Factors Affecting Flows into Sutter and Steamboat Slough

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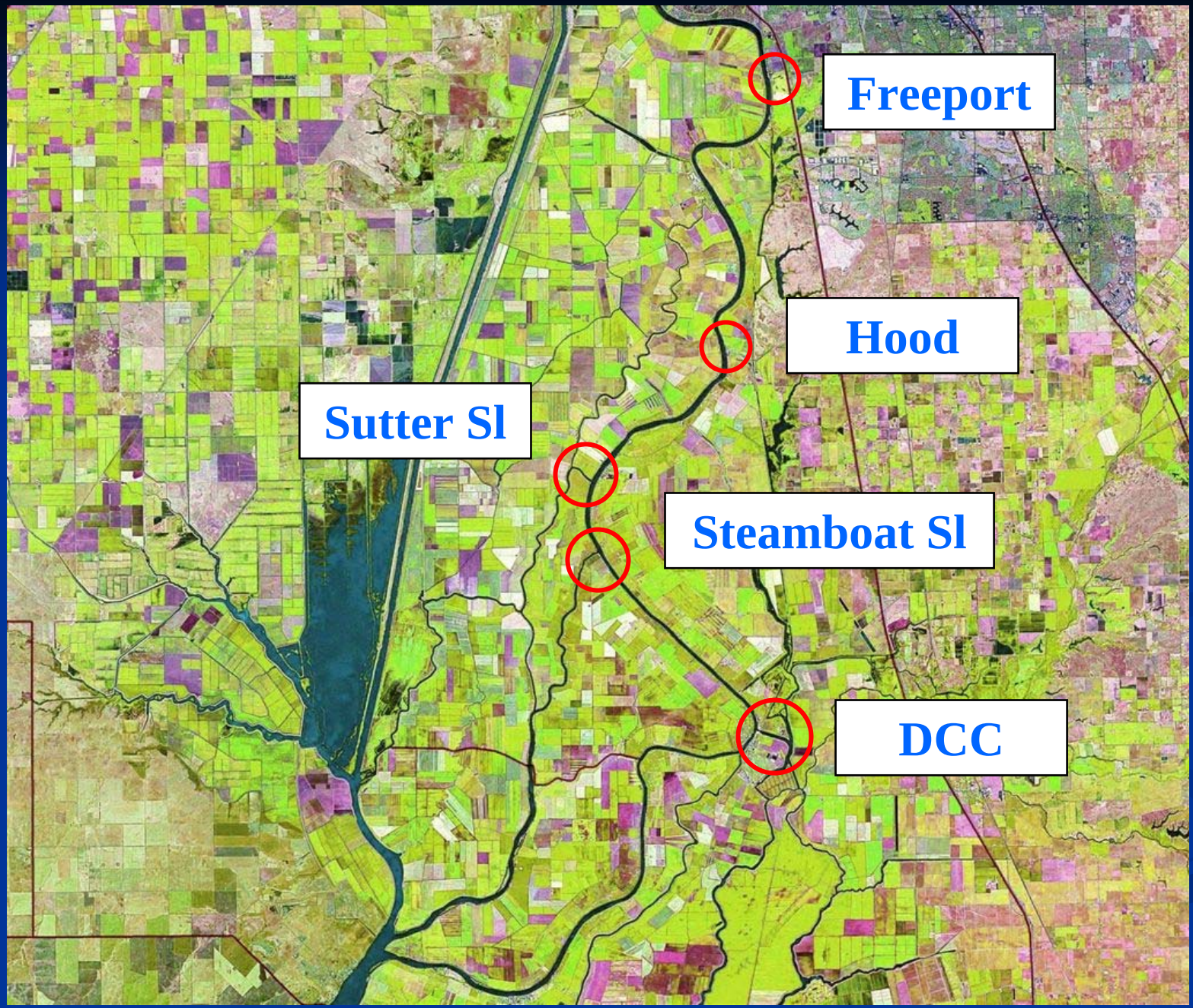
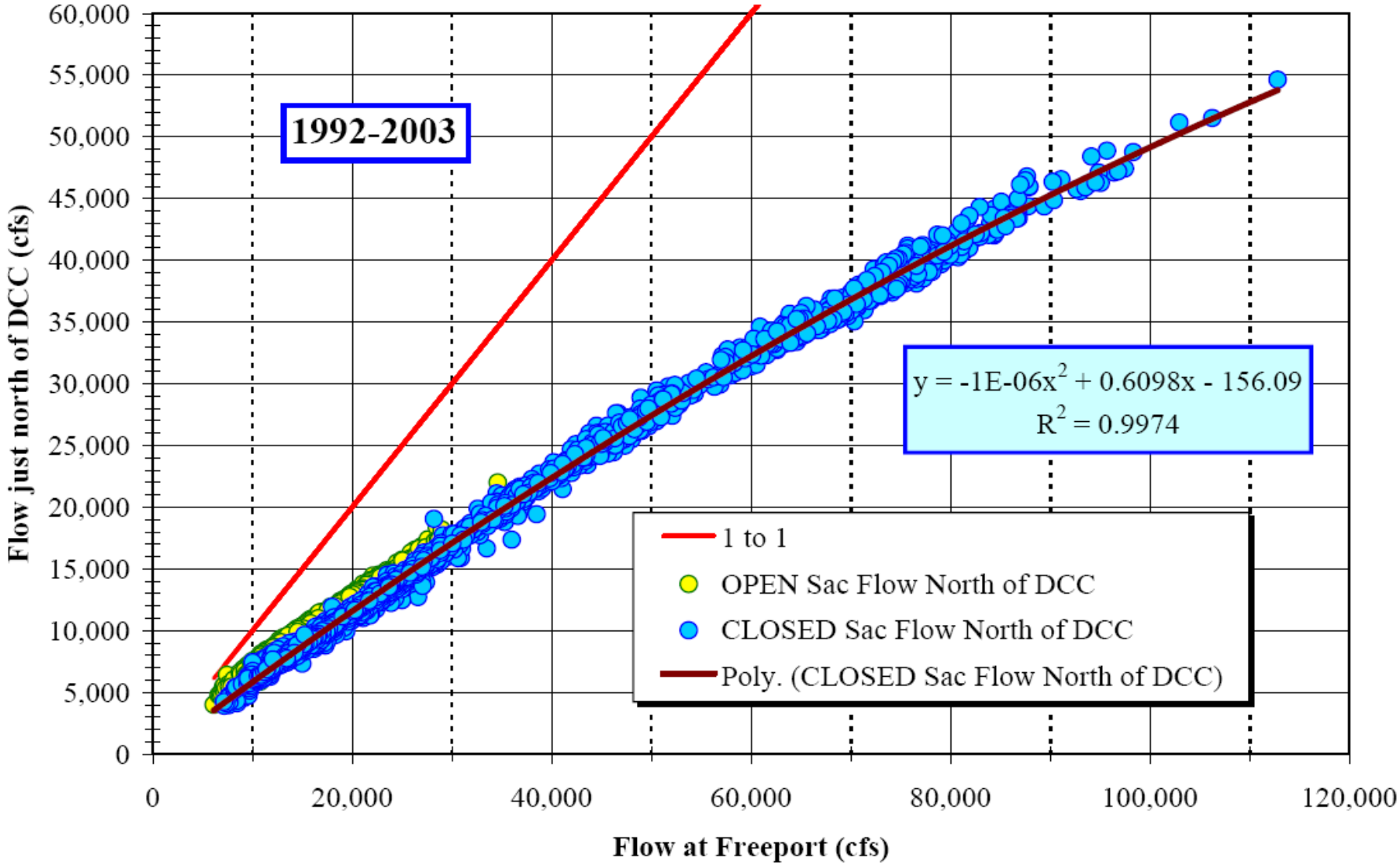

