Validating Length-at-Date run assignments for Central Valley Chinook salmon

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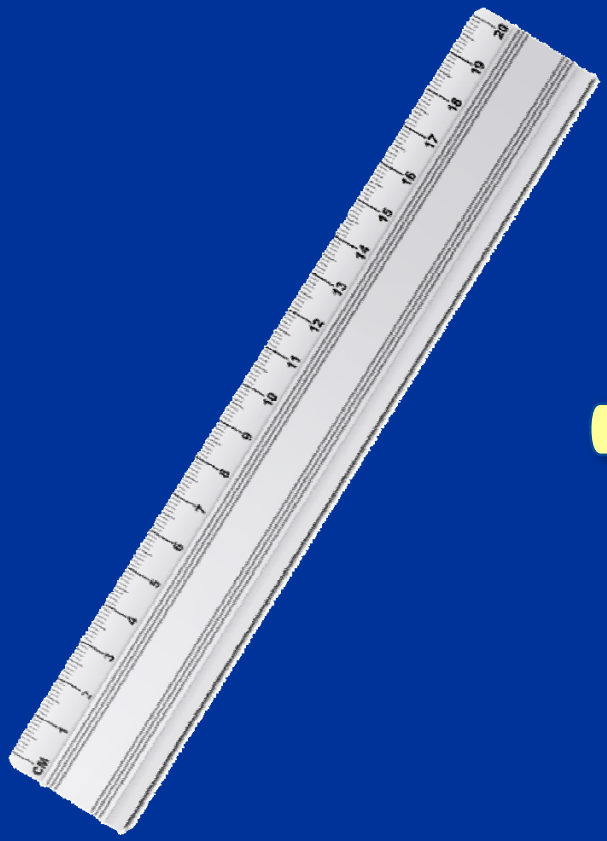
California Dept Water Resources
Aquatic Ecology

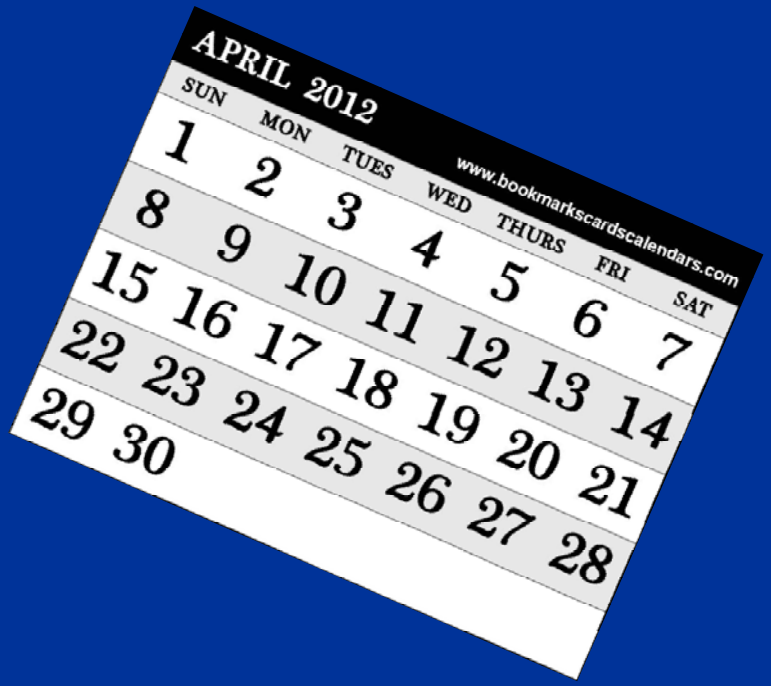
Acknowledgments

Michael Banks, OSU Marine Fisheries Genetics Laboratory
Sheila Greene, Westlands Water District (formerly DWR)

Staff at:
CVP and SWP Fish Salvage Facilities
DFG Tissue Archive
OSU Marine Fisheries Genetics Laboratory
IEP Salmon Genetics PWT

What is the Length-at-Date approach?





Length-at-Date

- Identifies Chinook run origin

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- 1989: Winter Run ESA listed

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Spring?

Late Fall?

Fall?

Winter?

Who's my Daddy?

Spring?

Late Fall?

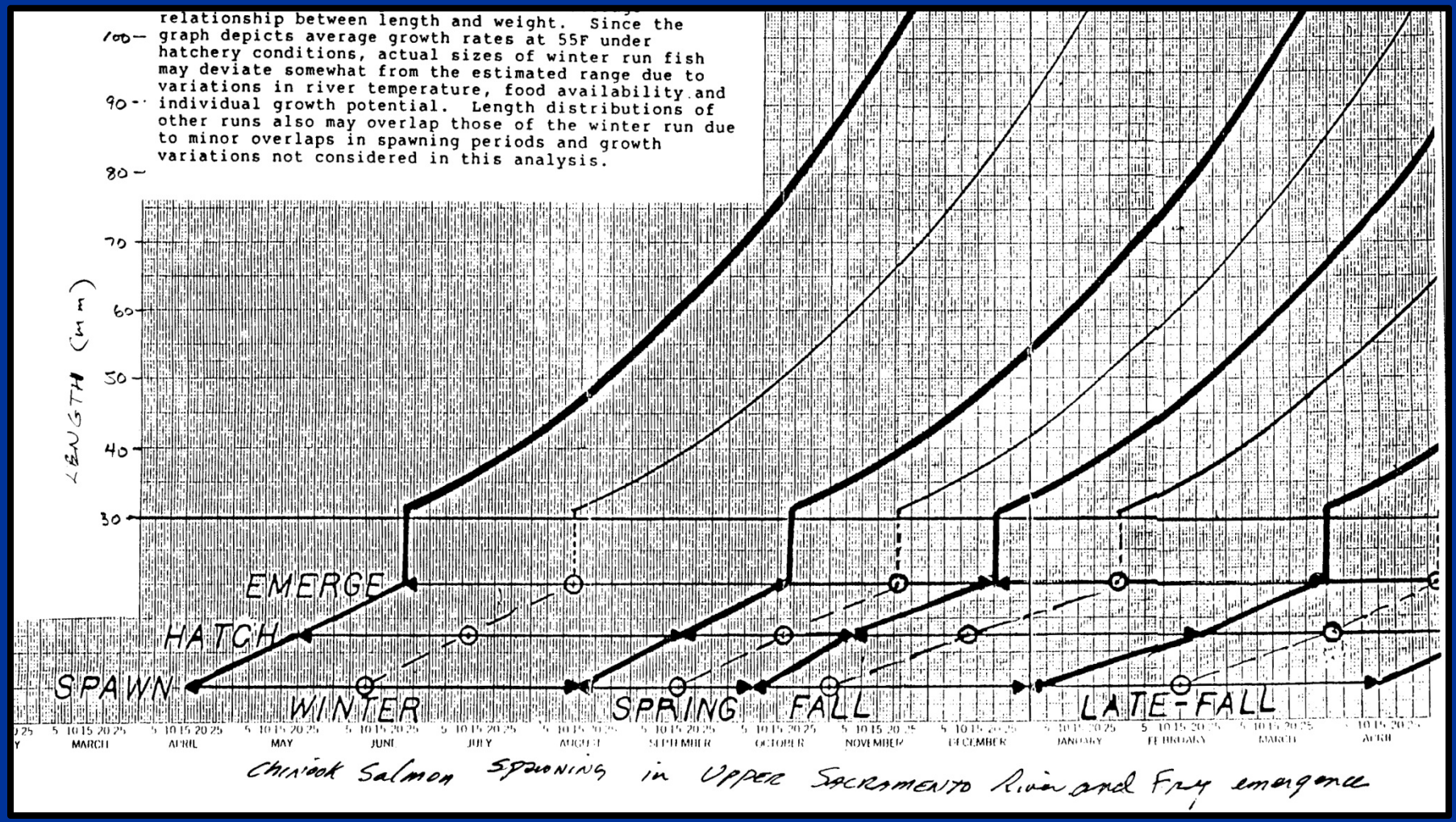
Fall?

Winter?

South Delta Fish Salvage Facilities

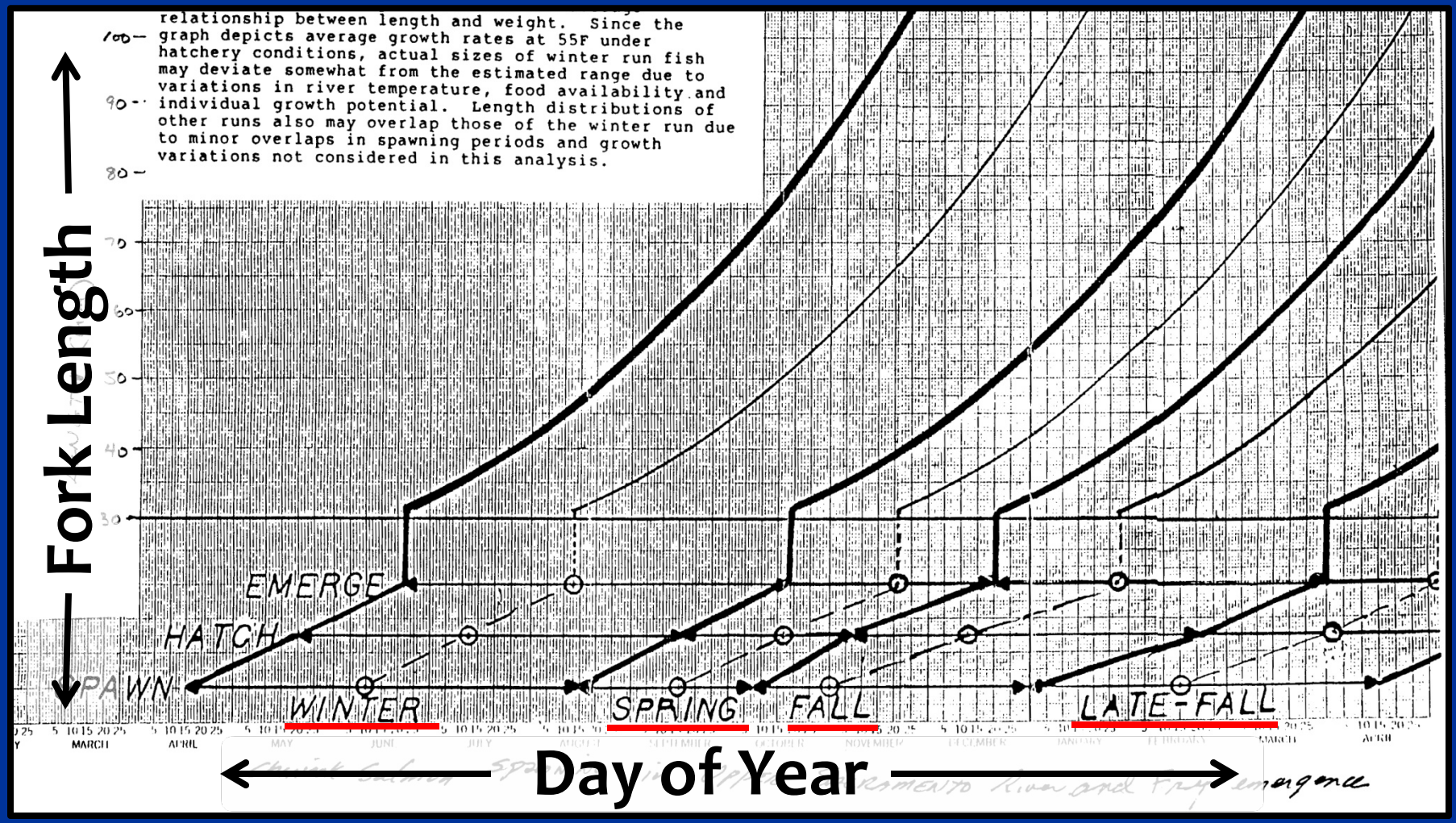
High Economic Stakes

1989: Length at Date approach conceived



Fisher's length-at-date chart from Stevens (1989 memo report)

1989: Length at Date approach conceived



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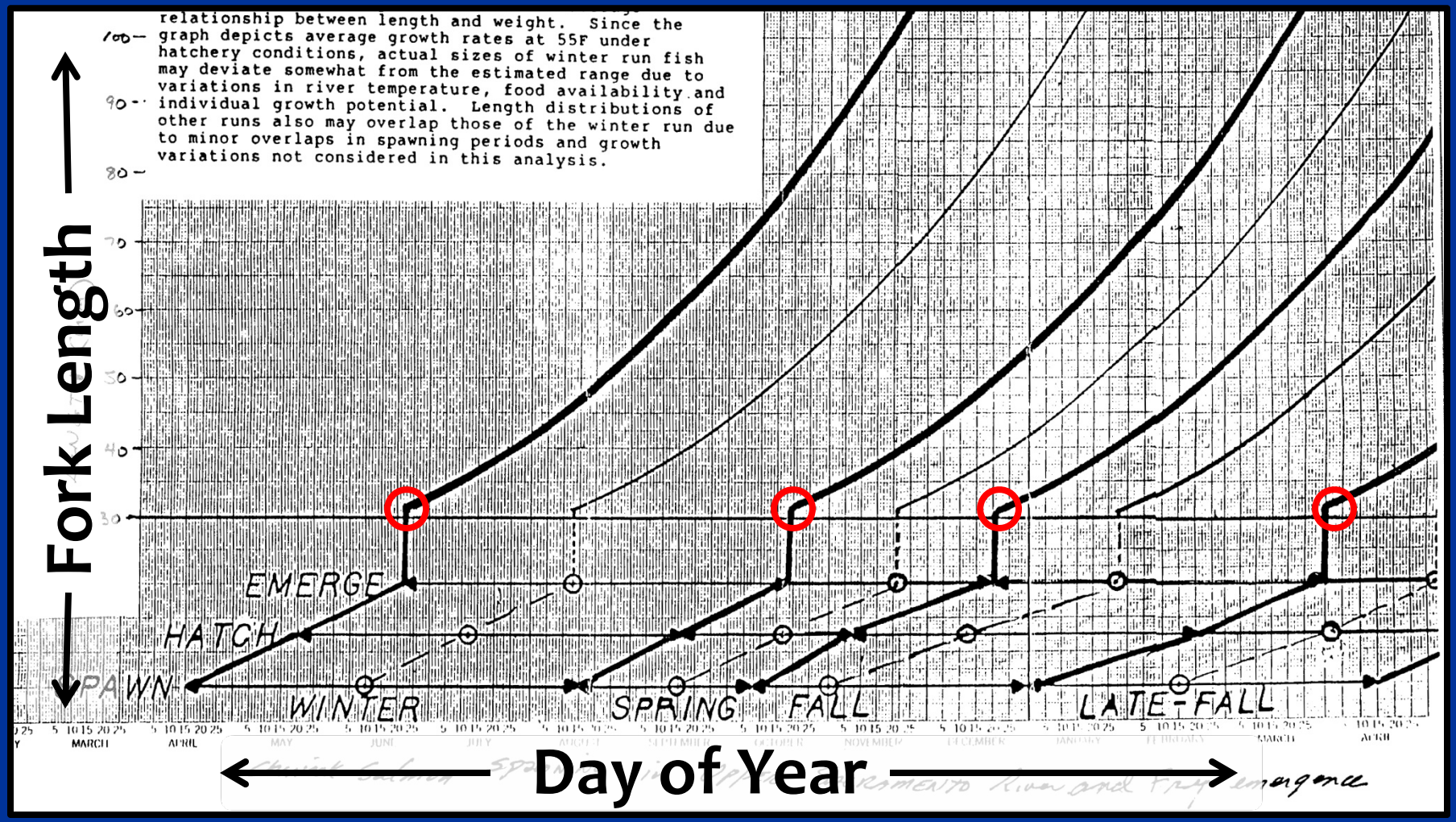

