

Tucannon River Spring Chinook Captive Broodstock - Founding & Early Results

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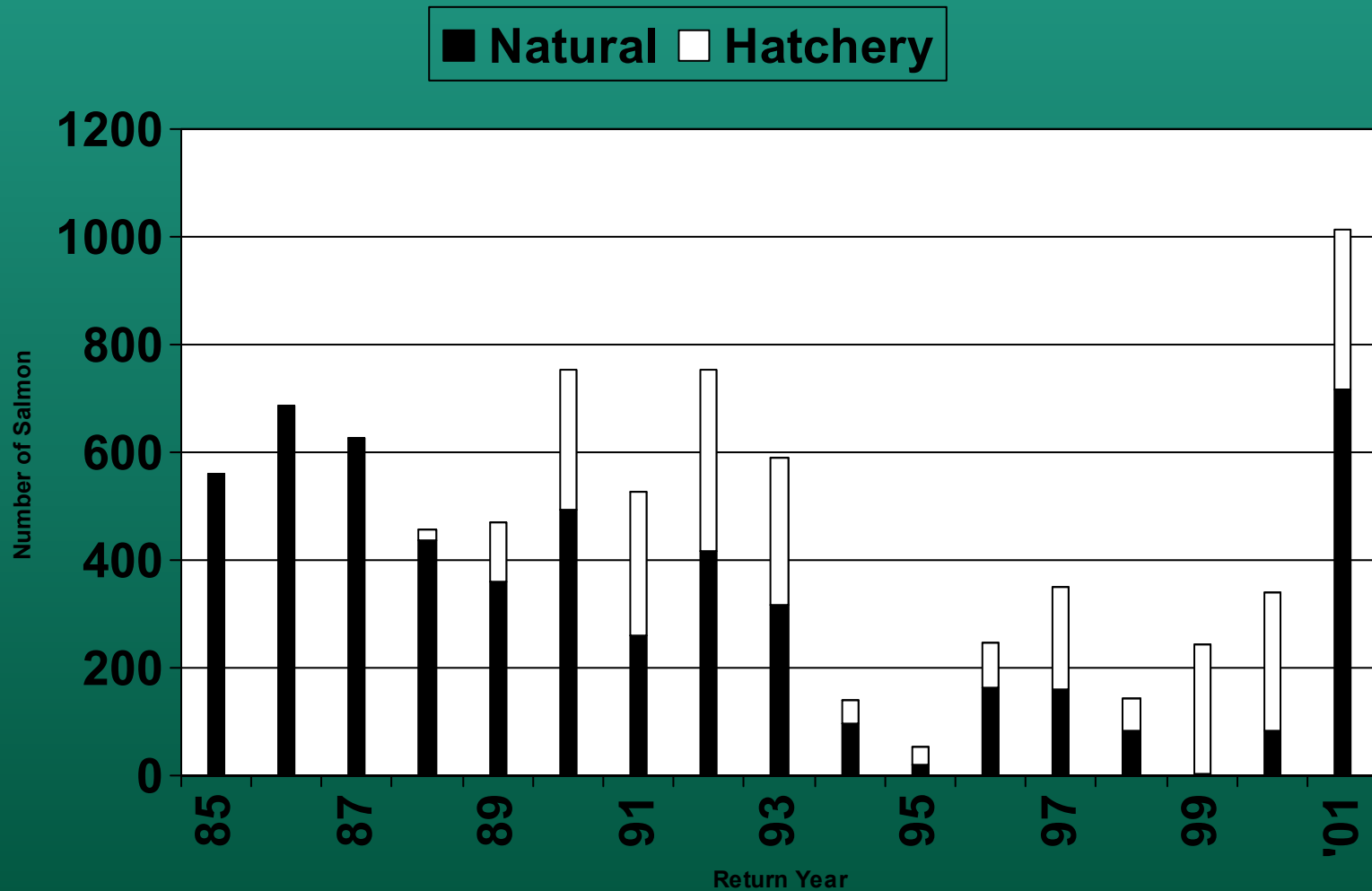
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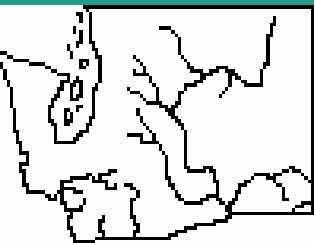
Bonneville Power Administration
Lower Snake River Compensation Plan -
U.S. Fish & Wildlife Service

Problem:

- Return of adult spring chinook salmon declined in the mid-1990's to less than 150 fish

Total escapement of Tucannon River spring chinook salmon from 1985-2001.





