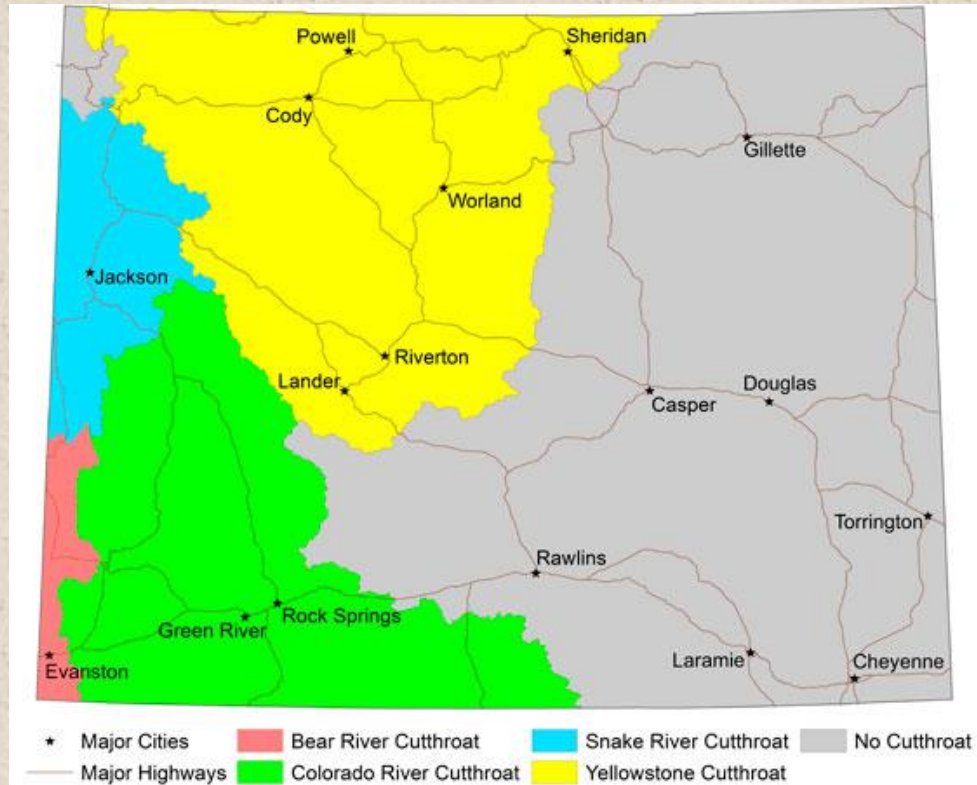


# A Timeline and Advances in Wyoming's Yellowstone Cutthroat Brood Stock

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# Strain History:





# Strain History:

- South Paint Rock Creek (1970-1990)



# Strain History:

- South Paint Rock Creek (1970-1990)
  - Peart and Launchberry Ponds





# Strain History:

- South Paint Rock Creek (1970-1990)
  - Peart and Launchberry Ponds
  - Clark's Fork Hatchery
    - (1977)



# Strain History:

- South Paint Rock Creek (1970-1990)
  - Peart and Launchberry Ponds
  - Clark's Fork Hatchery
  - Challenges (1989)
    - Congenital Abnormalities
    - Cataracts



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# Strain History:

- McBride Lake (1990-1995)



# Strain History:

- McBride Lake (1990-1995)
  - Originated from 15 Founders





# Strain History:

- McBride Lake (1990-1995)
  - Originated from 15 Founders
    - 1980, 1982, 1985, 1987



# Strain History:

- McBride Lake (1990-1995)
  - Originated from 15 Founders
    - 1980, 1982, 1985, 1987
  - Challenges
    - Founder Population
    - Lake Oriented Fish





# Strain History:

- LeHardy Rapid(1995-Present)



# Strain History:

- LeHardy Rapid(1995-Present)
  - Lake and River and Head Water Oriented





# Strain History:

- LeHardy Rapid(1995-Present)
  - Lake and River and Headwater Oriented
  - Challenges
    - Population Decline
      - Climate Change
      - Non-Native Introduction
      - Drought
      - Whirling Disease



# Strain History:

- LeHardy Rapid(1995-Present)
  - Lake and River Oriented
  - Challenges
    - Population Decline
      - Climate Change
      - Non-Native Introduction
      - Drought
      - Whirling Disease
    - Wading High Fast Water
    - Need for Visitor Interpretation





# Strain History:

- LeHardy Rapid(1995-Present)
  - Challenges at Clark's Fork
    - Water Quality



# Strain History:

- LeHardy Rapid(1995-Present)
  - Challenges at Clark's Fork
    - Water Quality
    - Egg Performance





# Strain History:

- LeHardy Rapid(1995-Present)
  - Challenges at Clark's Fork
    - Water Quality
    - Egg Performance
    - Post Spawn Mortality



# Strain History:

- LeHardy Rapid(1995-Present)
  - Challenges at Clark's Fork
    - Water Quality
    - Egg Performance
    - Post Spawn Mortality
    - Spawn Facility
    - Flood





# Strain History:

- LeHardy Rapid(1995-Present)
  - Ten Sleep Hatchery



# Strain History:

- LeHardy Rapid(1995-Present)
  - Ten Sleep Hatchery
  - Water Quality





# Strain History:

- LeHardy Rapid(1995-Present)
  - Ten Sleep Hatchery
    - Water Quality
    - Egg Performance



