Does reducing take for winter- run – sized- salmon increase survival through the Delta?

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EWA Workshop
September 8, 2004
USFWS

EWA for Salmon:
Goals, Conceptual Models, Objectives, Performance Measures and Relevant Analyses Plan (4/30/03) Presented 7/03

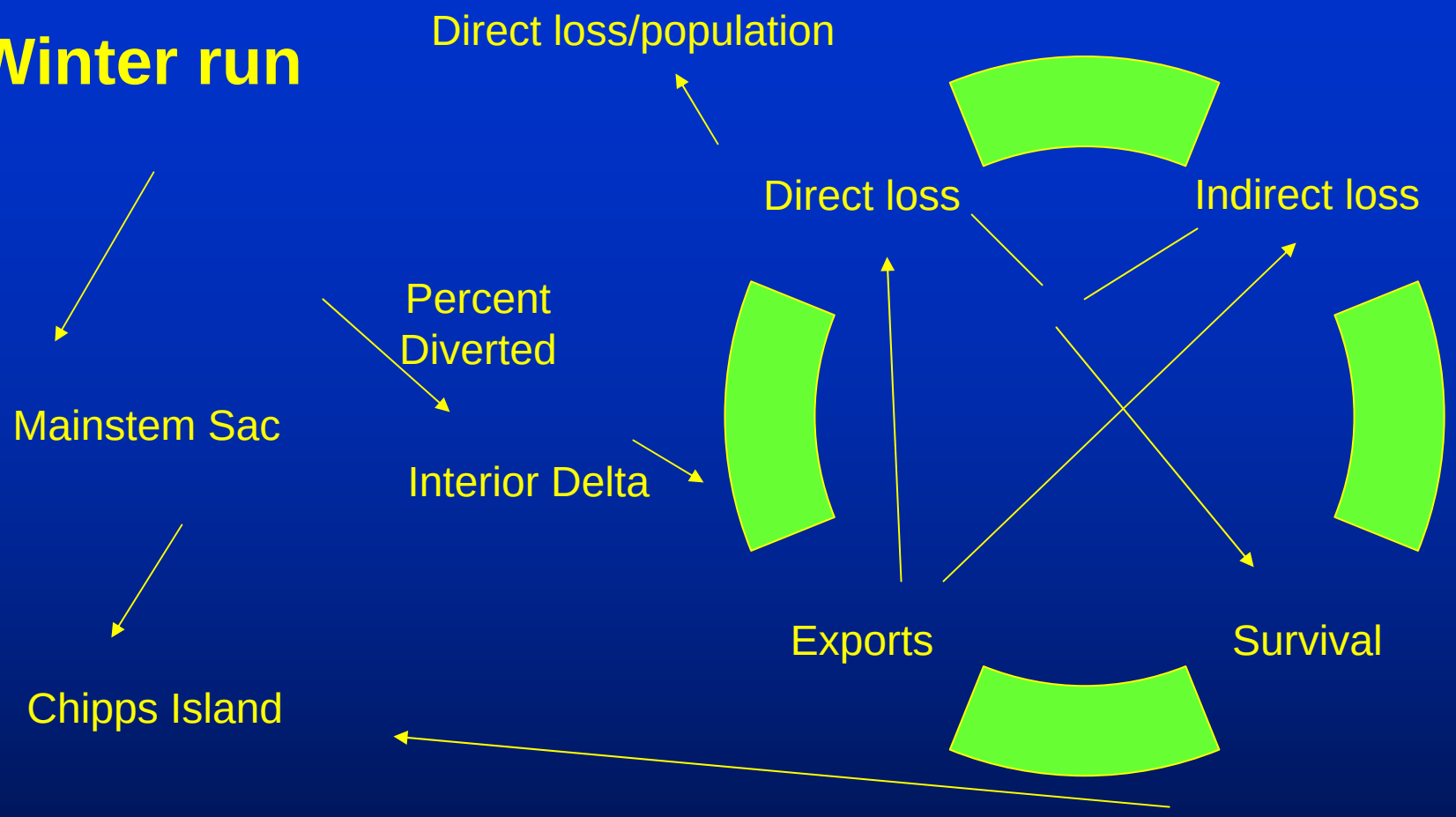
Goals:

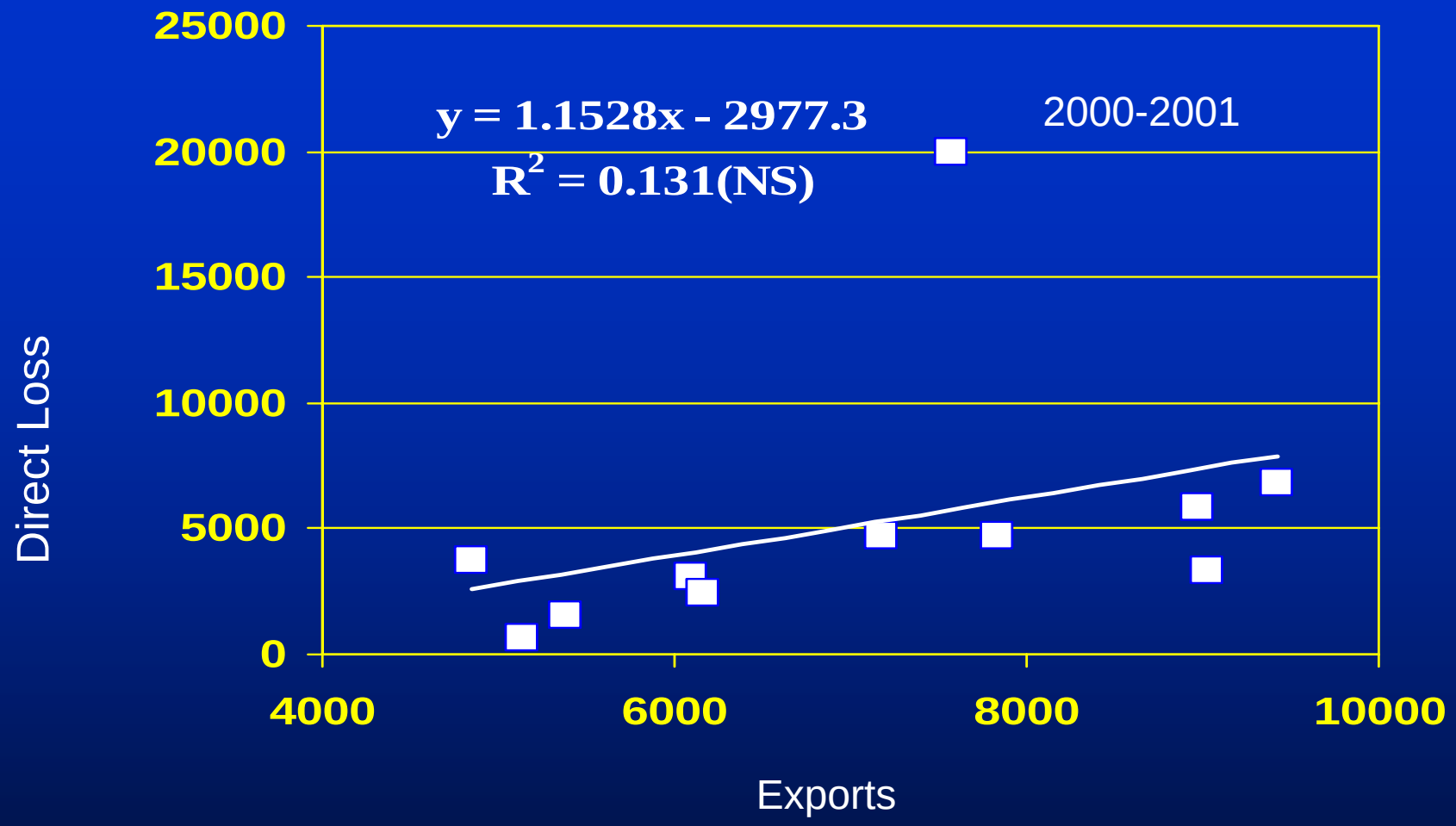
- Determine if minimizing take and closing the DCC provide greatest population benefits relative to other uses of EWA water

