Effects of Exports on Delta Smelt Population Abundance

Preliminary Analyses

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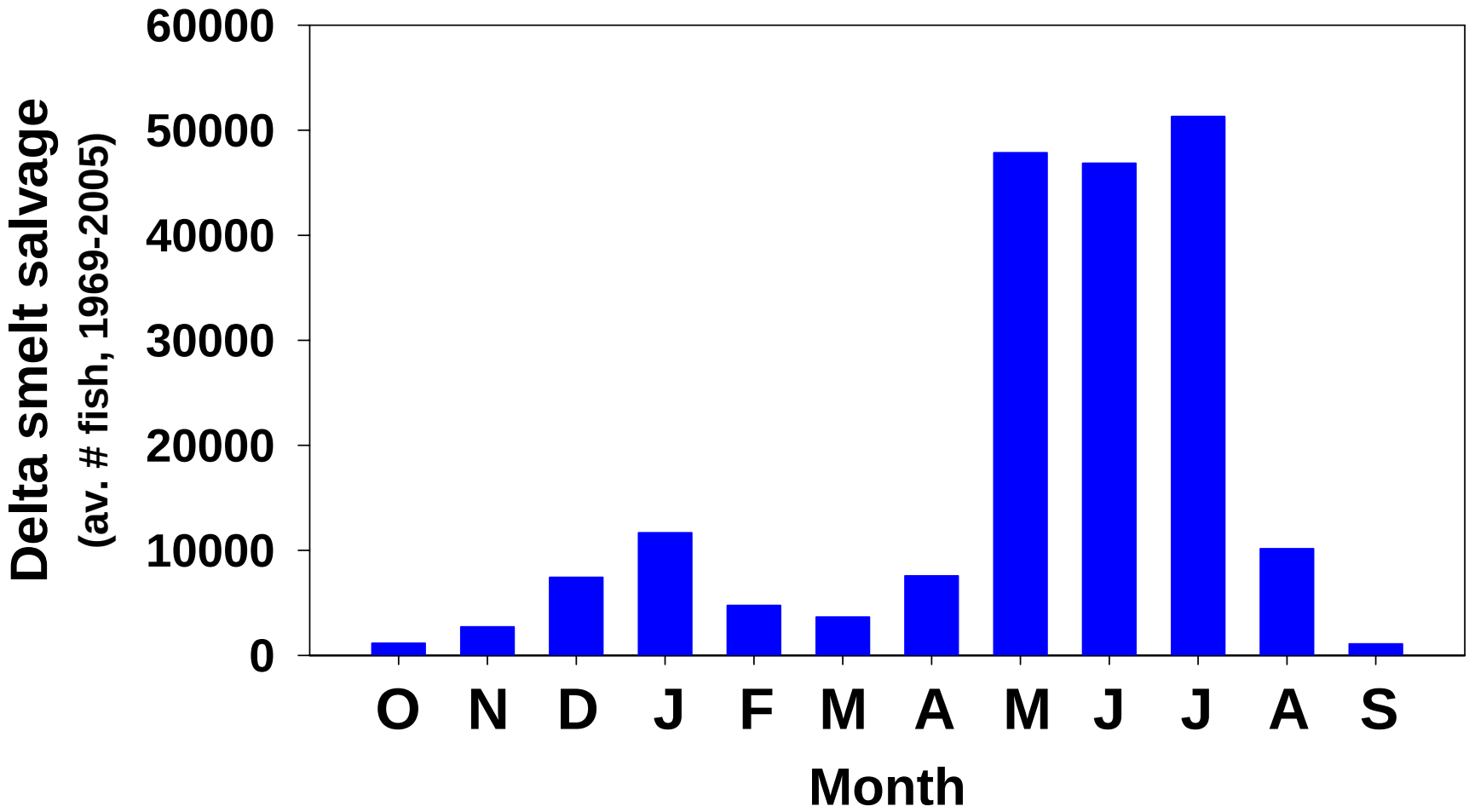
The Bay Institute

November 7-8, 2005

Seasonal salvage of delta smelt

(average number of fish/month; 1969-2005)



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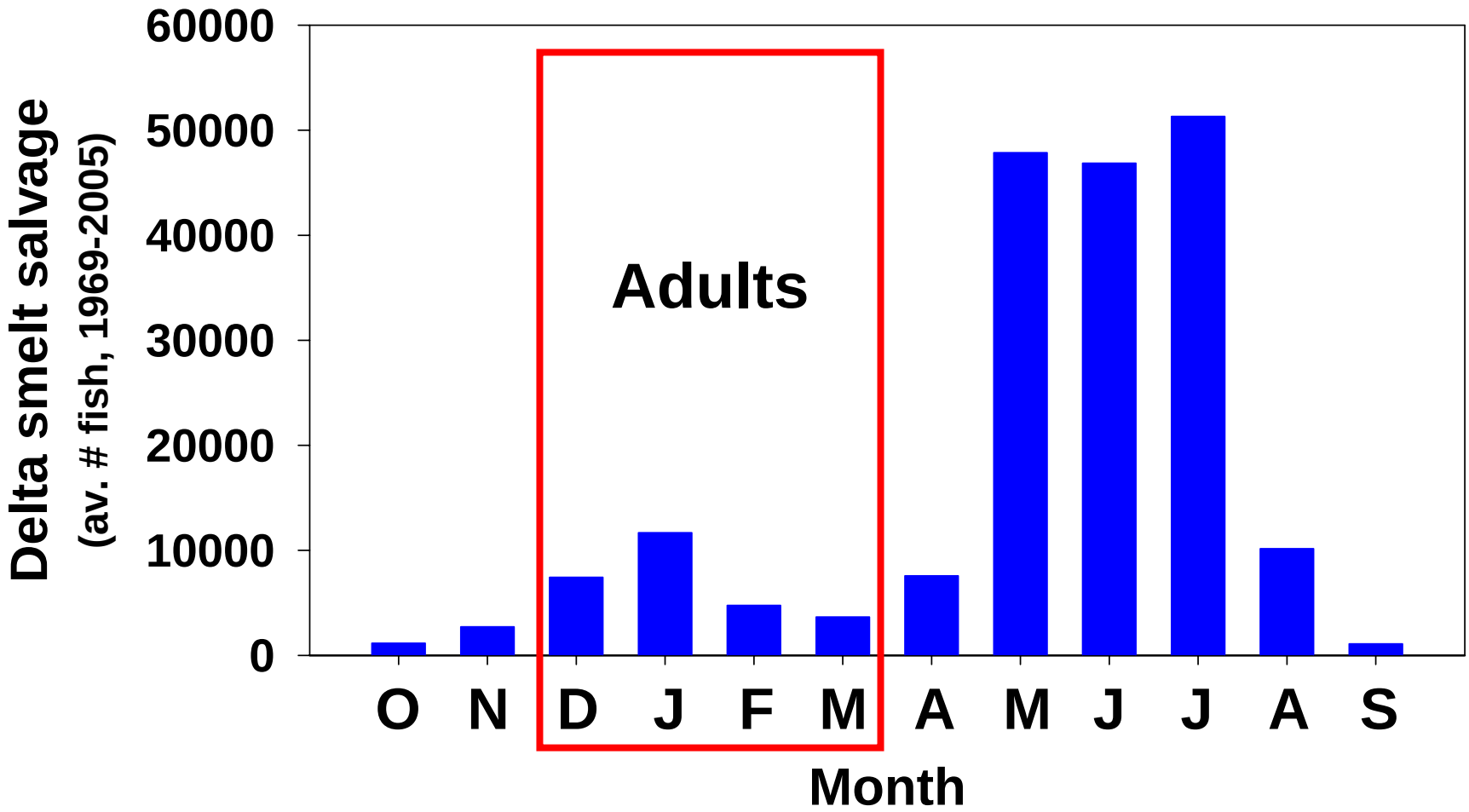

