Northwest Power and Conservation Council

November 12, 2003

MEMORANDUM

TO: Council Members

FROM: Bruce Suzumoto

SUBJECT: Recent trends in fish returns to the Columbia Basin

Over the last few years, adult salmon returns to the Columbia Basin have dramatically increased for many populations. Staff will brief the Council on recent trends in adult returns and discuss possible reasons for these increases. Attached is the PowerPoint presentation that will be given at the Council meeting.

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Recent Trends in Adult Fish Returns to the Columbia Basin

Coeur d'Alene, Idaho

November 19, 2003

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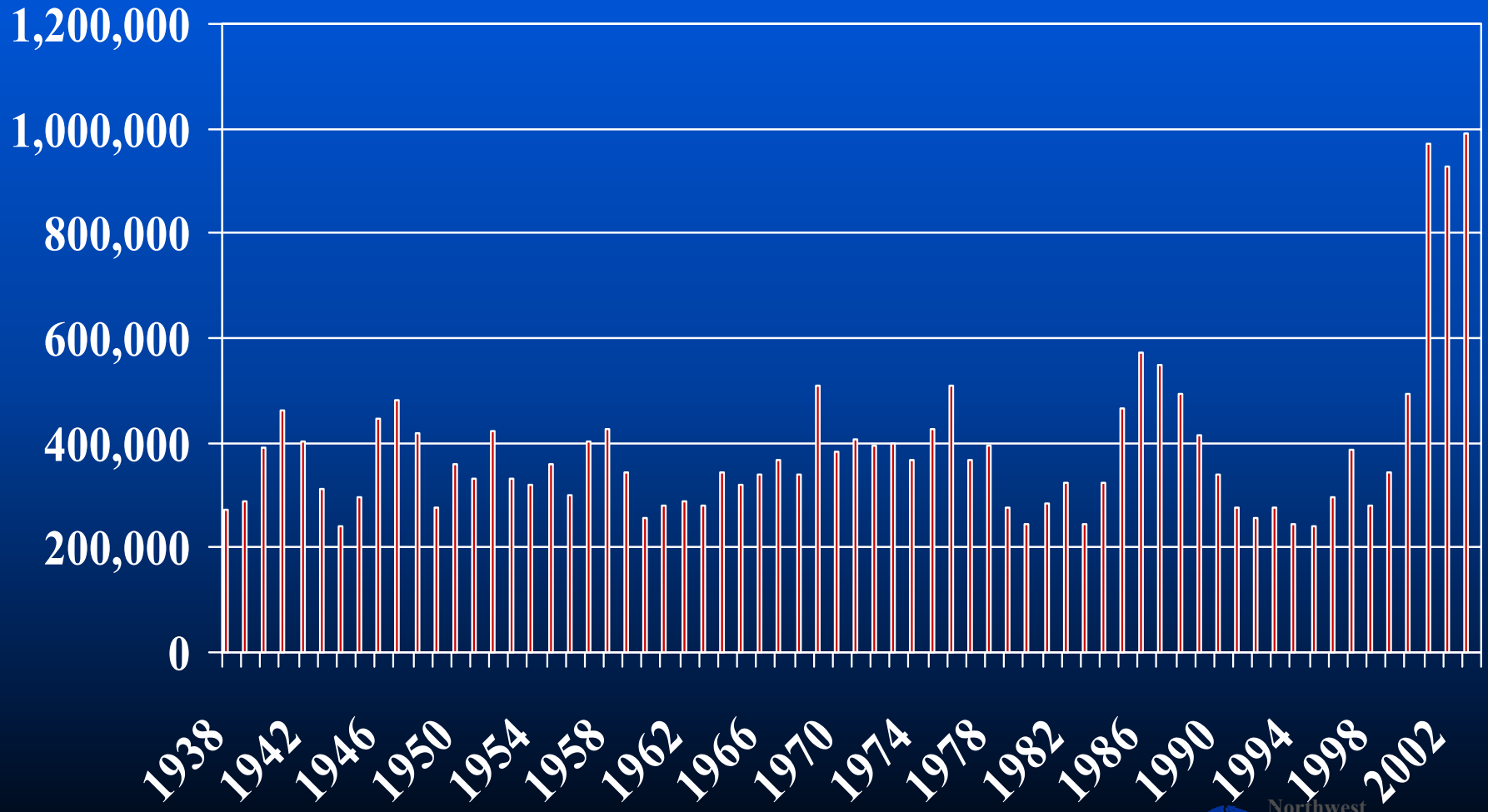
Background

- Adult dam counts- show overall trends
- Does not account for changes in human activities (i.e. harvest rates, hatchery production, hydro development, habitat changes)
- Hatcheries now produce the majority of fish returning to the Basin

Total Chinook Passage- Bonneville Dam 1938-2003



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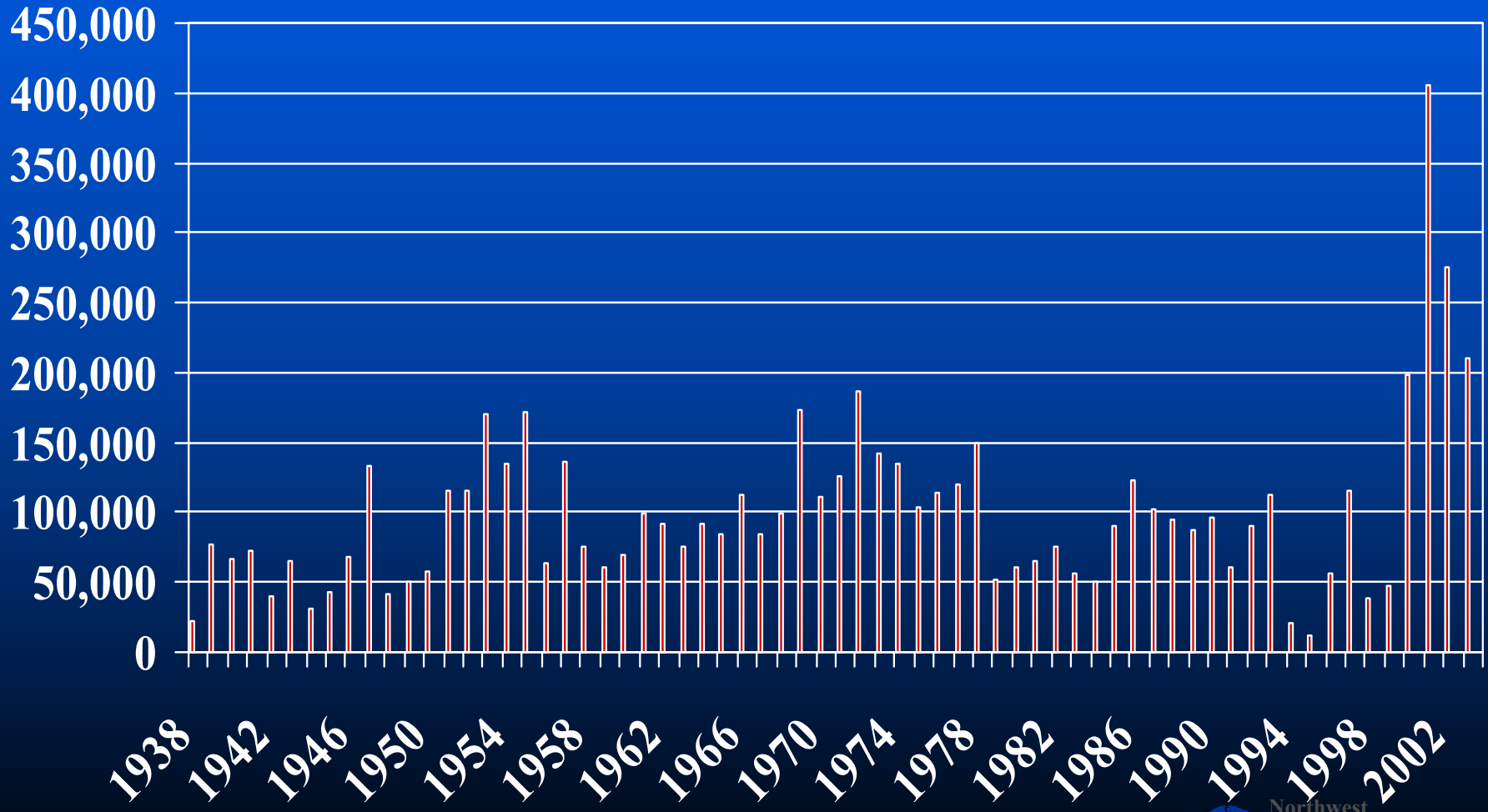
Spring Chinook Passage- Bonneville Dam 1938-2003



