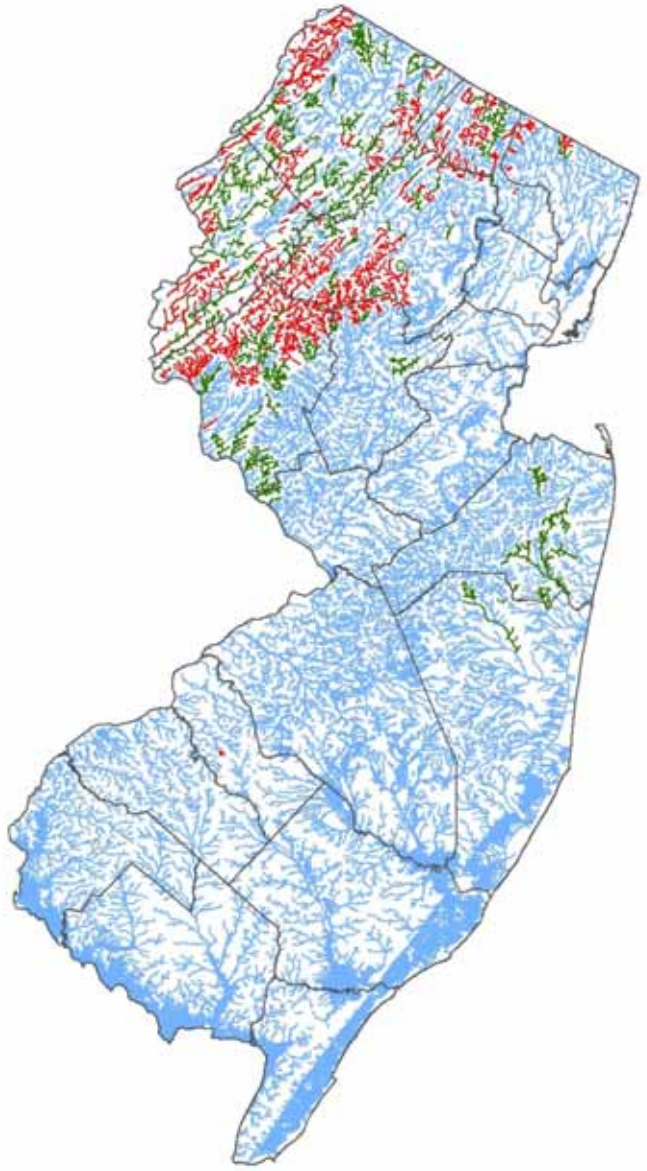
Trout production

Trout maintenance

Non-trout waters

Furunculosis status

Negative	Fish that do not test positive with standard kidney culture
Exposed	Fish that do not test positive, but were obviously exposed
Positive	Fish testing positive with standard kidney culture
Treated	Population that has tested positive, subsequently tests negative and no disease signs. Potential carriers of The bacterium



Trout stocking program in N.J.

- Negative fish may be stocked throughout the state
- No positive fish will be stocked in any state waters
- Treated fish will only be stocked in non-trout waters (put and take fishery)