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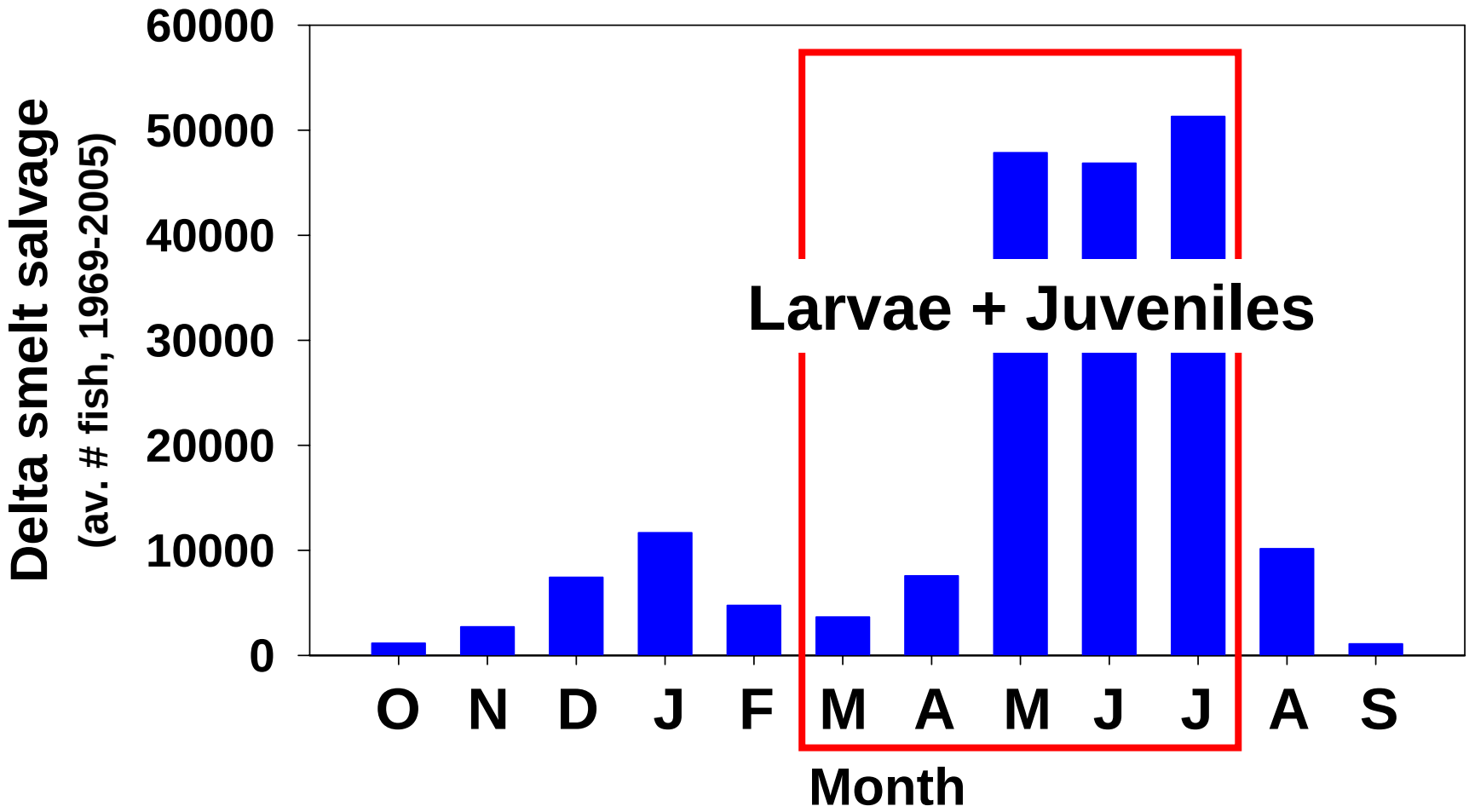
