

Post-release attributes of Lyons Ferry Hatchery fall Chinook salmon subyearlings released into the Snake River as surrogates for wild fall Chinook salmon subyearlings

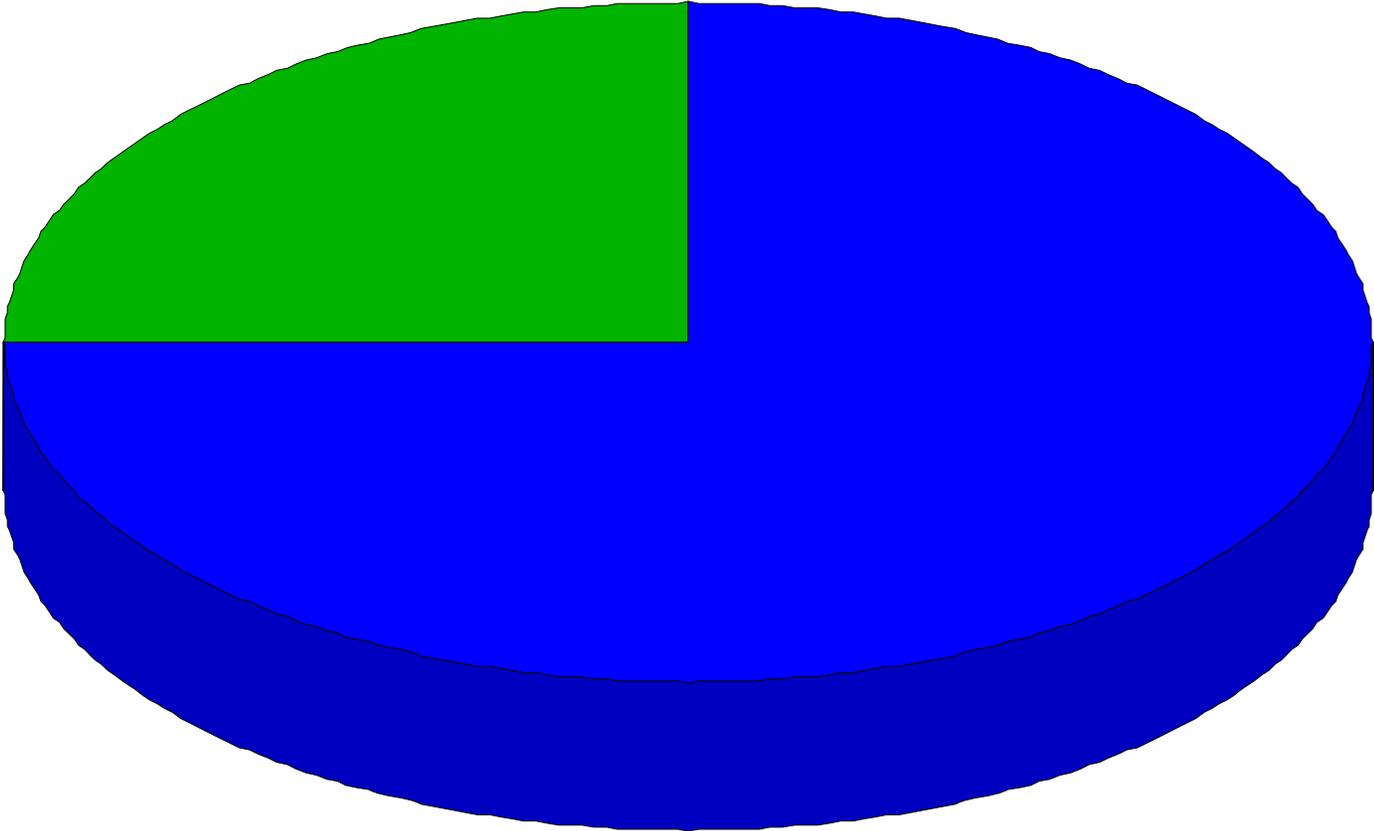


A study to compare SARs of Snake River fall Chinook salmon under alternative transportation and dam operational strategies



Basin-wide Redd Distribution (2004)

Clearwater, n = 631, 25%



Snake, n = 1926, 75%

Groups of PIT-tagged fall Chinook salmon subyearlings that provided data for comparing post-release attributes for this presentation.