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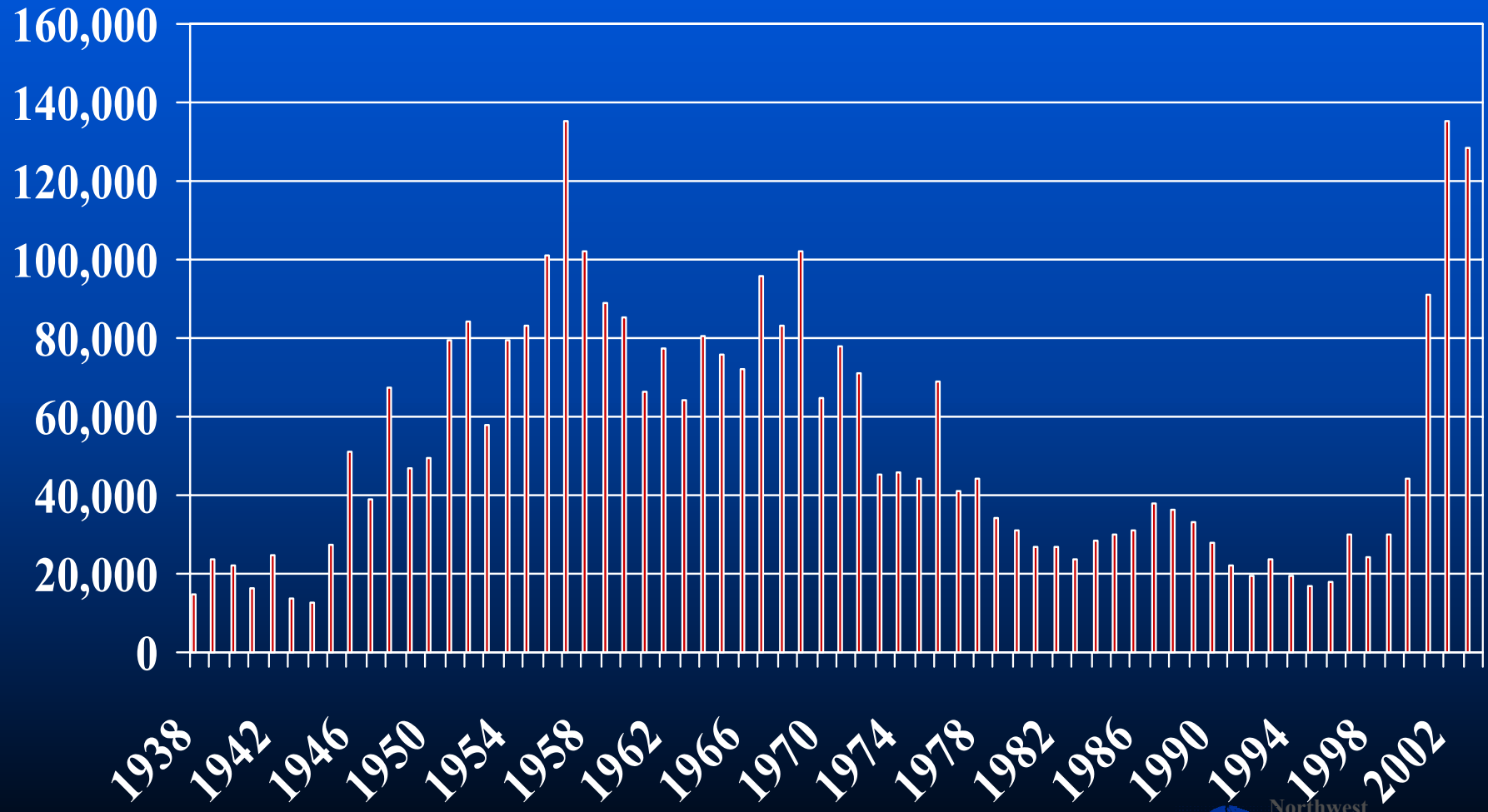
Summer Chinook Passage- Bonneville Dam 1938-2003



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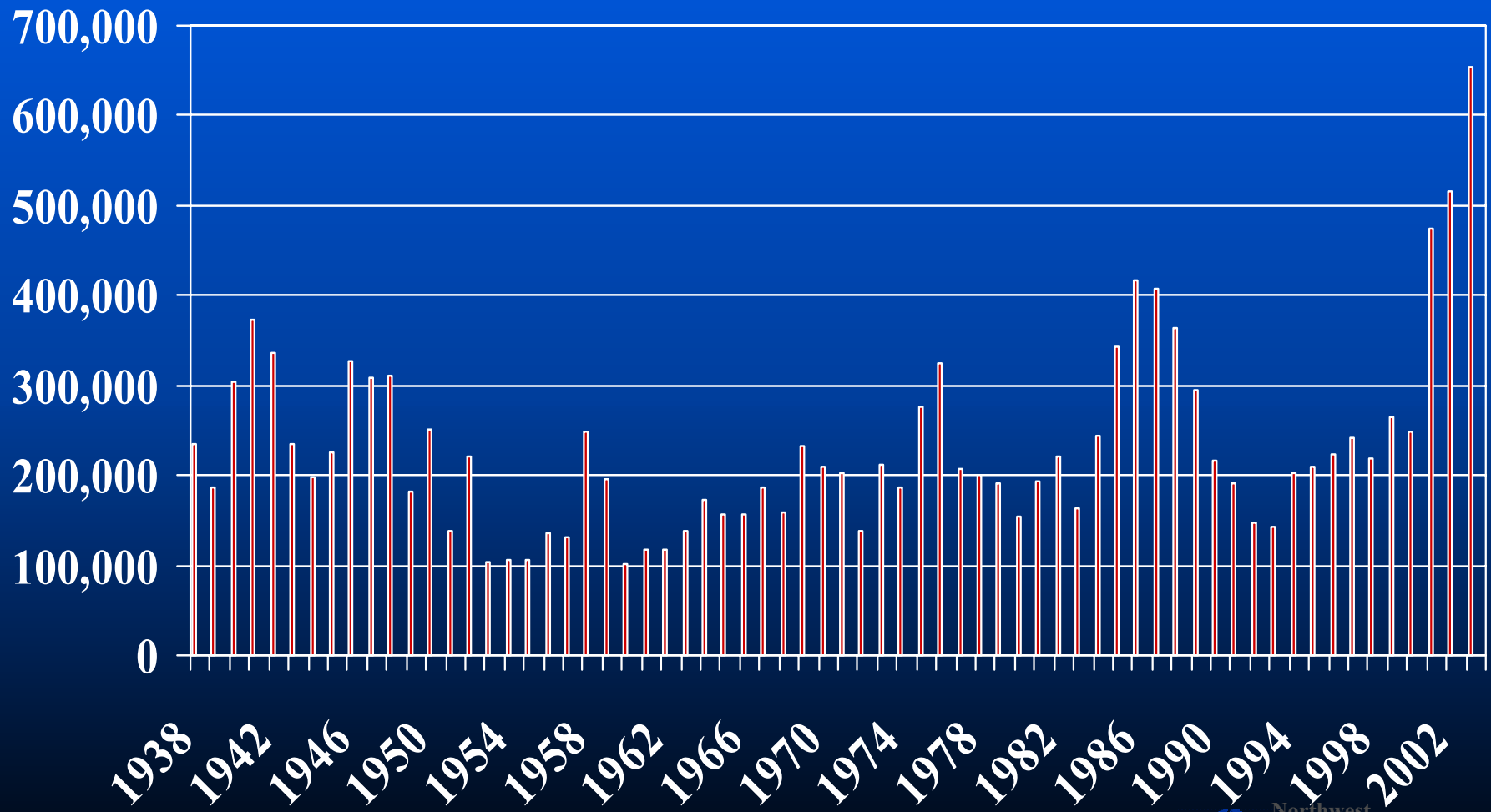
Fall Chinook Passage- Bonneville Dam 1938-2003



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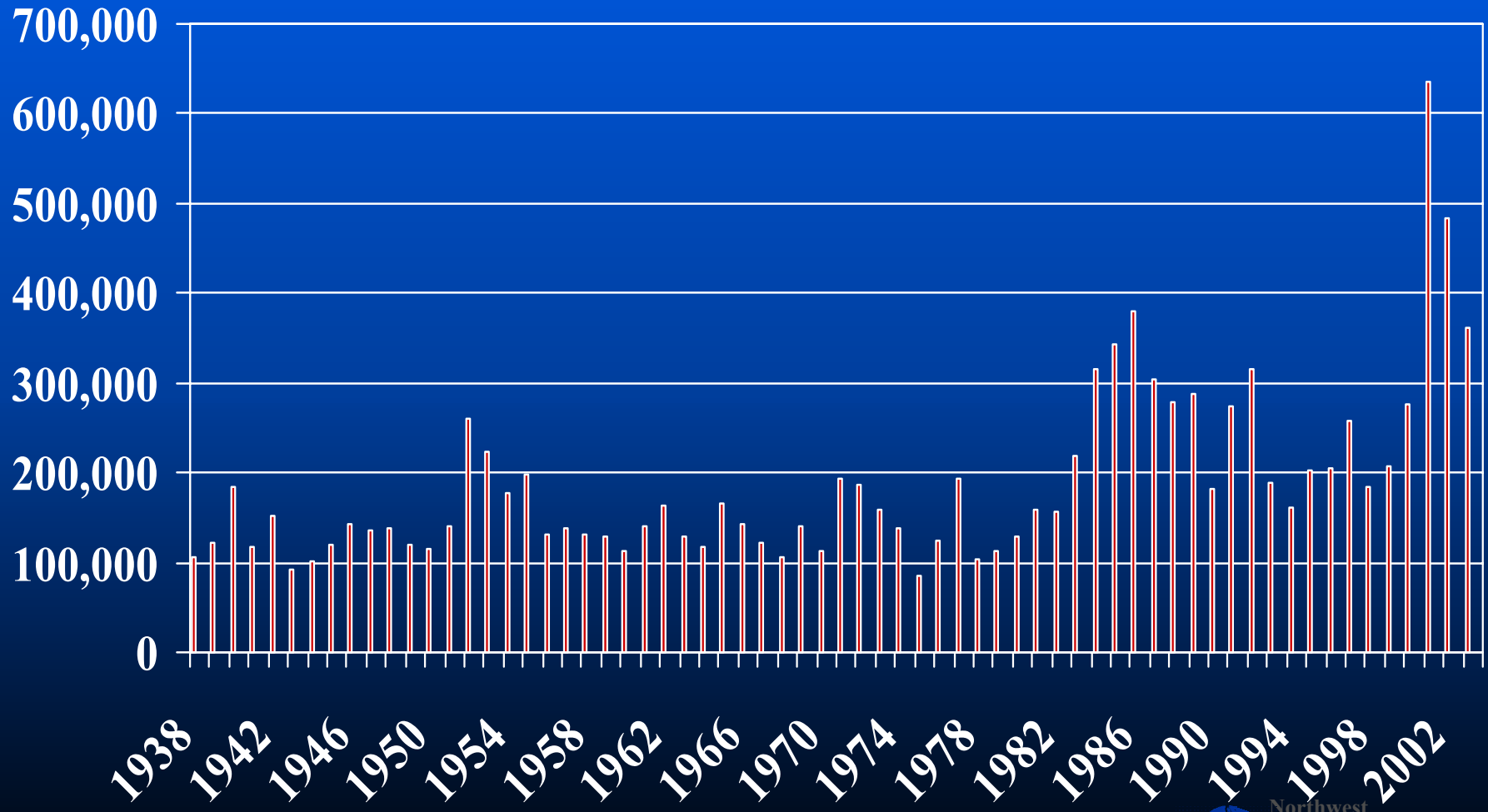
Steelhead Passage- Bonneville Dam 1938-2003