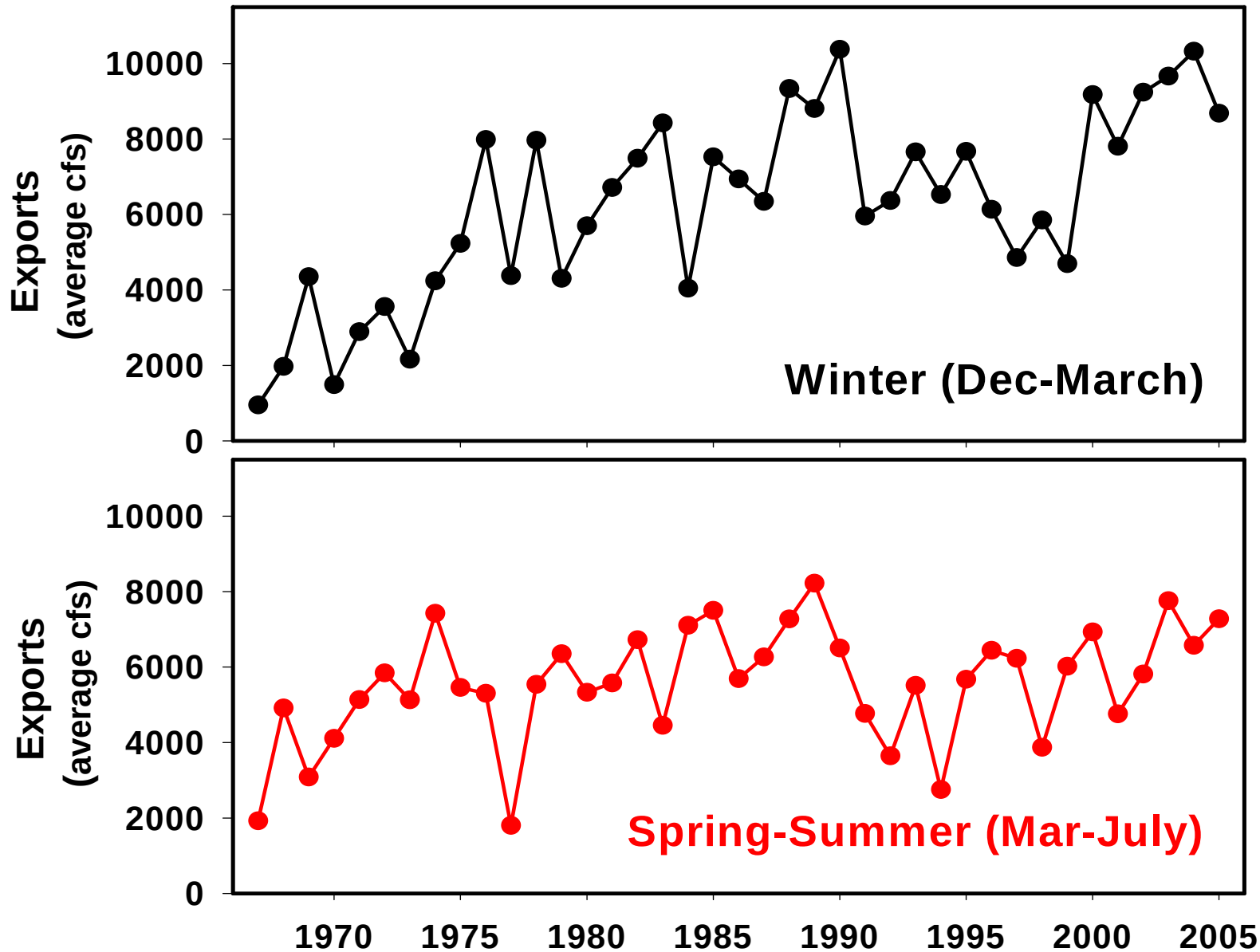
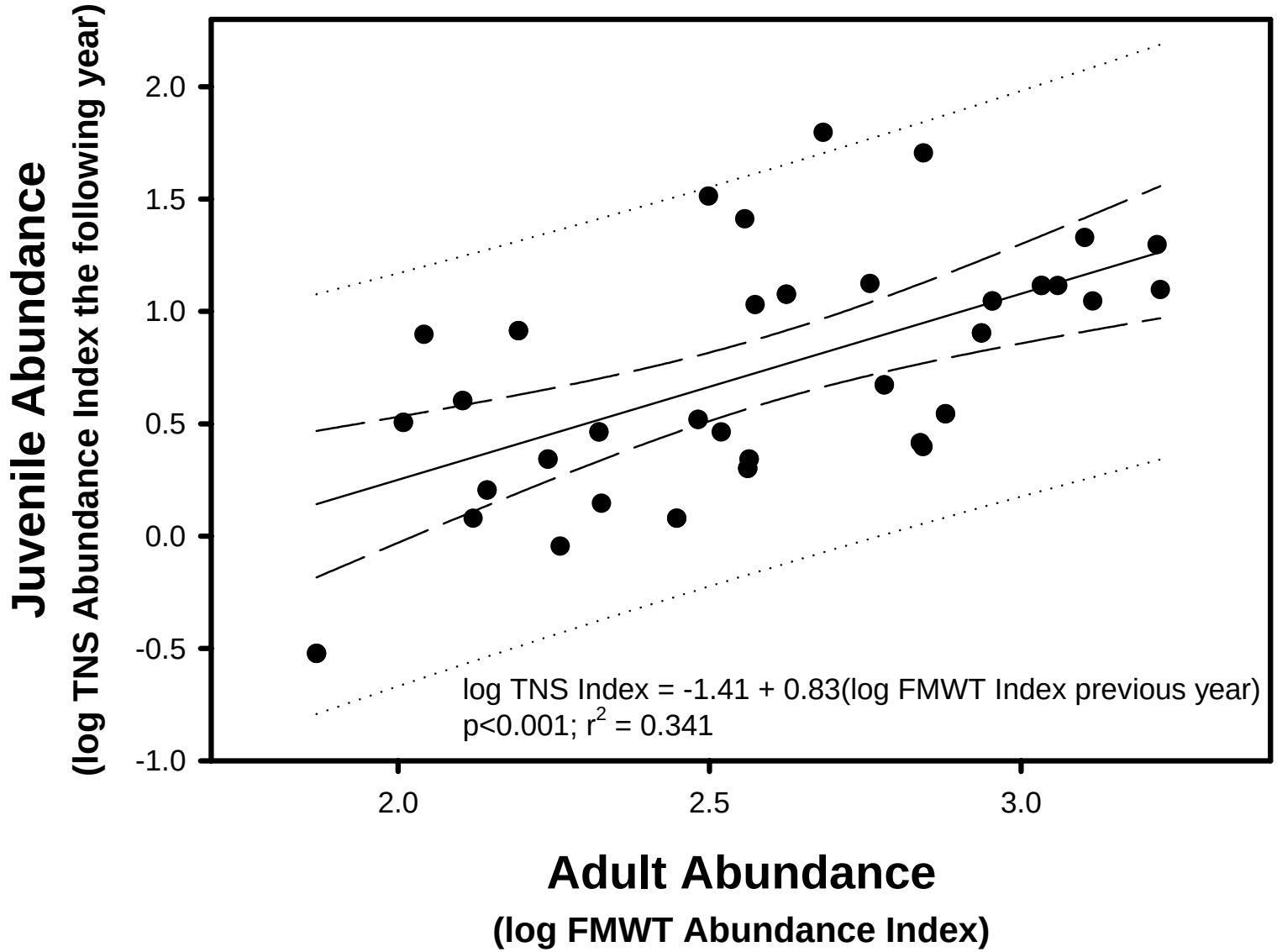