Freeport
Hood
Sutter Sl
Steamboat Sl
DCC

Sutter and Steamboat Slough Flows

- Based on earlier work by Jon Burau (USGS)
- Outmigrating salmon entering Sutter and Steamboat Sloughs
  - Have better access to habitat areas
  - Less likely to stray into central and south Delta
- USGS flow measurements available for Sac River at Freeport, and Sac River north of the DCC – some limited Sutter and Steamboat Slough data
- Flow just north of DCC correlated with, but only 55-70% of, upstream flow at Freeport

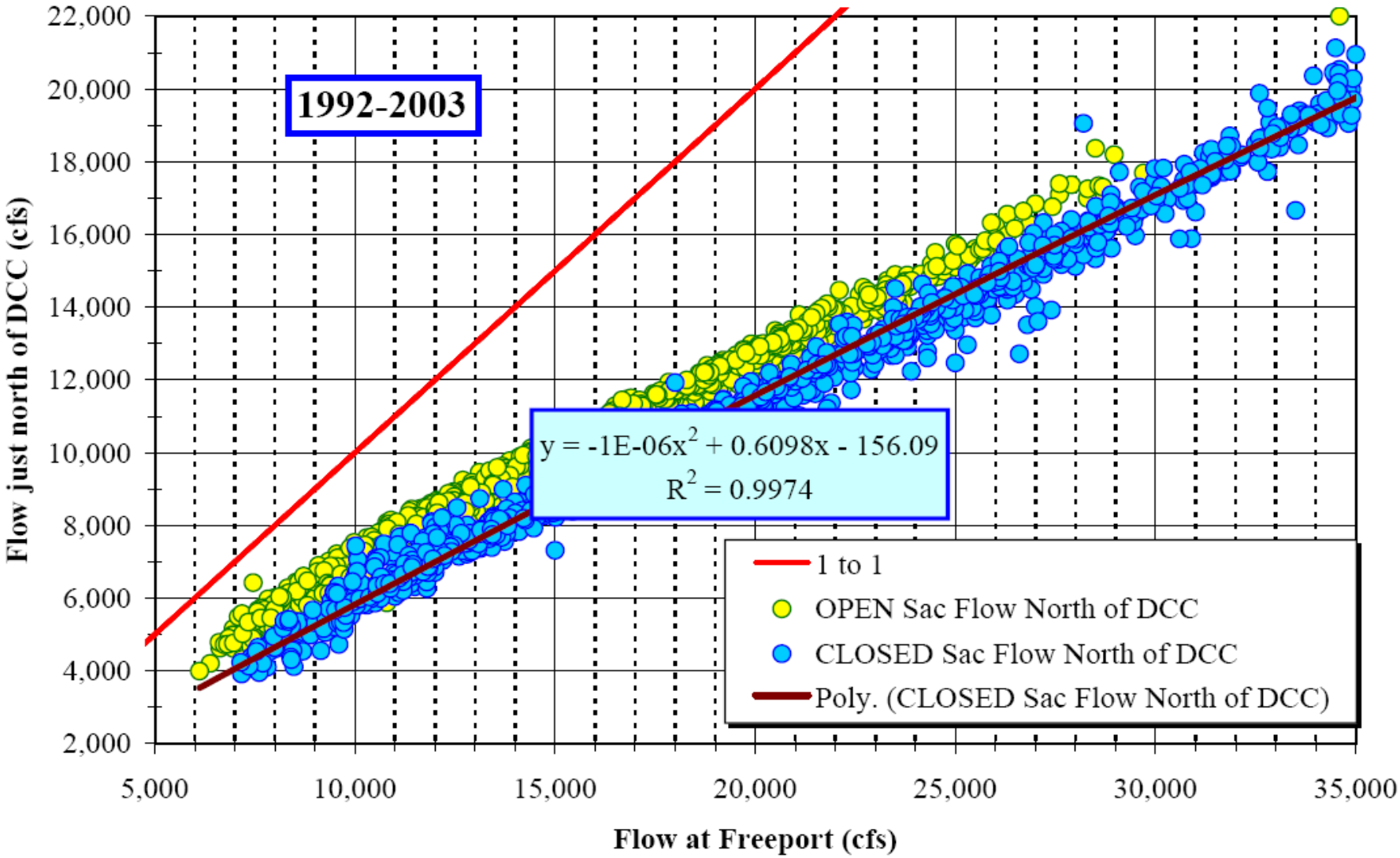
Sacramento River flow - Freeport, Walnut Grove (IEP)