Origin	Group	Release site	Number tagged	Release dates	
				Min	Max
Wild	Wild	Snake	9,301	14-April	05-July
Hatchery	Surrogates	Snake	124,448	16-May	27-May
Hatchery	Production	Hells Canyon Dam	9,972	28-April	28-April
		Pittsburg Landing	2,492	26-May	26-May
		Captain John Rapids	3,494	25-May	30-May
		Couse Creek	3,465	26-May	26-May
		Big Canyon Creek	2,498	31-May	31-May

Mean fork length at PIT tagging



Wild $N = 9,300$ 68 ± 7 mm



Surrogate $N = 123,380$ 76 ± 8 mm



Production $N = 12,918$ 86 ± 9 mm

Attributes compared among groups

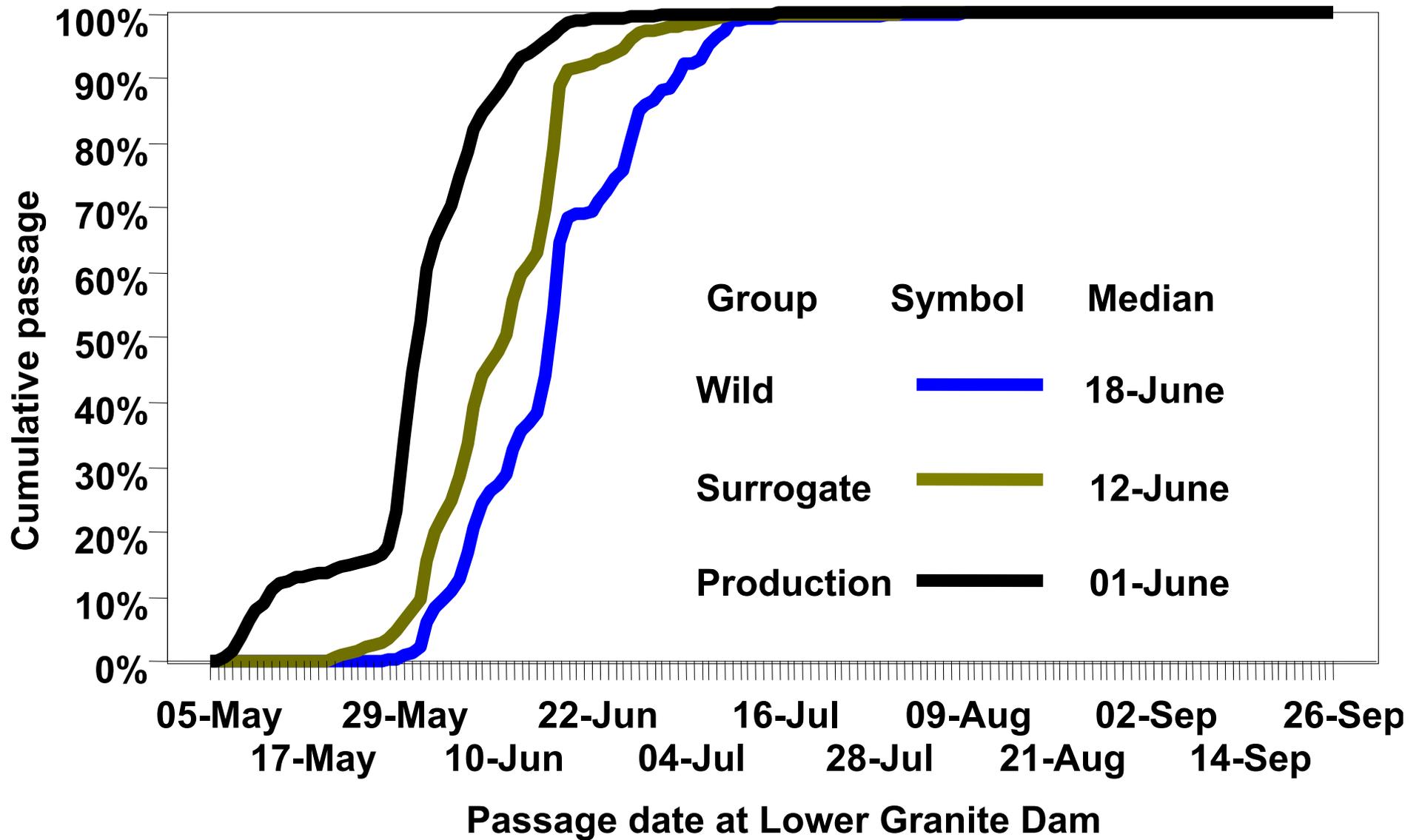
- **Passage timing at the first three lower Snake River dams**
- **Level of exposure to spill at the first three lower Snake River dams**
- **Travel time to Lower Monumental Dam**
- **Joint probability of actively migrating and surviving to pass Lower Monumental Dam**