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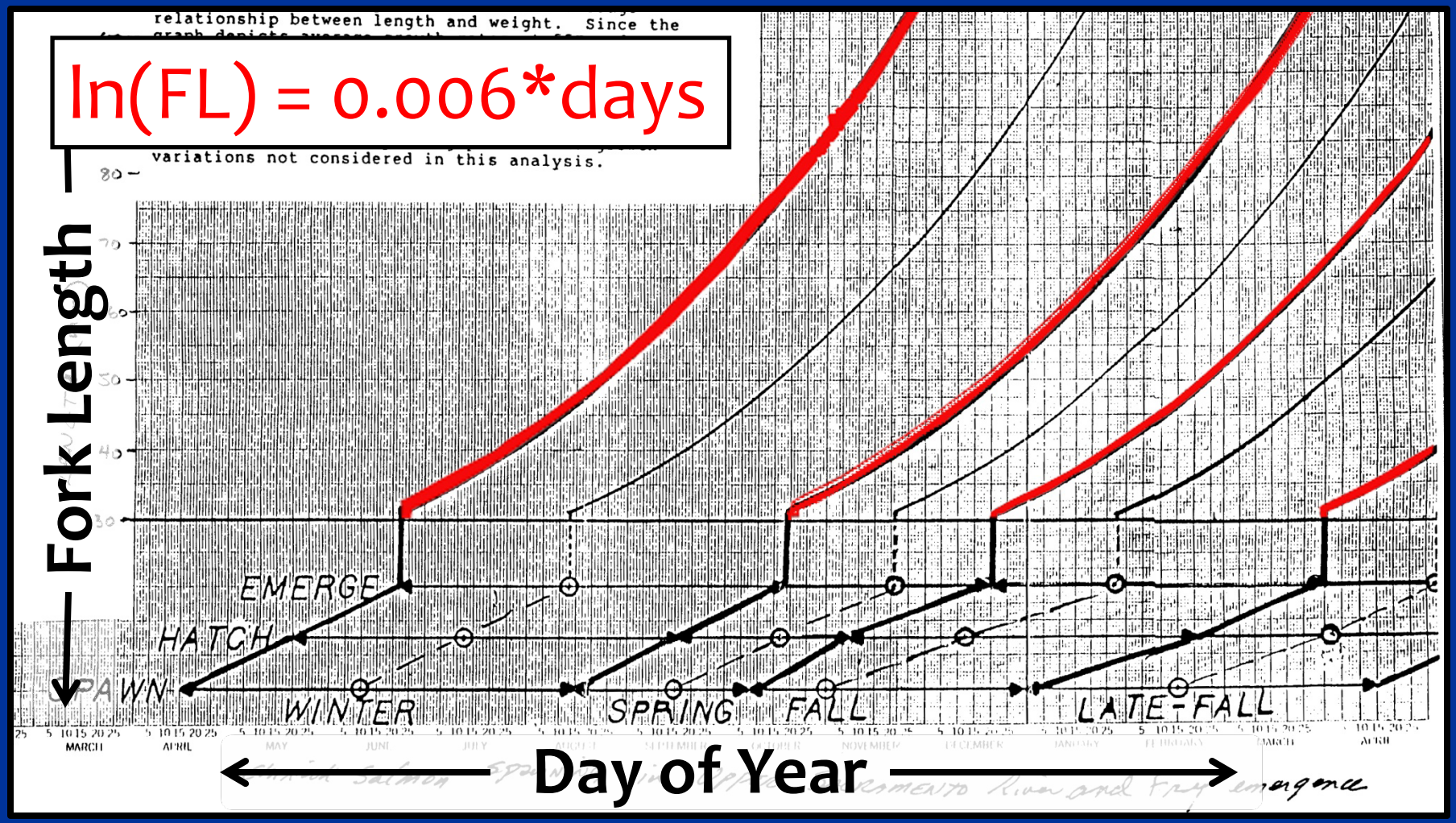

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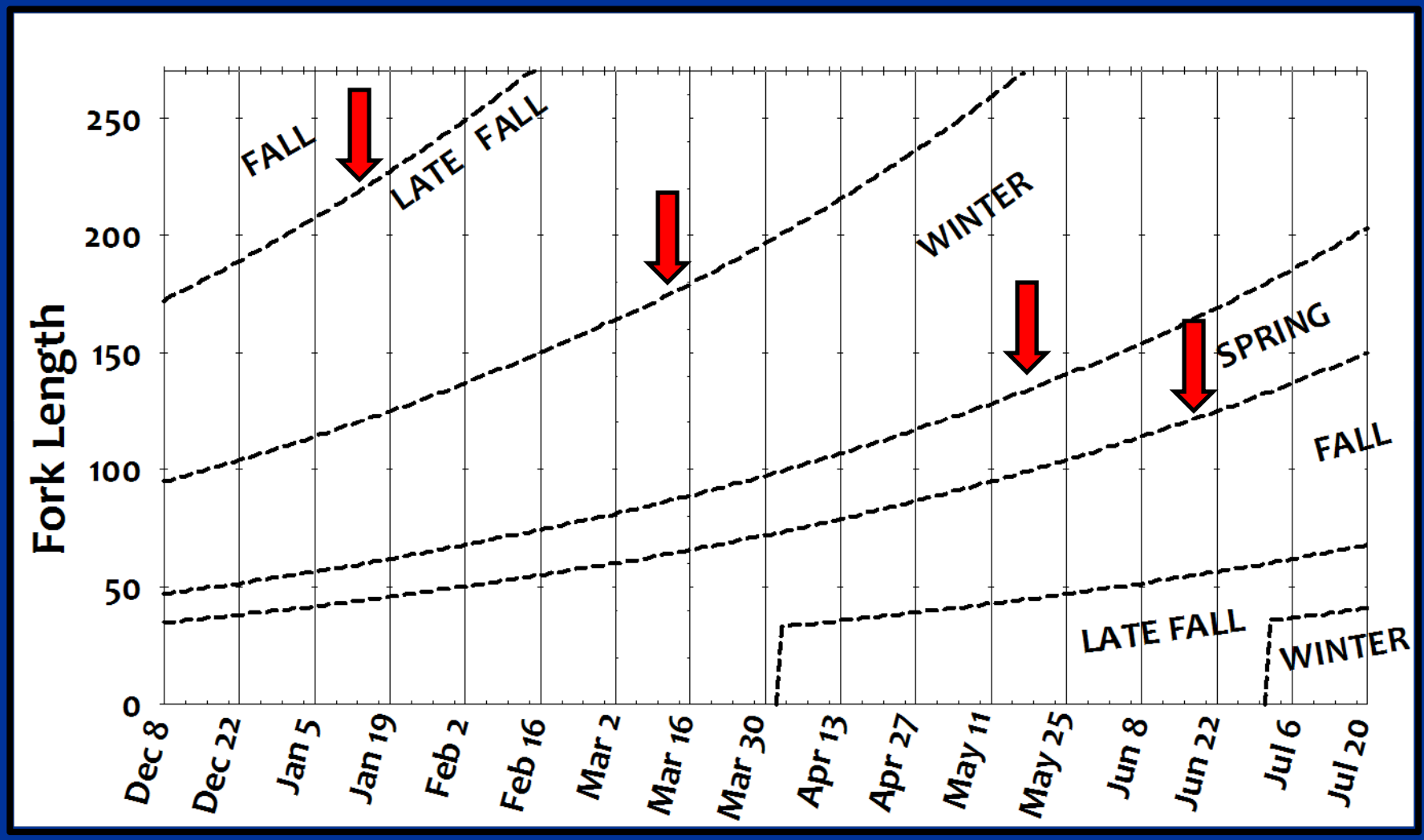
Current Fisher Model Size Criteria



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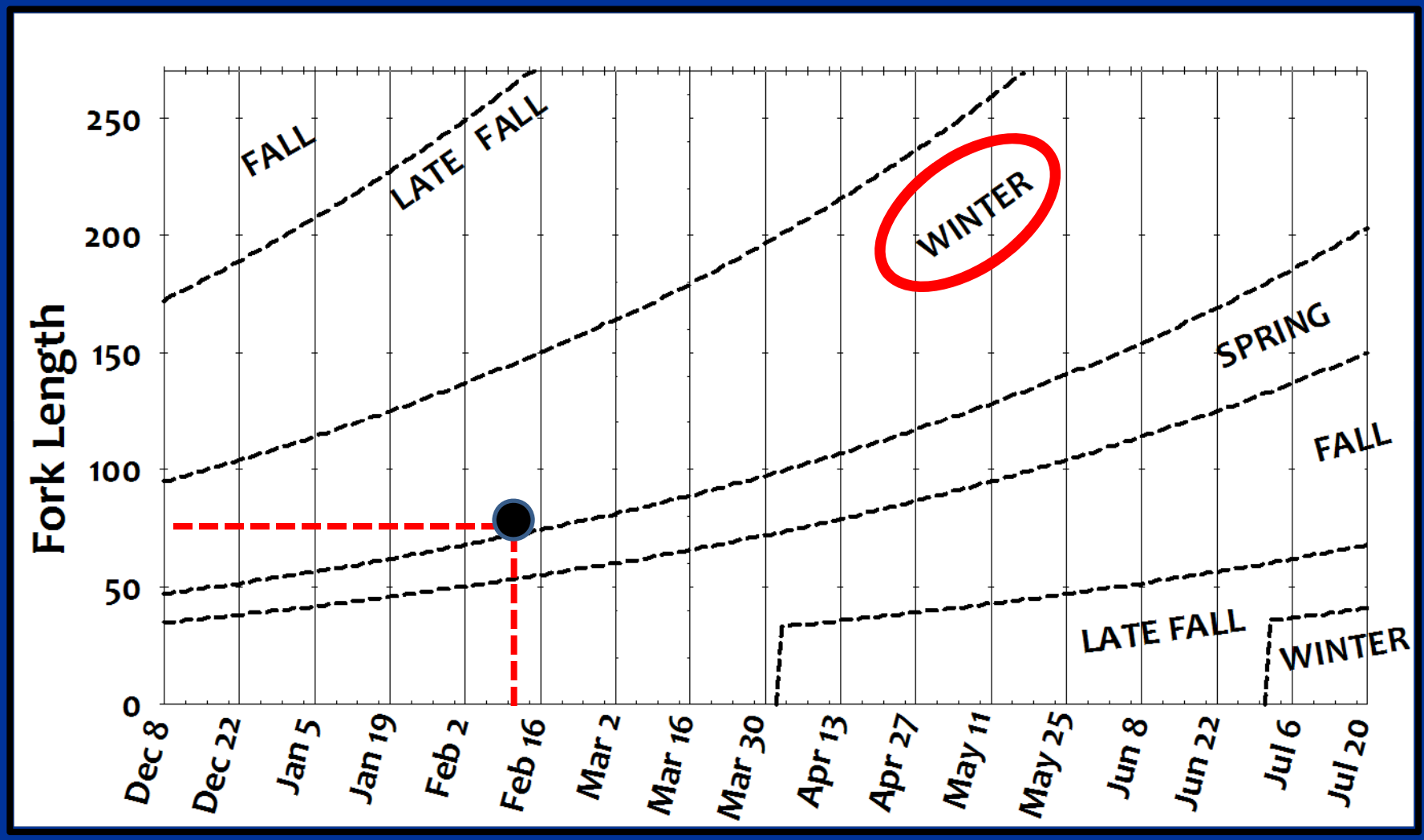