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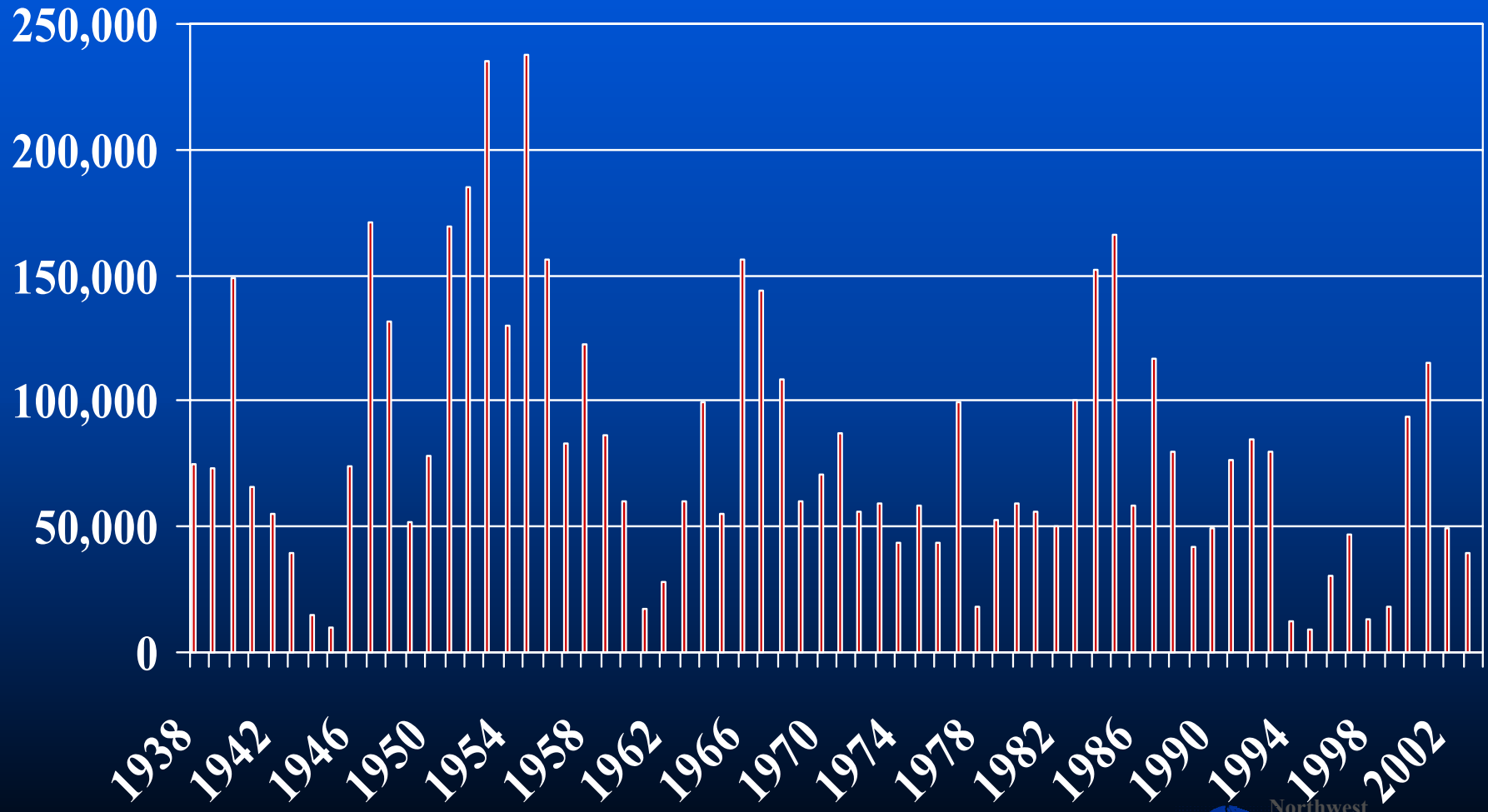
Sockeye Passage- Bonneville Dam 1938-2003



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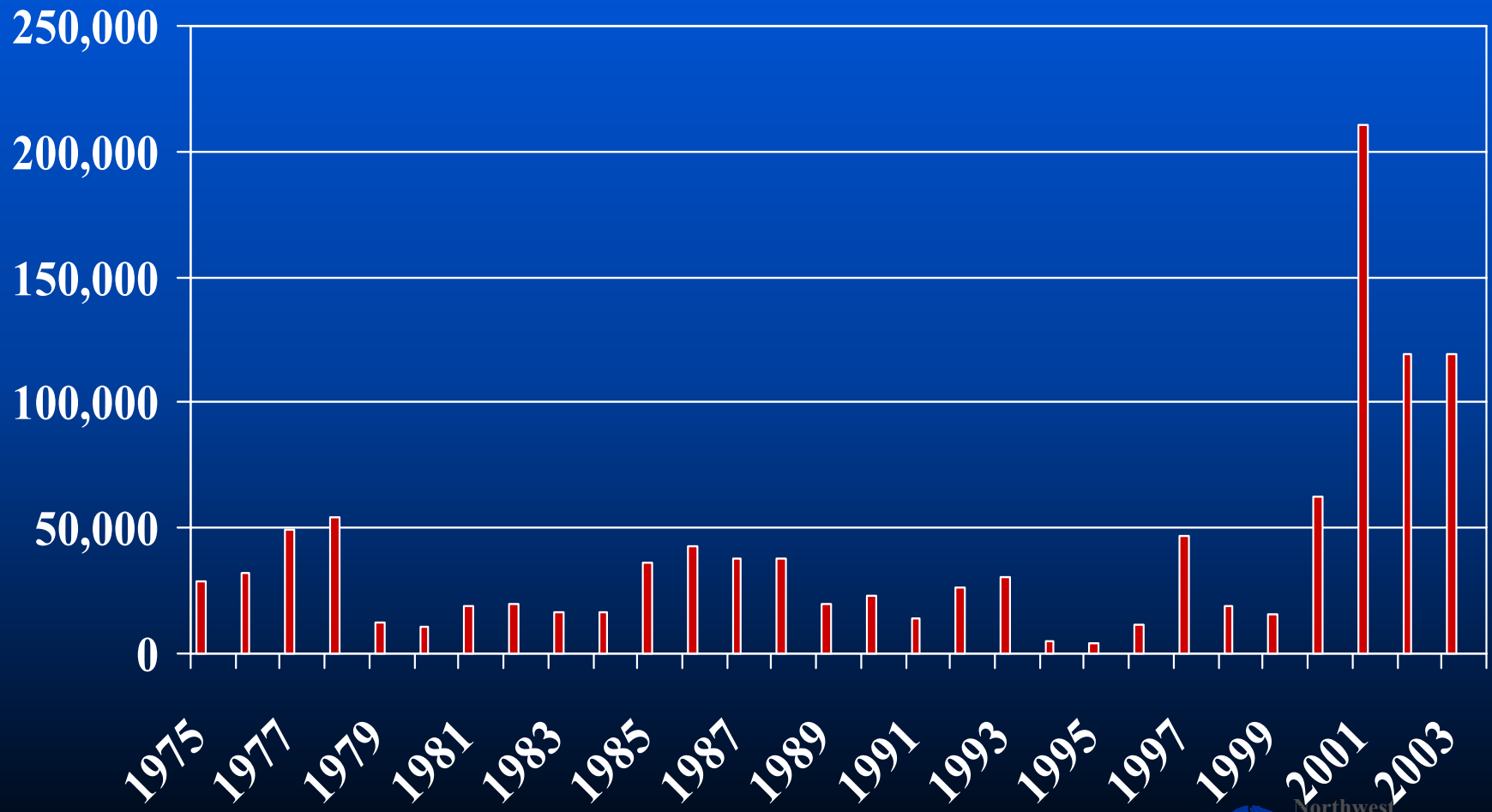
Total Chinook Passage- Lower Granite Dam 1975-2003



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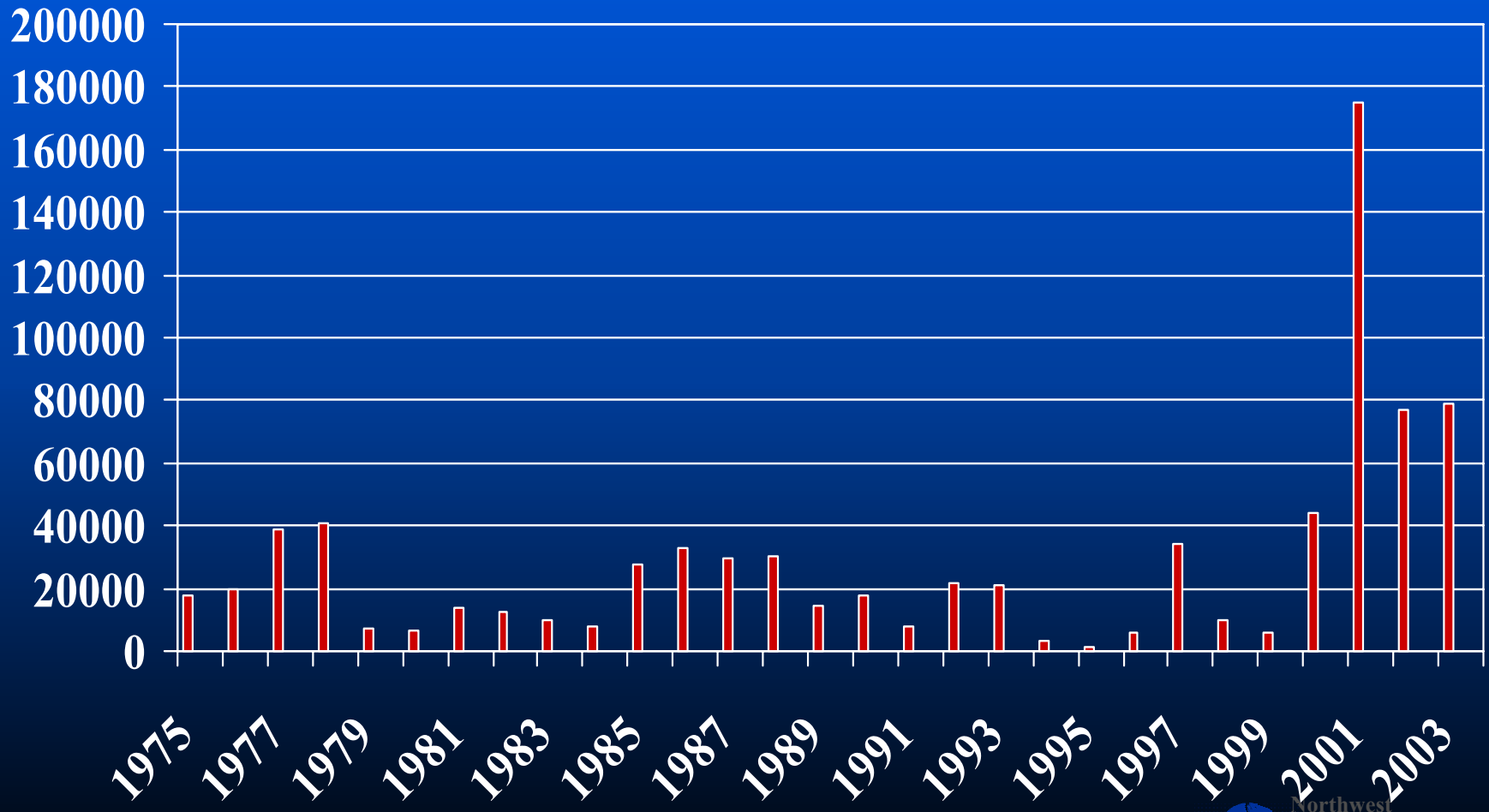
Spring Chinook Passage- Lower Granite Dam 1975-2003