Conceptual Models:

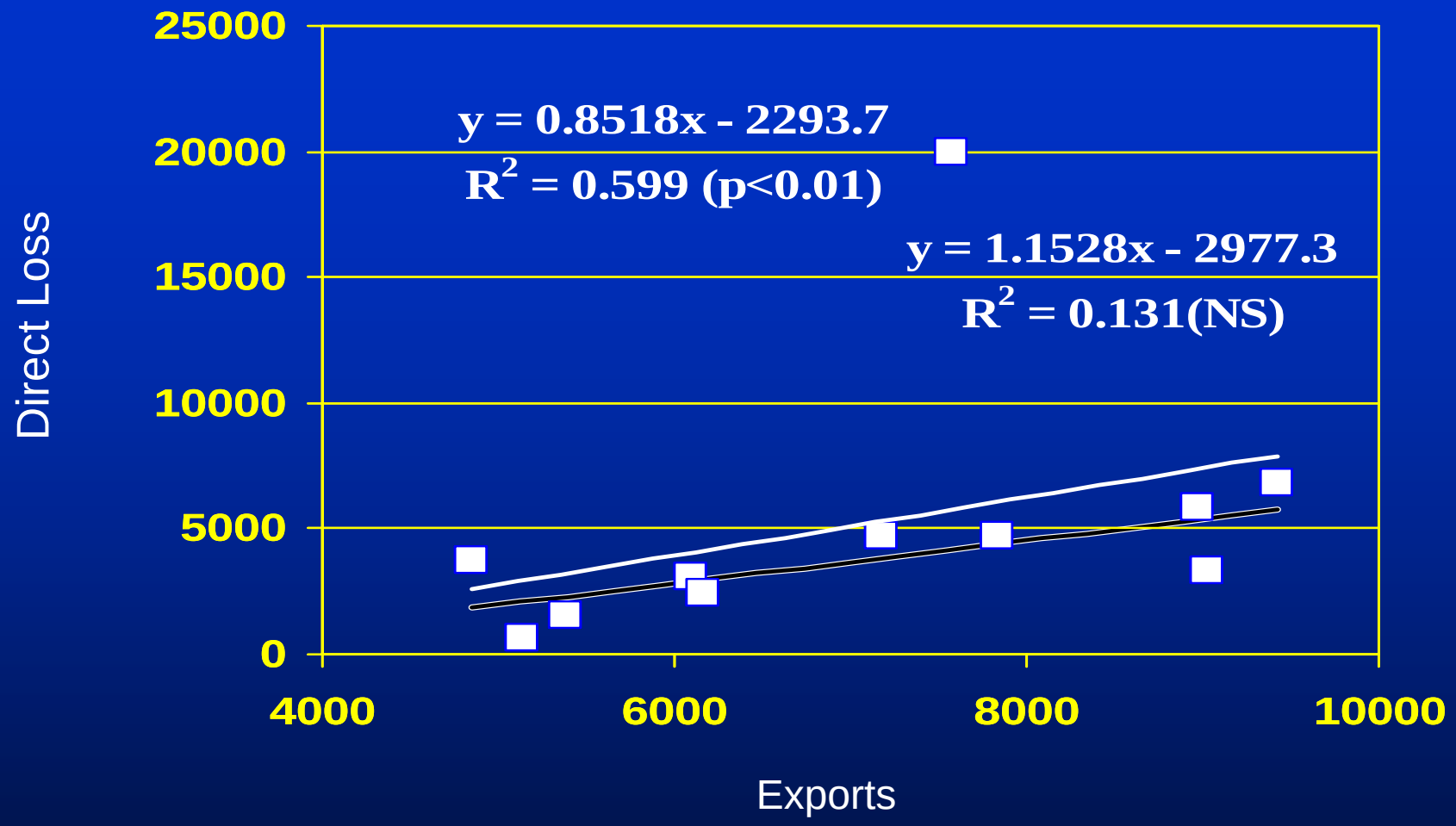
- How would minimizing (reducing) take improve survival in the Delta and in the population?

Winter run


Direct loss/population
Direct loss
Indirect loss
Percent Diverted
Mainstem Sac
Interior Delta
Exports
Survival
Chipps Island



Combined direct loss (using Delta curves) of winter run versus mean CVP+SWP exports December 1 through April 15, 1993-1994 through 2001-2002.