Trends in seasonal exports, 1967-2005



Juvenile abundance is correlated with adult abundance



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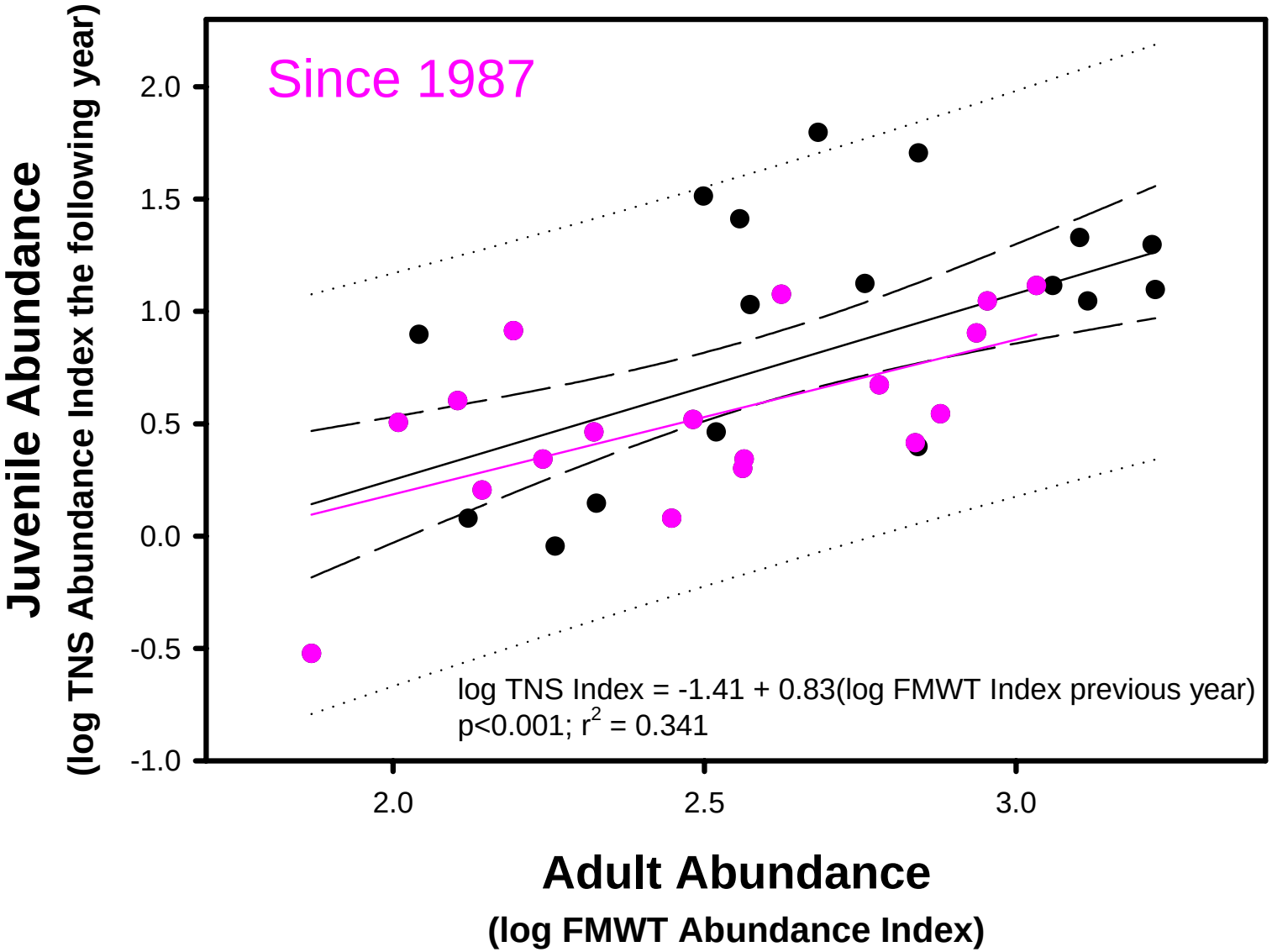
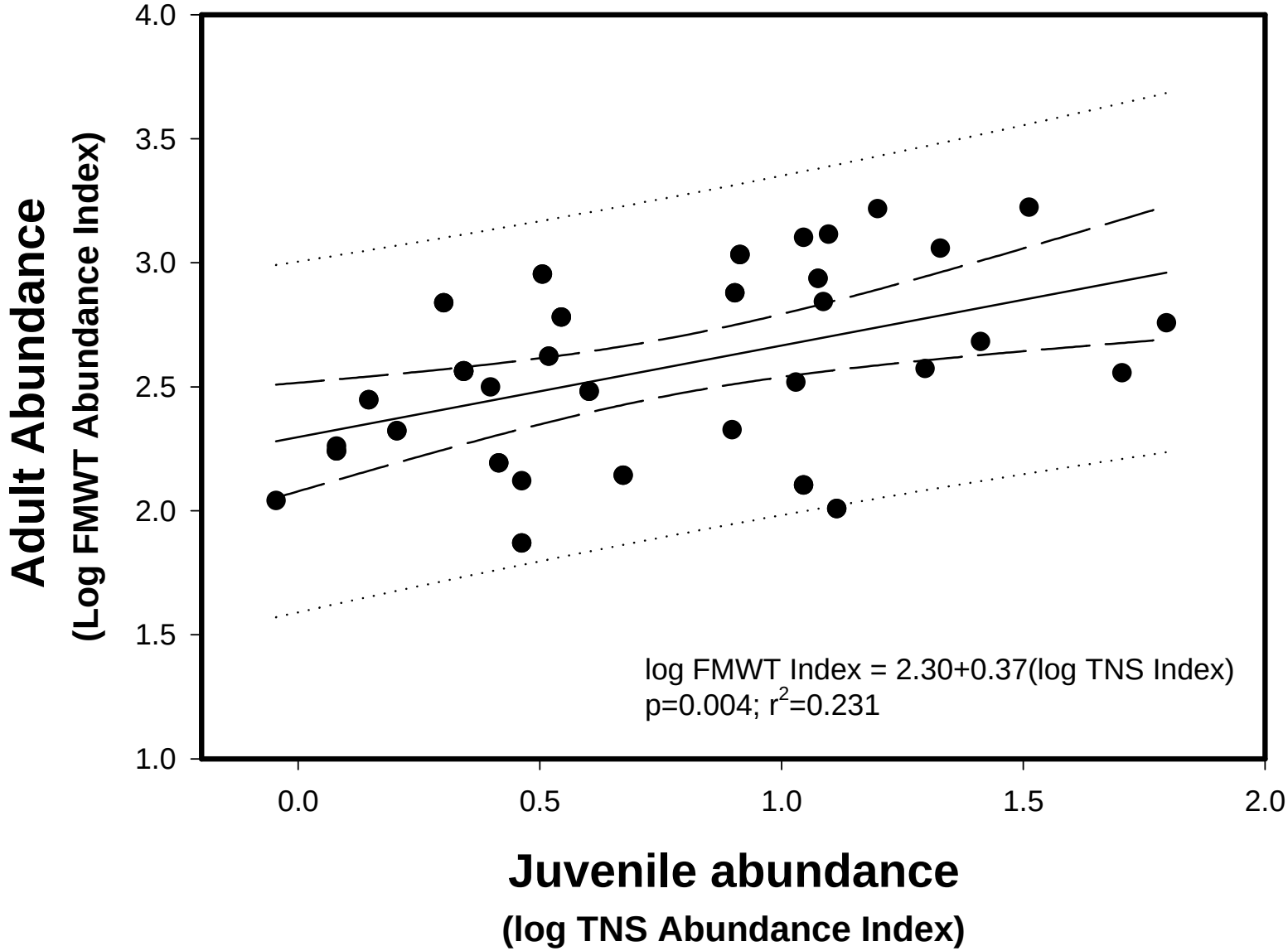