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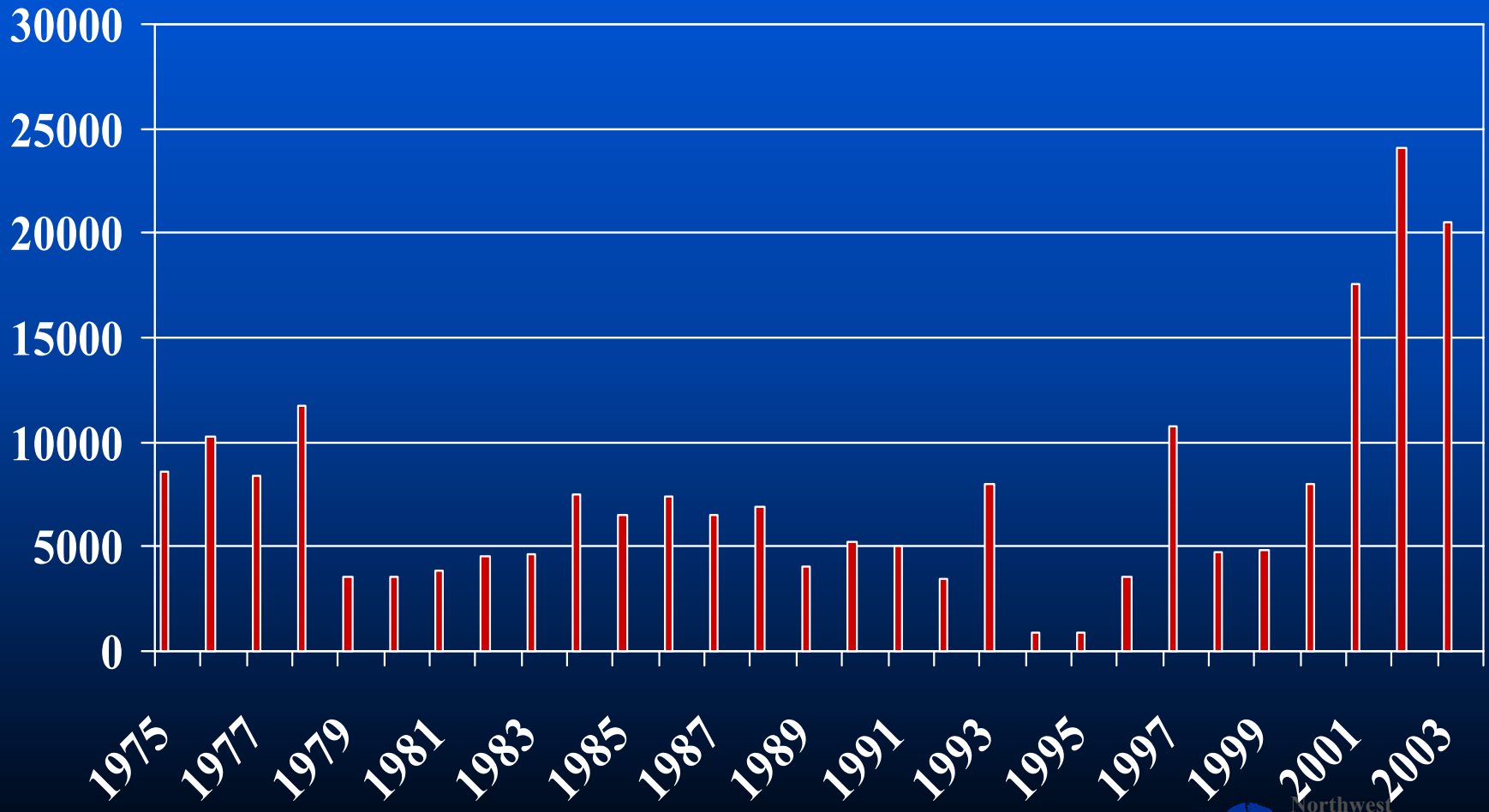
Summer Chinook Passage- Lower Granite Dam 1975-2003



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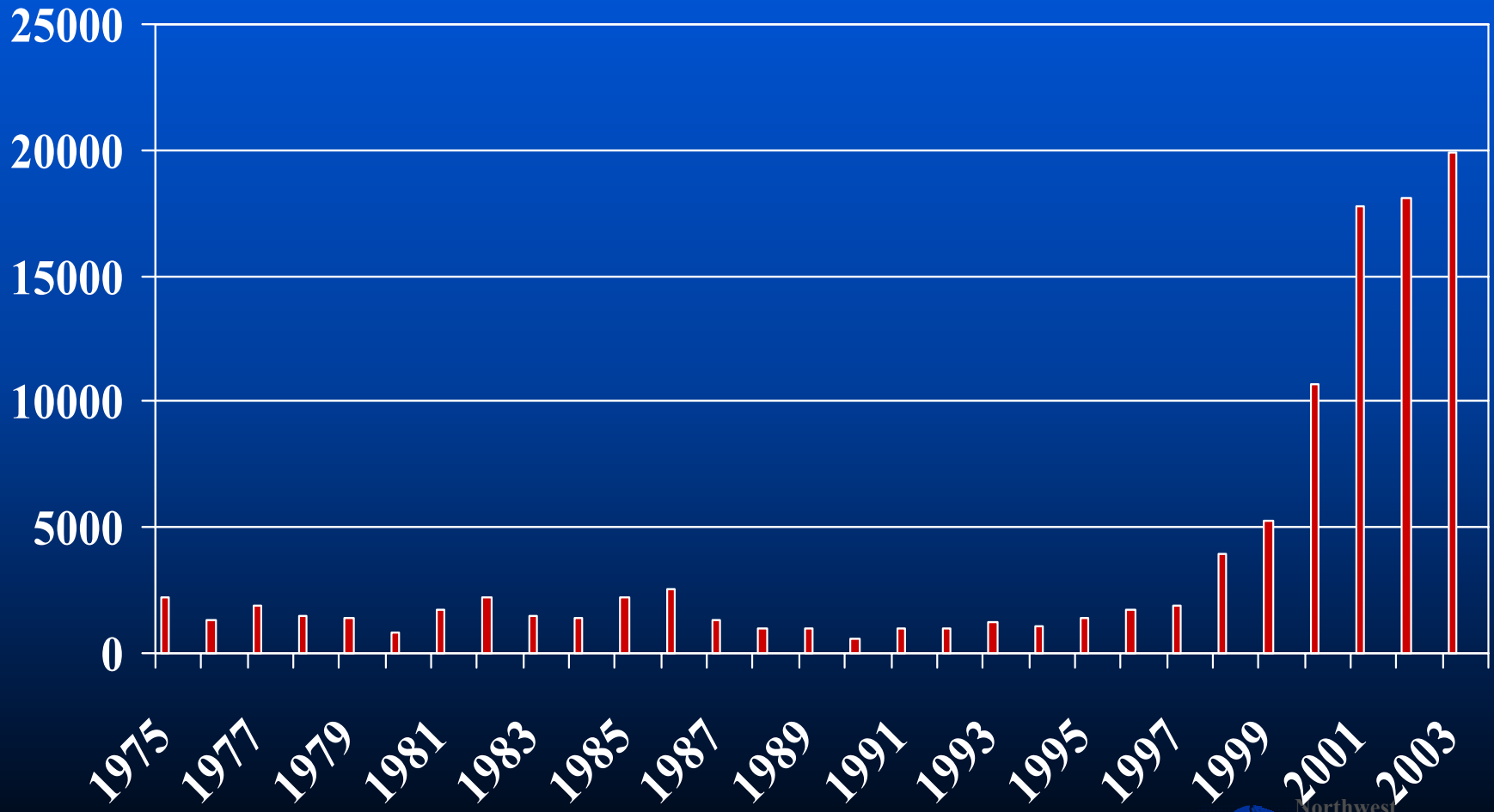
Fall Chinook Passage- Lower Granite Dam 1975-2003



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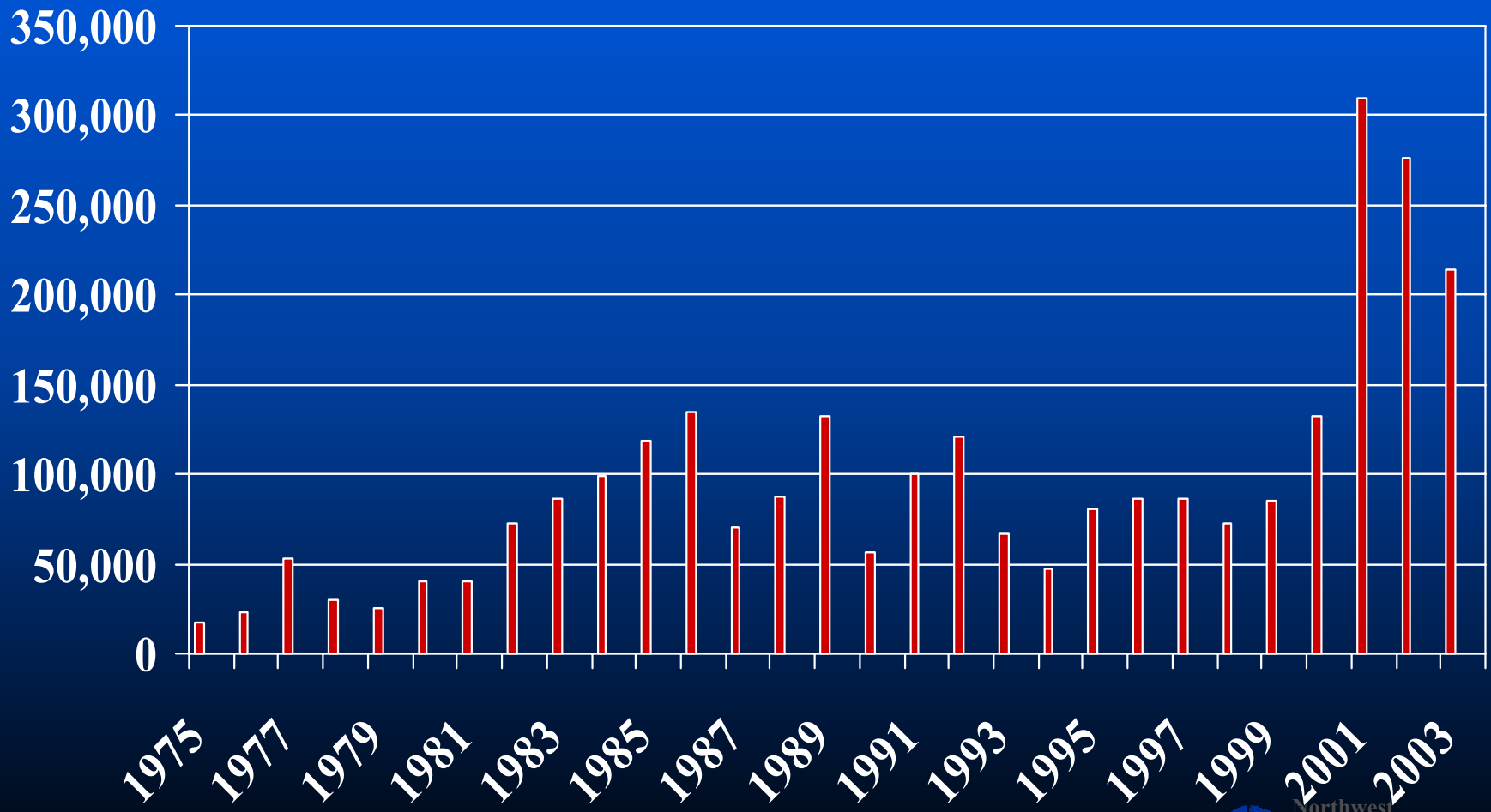
Steelhead Passage- Lower Granite Dam 1975-2003