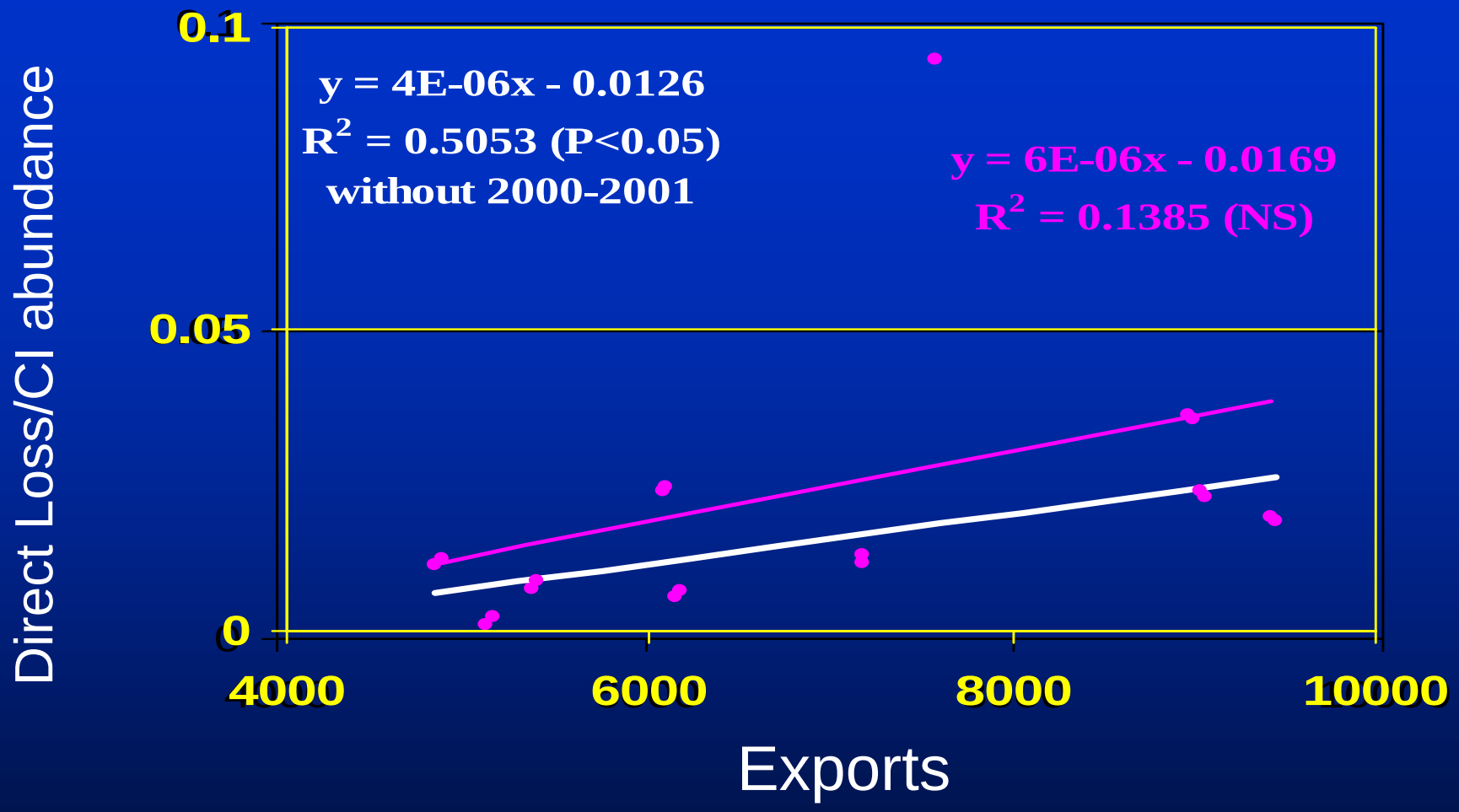
Combined direct loss (using Delta curves) of winter run versus mean CVP+SWP exports December 1 through April 15, 1993-1994 through 2001-2002.

Correcting loss to determine proportion of the population

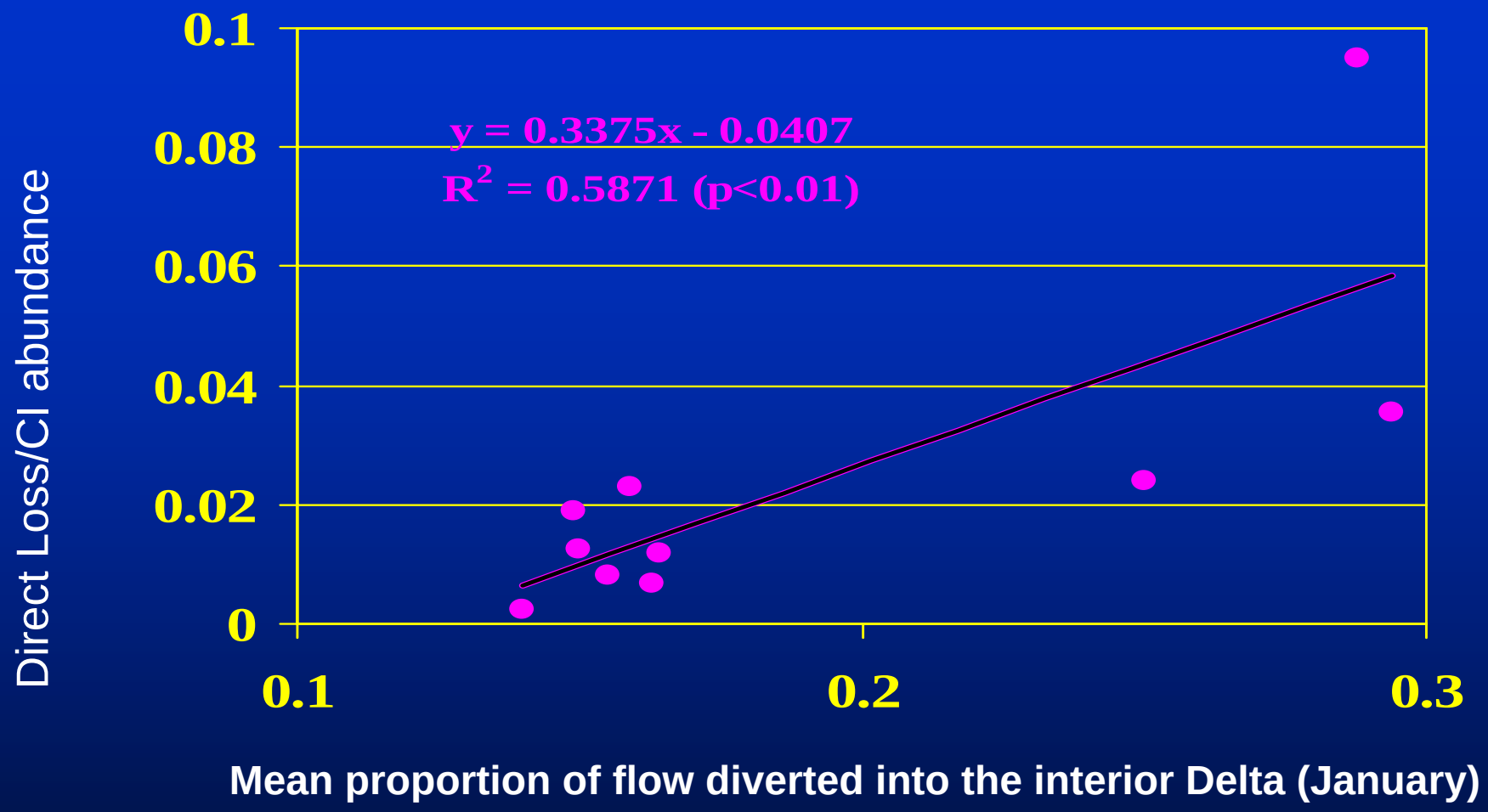
-Used absolute abundance at Chipps Island to estimate population size in Delta:

$$Ni = Catch/(ti * 0.007692)$$

Where: Ni = Absolute abundance estimate
ti = Fraction of time sampled (time sampled/total time)
and 0.007692 = fraction of channel width sampled (30'/3900')



Direct loss (Delta curves)/Chipps Island abundance (Delta curves) versus mean CVP+SWP exports December 1 through April 15, 1993-1994 through 2002-2003



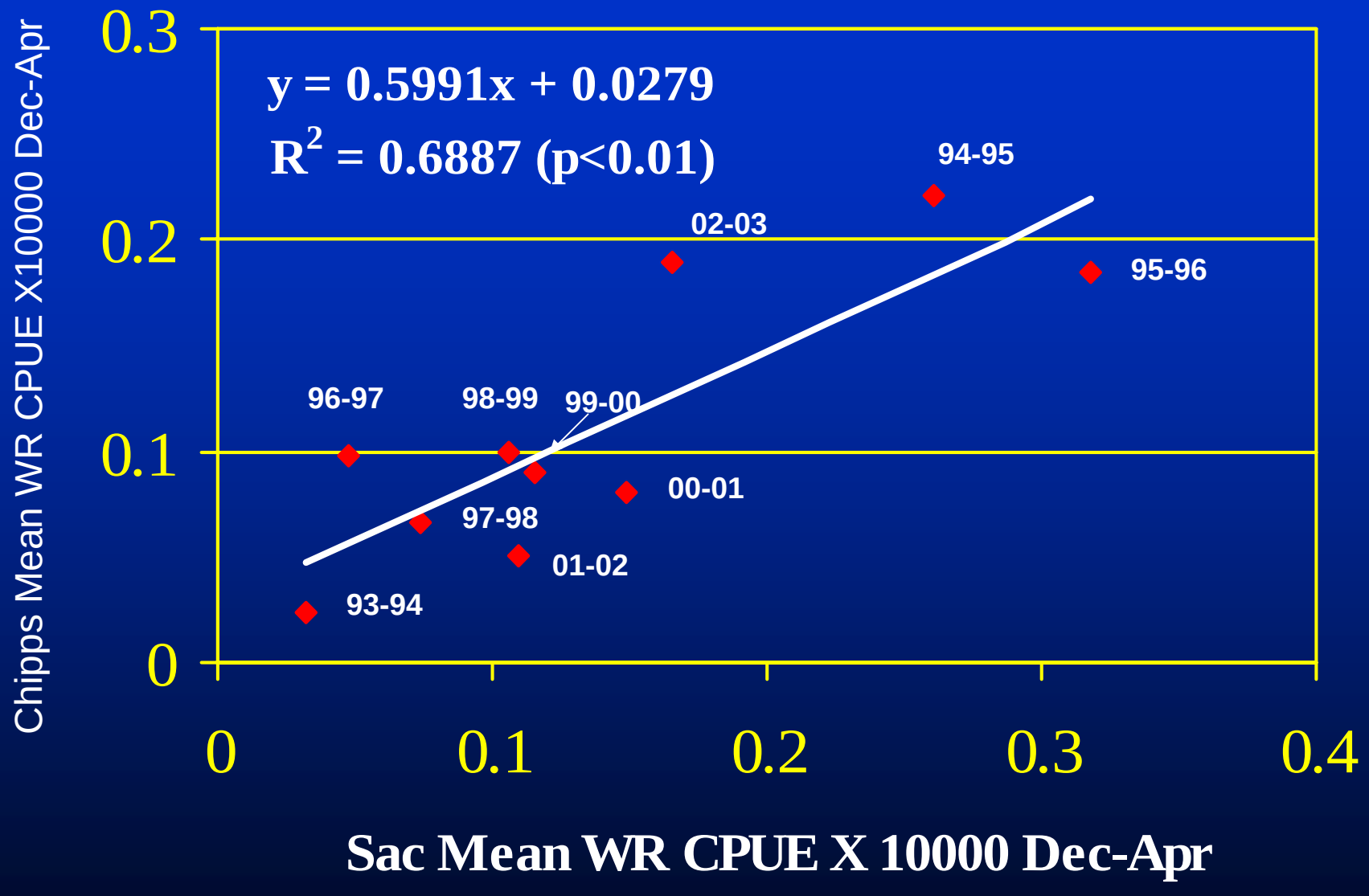
Direct loss of winter run (using Delta curves)/Chipps Island abundance (Delta curves) versus mean proportion of flow diverted in January, 1993-1994 through 2002-2003