Adult abundance is correlated with juvenile abundance



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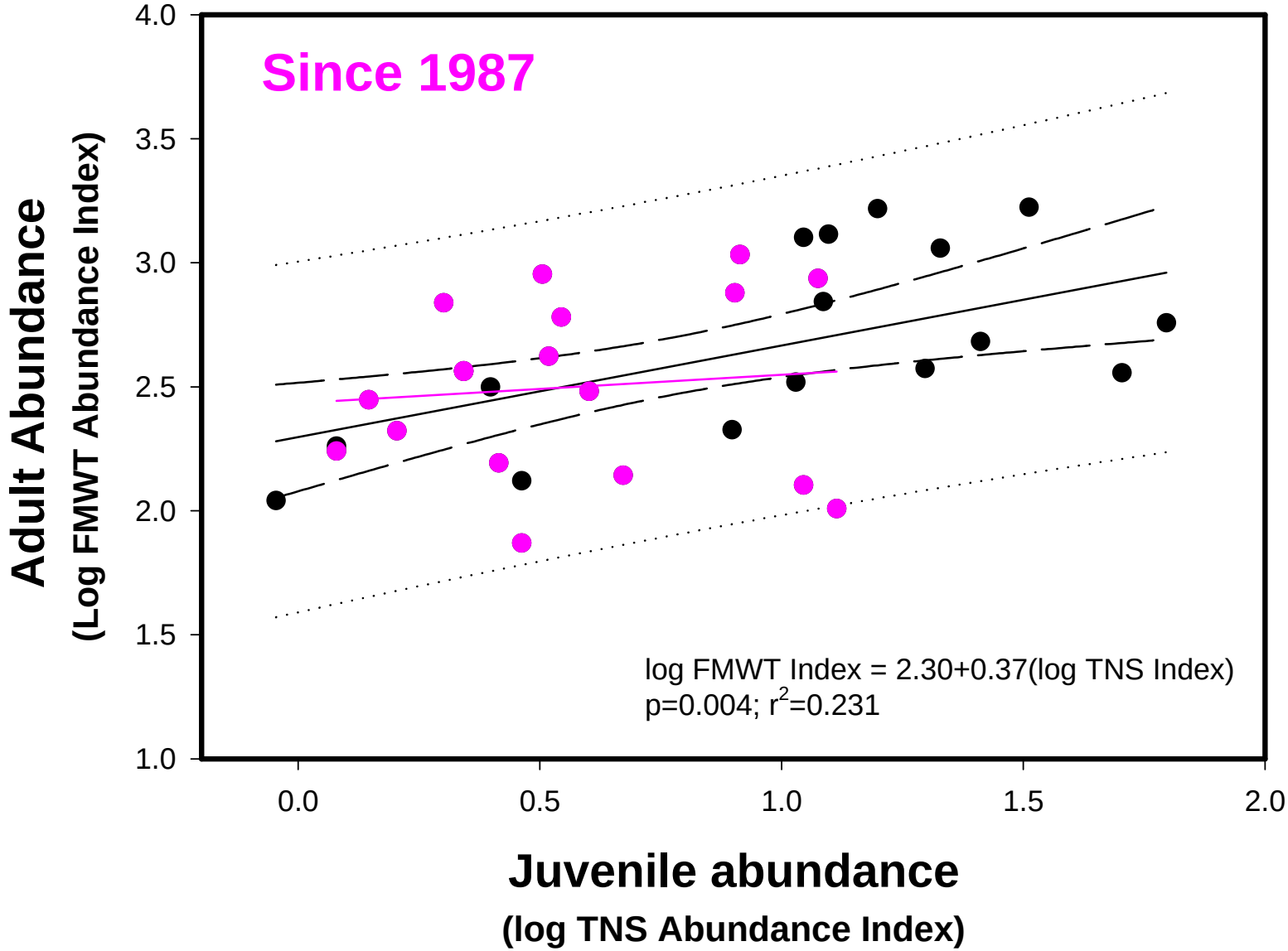
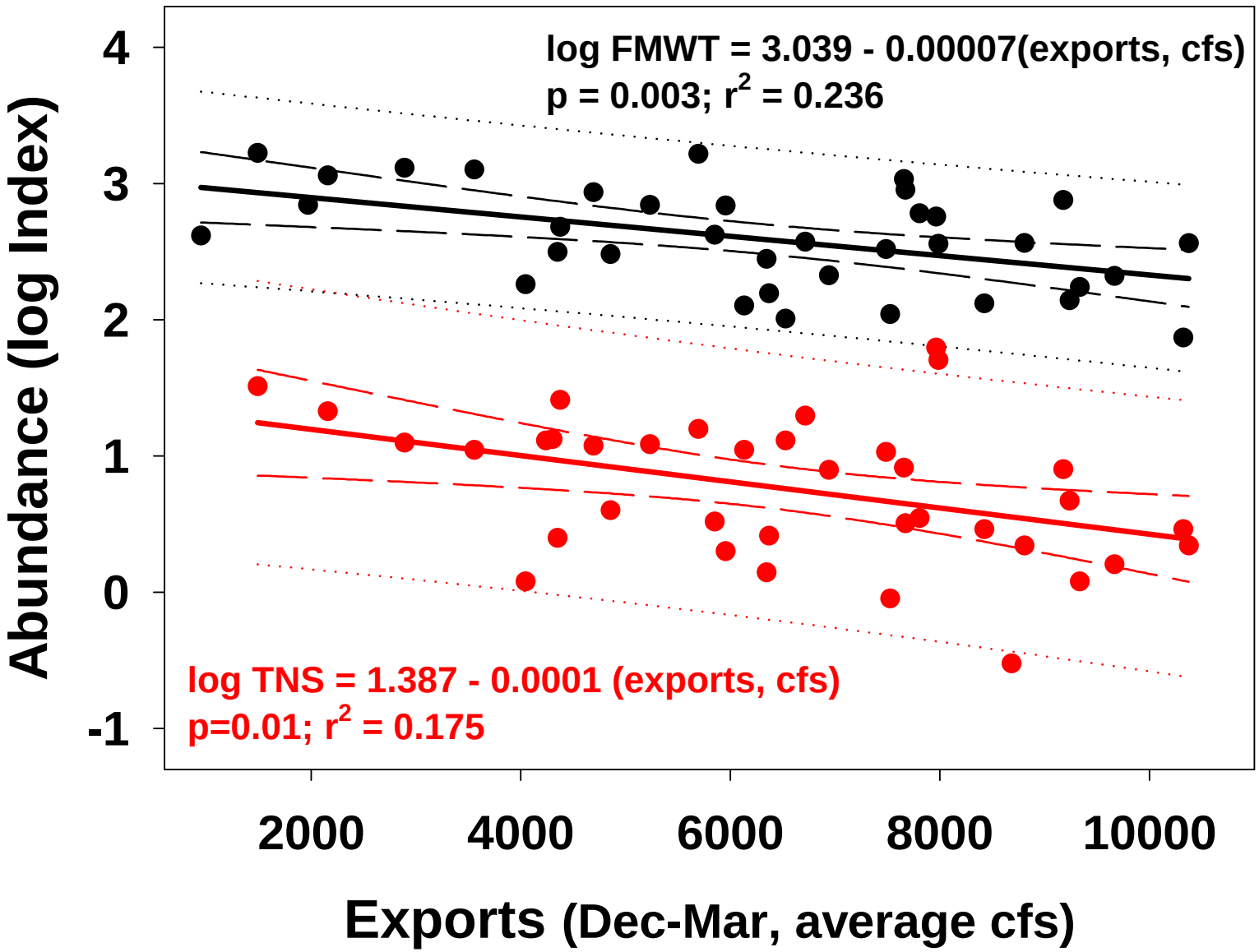