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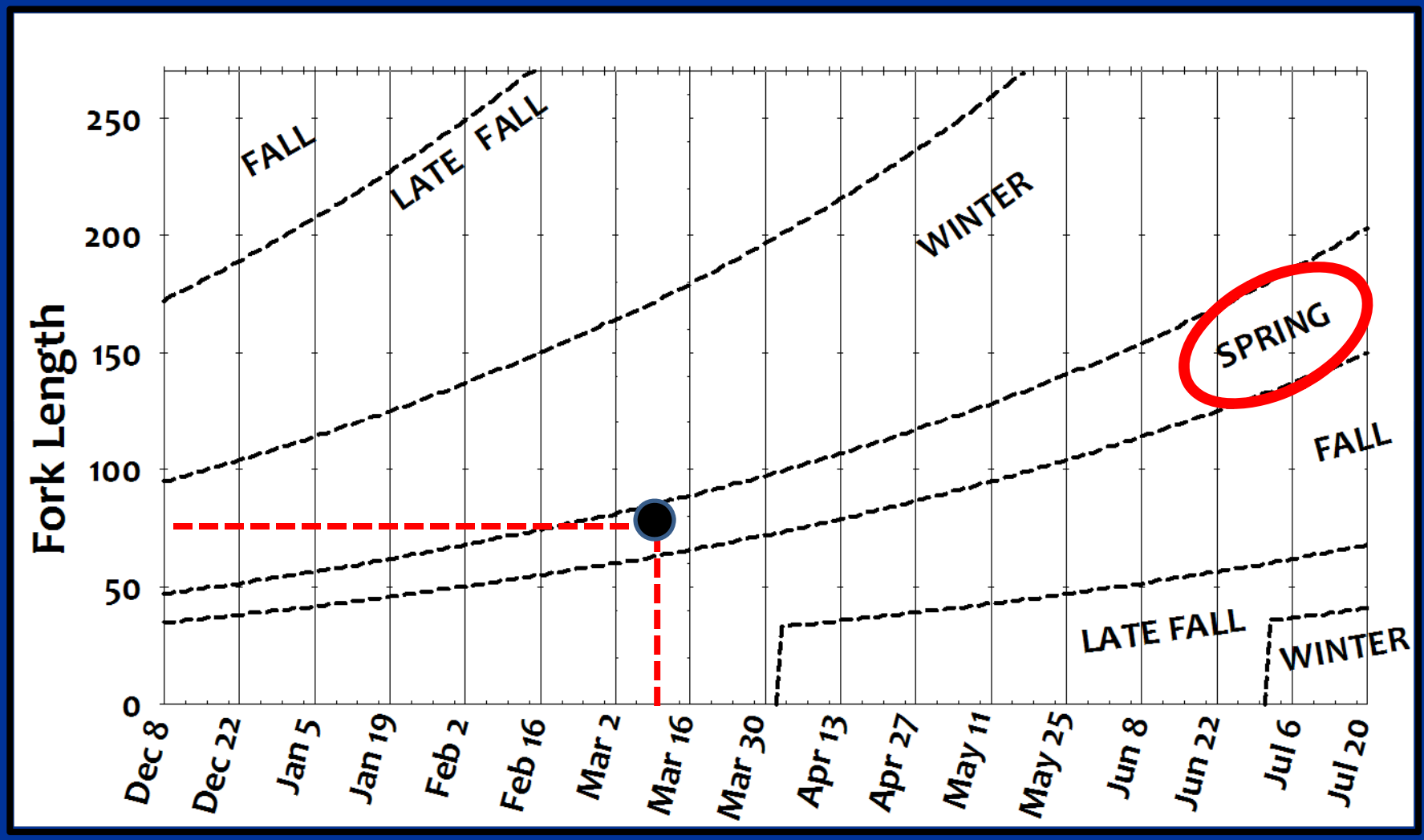

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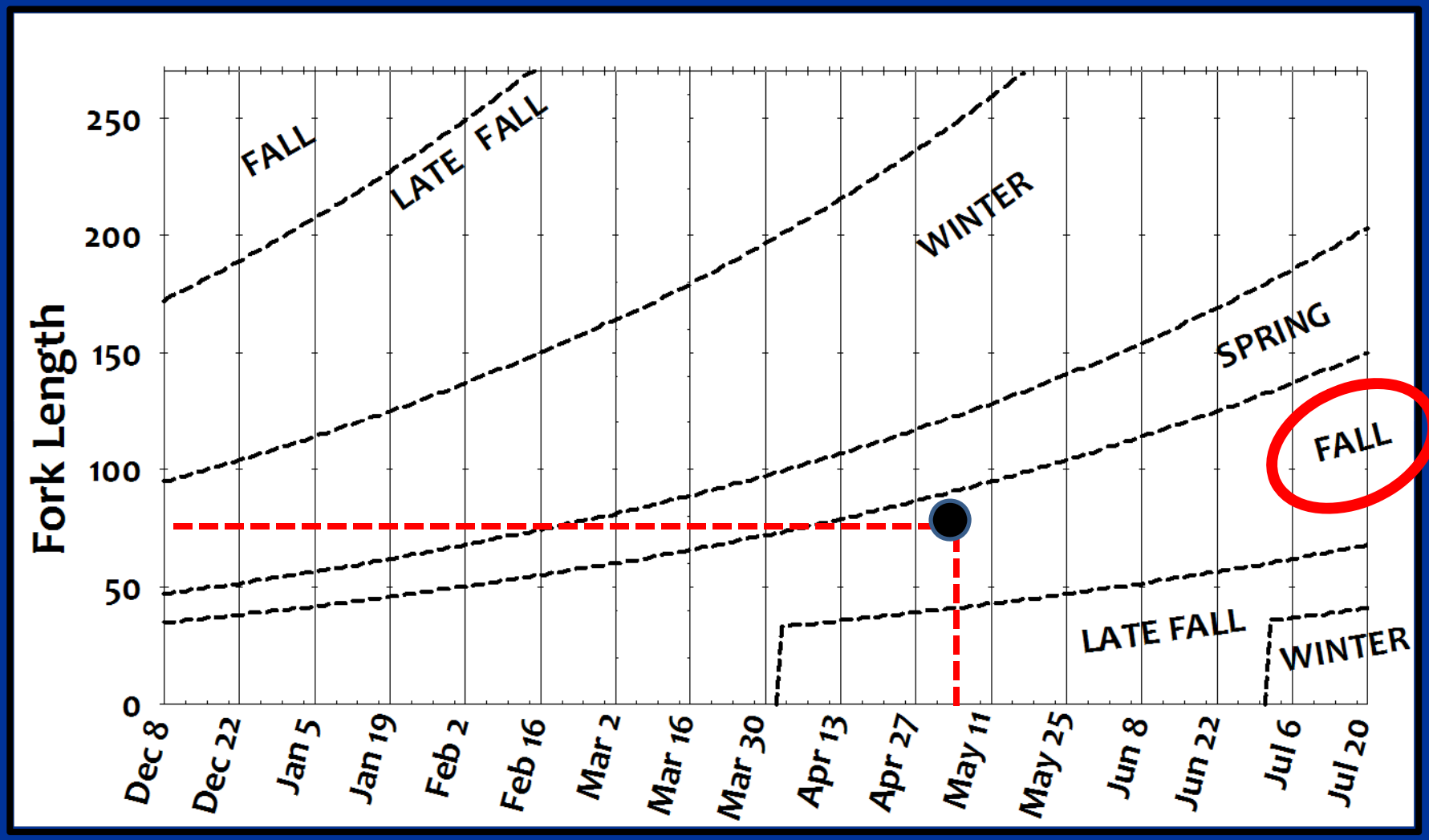
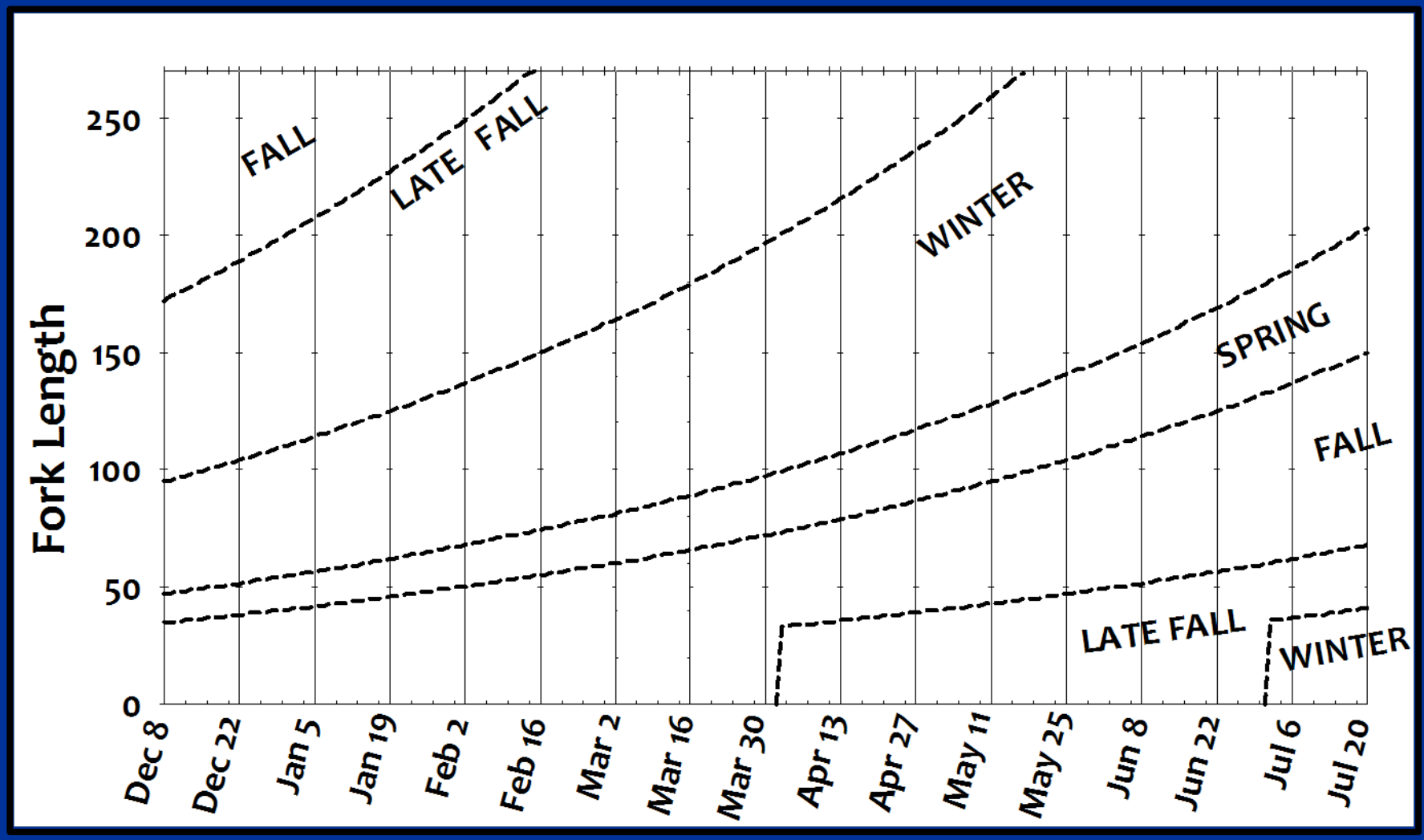
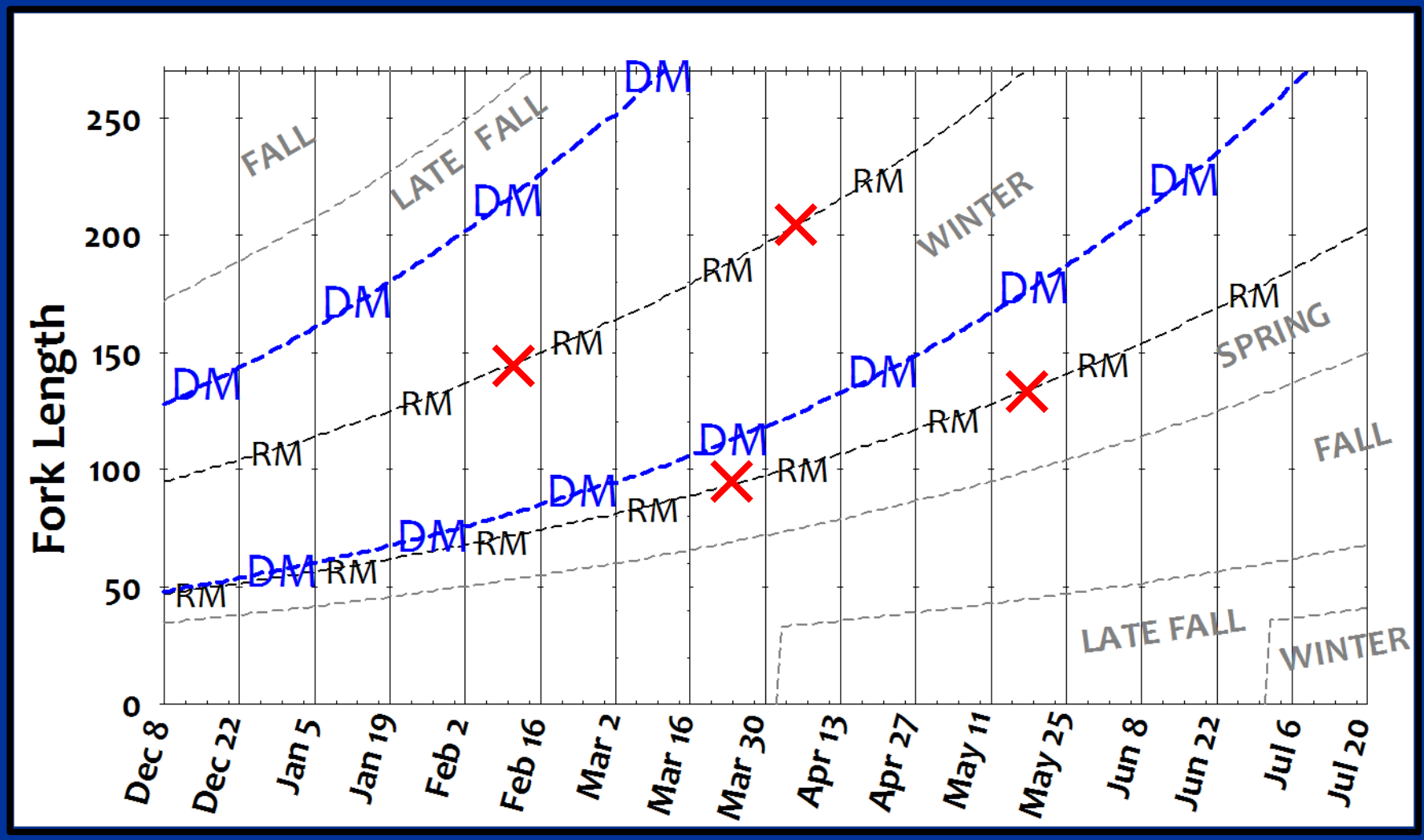