Wanted to determine if direct loss was related to survival through the Delta

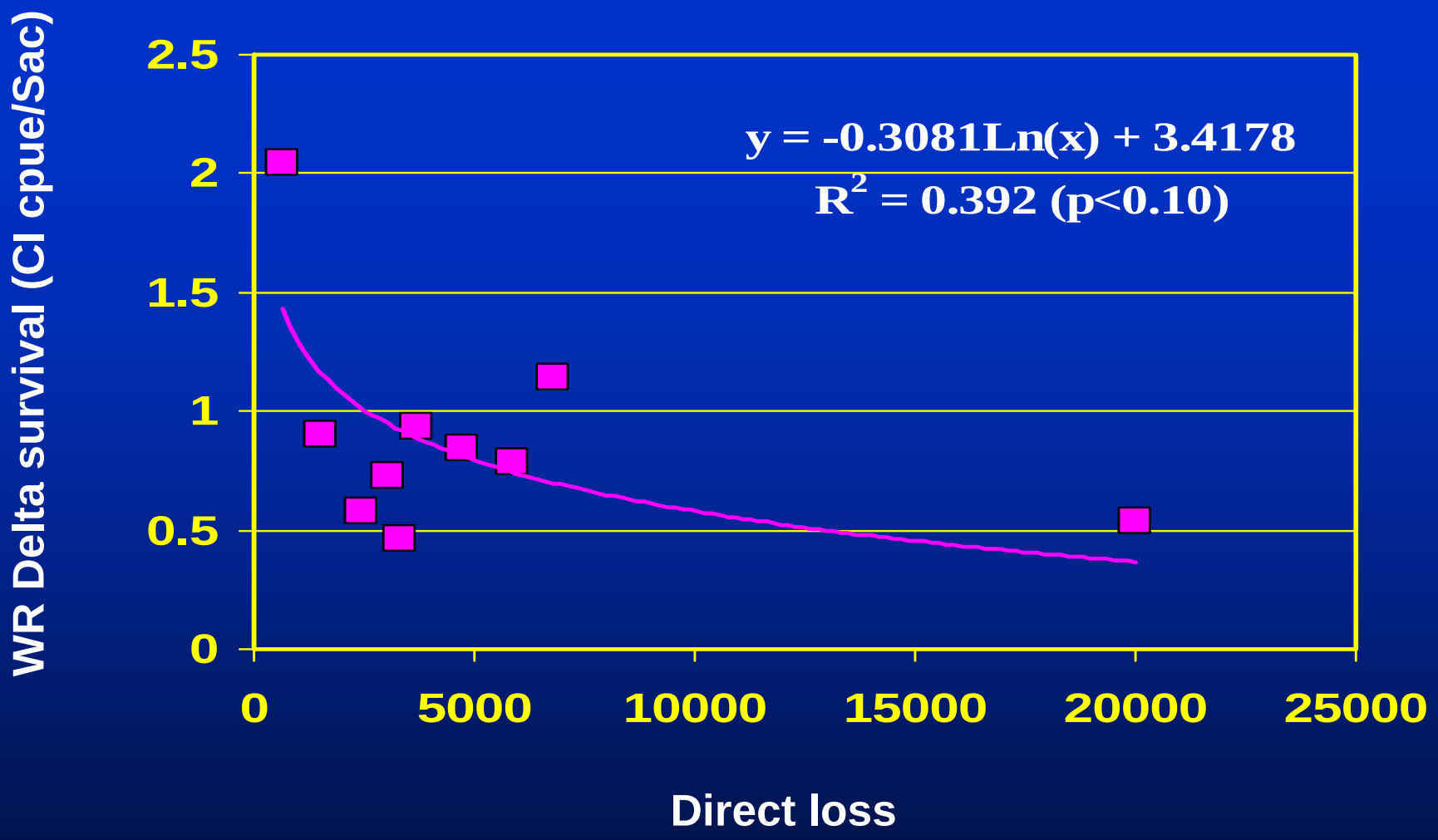
$$\text{Winter run Survival index through the Delta} = \frac{\text{Chipps Island Mean CPUE (Dec-Apr)}}{\text{Sacramento Trawl Mean CPUE (Dec-Apr)}}$$

of winter run sized salmon (using the Frank Fisher curves))

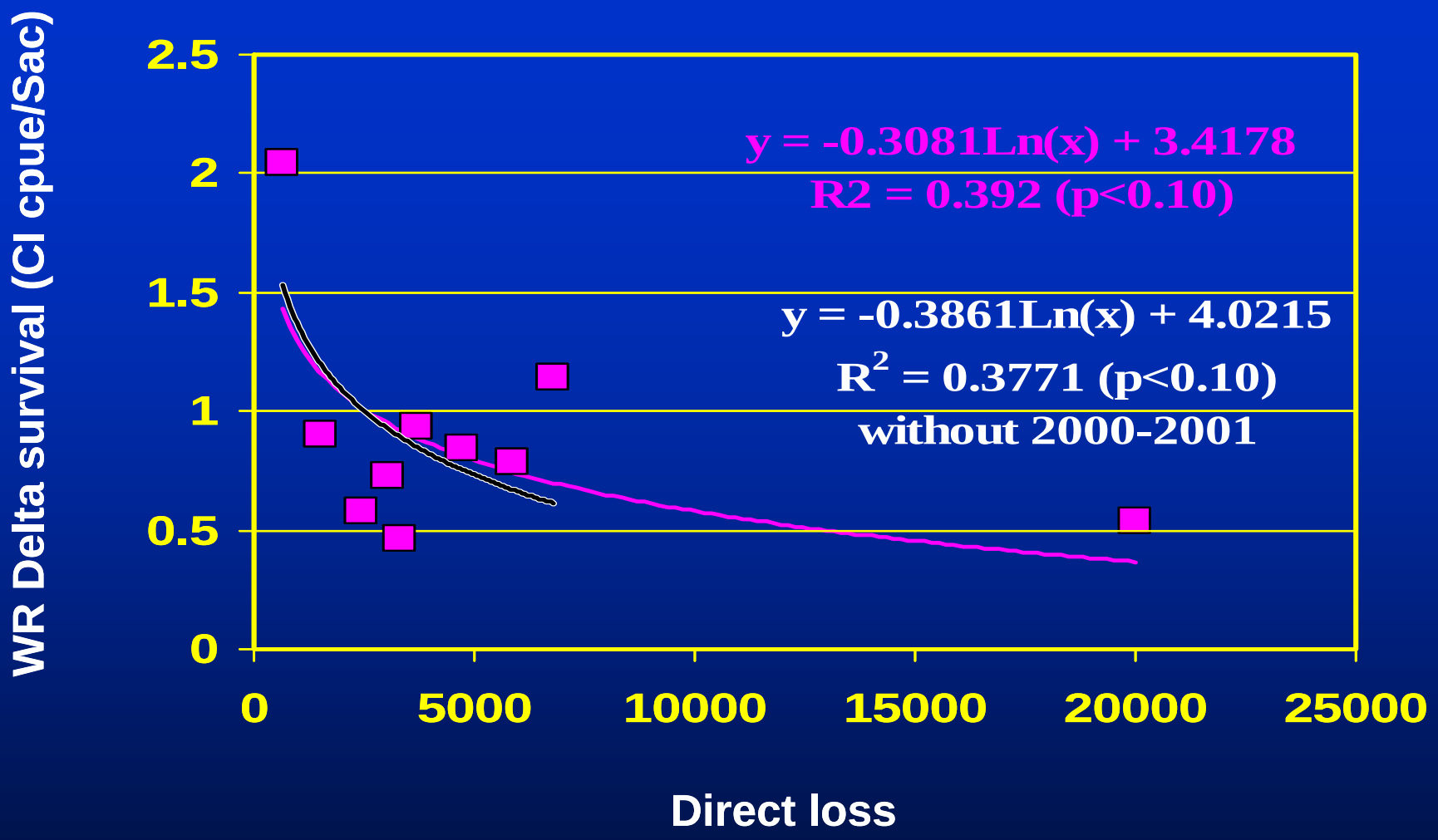
Where the Sacramento Trawl index was the average of the Kodiak Trawl and Midwater trawl when both were used during the month