# Strain History:

- LeHardy Rapid(1995-Present)
  - Ten Sleep Hatchery
    - Water Quality
    - Egg Performance
    - Spawn Facility





# Infusion:

- Suitable Genetic Variability
  - Three Years of External (Wild) Recruitment
  - Seven Years of Internal (Captive) Recruitment

Ten Sleep Hatchery Brood Stock Recruitment Rotations (May 21, 2015)

2015 BMP External Recruitment					2020 Internal					2025 BMP External Recruitment				
2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

	= 2010 through 2014 internal brood spawning	Brood Plans
	= Yellowstone River infusion recruitment year classes	2010 - 2014
1	= Genetic Sampling completed on each yearling stock to confirm variability	2015 - 2019
*1	= *Genetic Sampling completed from the 9th brood year when one year of age in 10th brood year	2020 - 2024

Brood Stock Management Plans for a 2 year spawning stock is rotated every 5 years



# Strain History:

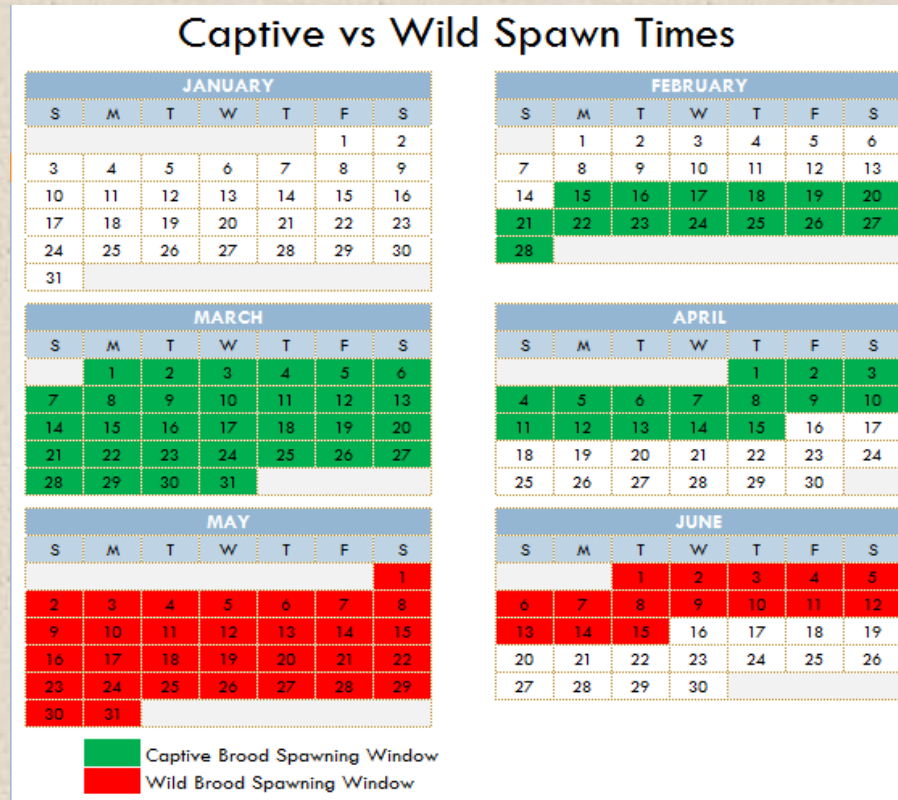
- LeHardy Rapid(1995-Present)
  - Lake and River Oriented
  - Challenges
    - Population Decline
      - Climate Change
      - Non-Native Introduction
      - Drought
      - Whirling Disease
    - Wading High Fast Water
    - Need for Visitor Interpretation
    - We can Only Utilize Male Gametes





# Infusion:

- Spawn Timing



# Infusion:

- Story Hatchery
  - Typical Hatchery
    - Constant Water Temperatures
    - Maximized Growth





# Infusion:

- Story Hatchery
  - Typical Hatchery
    - Constant Water Temperatures
    - Maximized Growth
  - Story's Contrast
    - South Piney Creek Caverns
      - Water infiltrates and travels for 3 hours
      - Story's Big Spring
    - Seasonal Temperatures



# Infusion:

- June 2014 Story Transfer
  - 60 - Three Year Olds, and 100 - Four Year Olds





# Infusion:

- June 2014 Story Transfer
  - 60 - Three Year Olds, and 100 – Four Year Olds
  - Checked for Ripeness
    - Feb-May
    - Both Lots showed spawn time shift
  - Utilized the Three Year Olds
  - Injected 22 Three Year Olds with OVA rH



# Infusion:

- In Yellowstone National Park
  - 44 Males were Captured





# Infusion:

- In Yellowstone National Park
- 44 Males were Captured



# Infusion:

- In Yellowstone National Park
  - 44 Males were Captured
  - 22 Females from Story





# Infusion:

- Tillett Isolation
  - Incubated
  - Reared For a Year in Isolation
  - Disease Certification & Genetic Testing



# Infusion:

- Tillett Isolation
  - Incubated
  - Reared For a Year in Isolation
  - Disease Certification & Genetic Testing
- Return to Ten Sleep Brood Stock