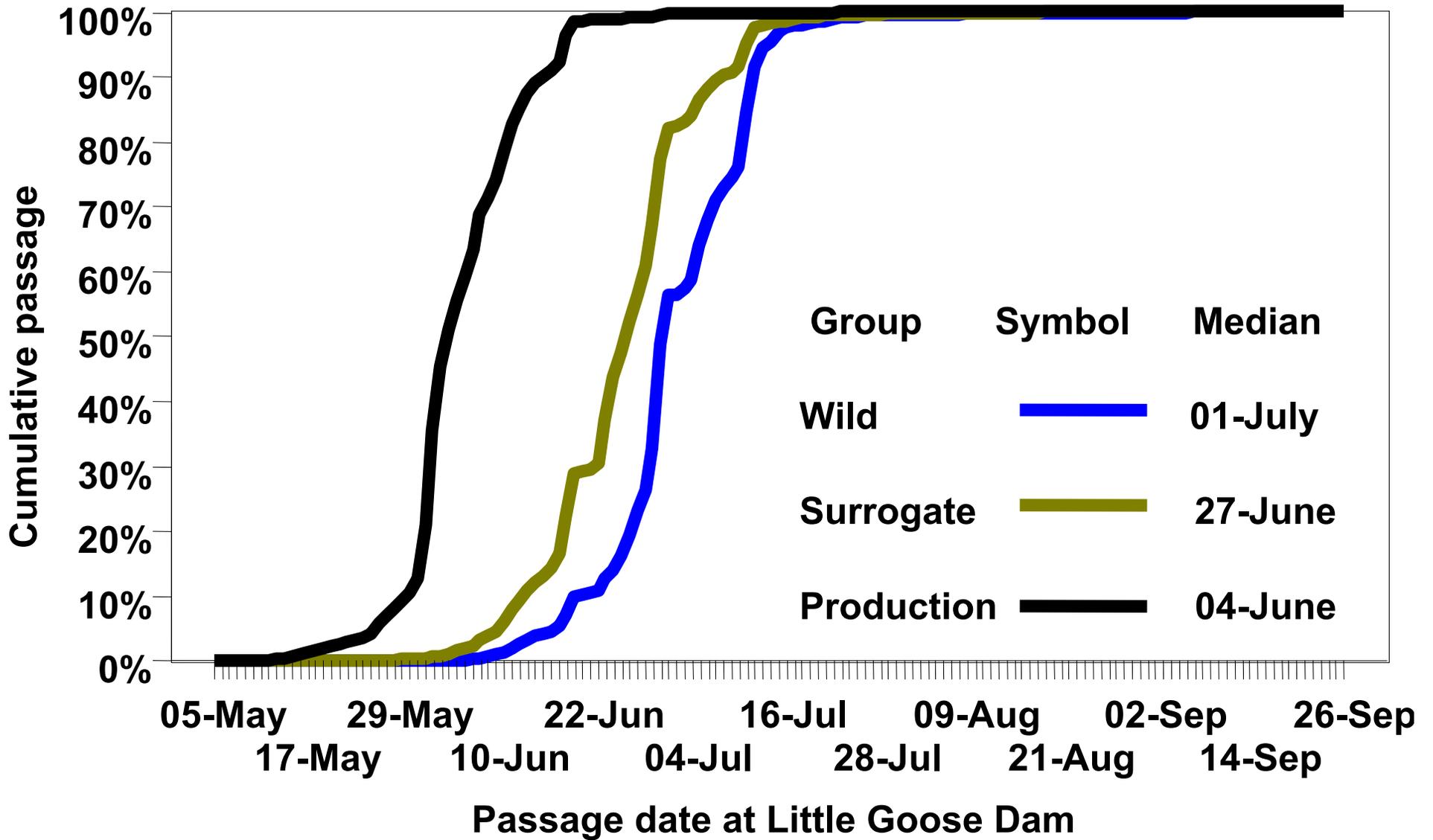
Use of the Sandford and Smith (2002) Method to Estimate Daily Passage:

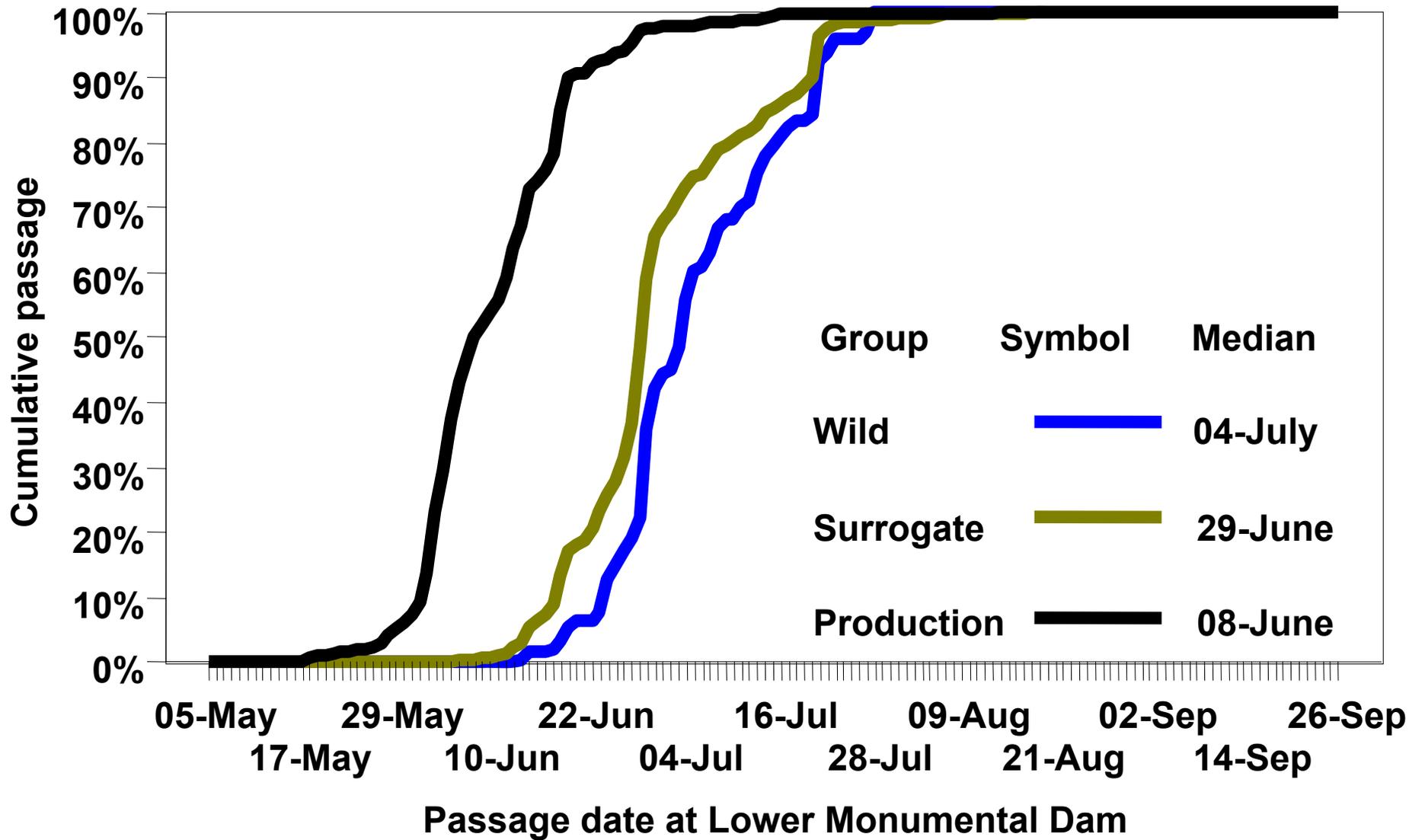
$$n^{\wedge} = n / \wedge P;$$

where n = observed PIT-tag detections