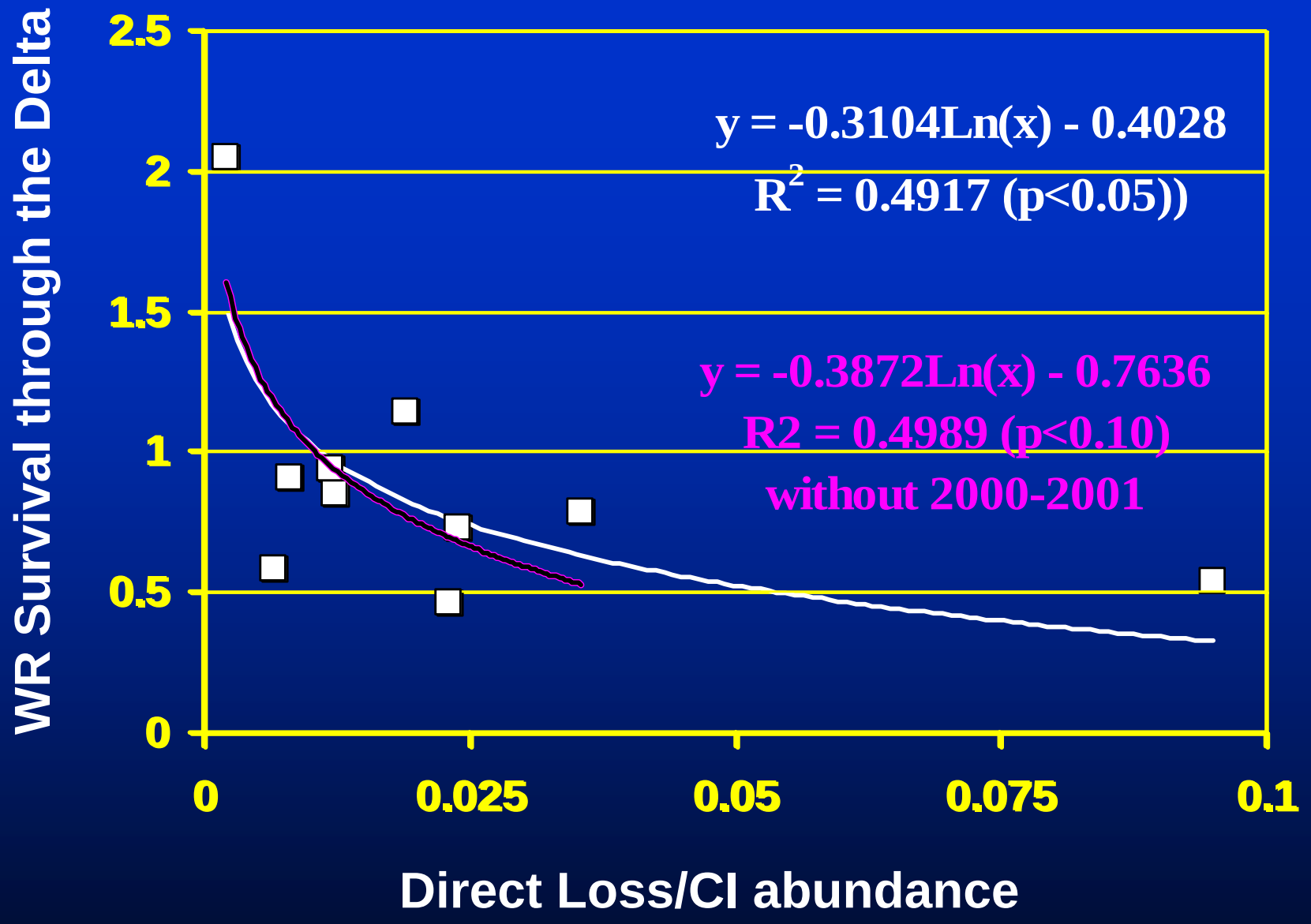
Relationship between Mean CPUE of Winter run sized salmon (using the Fisher curves) in the Sacramento Trawl and Chipps Island Trawl