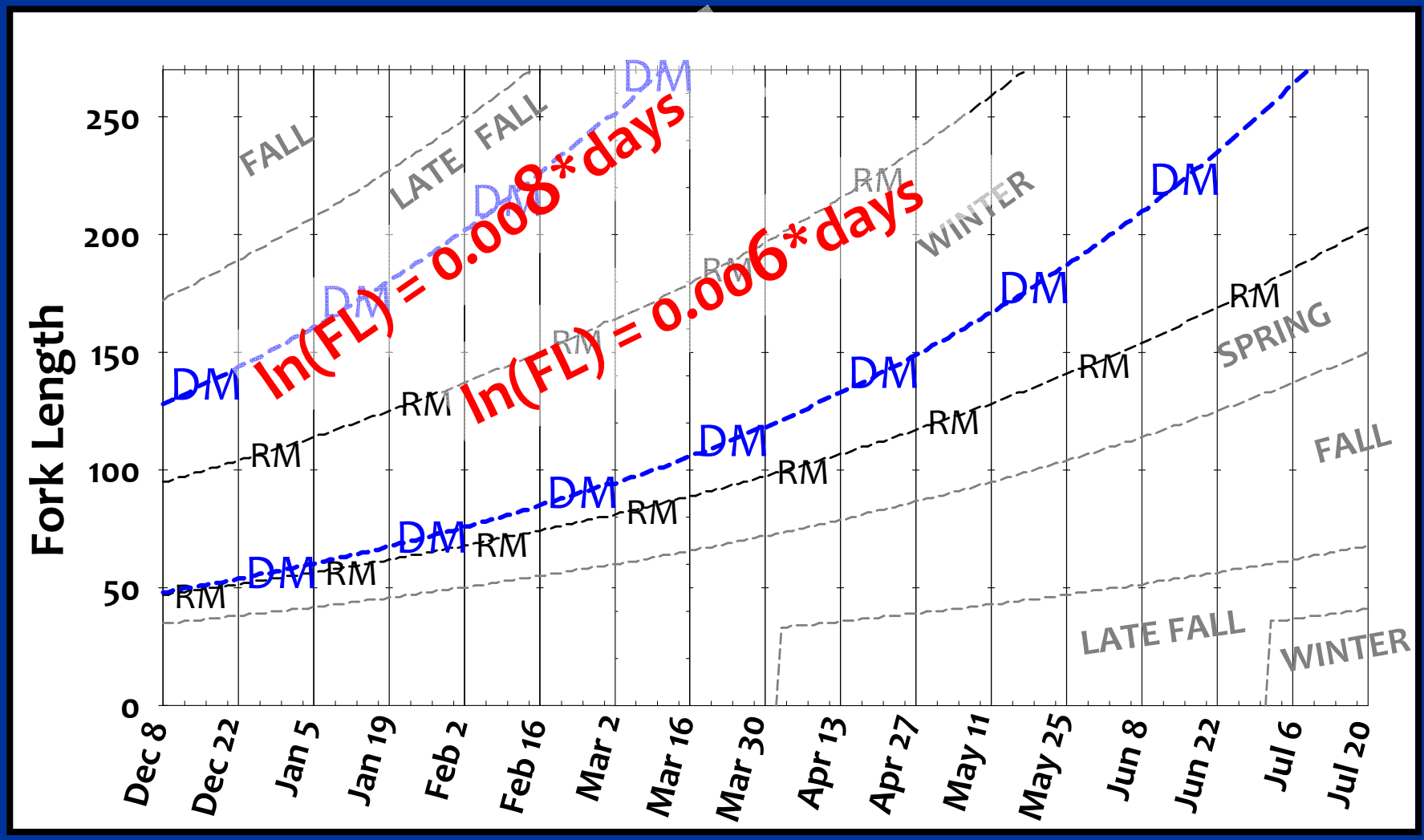
River
Current ~~Fisher~~ Model Size Criteria



1997: Delta Model adopted for Salvage ONLY



Delta Model based on Delta catch data



Criteria developed for Winter Run

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Model Assumptions

1. spawning runs segregated in time
2. same constant growth rate (except winter run)
3. juvenile FL ranges segregated

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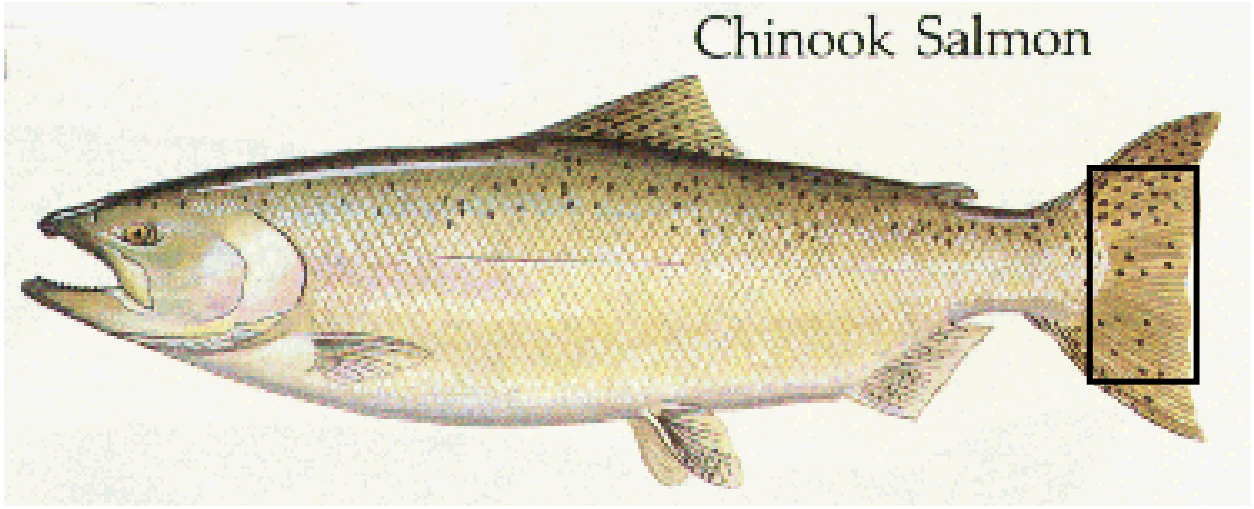
1993: Genetic testing initiated



Collect Tissue From Here

Juveniles tested by each genetic method

	Genetic Method					
Year	WR3.2E	WR3.2B	WR4.0	GMA12	GMA16	ONCOR16
1997	899					
1998	1,063					
1999	1,643					
2000	1,121			2		
2001	1,202			361		
2002		336		120		
2003		2		783		
2004			1	319	582	
2005					279	
2006					2,932	
2007					1,055	
2008						2,859
2009						1,728
2010						1,832

Chinook tested by each method

	Genetic Method					
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= 19,119

Chinook tested by each method

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1997	899					
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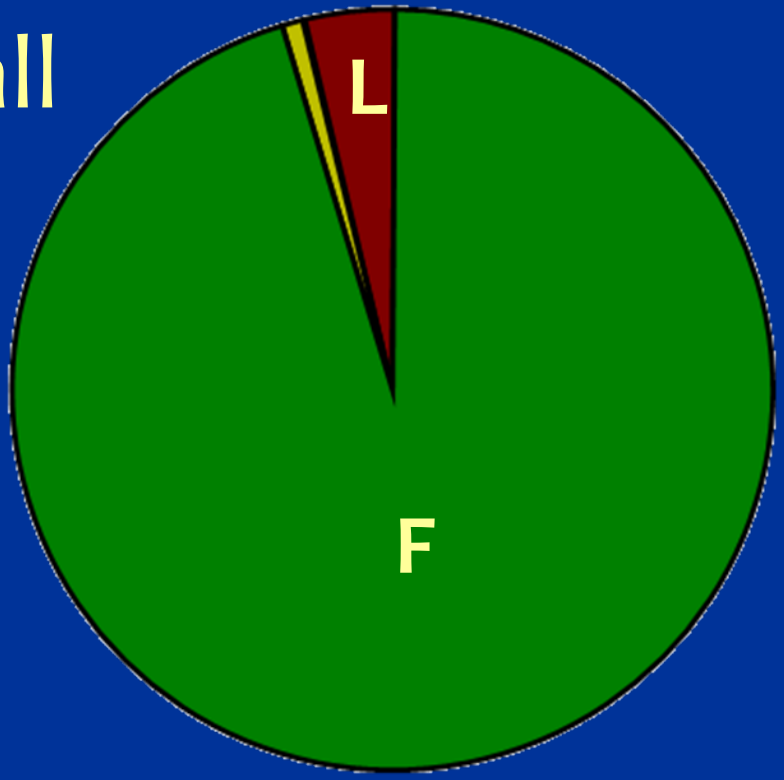
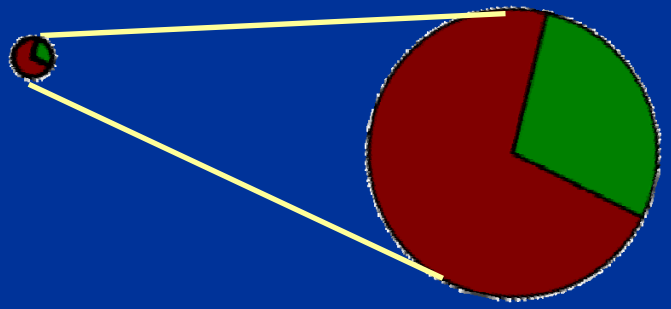
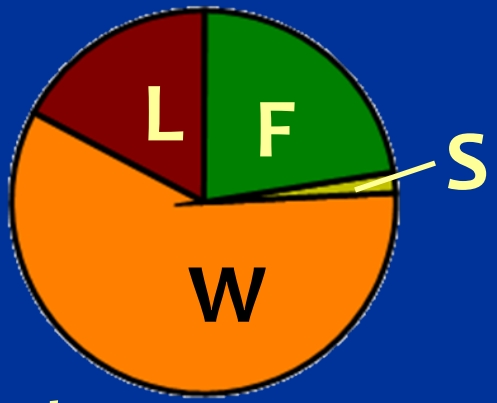
= 11,307

Fall

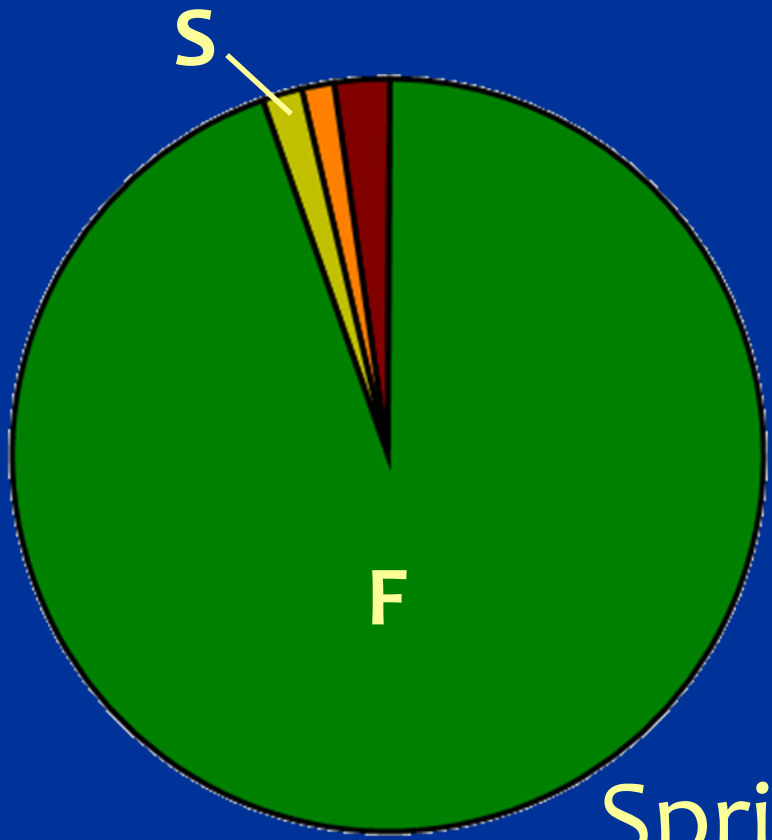


Late-fall



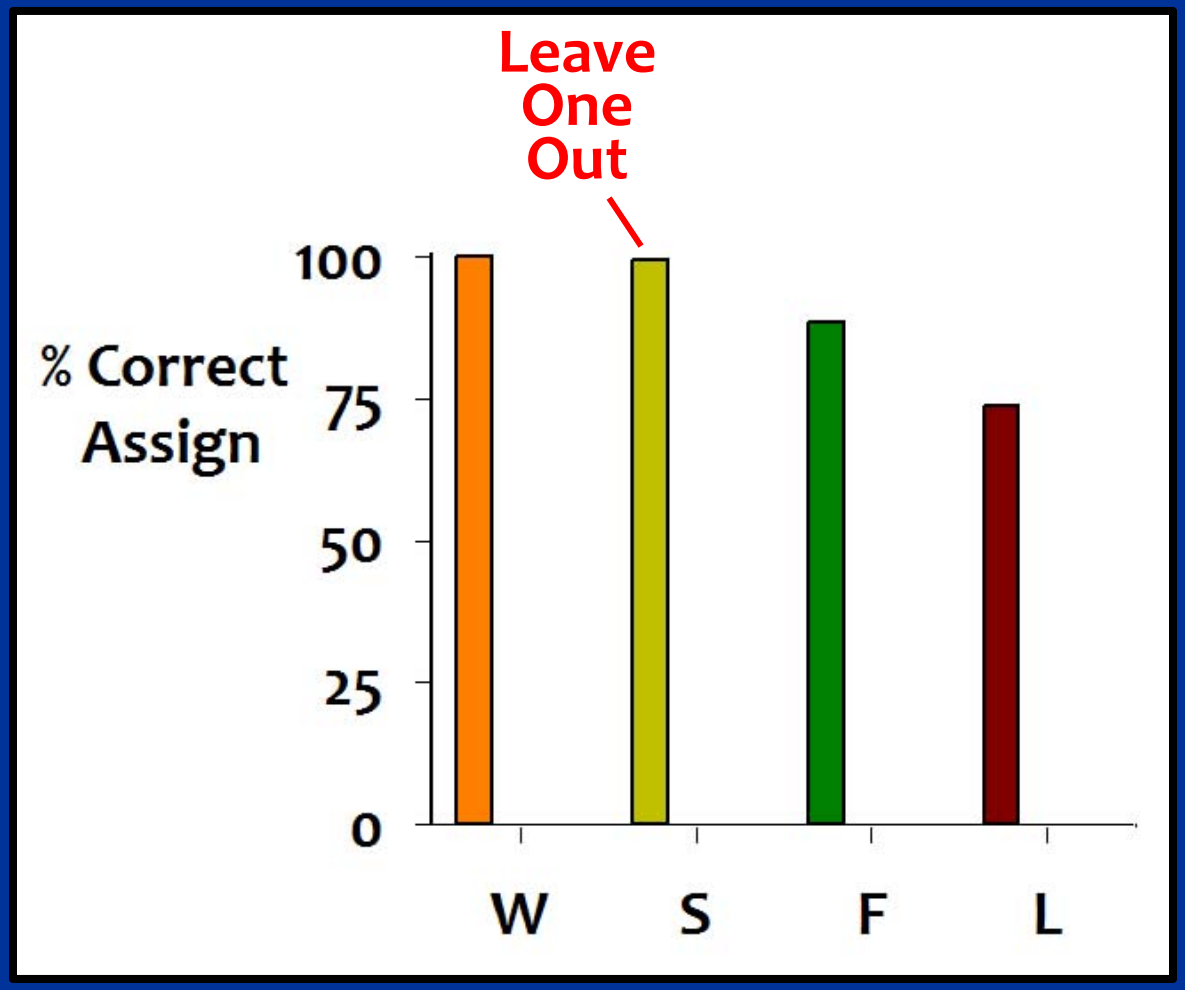


Winter



Spring

Genetic Test Accuracy



(Michael Banks et al., in review, Animal Genetics)