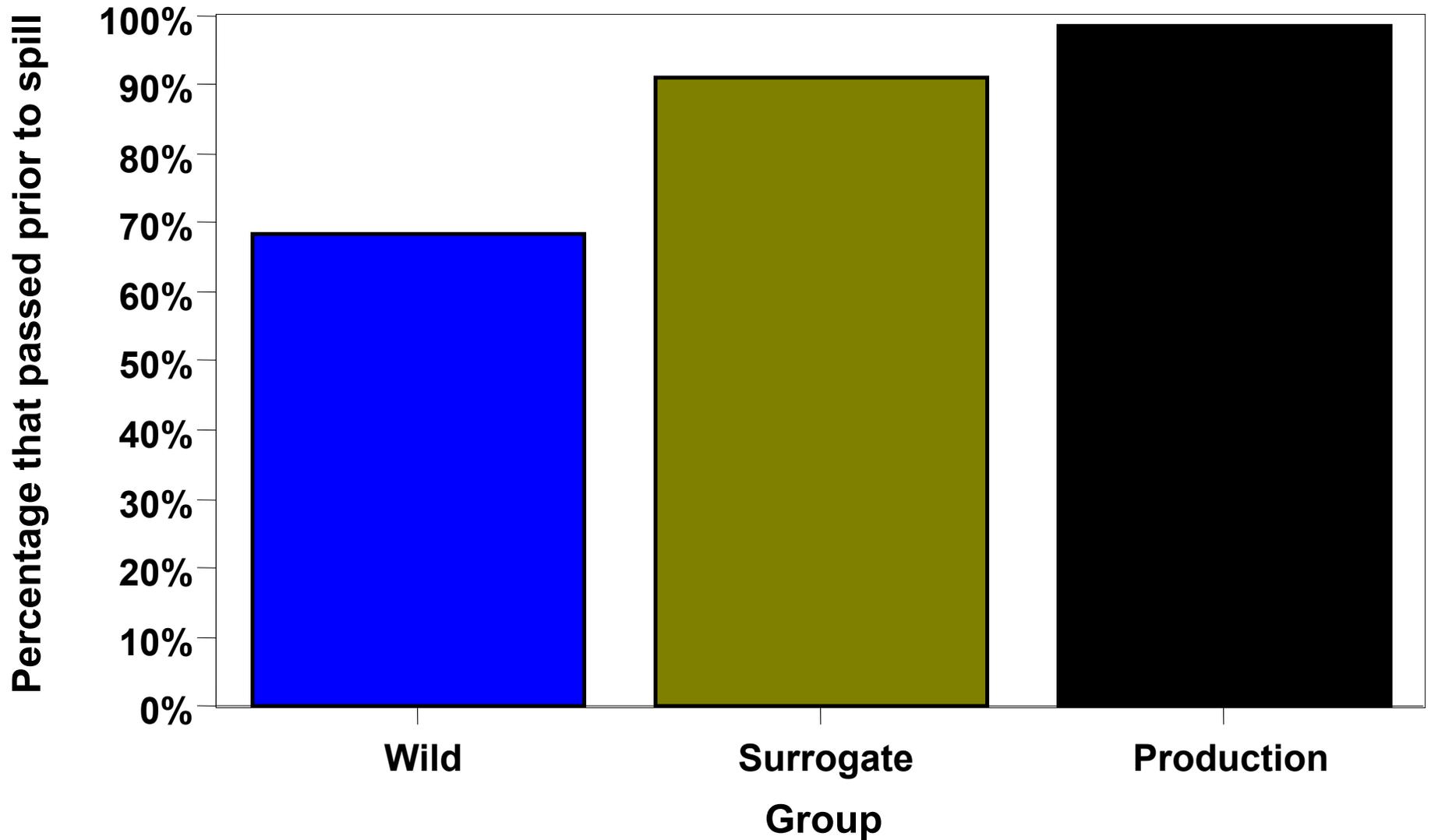
and $\wedge P$ = estimated detection probability.