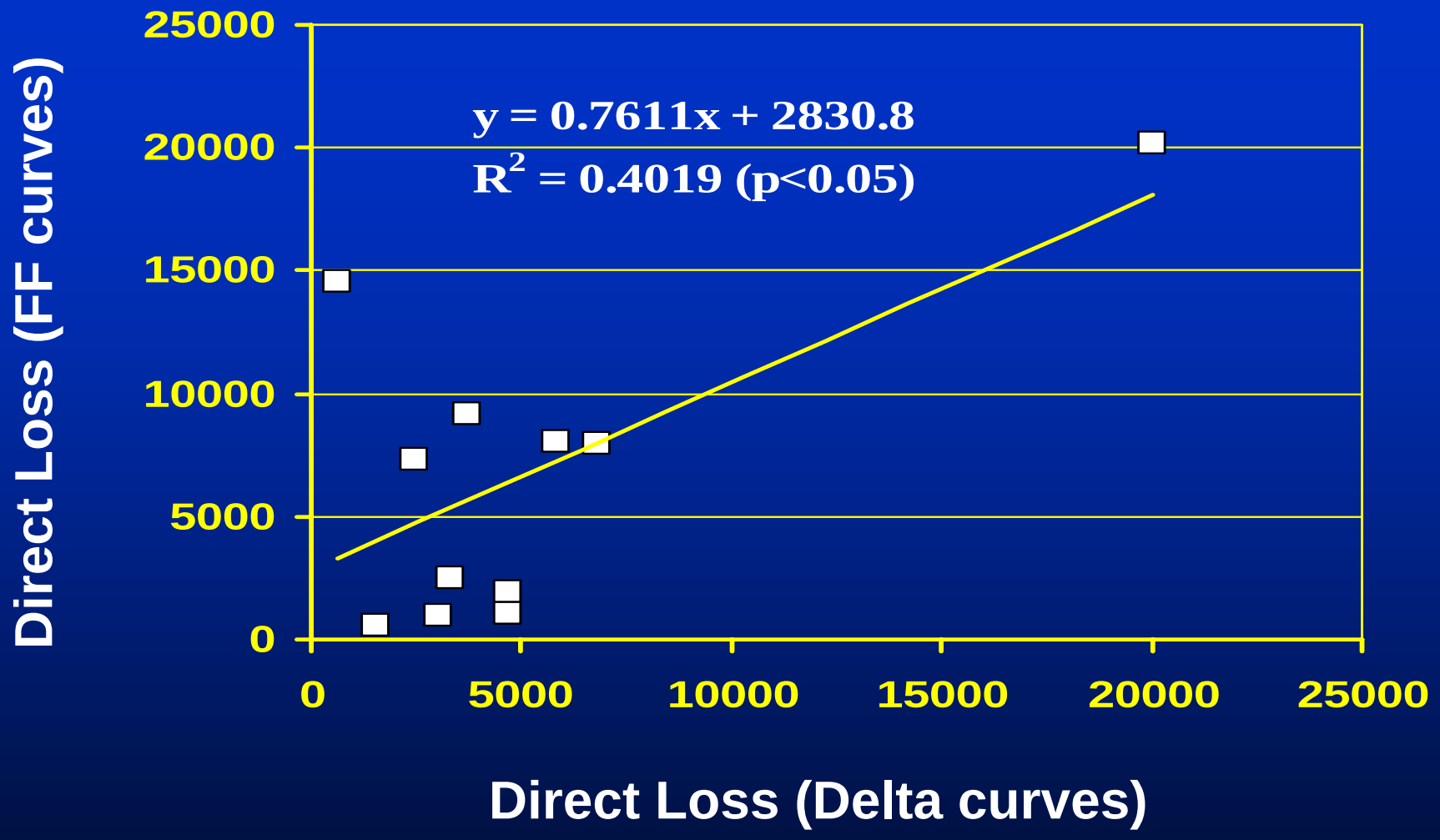
Survival of winter run between Sacramento and Chipps Island (based on FF curves) versus direct loss (Delta curves) at the CVP+SWP, 1993-1994 through 2002-2003.



Survival of winter run between Sacramento and Chipps Island (based on FF curves) versus direct loss (Delta curves) at the CVP+SWP, 1993-1994 through 2002-2003.

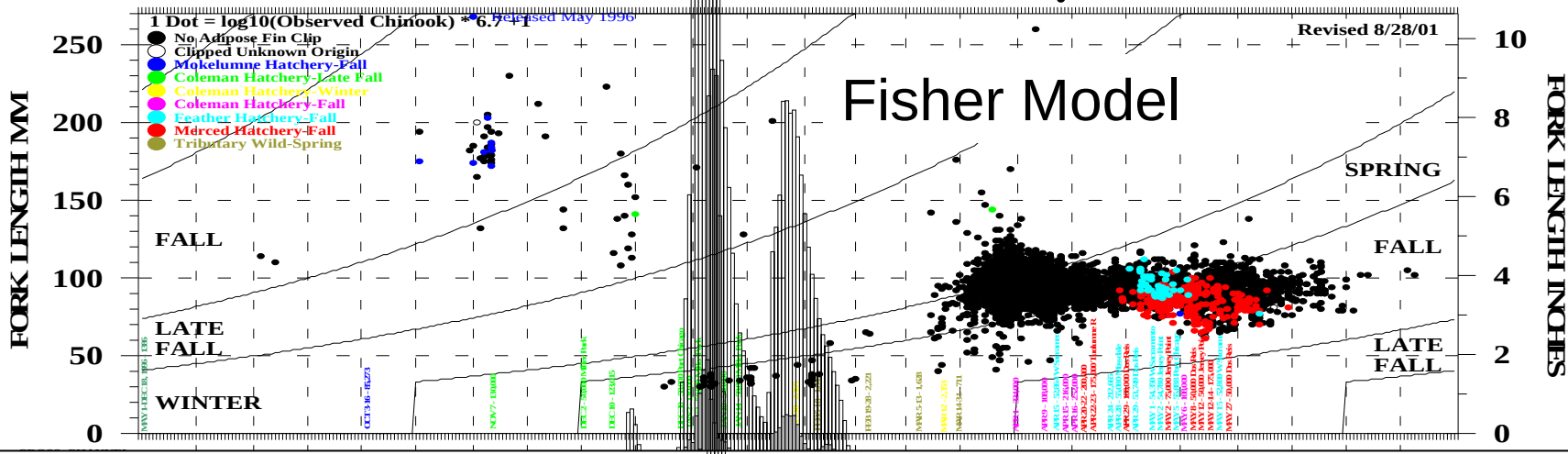


Direct loss (Delta curves)/Chipps Island abundance (Delta curves) versus winter run survival through the Delta (FF curves) 1993-1994 through 2002-2003.