Effects of winter exports on delta smelt abundance



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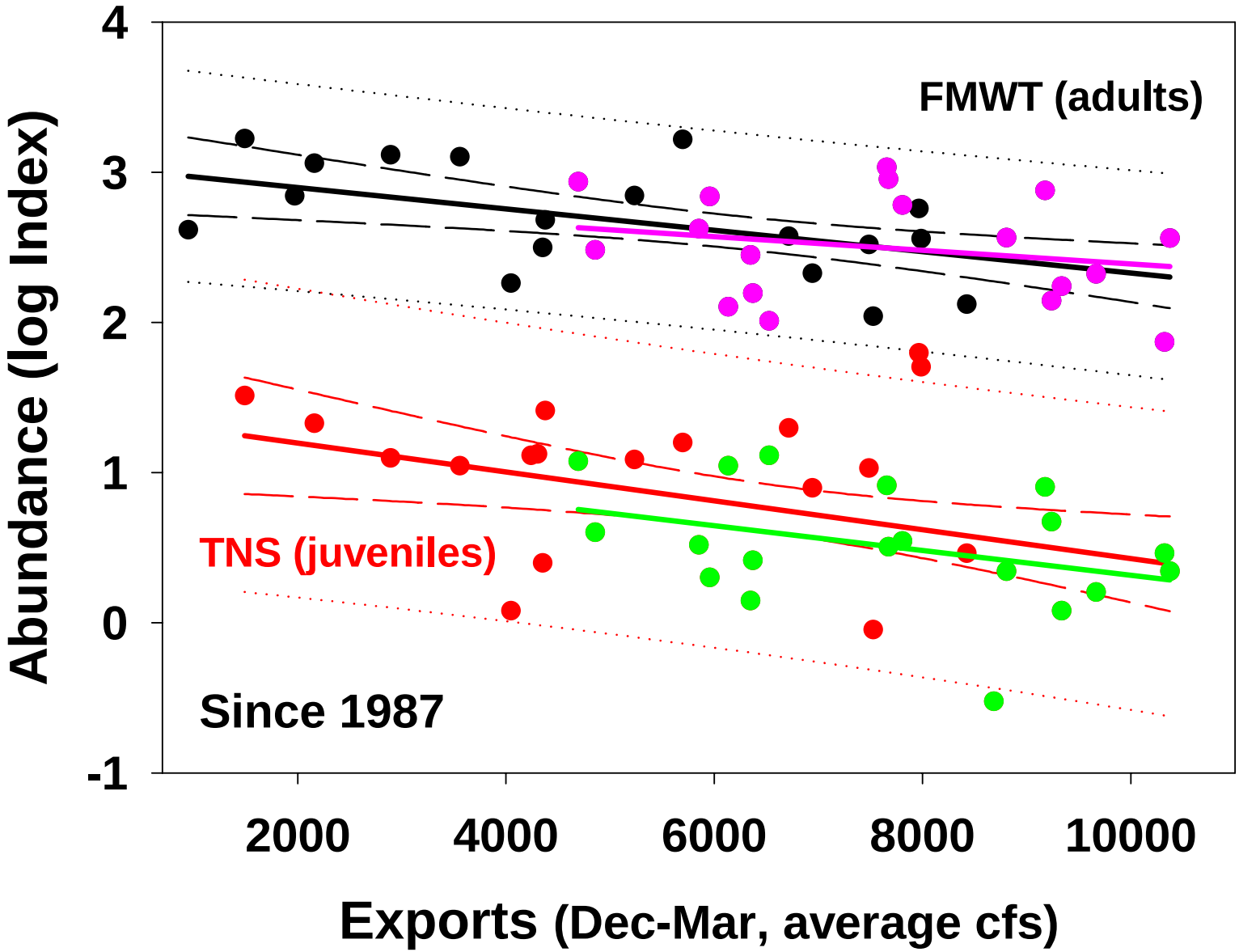