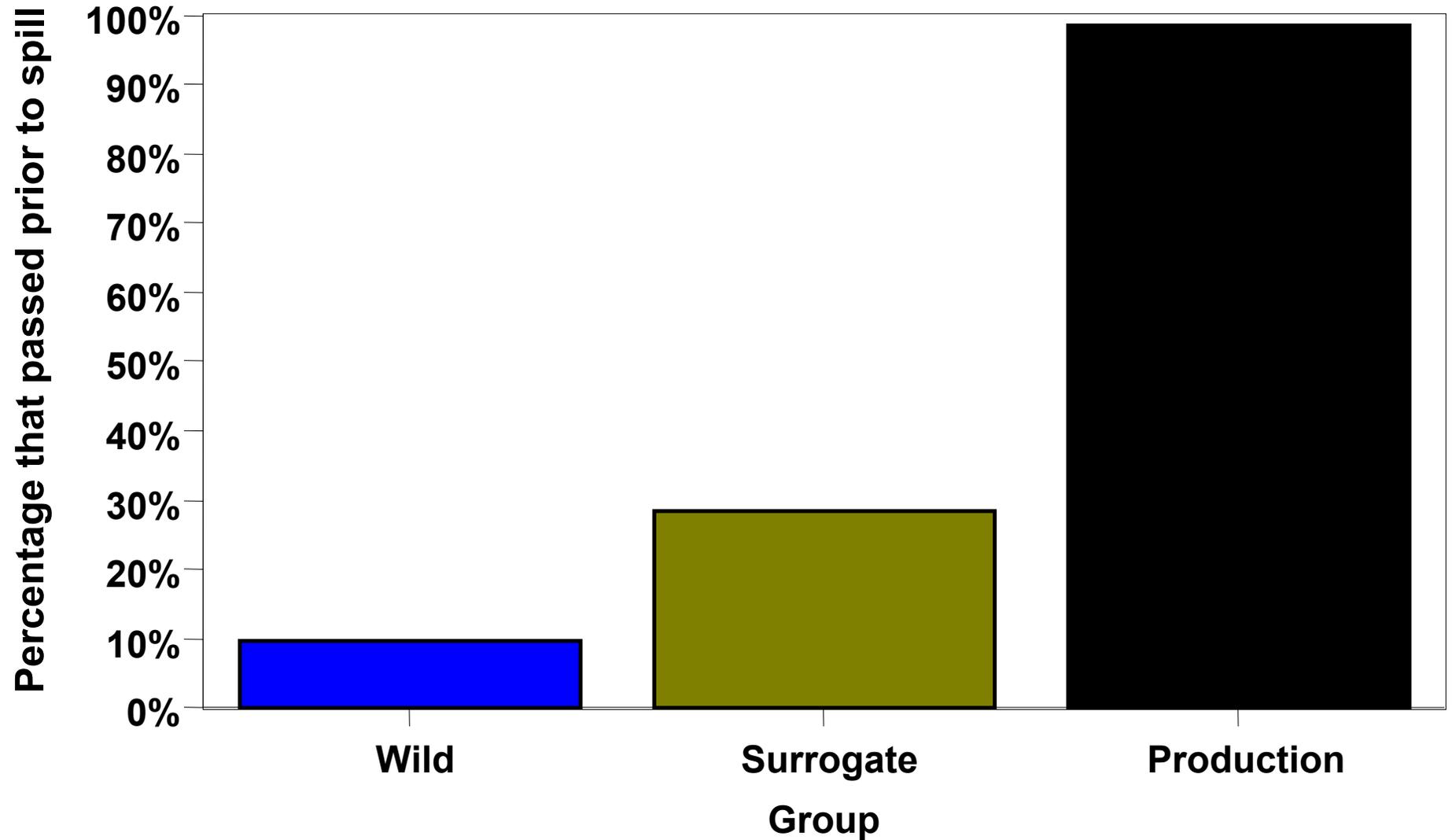




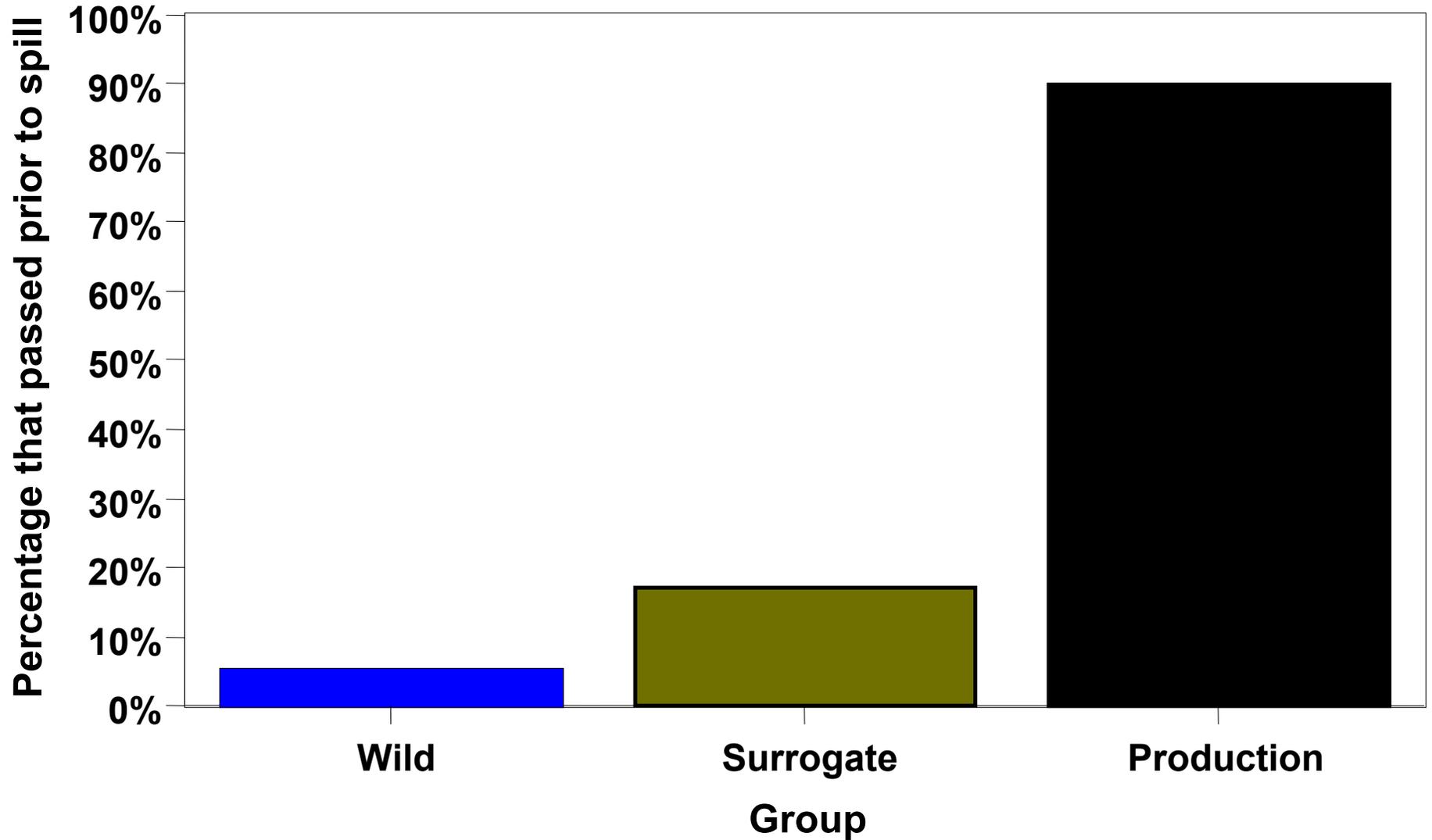
Lower Granite Dam



Little Goose Dam



Lower Monumental Dam



Group	<i>N</i>	Travel time to Lower Monumental Dam
Wild	2,135	45 ± 0.2
Surrogate	18,608	41 ± 0.1
Production	10,853	28 ± 0.1

Group	<i>n</i>	Joint probability of migrating and surviving to the tailrace of Lower Monumental Dam
Wild	2	26 ± 11
Surrogate	2	16 ± 0
Production	5	52 ± 8

Summary of 2005 findings

- **The post-release attributes of wild Snake River subyearlings and the Snake River surrogates were not identical, but there were general similarities in passage timing, level of exposure to spill, travel time, and the joint probability of migrating and surviving.**
- **Releasing Snake River surrogates over a three-week period in 2006 might reduce the differences observed in post-release attributes between wild Snake River subyearlings and the Snake River surrogates.**
- **Compared to wild Snake River subyearlings; production subyearlings passed downstream much earlier, were exposed to very little summer spill, moved seaward rapidly, and had a much higher probability of migrating and surviving.**
- **Plans are presently being made to represent production fish in the 2006 hydrosystem operation study.**