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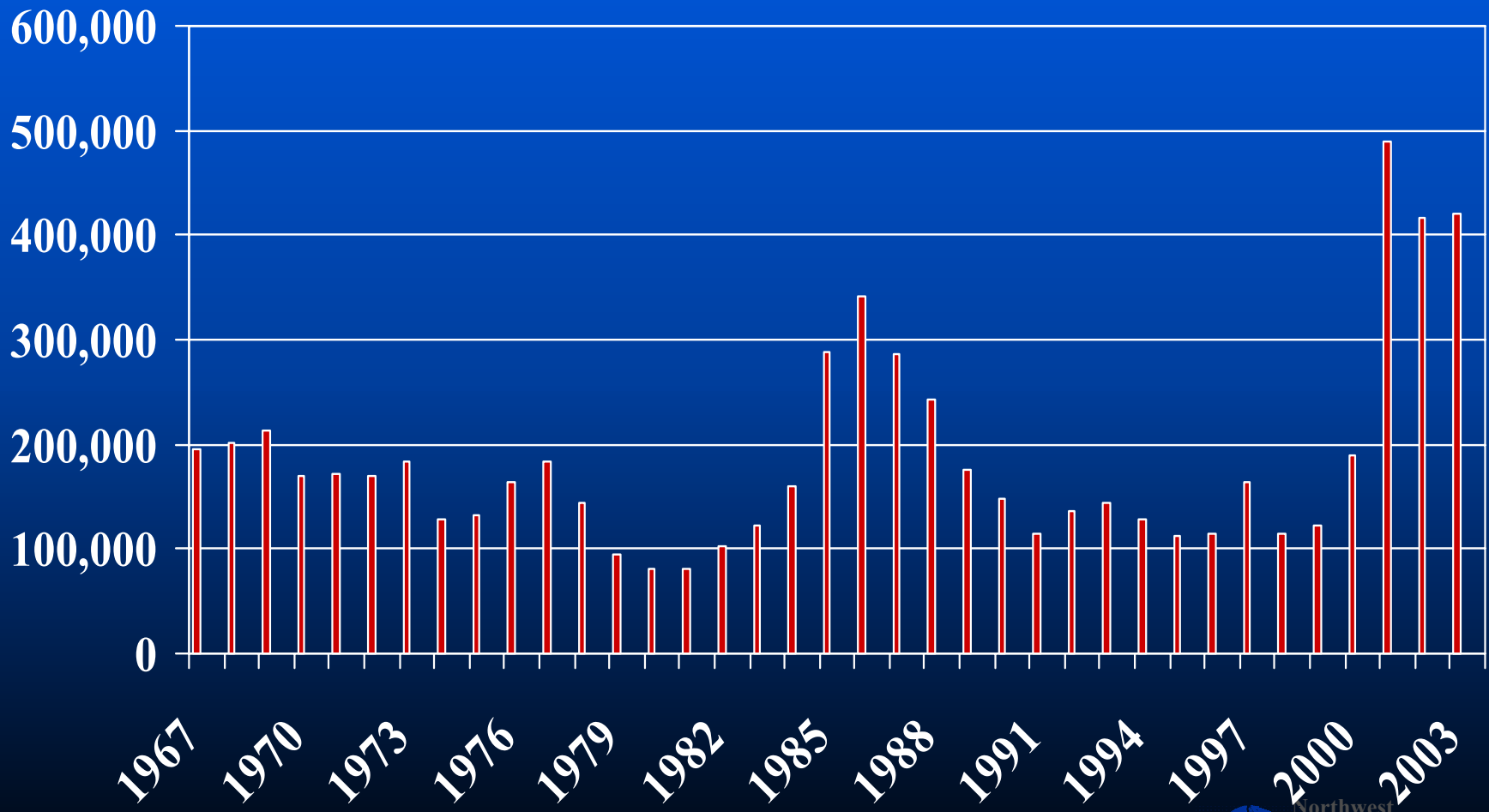
Total Chinook Passage- McNary Dam 1967-2003



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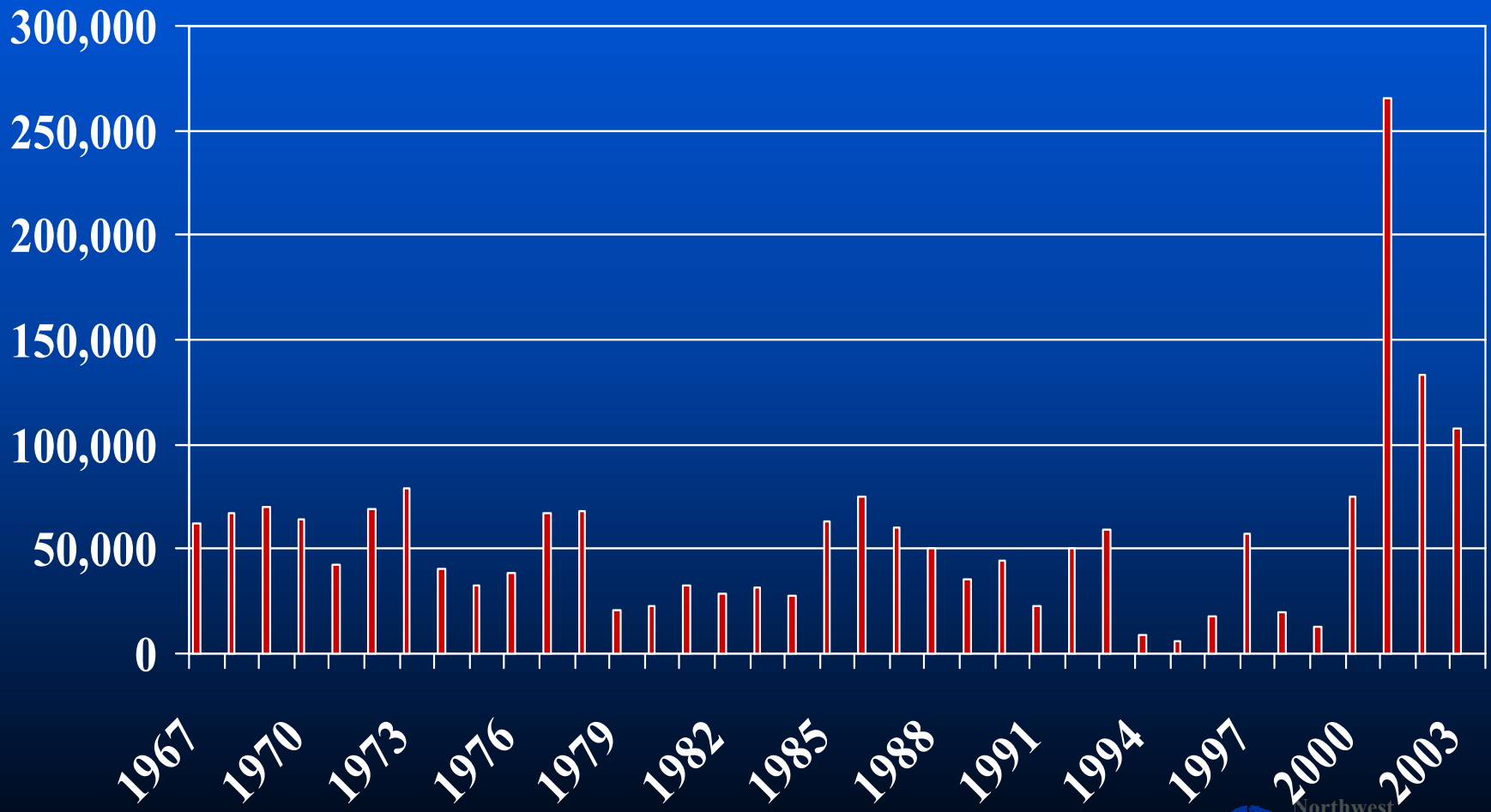
Spring Chinook Passage- McNary Dam 1967-2003