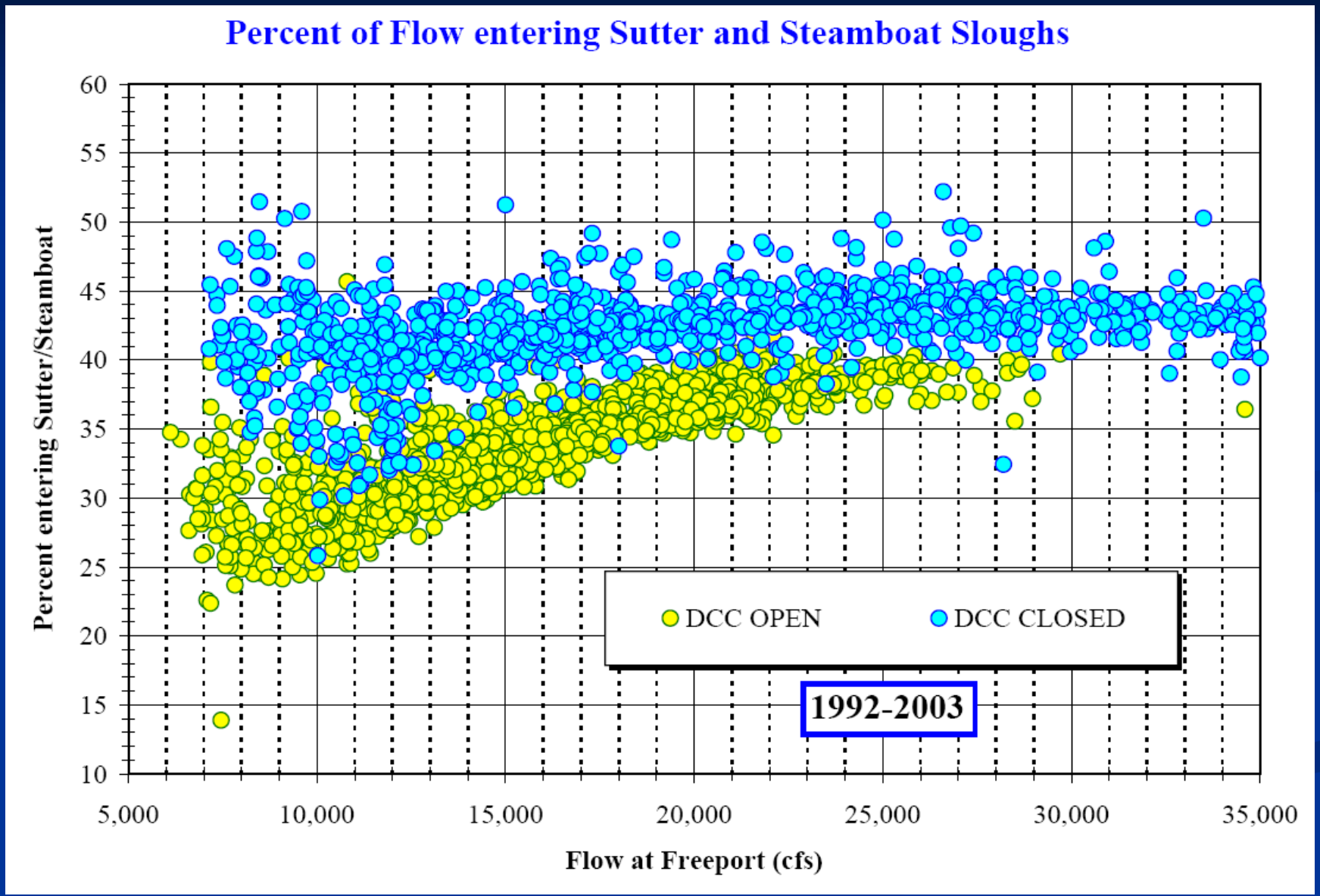
Sutter and Steamboat Slough Flows

- Flow into Sutter and Steamboat highly correlated with upstream flow (Freeport or Hood)
  - i.e., no change in flow between Freeport and Hood
- Jon Burau (USGS) also found closing the Delta Cross Channel increases flows into Sutter and Steamboat

Sacramento River flow - Freeport, Walnut Grove (IEP)