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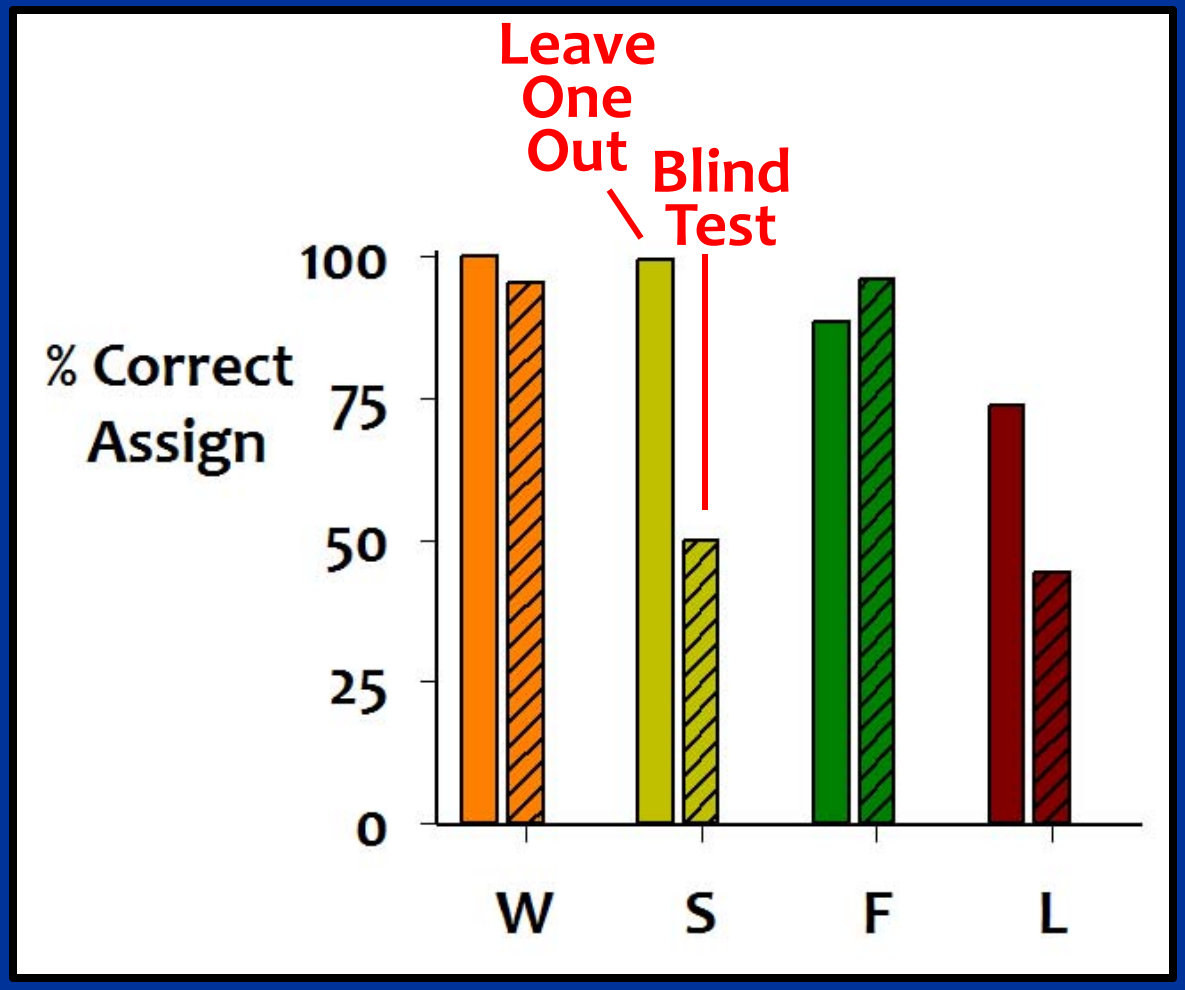

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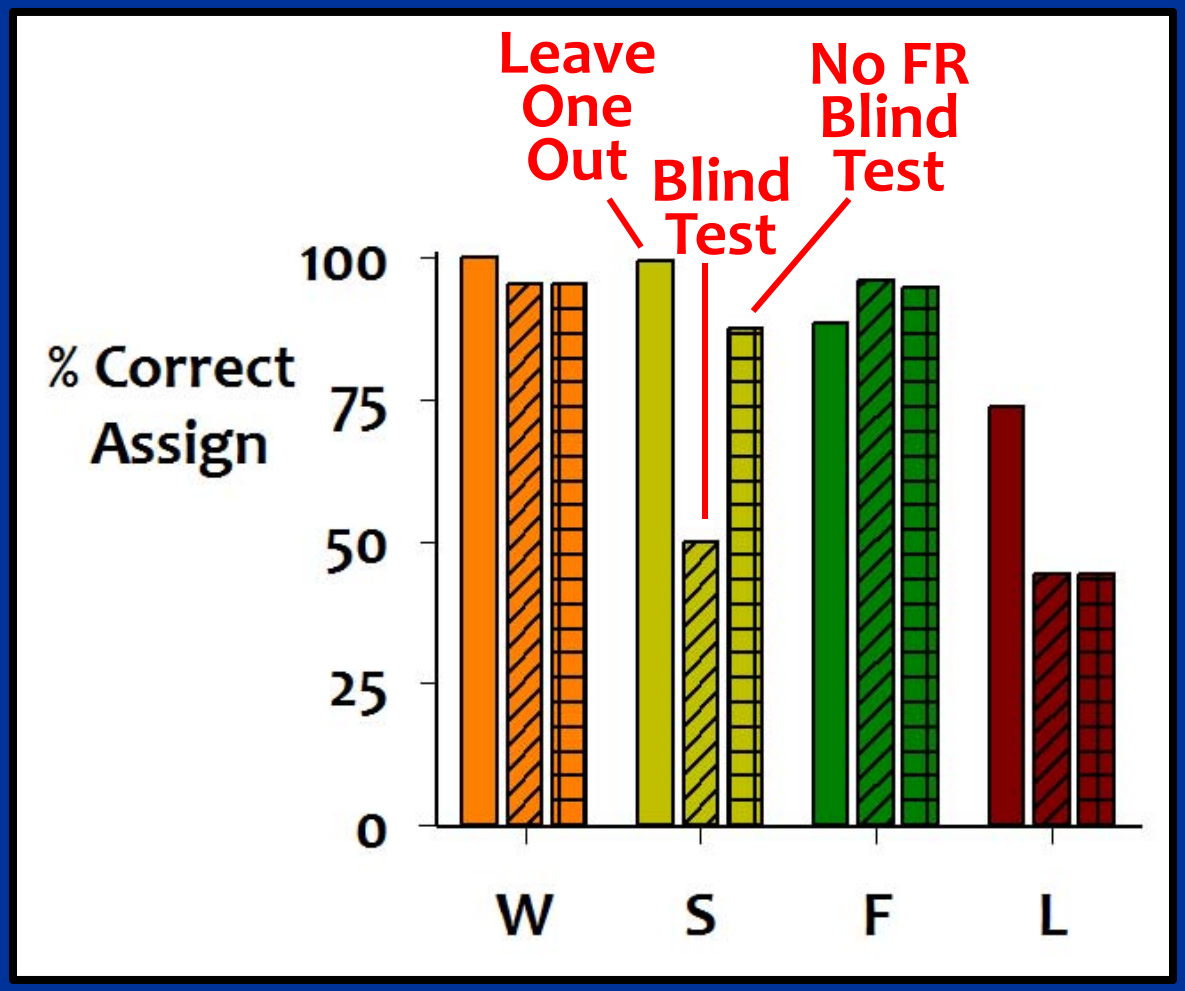

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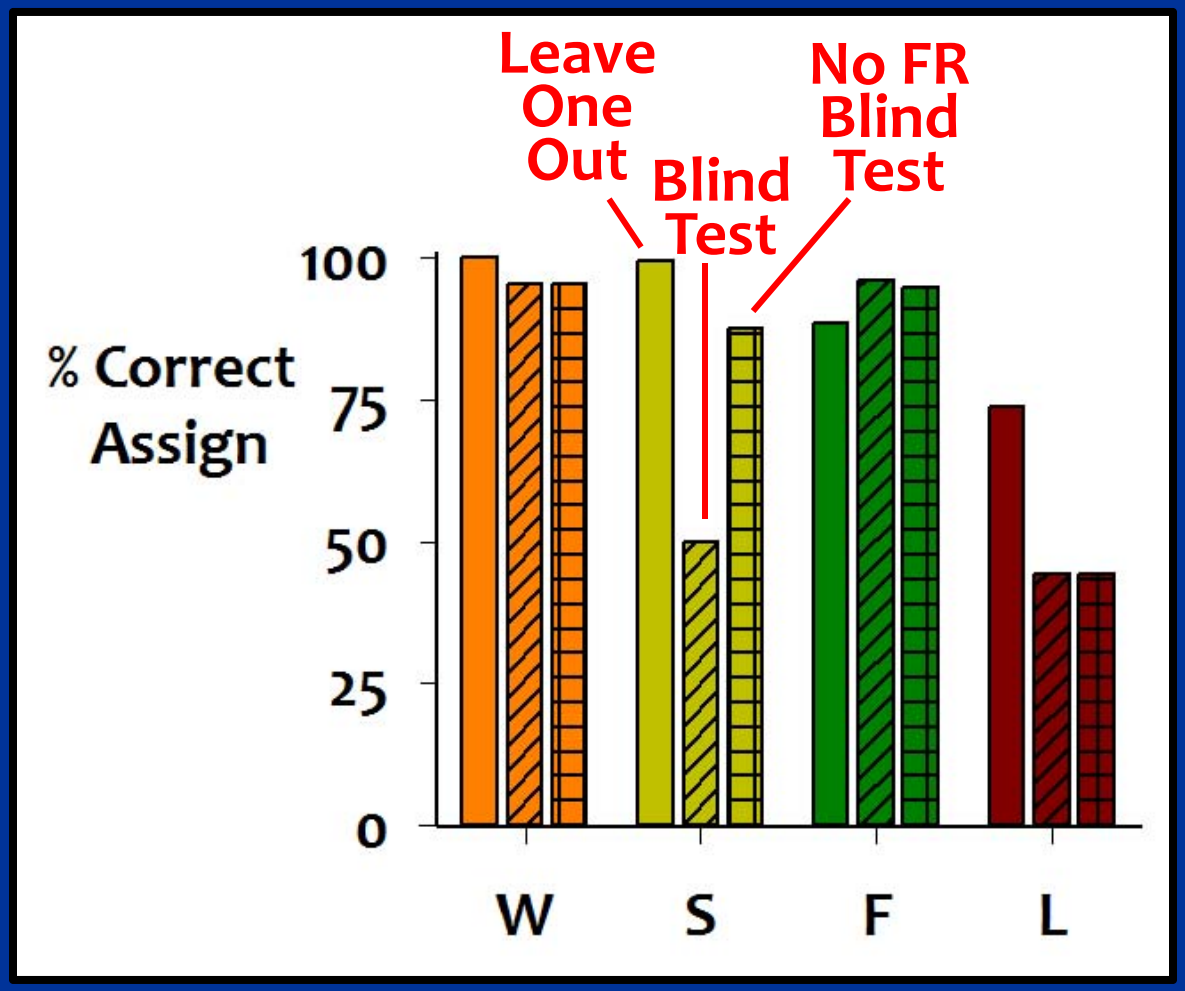