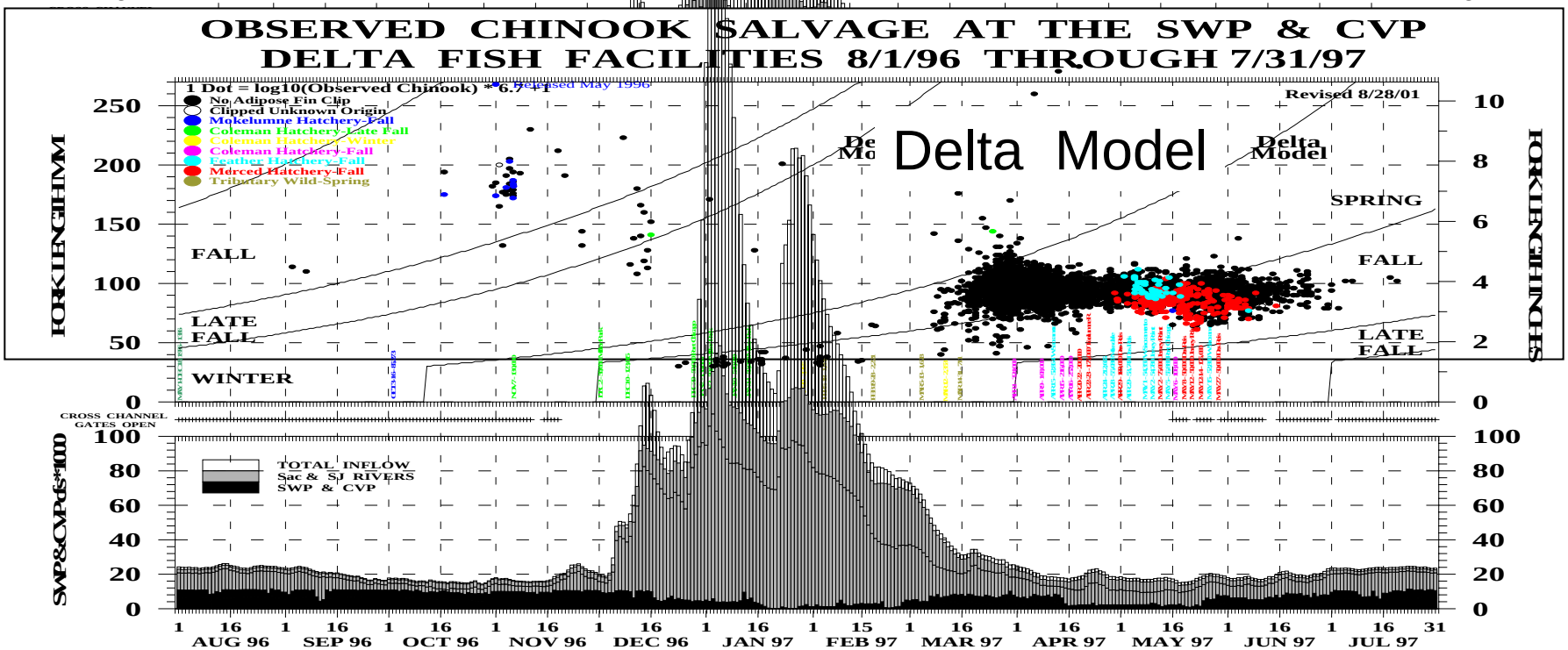


Direct loss using Frank Fisher curves versus direct loss using Delta curves to distinguish winter run sized fish, 1993-1994 through 2001-2002.

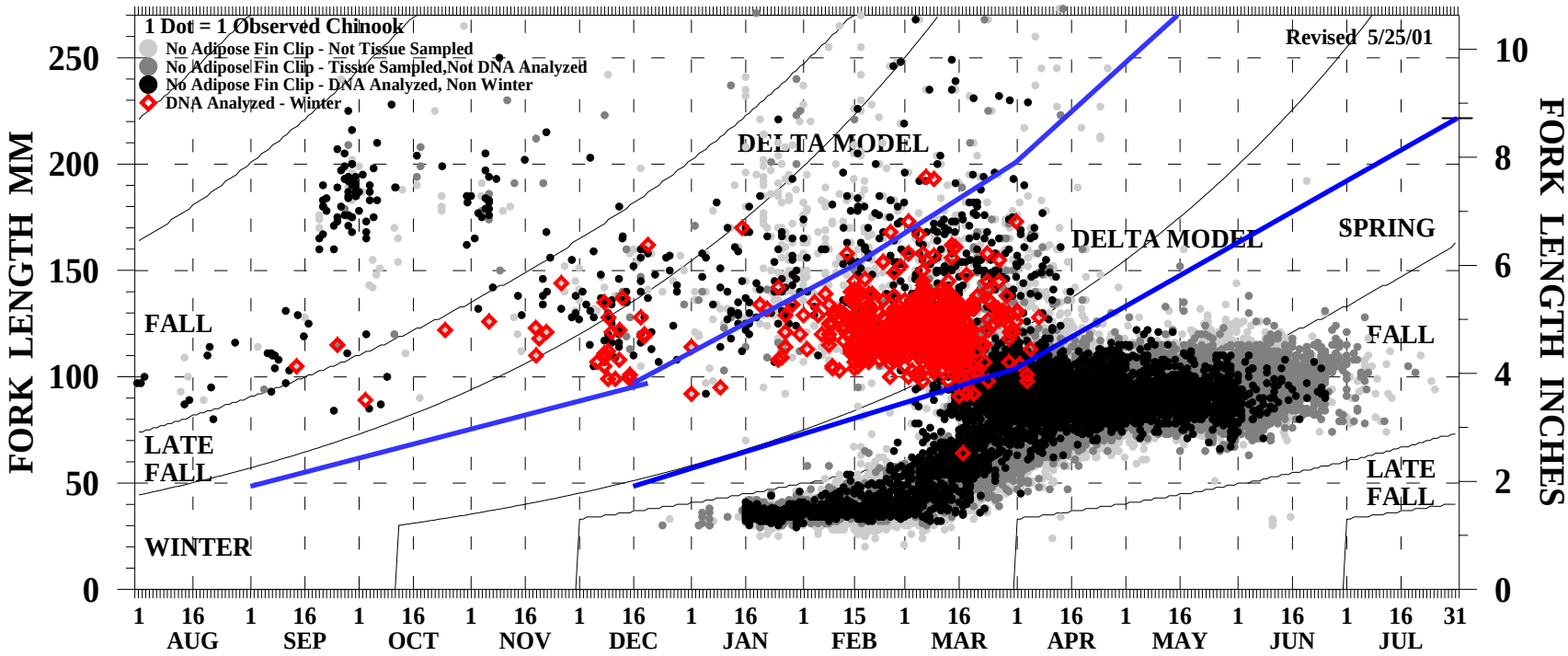
OBSERVED CHINOOK SALVAGE AT THE SWP & CVP DELTA FISH FACILITIES 8/1/96 THROUGH 7/31/97



OBSERVED CHINOOK SALVAGE AT THE SWP & CVP DELTA FISH FACILITIES 8/1/96 THROUGH 7/31/97



OBSERVED CHINOOK SALVAGE AT THE SWP & CVP DELTA FISH FACILITIES 8/1/95 THROUGH 3/19/01



Preliminary, Subject to Revision
Sheila Greene, DWR 10/01/2001

Blue lines = Frank Fisher winter run lines

Does reducing take for winter- run –sized- salmon increase survival through the Delta?

Yes

But..

Using different size criteria adds uncertainty

Use genetics to help sort out which size criteria is most appropriate at each location