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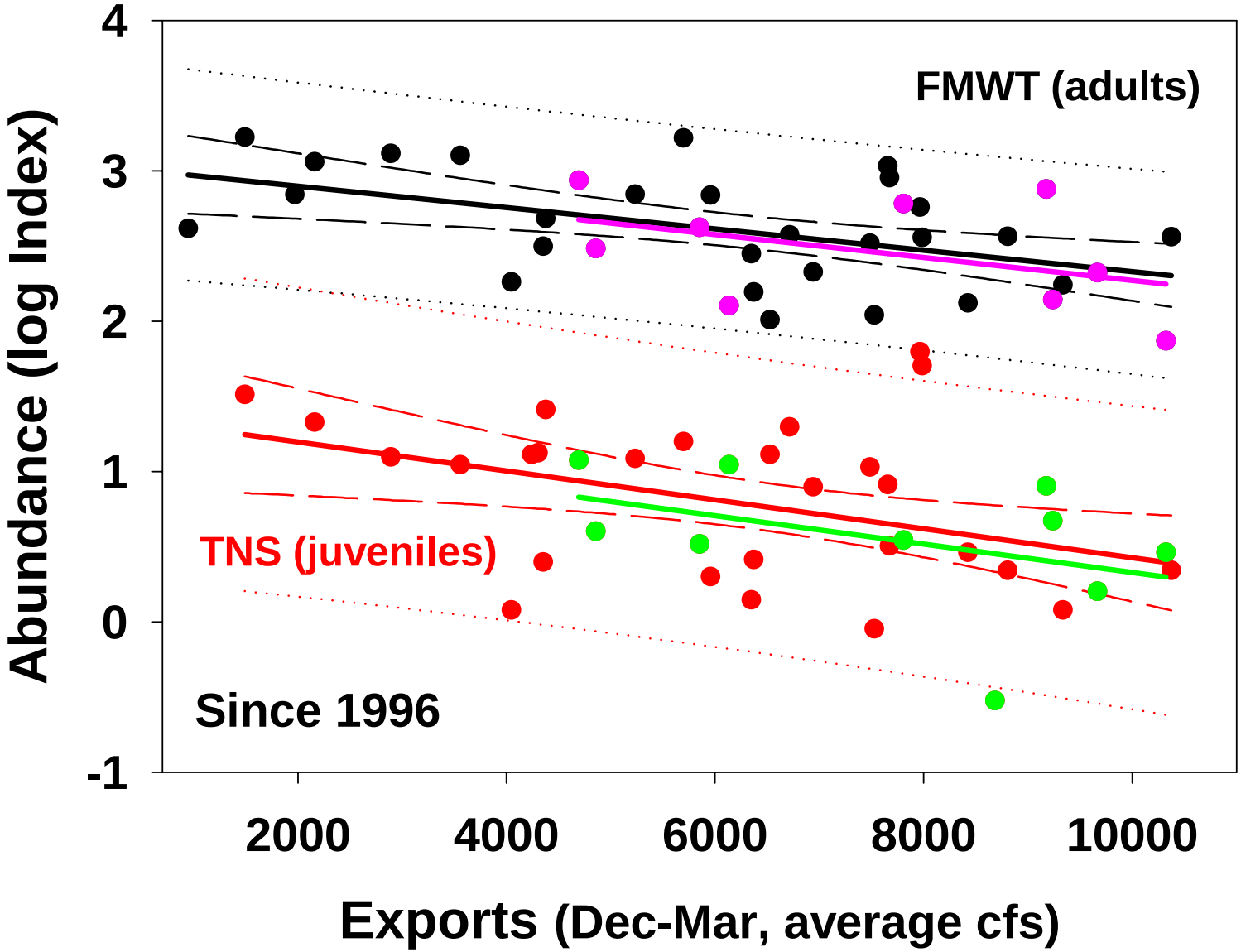

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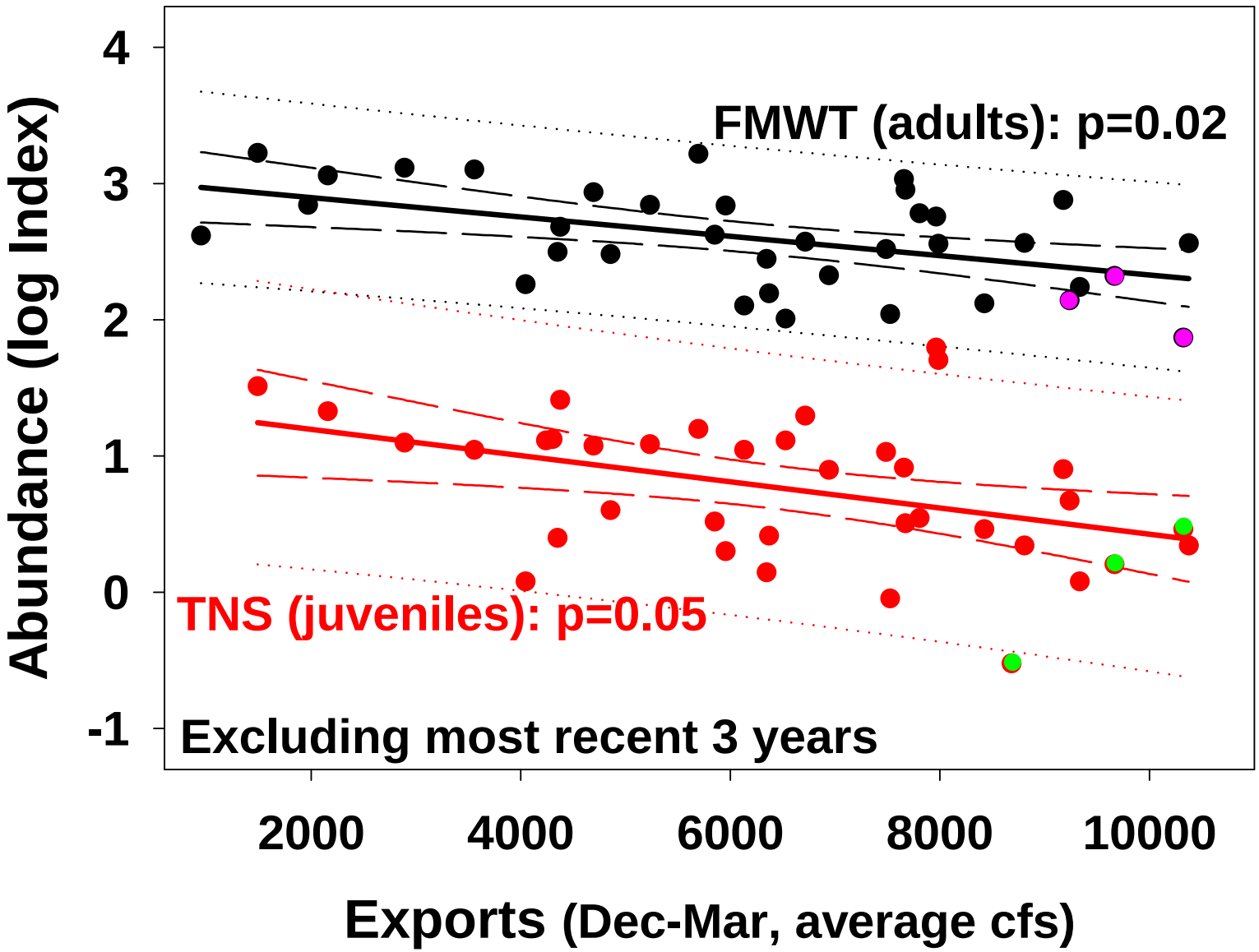