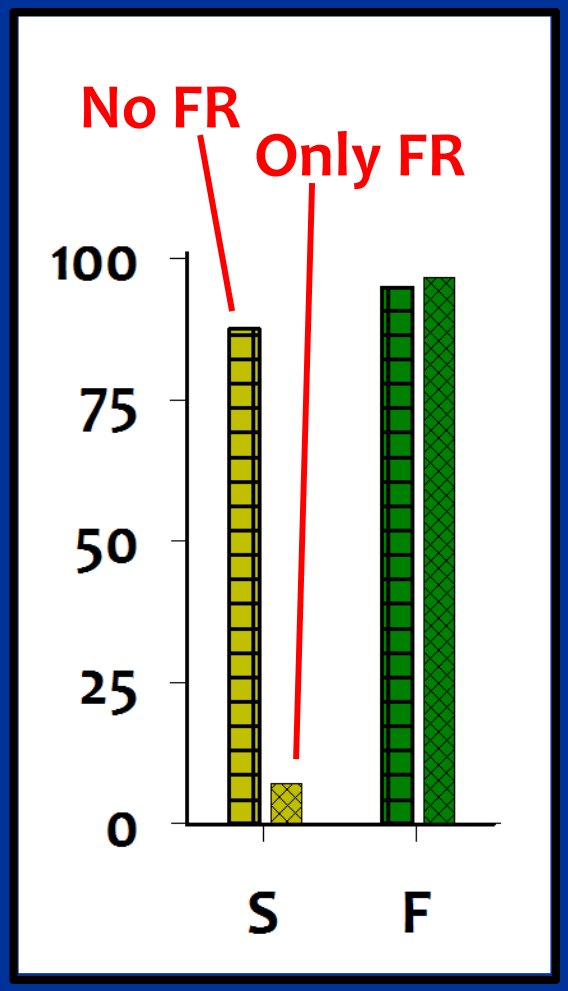

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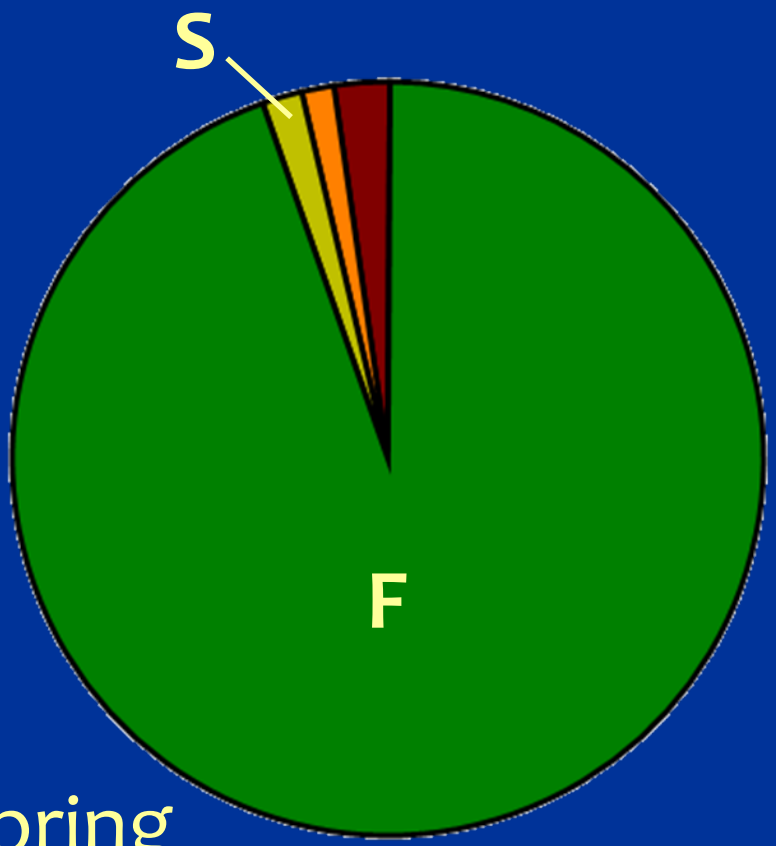
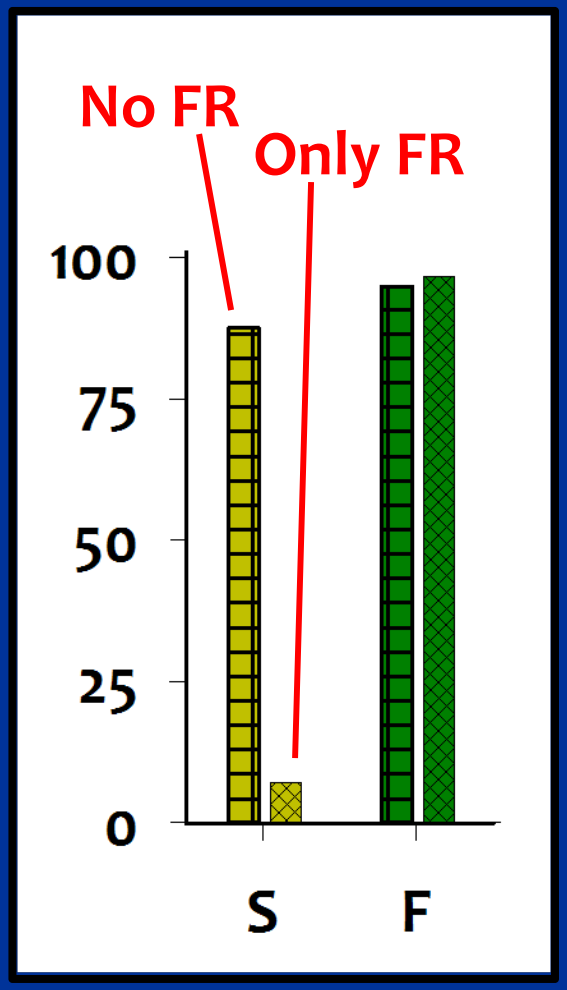
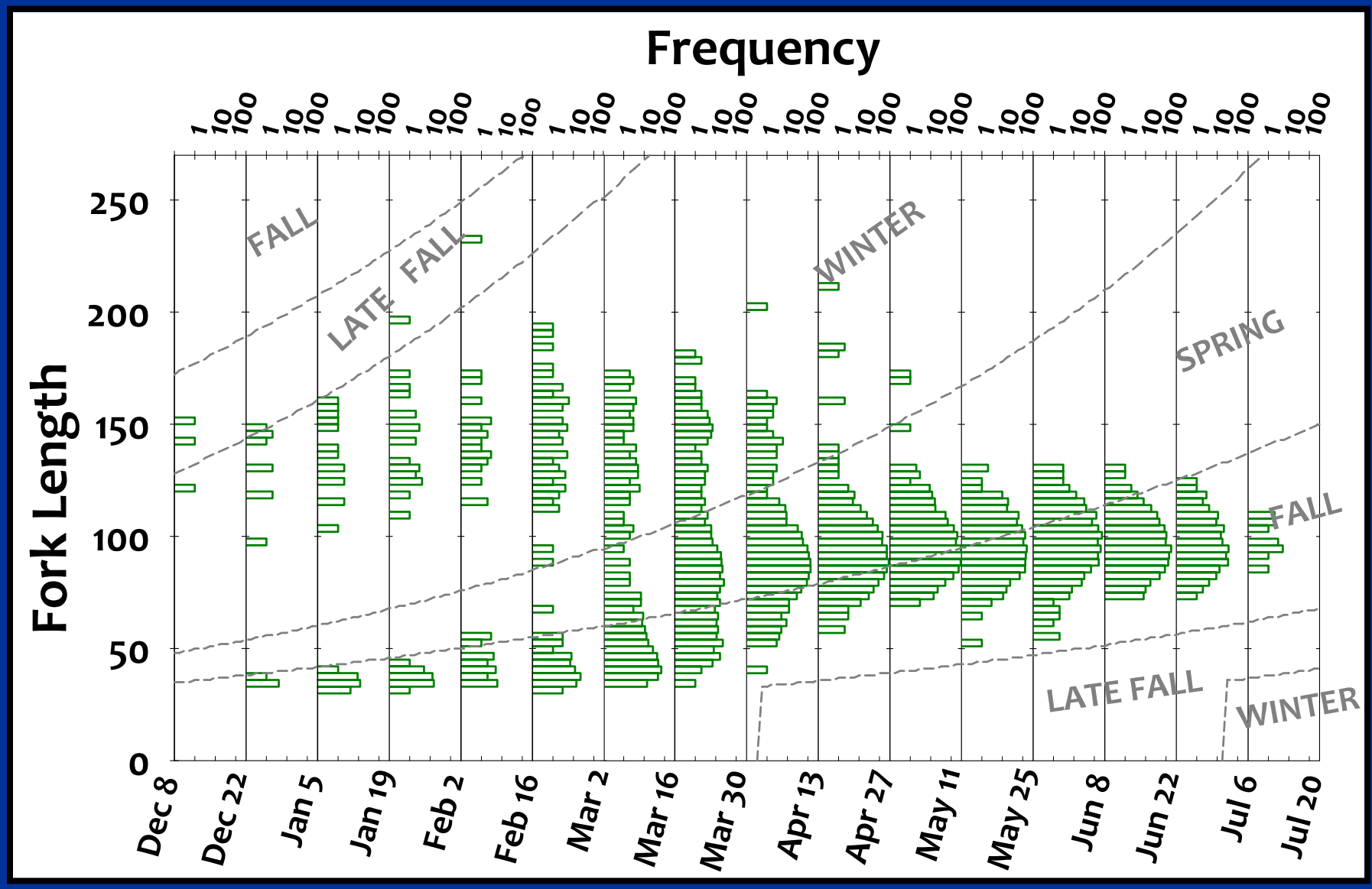
Fall Run or Feather River Spring?



Spring



Genetic Fall Run



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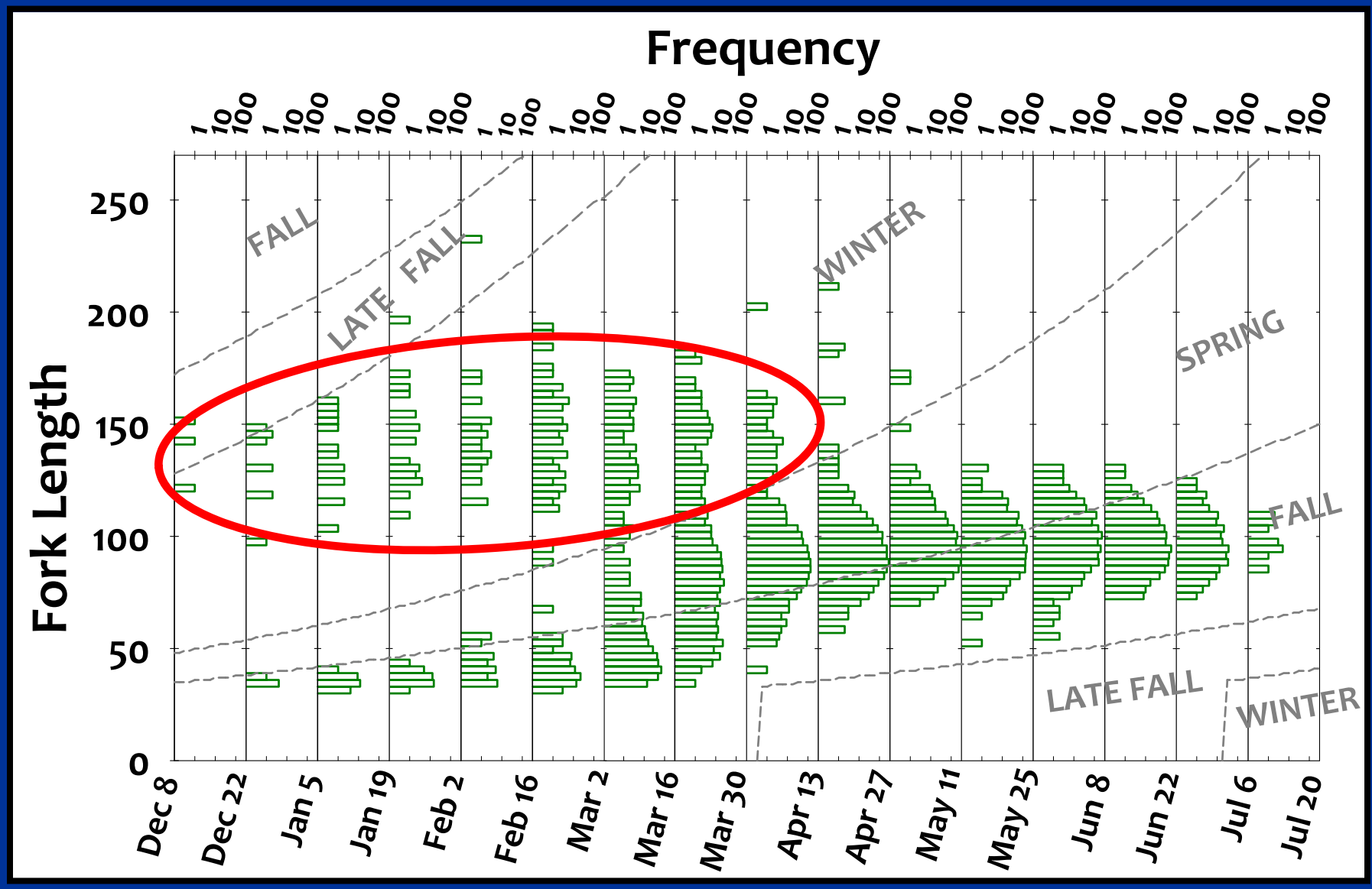