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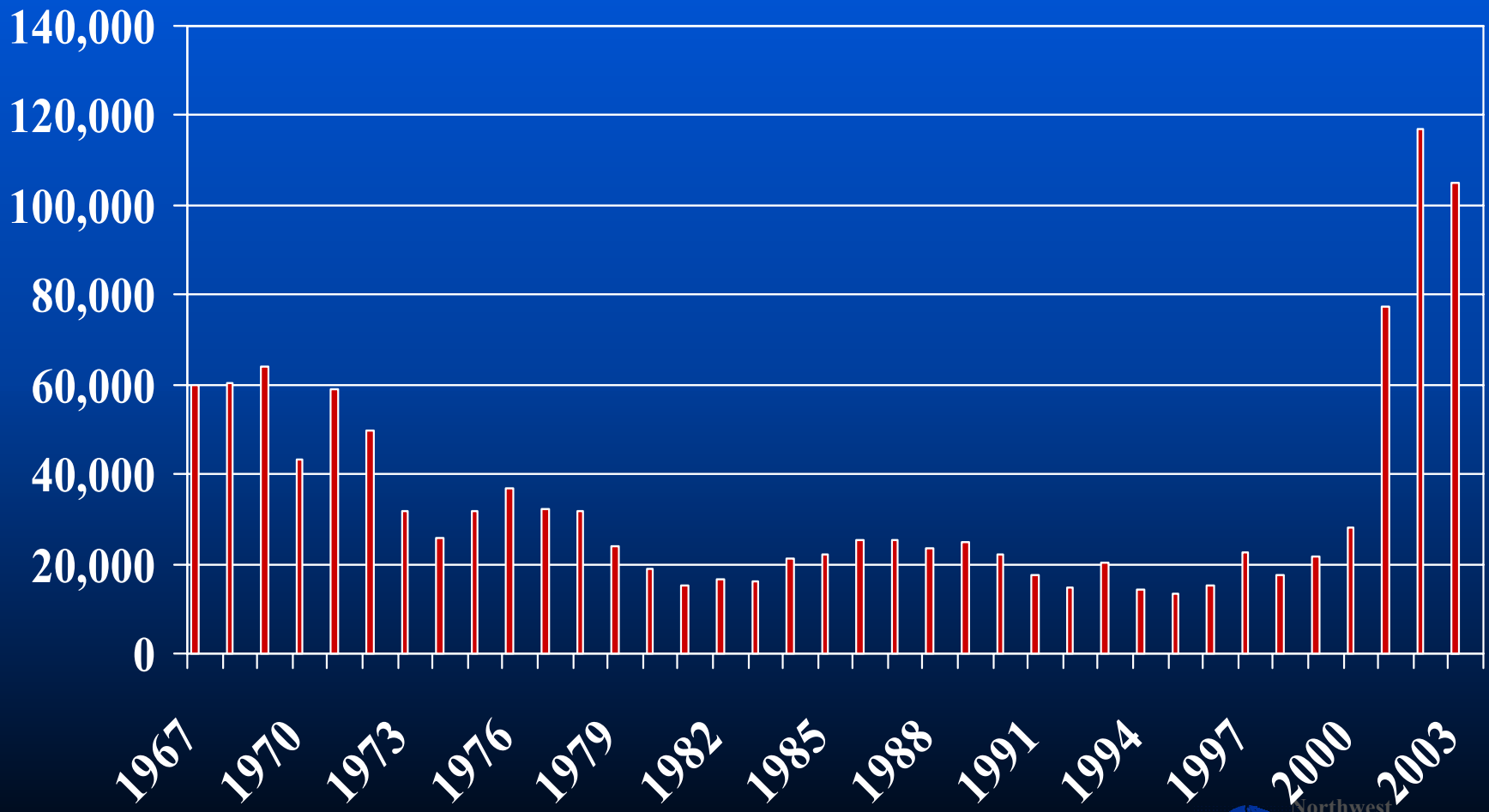
Summer Chinook Passage- McNary Dam 1967-2003



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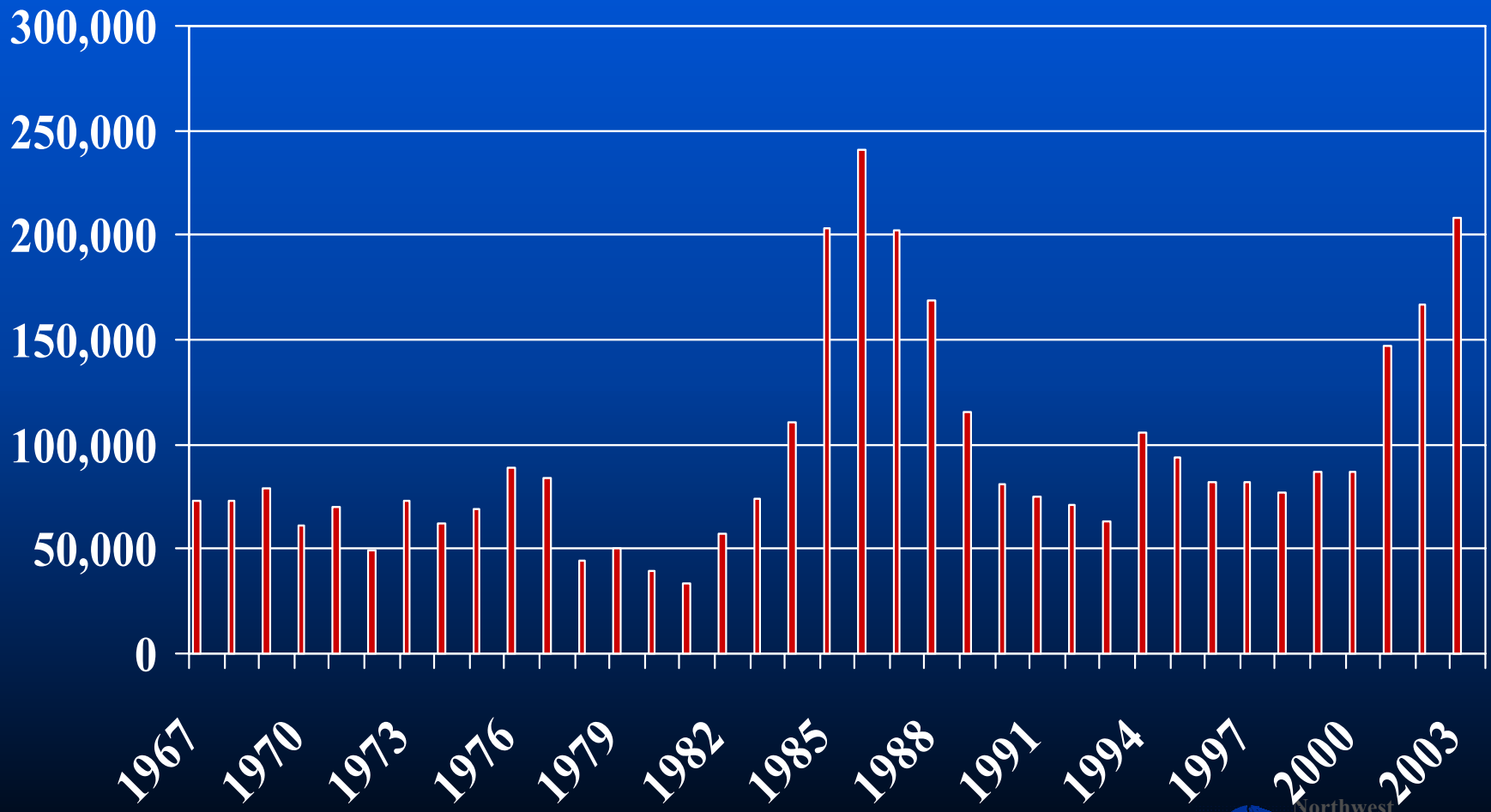
Fall Chinook Passage- McNary Dam 1967-2003



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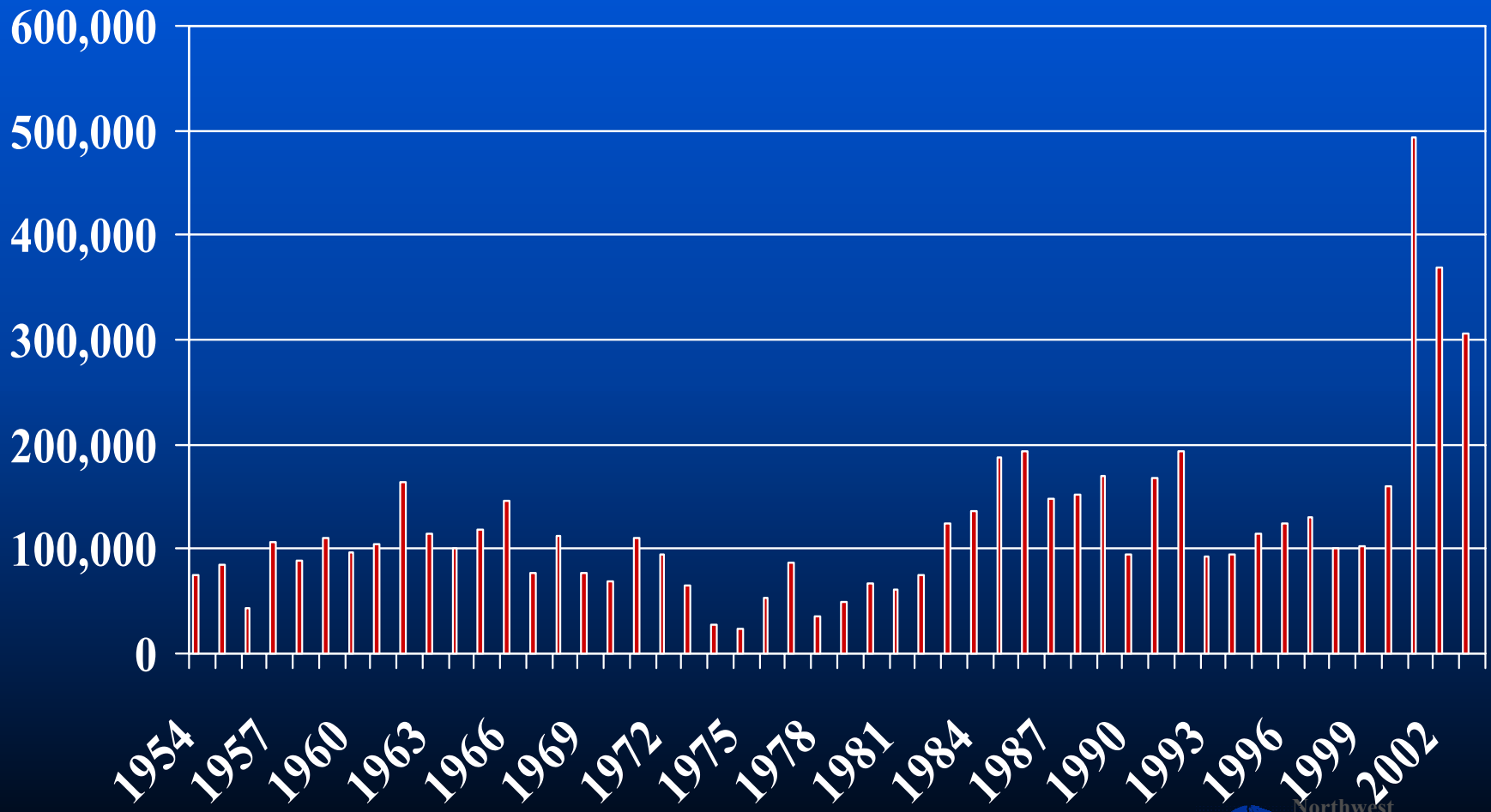
Steelhead Passage- McNary Dam
1954-2003