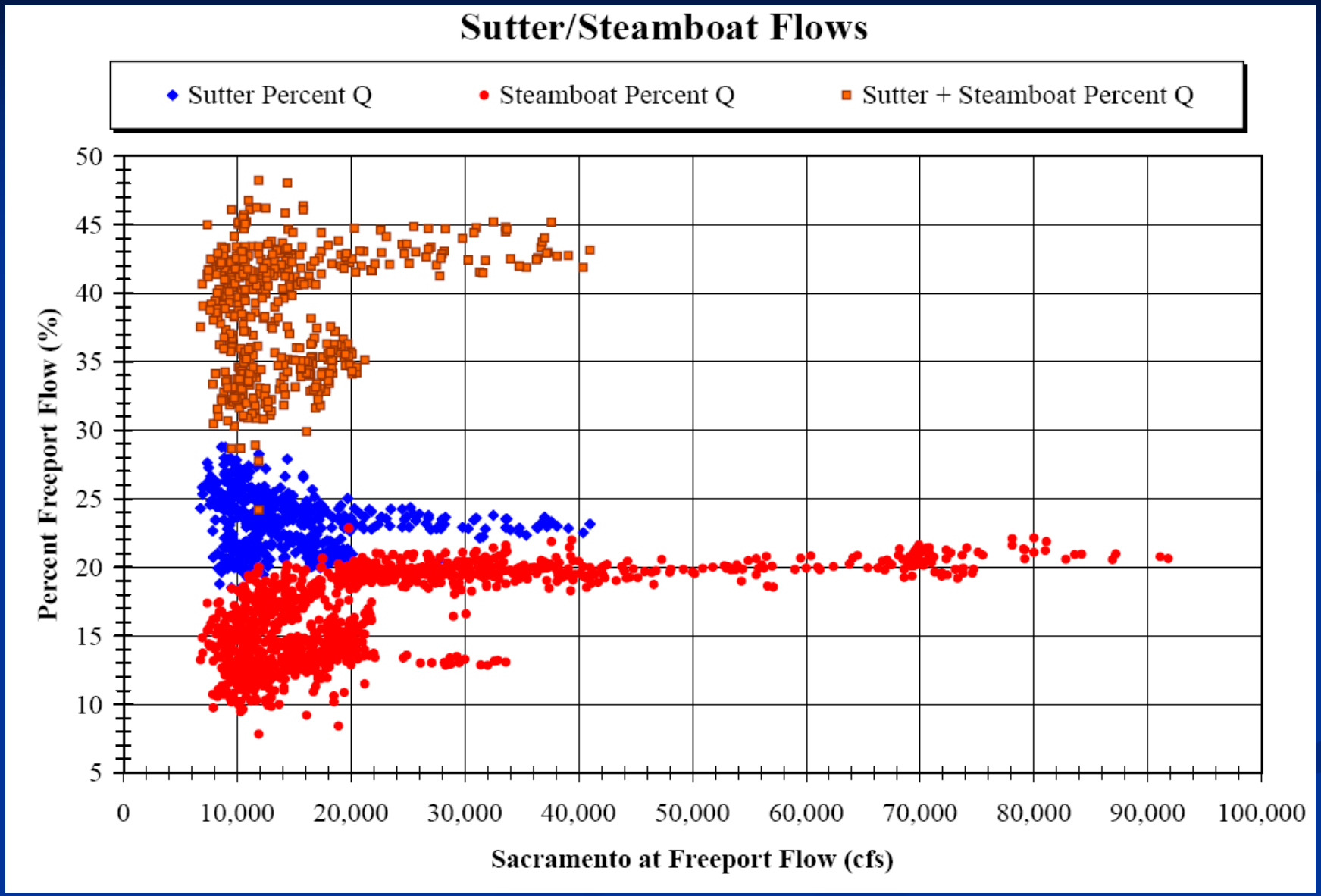
Assuming net loss in flow is the flow entering Sutter and Steamboat