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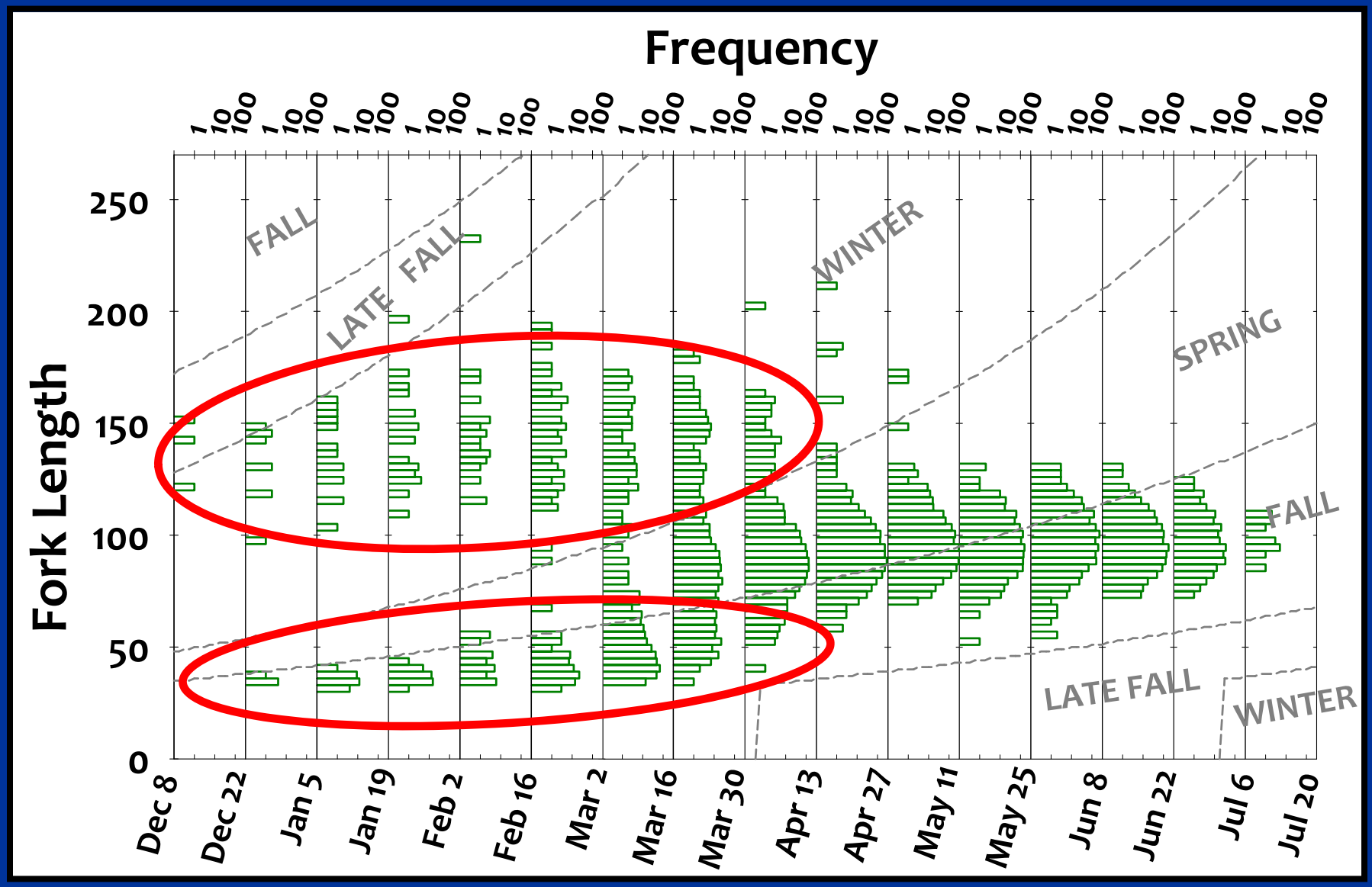
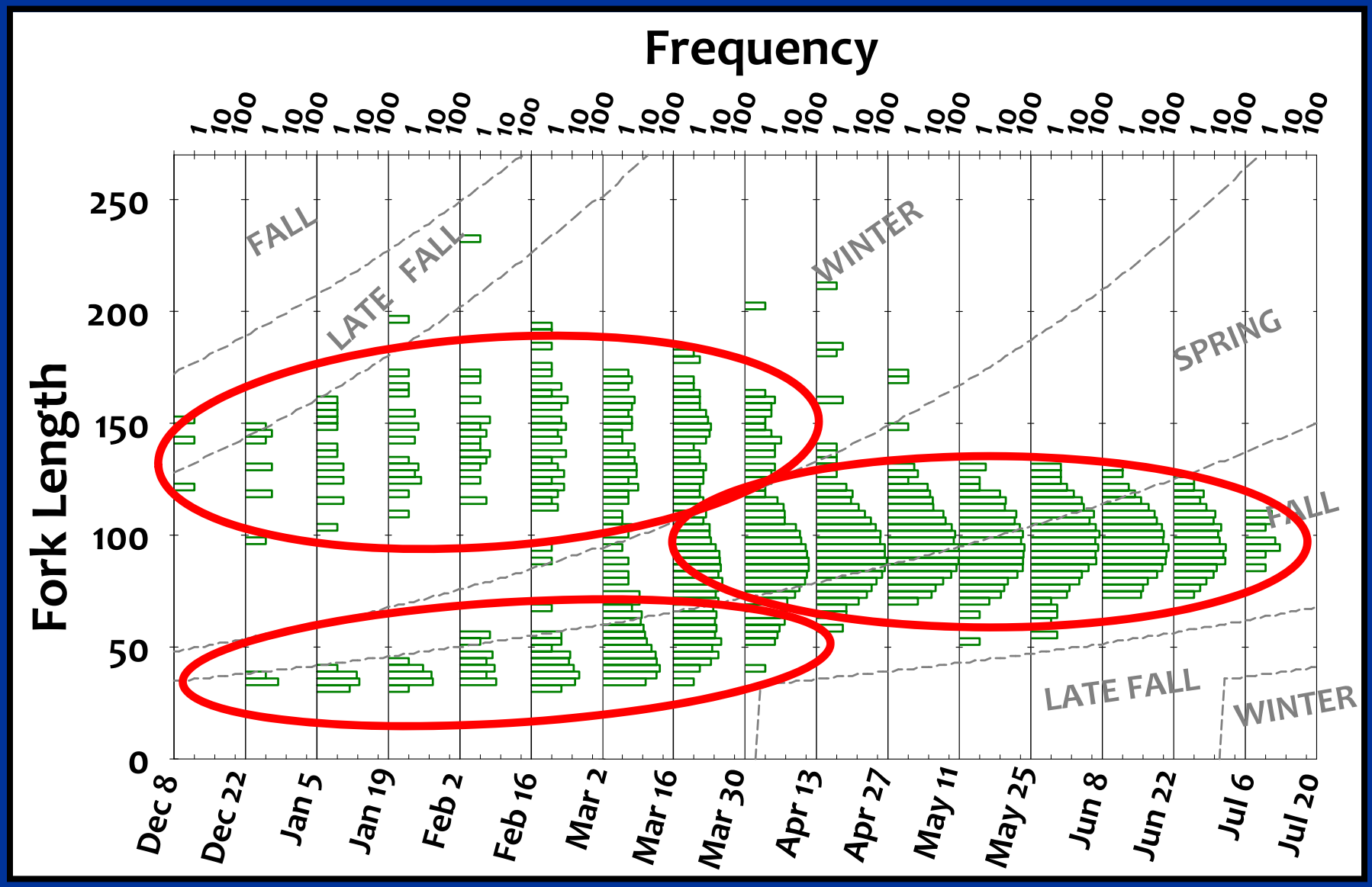
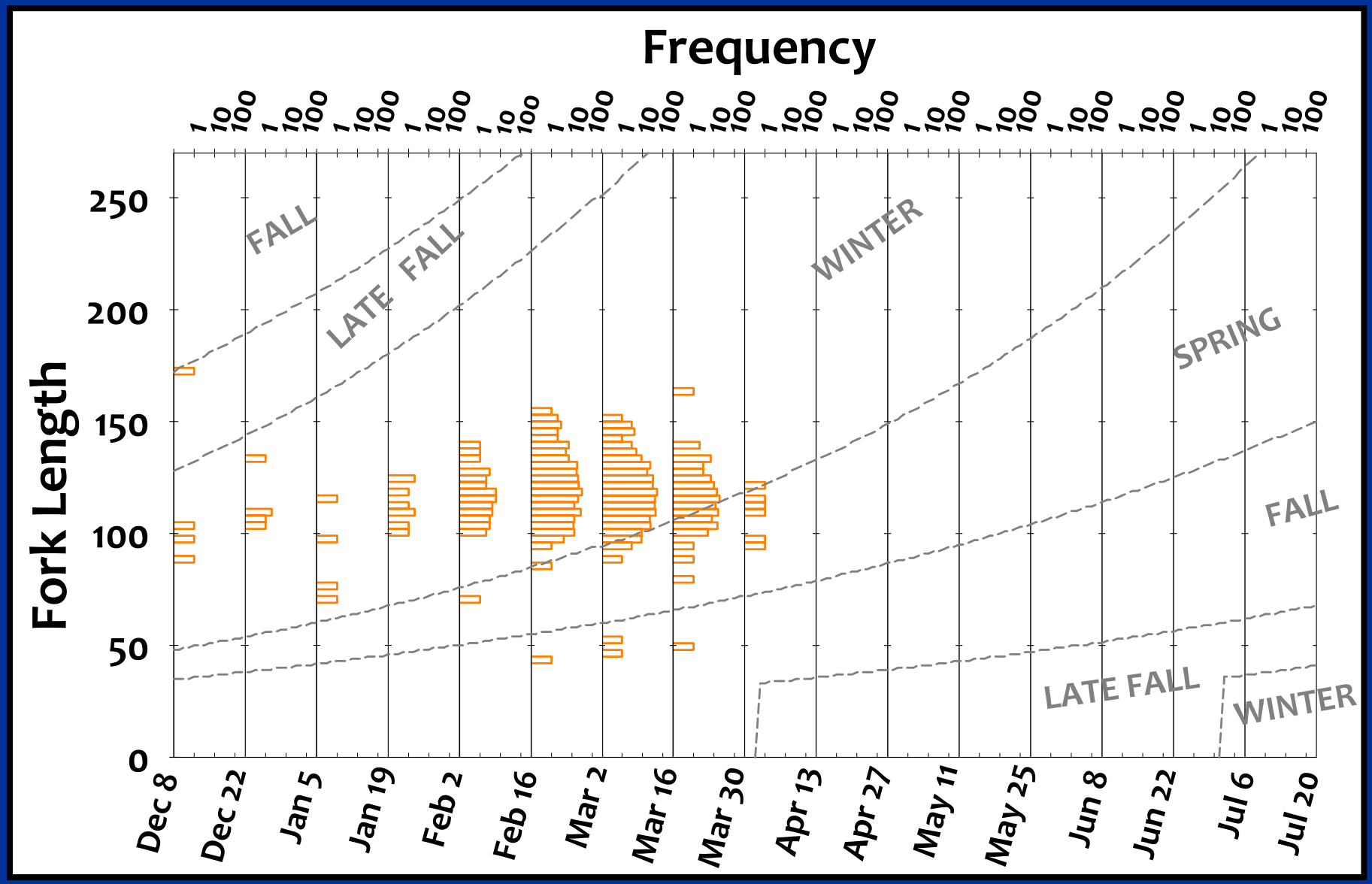