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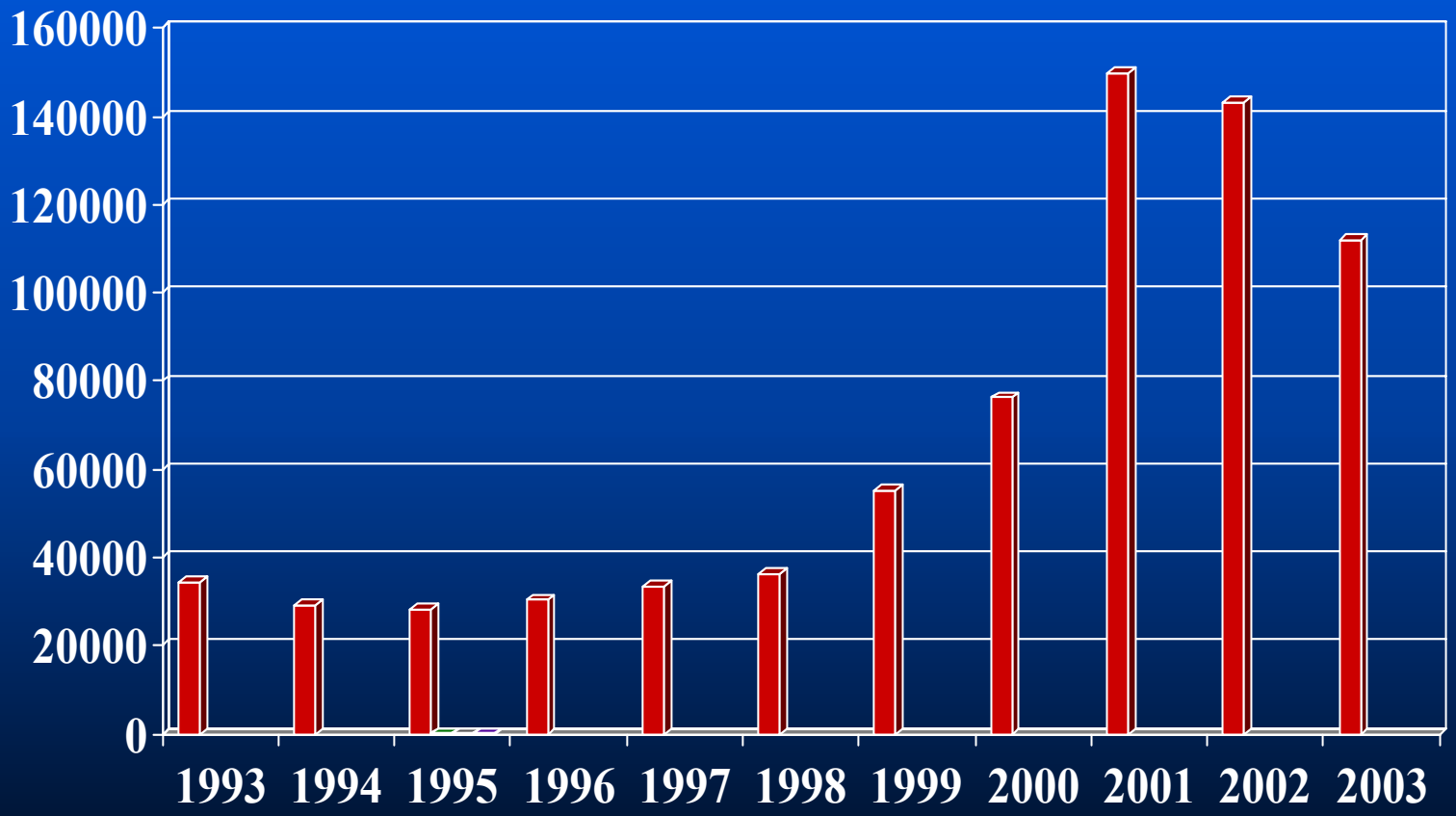
Wild Steelhead Passage- Bonneville Dam 1993-2003



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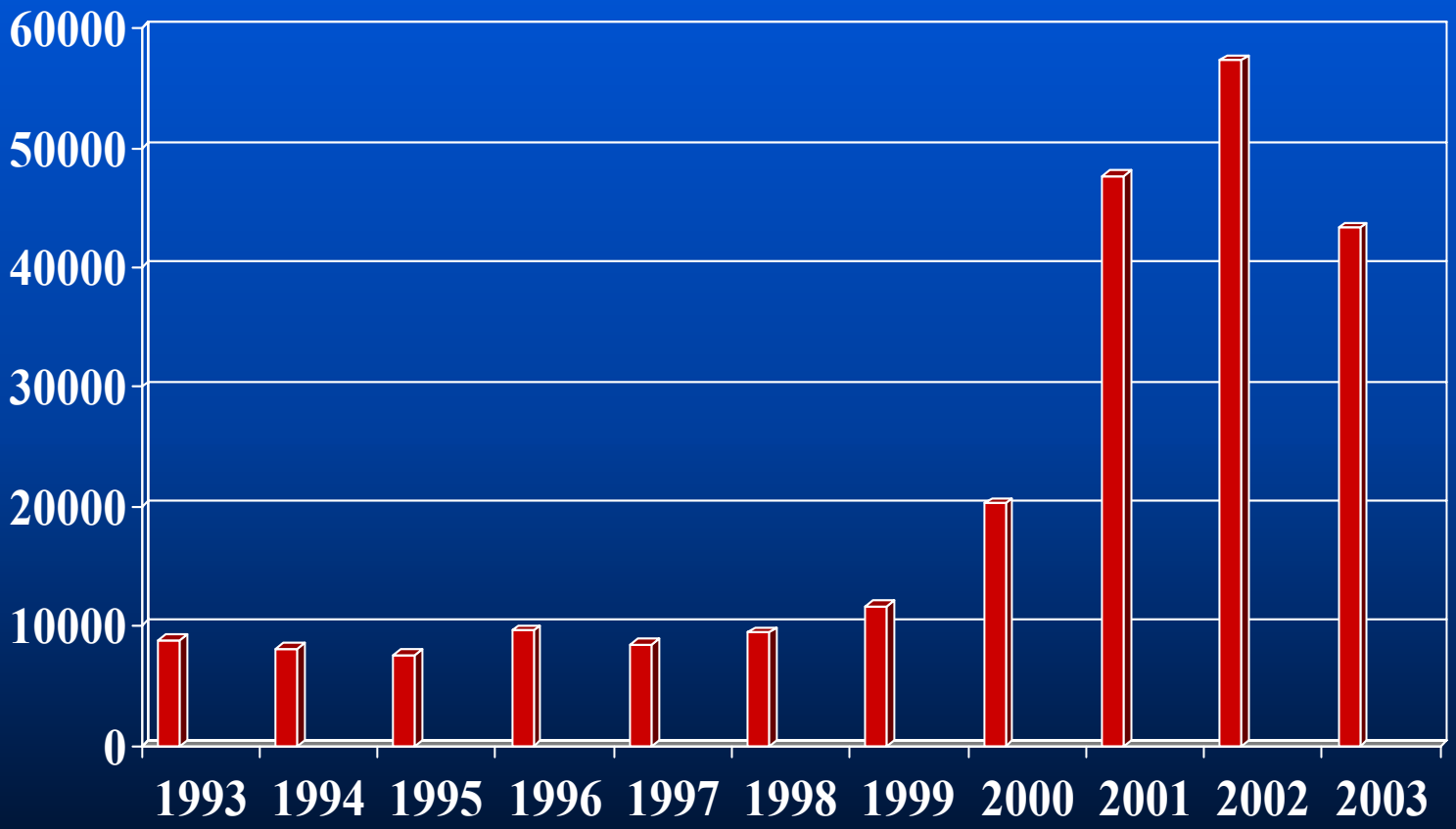
Wild Steelhead Passage- Lower Granite Dam 1993-2003



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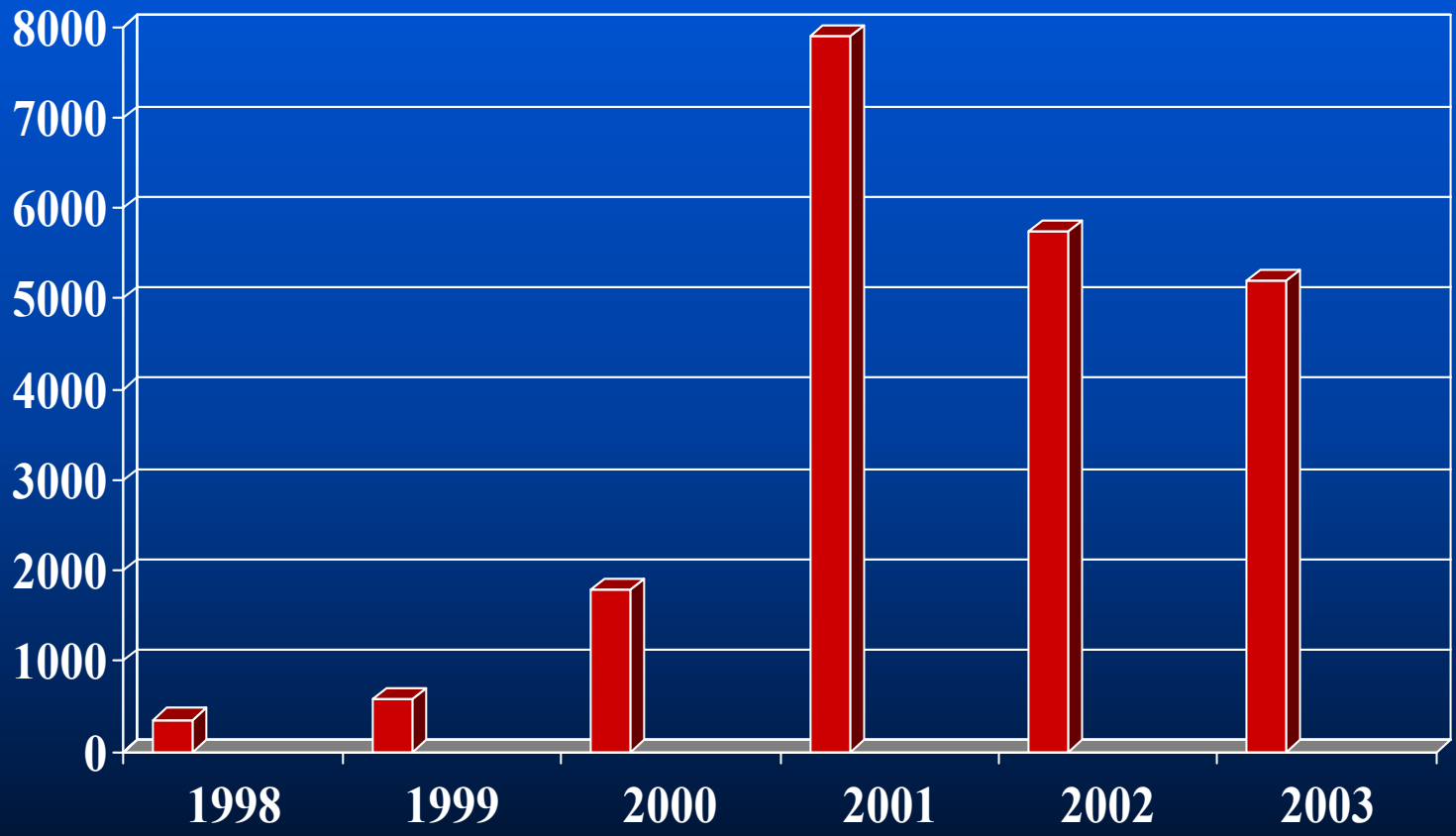
Wild Steelhead Passage- Wells Dam 1998-2003