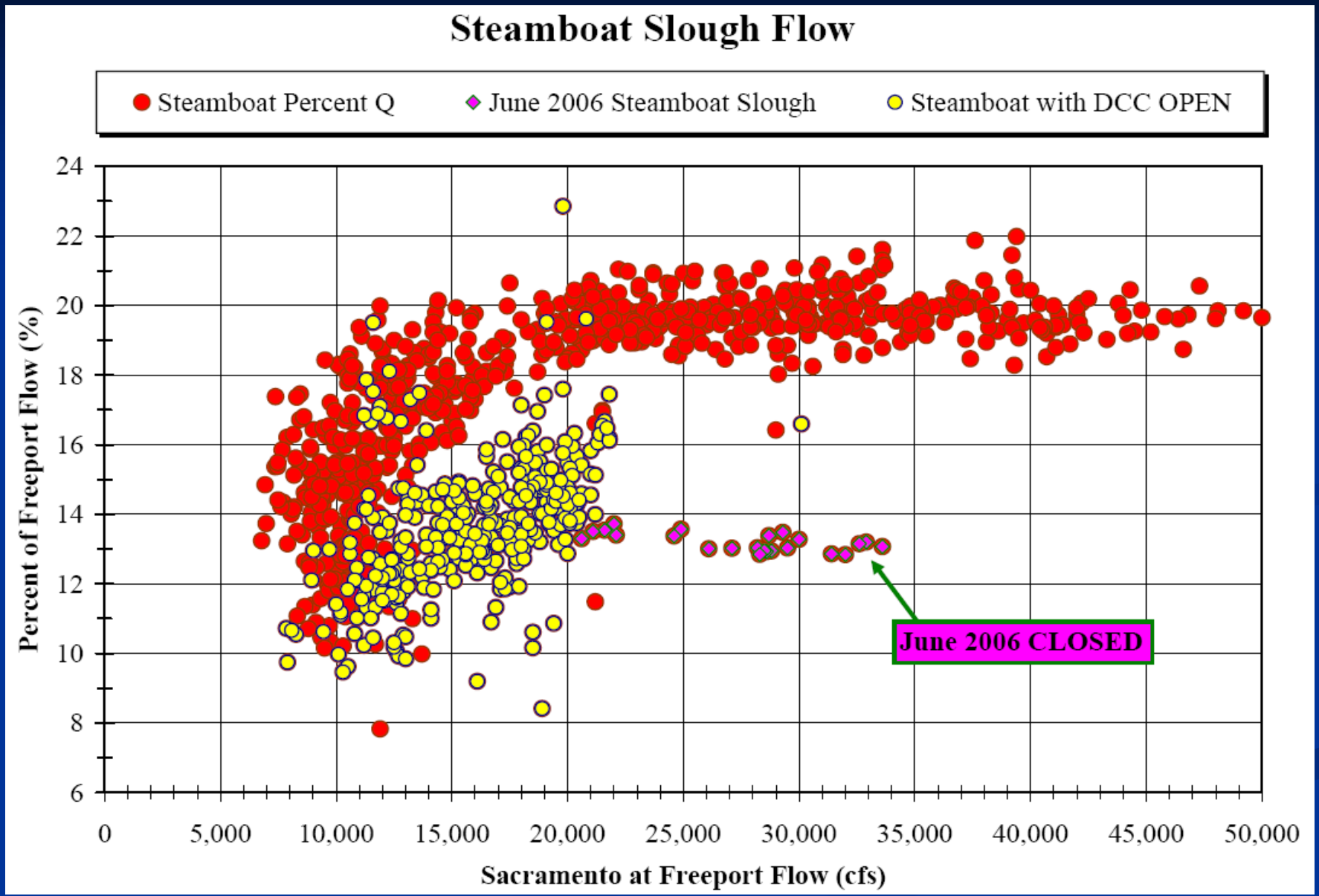
Actual Sutter and Steamboat Slough Flow Measurements

- Some 15-minute USGS data are available in Sutter and Steamboat Sloughs
  - Sutter Slough: Dec 2006 – July 2008
  - Steamboat Slough: Sept 2003 – July 2008

Based on actual USGS measurements in Sutter and Steamboat



Based on actual USGS measurements in Sutter and Steamboat



Conclusions

- When flow below Hood is reduced, percentage of flow entering Sutter and Streamboat Sloughs will also reduce – less chance of survival
- Opening DCC reduces percentage even further
- Reducing flows also increases exposure of outmigrants to predators – reduced survival
- Jon Burau has detailed experimental data on survival
- An intake downstream of Steamboat Slough will avoid many of these fishery impacts – will also reduce length and cost of isolated pipeline