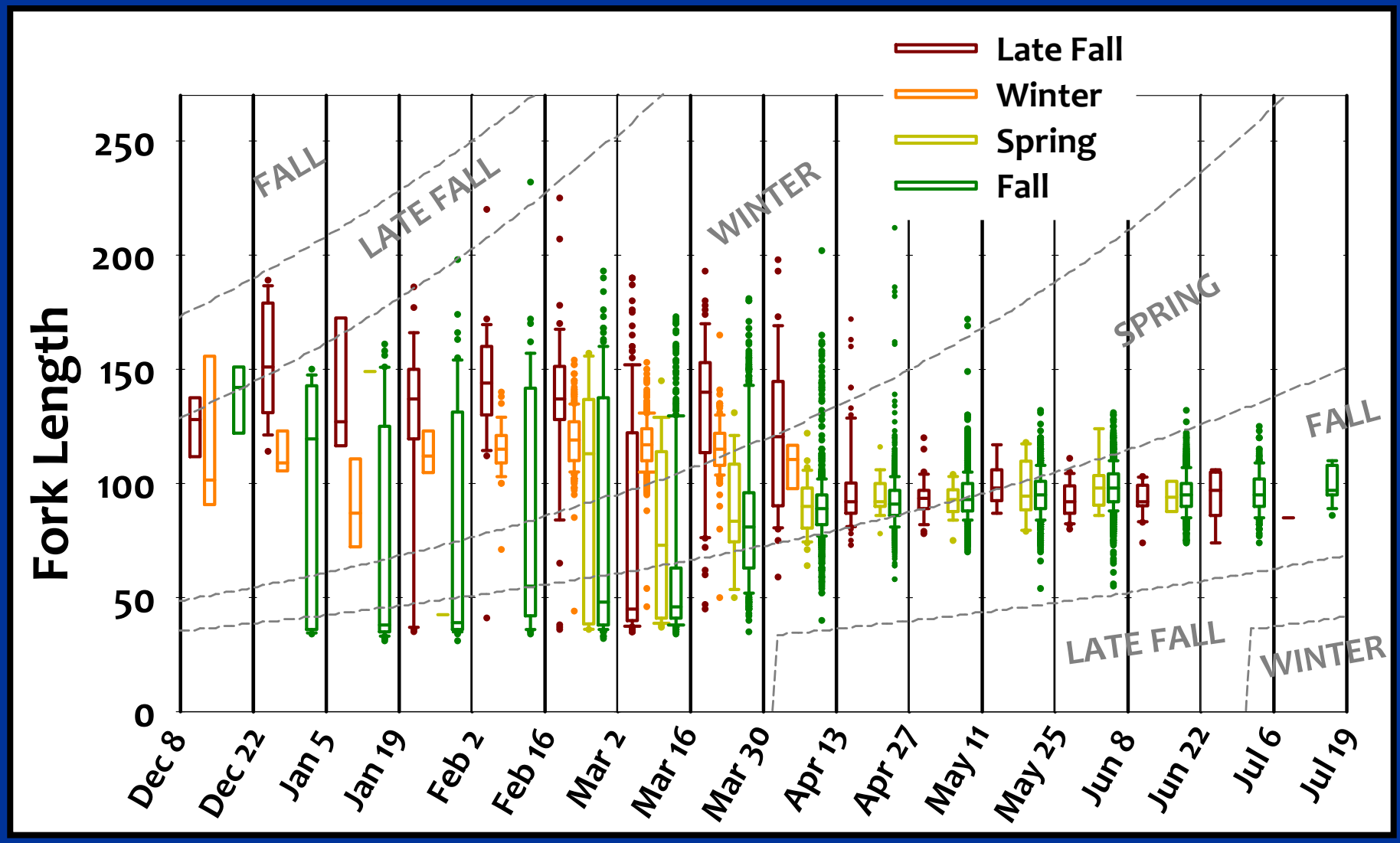
Genetic Fall Run



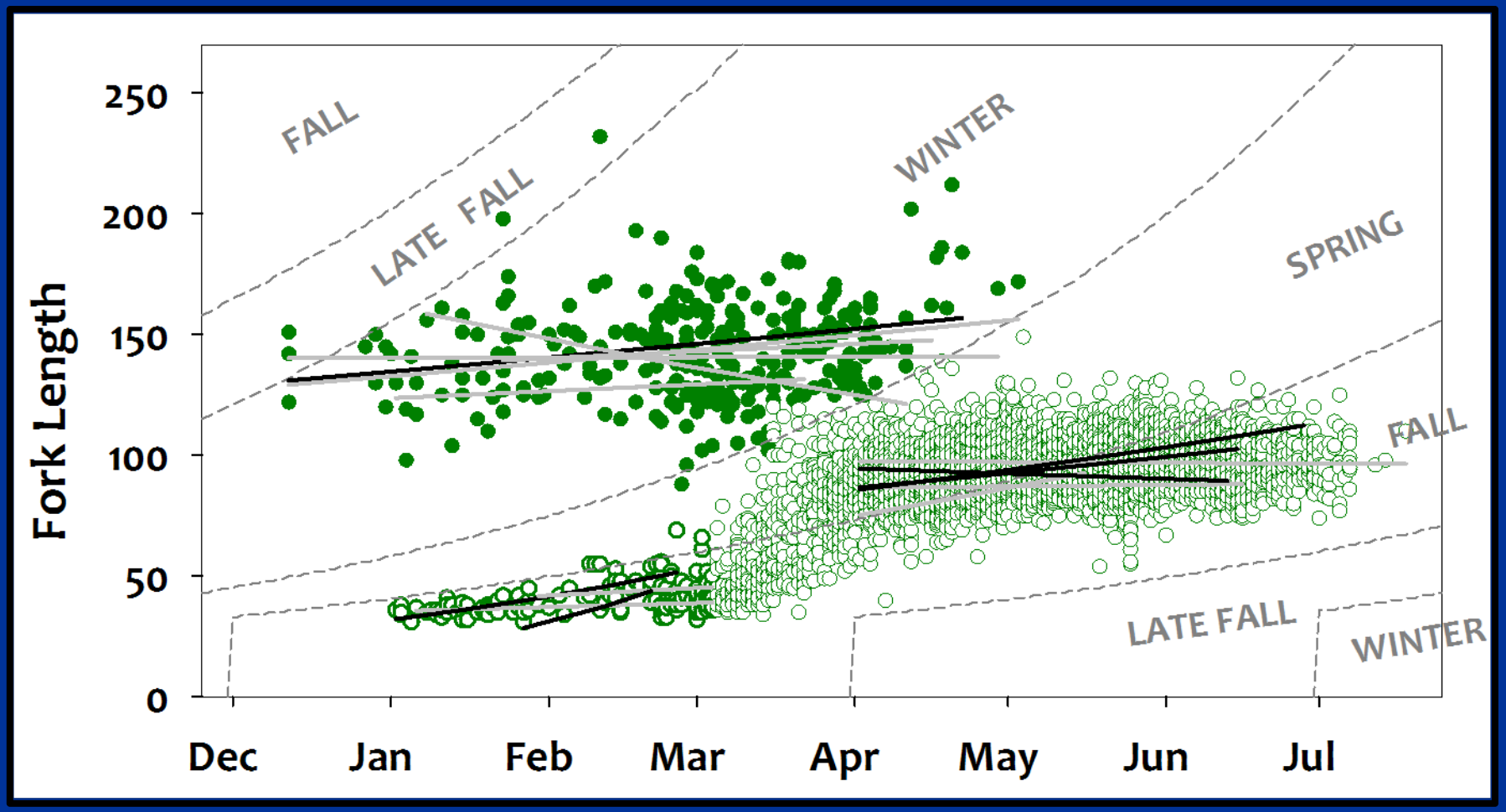
Genetic Winter Run



Segregated Fork Length Ranges?



Fall Run
Apparent Growth



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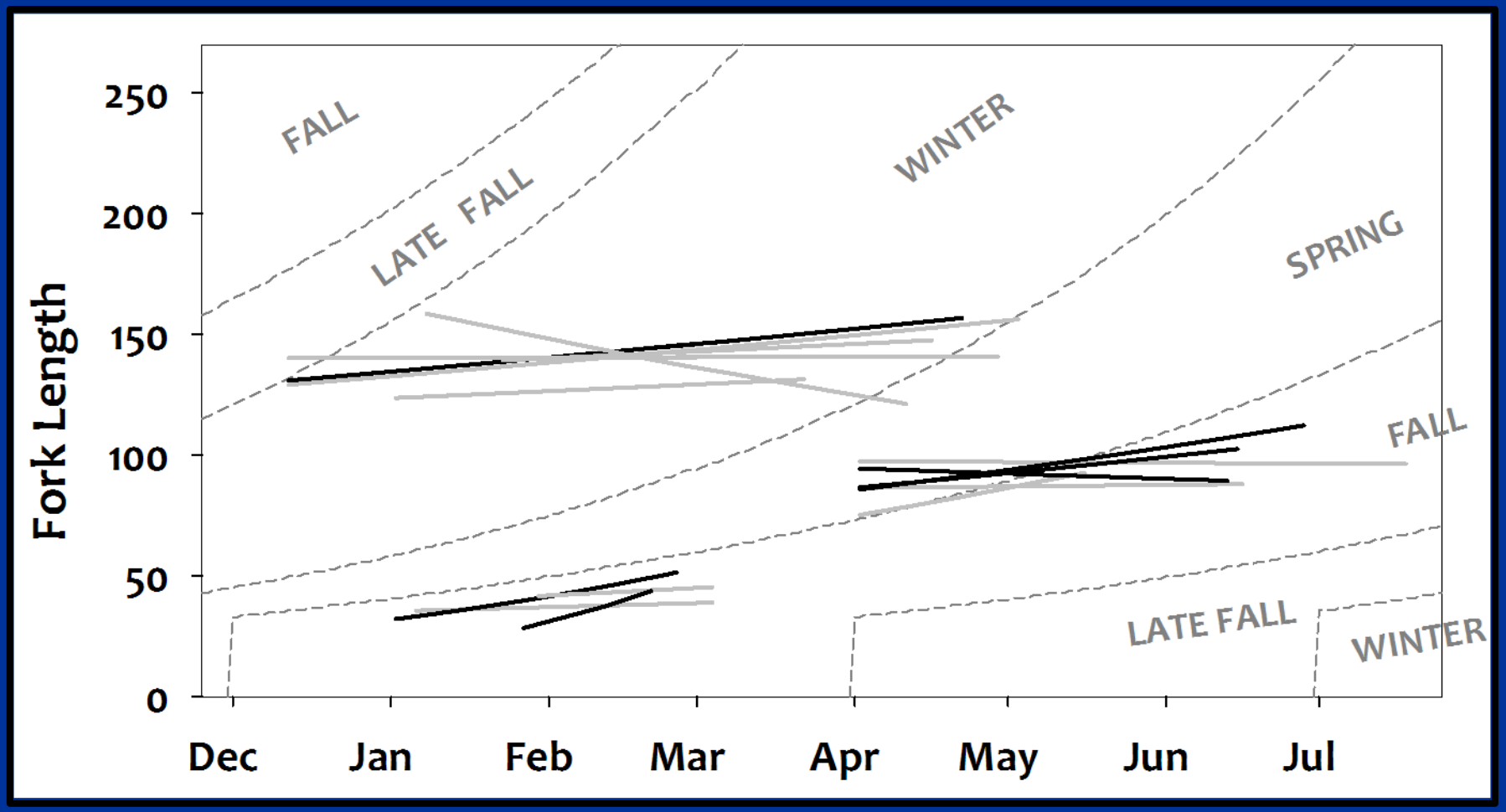

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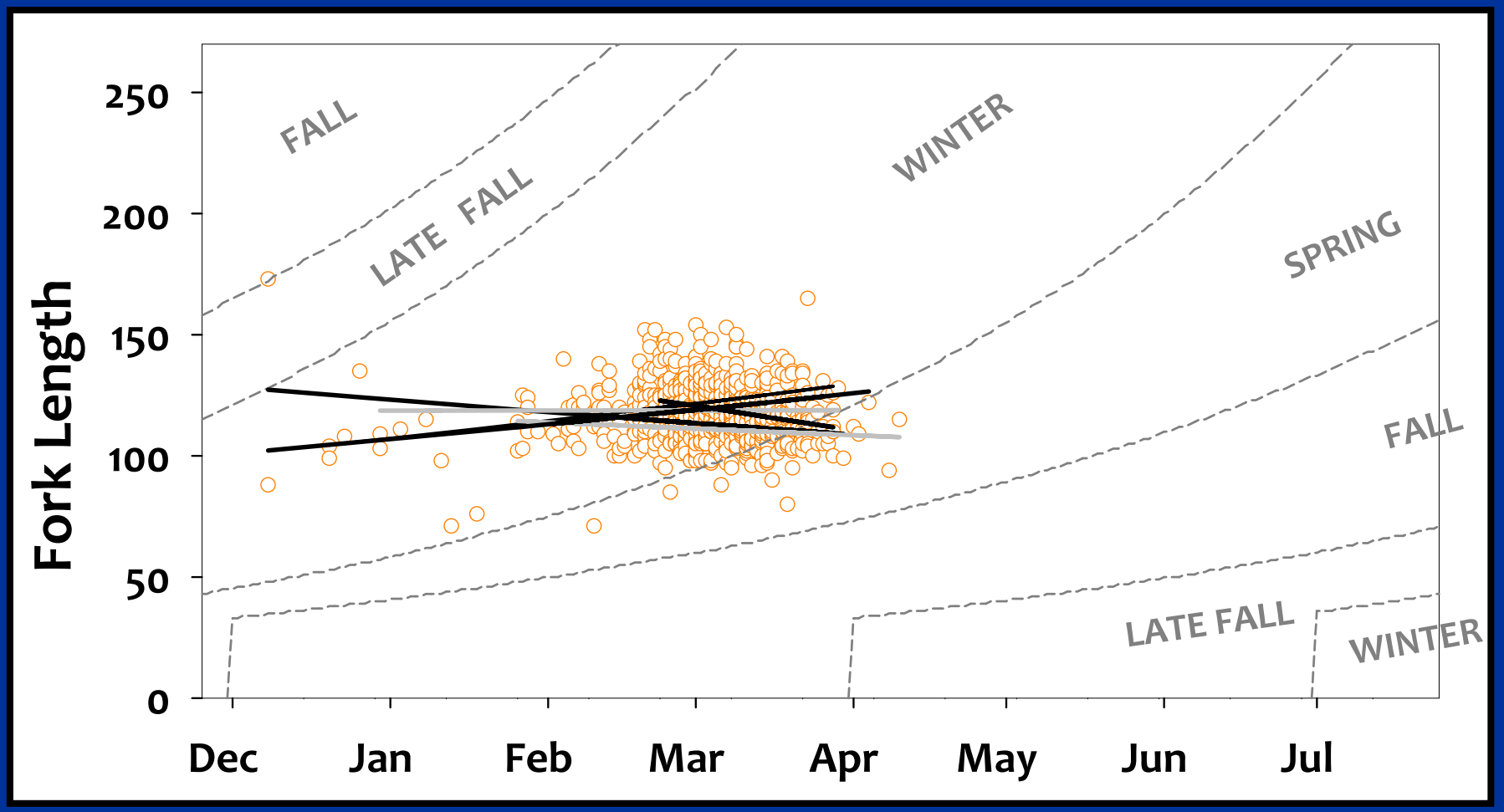
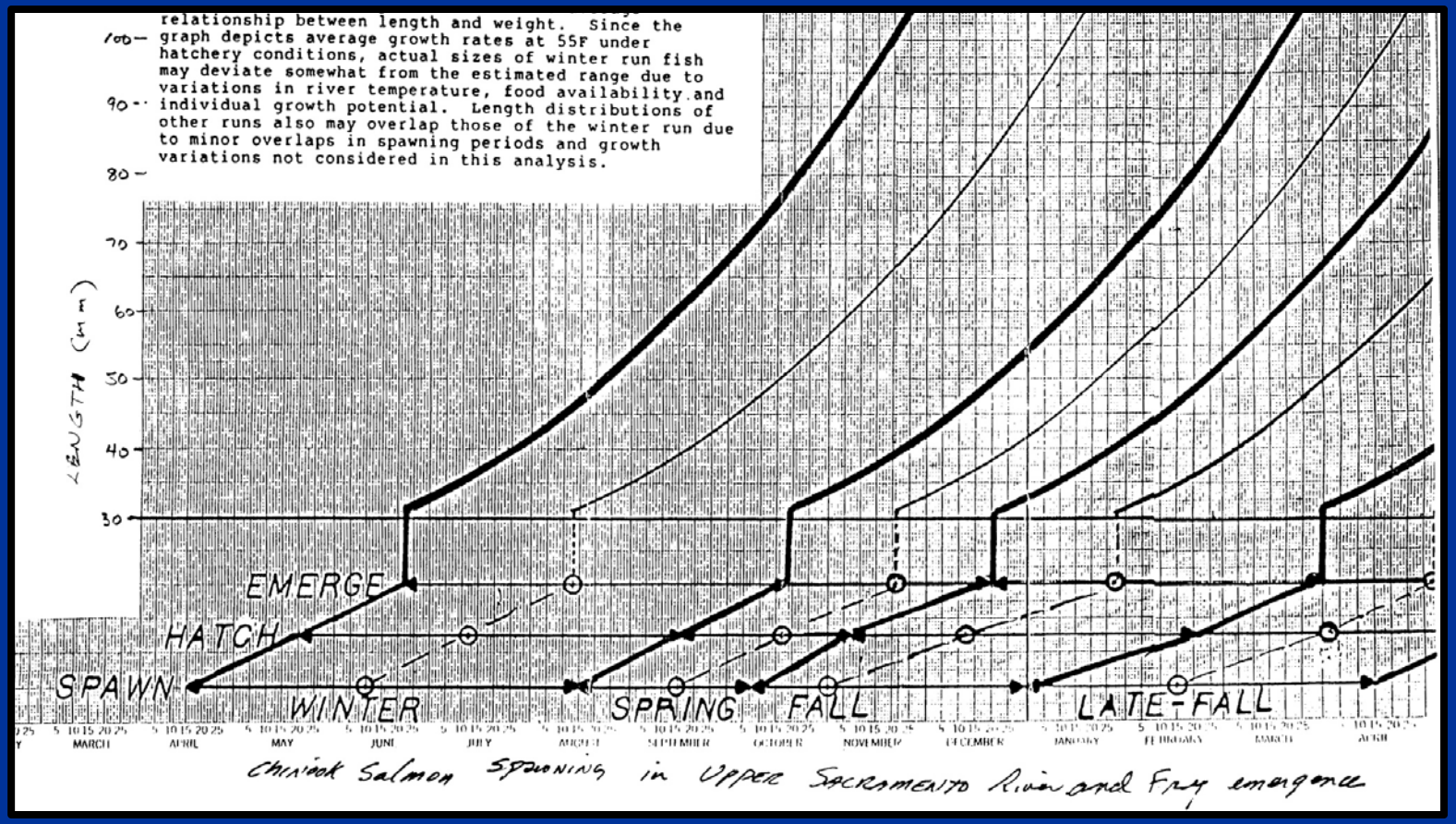


Bad News

- Delta Model assumptions unsupported
- Feather River spring run undetectable



Good News

- Delta Model works for Winter Run

Good News

- Delta Model works for Winter Run
- Rapid genetic assays forthcoming

Who's my Daddy?

Thank You

DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA

Environmental Water Quality Estuarine Studies Program
EWQES

DWR • USBR • USFWS • SWRCB • DFG •
USEPA • USACE • NMFS • USGS