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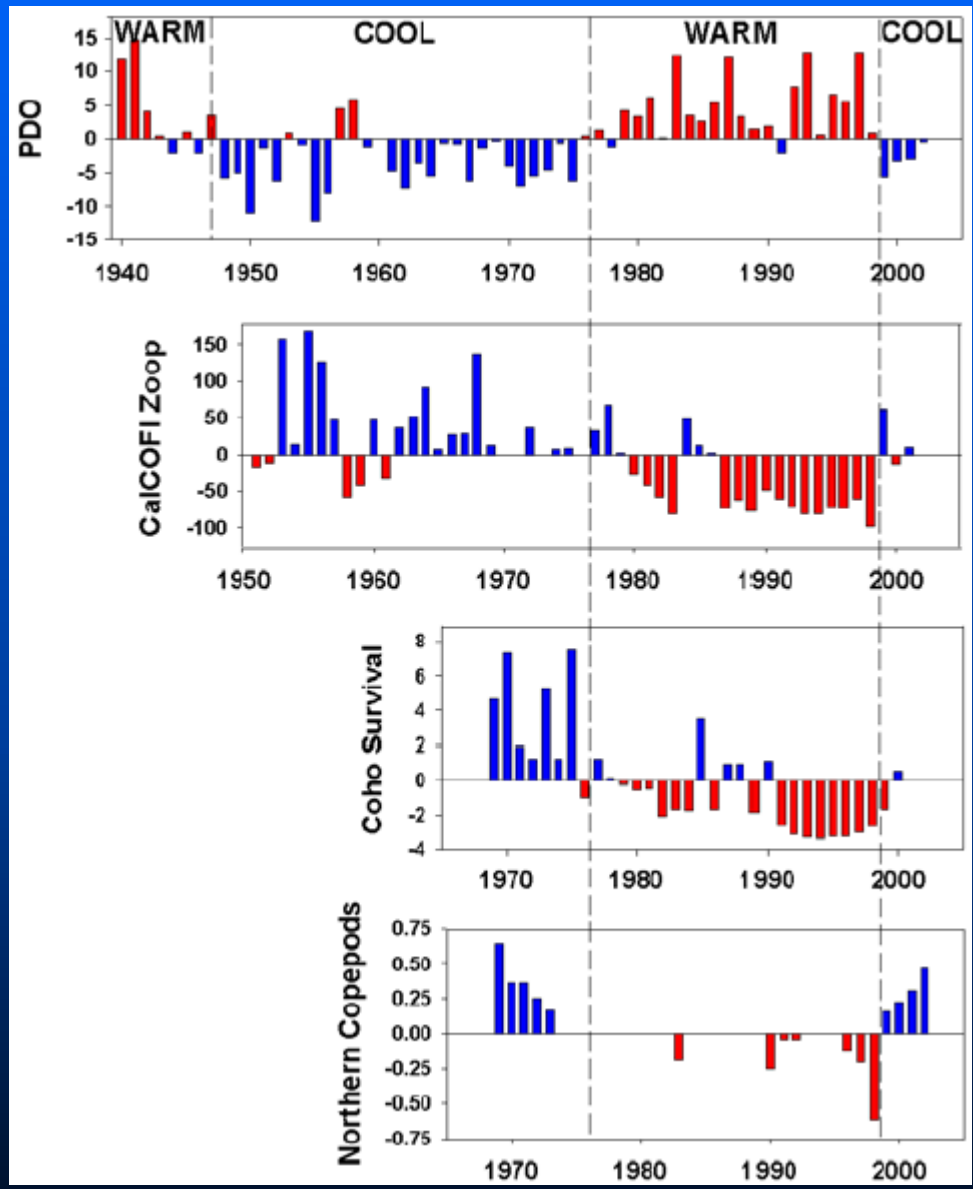
Increase in Number of Adults Past Bonneville Dam: 2001-2003 Average Compared to Other Averages (number of times larger)

	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye
Average 1991-2000	**3.9**	**4.8**	**2.6**	**2.2**	**1.5**
Average 1994-1996	**10**	**6.5**	**2.6**	**2.6**	**3.9**

Increase in Number of Adults Past Lower Granite Dam: 2001-2003 Average Compared to Other Averages (number of times larger)

	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead
Ave 1991-2000	**7.1**	**4.1**	**6.4**	**3.0**
Ave 1994-1996	**31.7**	**11.7**	**13.4**	**3.7**

Time series of (a) the PDO index summed annually over May–September (highly correlated with annual averages, R2 = 0.92); (b) annual anomalies of CalCOFI zooplankton volumes from the California Current region, (c) coho salmon survival, and (d) biomass anomalies of cold-water copepod species. Positive (Negative) PDO index indicates warmer (cooler) than normal temperatures in coastal waters off North America, and vice versa (Peterson and Schwing, 2003).



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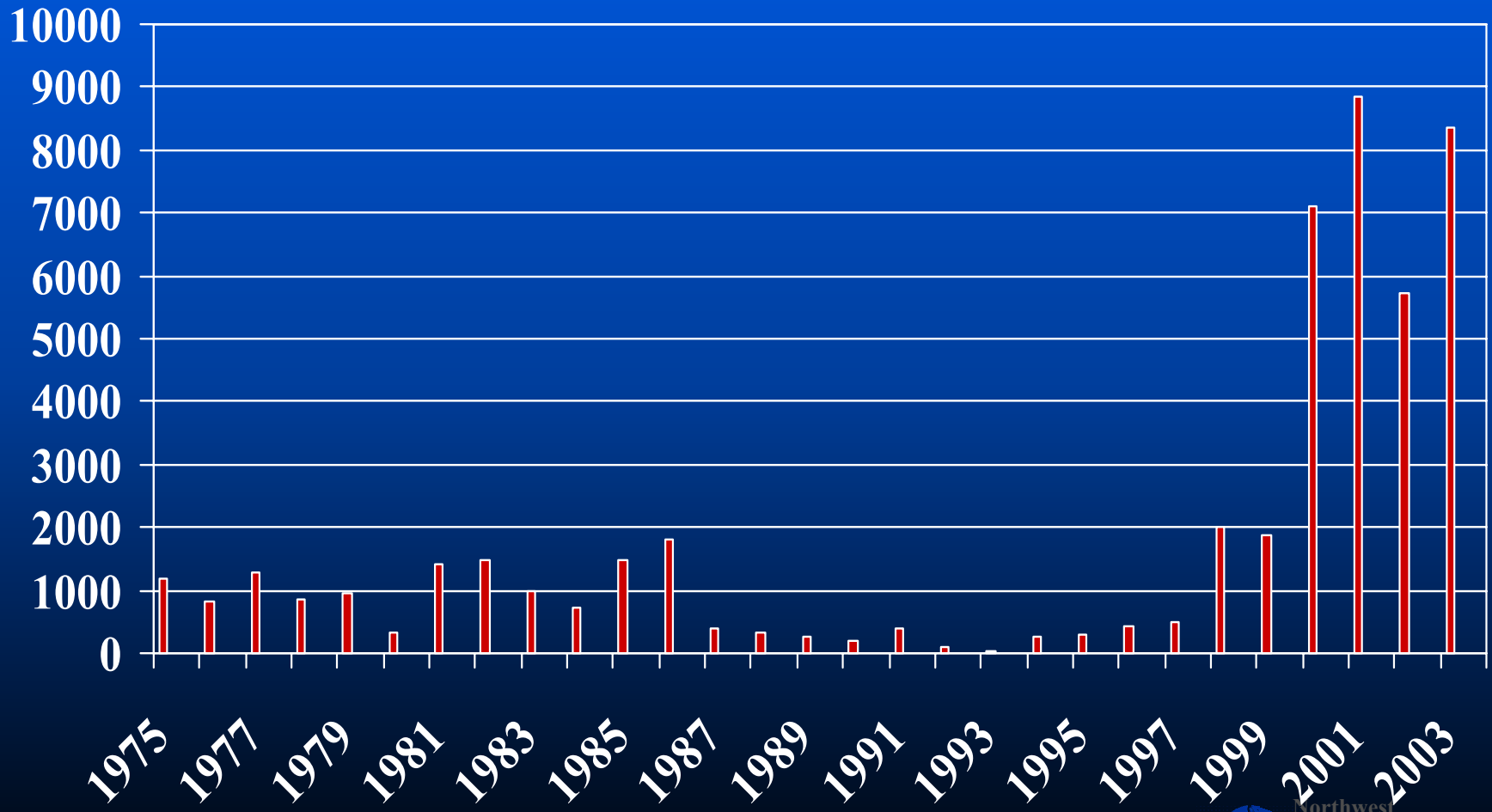
Spring Chinook Jack Passage- Lower Granite Dam 1975-2003



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Conclusions/Comments

- Good ocean conditions are creating strong adult returns.
- Past fish activities probably helped populations survive period of poor ocean conditions
- All fish actions should be evaluated with consideration to both freshwater and ocean conditions
- Ocean conditions will change- do what can be done to ensure that fish reach the ocean and return to good freshwater habitat
- Consider greater flexibility in fish and wildlife actions to respond to changing ocean regimes.