Tucannon River Spring Chinook Supplementation Program

- Goal: Produce 132,000 yearling smolts @ 15 fish/lb or 30 gm
- Started in 1985 with trapping and spawning of returning adults

Fish Facilities

- Tucanon River Trap
- Lyons Ferry Hatchery
- Tucannon Hatchery
- Curl Lake Acclimation Site

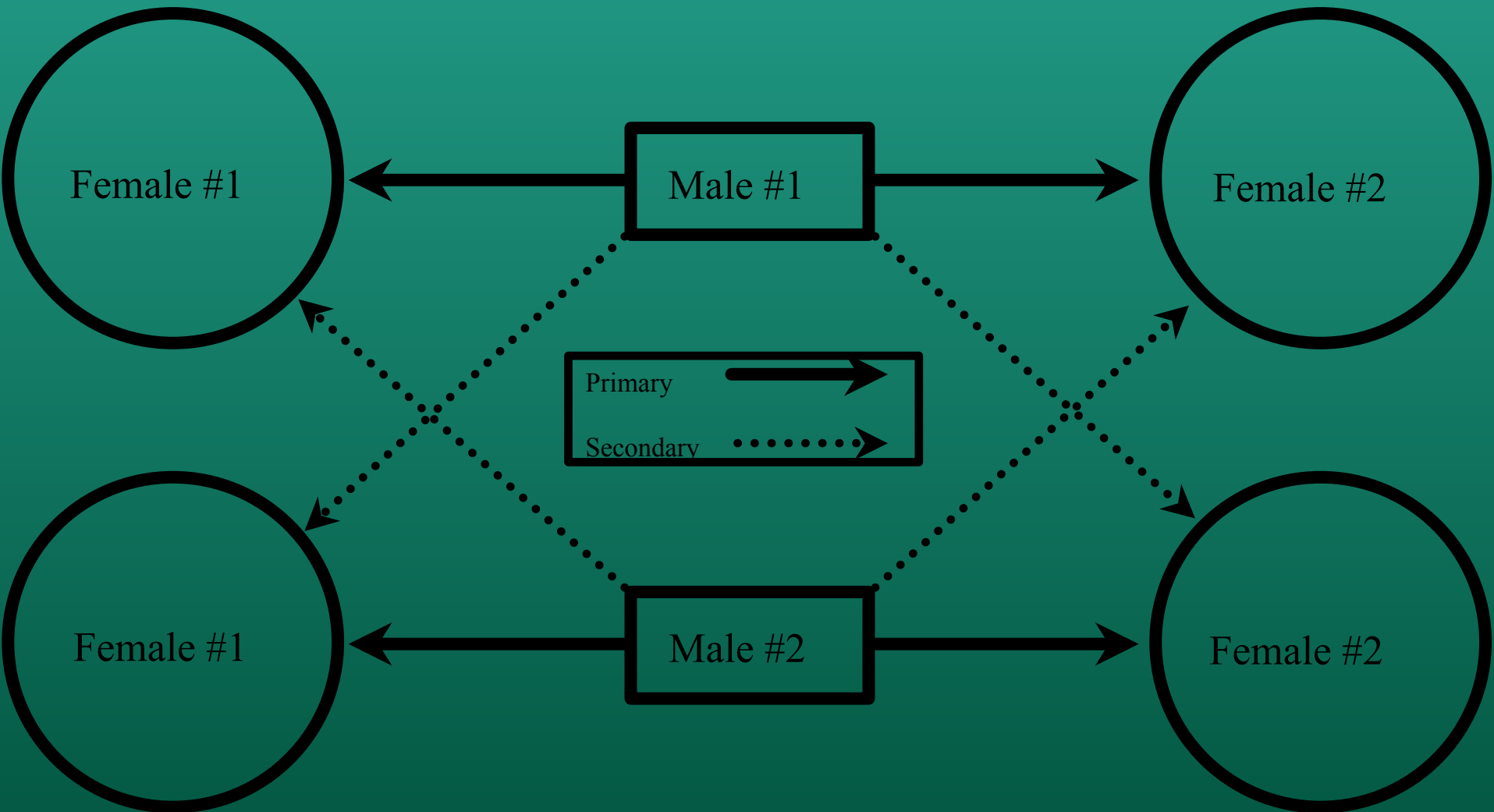
Tucannon River Spring Chinook Captive Broodstock Program