Implications for recovery of delta smelt

Dec-March Exports>8000 cfs: 1983, 1988, 1989, 1990, 2000, 2002, 2003, 2004 (and 2005)

Average FMWT: 292 (does not include 2005)

Median FMWT: 210 (does not include 2005)

Recovery Index = 239, usually <50% of FMWT Index

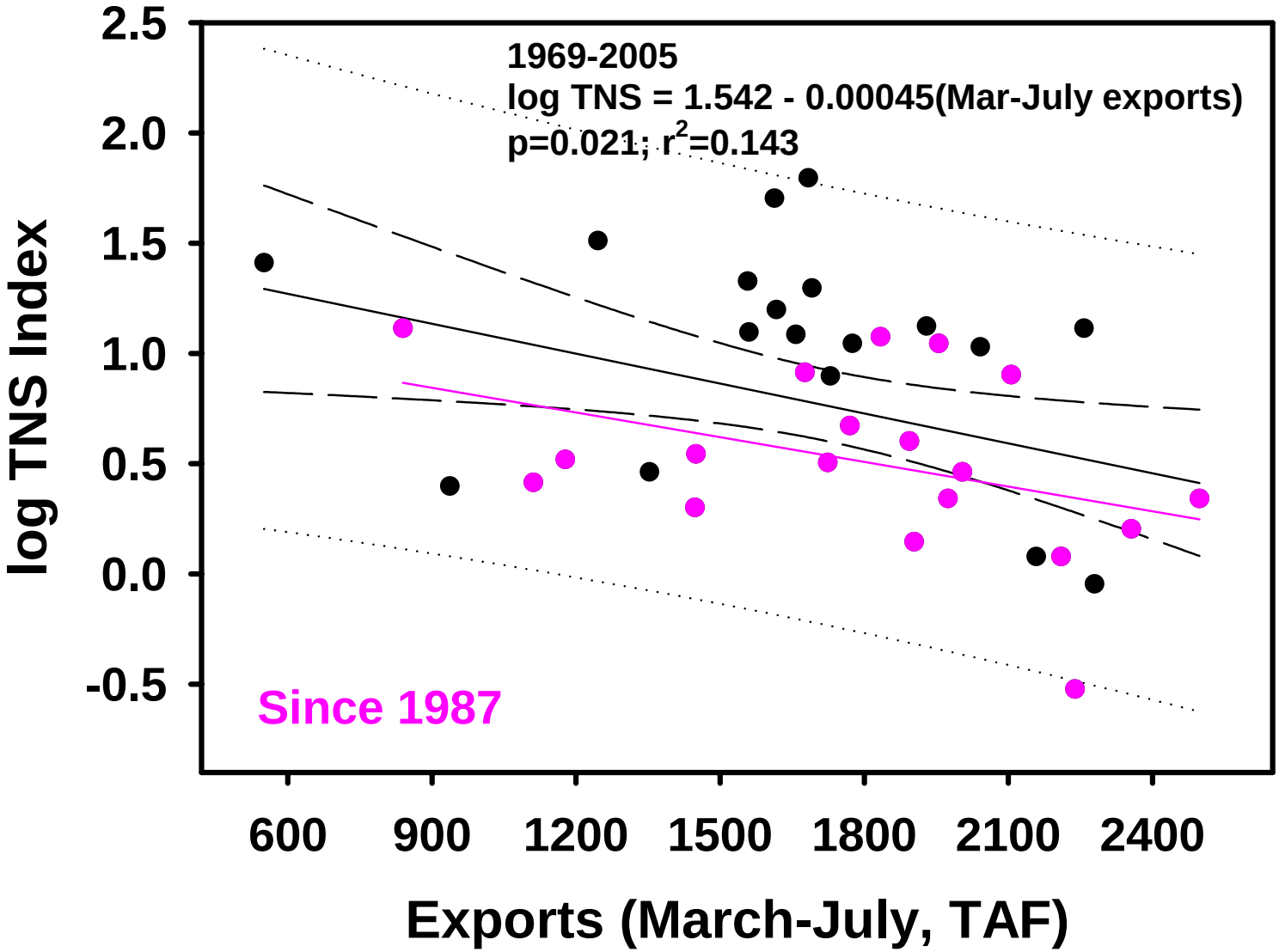
For a predicted average FMWT Index = 500, winter exports = ~4000-7000 cfs

For comparison:

Average winter exports, 1995-1999: 5850 cfs

Average winter exports, 2000-2005: 9150 cfs

Effects of spring-summer exports on abundance of juvenile delta smelt



Closing Thoughts

- These analyses are incomplete;
- Many other variables should be tested;
- Identify the mechanism(s) for effect of exports on delta smelt abundance

But they have implications for:

- Delta smelt protection and recovery;
- Evaluation of the effects of present and future water management operations on delta smelt; and
- Use and utility of the EWA