- Goal: 150,000 yearling smolts at 15 fish/lb or 30 gm
- Smolts releases from 2002 to 2007
- In addition to supplementation program

Founding Captive Broodstock

- Returning adults to Tucannon River
- 15 families (30 half-sibling families)
- From 2 x 2 mating cross
- Progeny selected from Below-Low and Low BKD-ELISA females

2 x 2 Mating Cross



Rearing - Year 1

- At ponding, 80 fish selected from 15 families
- Each family is reared separately for 1st year in 1.2 m circular tanks
- At age 1, 30 fish are selected and mark with CWT and VI tags and combined into 1 tank

Rearing - Year 1 to 5

- Fish are reared in 6.1 m circular tanks
- Age 1 to 2, less than 450 fish/tank
- Age 2 to 3, less than 150 fish/tank
- Age 3+, less than 100 fish/tank

Rearing Conditions:

- All tanks are supplied with 52 F (11C) well water
- Fish are fed commercial broodstock rations
- Handling limited to maturation sort in early July
- Mature fish are moved to spawning raceway for final maturation

Results:

- All 5 broodyear, 1997 to 2001 successfully established
- Good survival to spawning - no bacterial kidney disease
- In 1997 broodyear, external fungus mortality - controlled with formalin treatments

Captive Broodstock Spawning

Goal: 290,000 eggs

| Spawning Year | Broodyear | No. Females | Green Eggs |
|---------------|-----------|-------------|------------|
| 2000 | 97 | 12 | 14,600 |
| 2001 | 98 | 125 | 47,400 |
| | 97 | 41 | 233,900 |
| | | Total | 281,300 |
| 2002 | 99 | 18 | 8,800 |
| | 98 | 93 | 103,600 |
| | 97 | 9 | 10,200 |
| | | Total | 122,600 |

Egg Mortality to Eyed Stage

| Spawning Year | Broodyear | Percent Mortality | Range |
|---------------|-----------|-------------------|-----------|
| 2000 | 97 | 54 | 5 to 100 |
| 2001 | 98 | 19 | 1 to 100 |
| | 97 | 31 | 1 to 100 |
| 2002 | 99 | 45 | 1 to 100 |
| | 98 | 71 | 1 to 100 |
| | 97 | 78 | 14 to 100 |

Female Size

| Spawning Year | Broodyear | No. | Length (cm) | Range |
|---------------|-----------|-----|-------------|----------|
| 2000 | 97 | 12 | 48 | 43 to 52 |
| 2001 | 98 | 41 | 46 | 40 to 51 |
| | 97 | 125 | 54 | 39 to 66 |
| 2002 | 99 | 18 | 47 | 42 to 57 |
| | 98 | 93 | 54 | 42 to 63 |
| | 97 | 9 | 54 | 45 to 65 |

Smolts Produced

Goal: 150,000 smolts

| Broodyear | Year Released | Number |
|-----------|---------------|-----------|
| 2000 | 2002 | 3,100 |
| 2001 | 2003 | 140,000 ? |
| 2002 | 2004 | 80,000 ? |

Problems:

- High egg mortality
- Spawning timing delayed compared to supplementation fish
- Early broodfish maturation

Future:

- Continue work on meeting smolt goal
- Monitoring and evaluation program - captive brood versus supplementation

Acknowledgement

'Papa' Joe Bumgarner and staff of Snake River Laboratory

Butch 'Buzz' Harty (WDFW retired) and staff of Lyons Ferry Hatchery