Water Quality in San Francisco Bay: 2009

J.A. Davis, L.J. McKee, M.D. Sedlak, S. Klosterhaus, D. Yee, K. Taberski, T. Mumley, R. Looker, B. Baginska, I. Werner, S.N. Luoma, C.L. Brown, A.R. Flegal, A. Cohen 2009 RMP Annual Meeting Bay Sediments: Past a Tipping Point

Regional Monitoring Program for Water Quality in the San Francisco Estuary

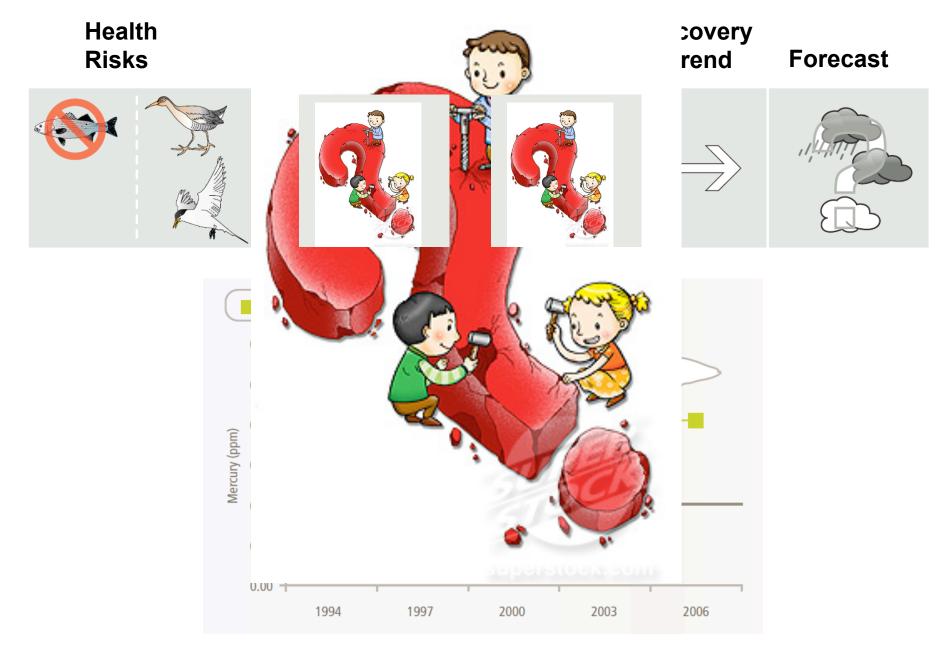
Table 4 Water Quality in San Francisco Bay: The Biggest Water Quality Problems						
Pollutant	Status	Health Risks Humans Wildlife	Important Pathways	Spatial Pattern	Recovery Trend	Likely Status in 20 Years
Total Mercury					A	
Methylmercury						
PCBs					A	
Dioxins				\mathbf{P}		
Exotic Species		Major impacts on virtually all types of invertebrates and some fish; possible impacts on some birds. So far only minor human health problems.	Ship ballast water Ship and boat hull fouling Bait imports and transfers	Except near the mouth of the Bay, common and dominant on hard and soft substrates and common in the water column.	2	

POP Chart, 2009

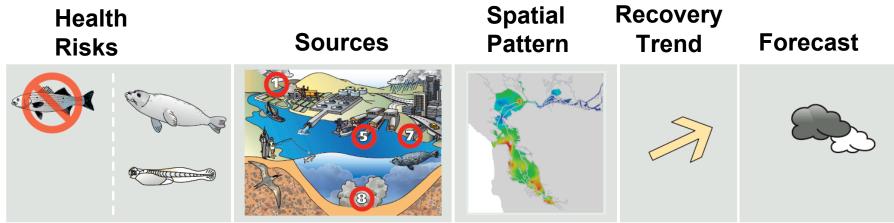
Biggest Problems	Total/Methylmercury		
	PCBs		
	Dioxins		
	Exotic Species		
Other Threats	Selenium		
	Sediment Toxicity		
	Trash NEW		
	PAHs		
	Legacy Pesticides		
Rising Concerns	PBDEs		
(FOR)	Pyrethroids 🔶 🔶		
	PFCs New		
	Pollutant Mixtures		
Just Below Thresholds	Copper		
	Nickel 🔶		
Problems Solved*	Nutrients 🔶 🔶		
	Organic Waste		
	Silver		

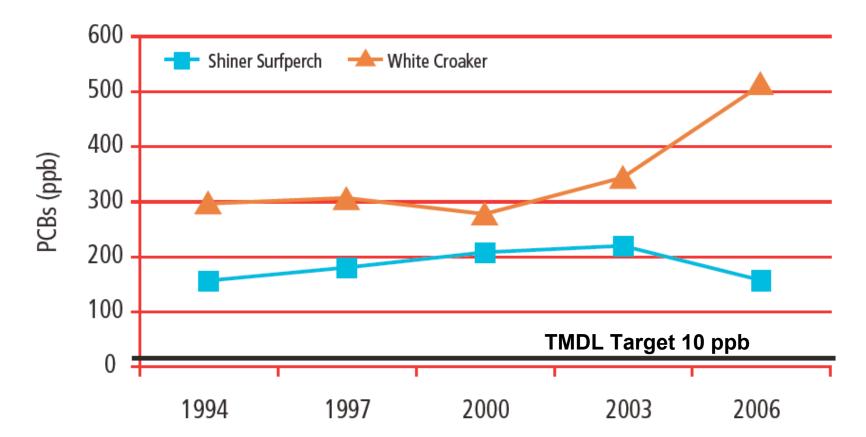
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Biggest Problems: Methylmercury



Biggest Problems: PCBs

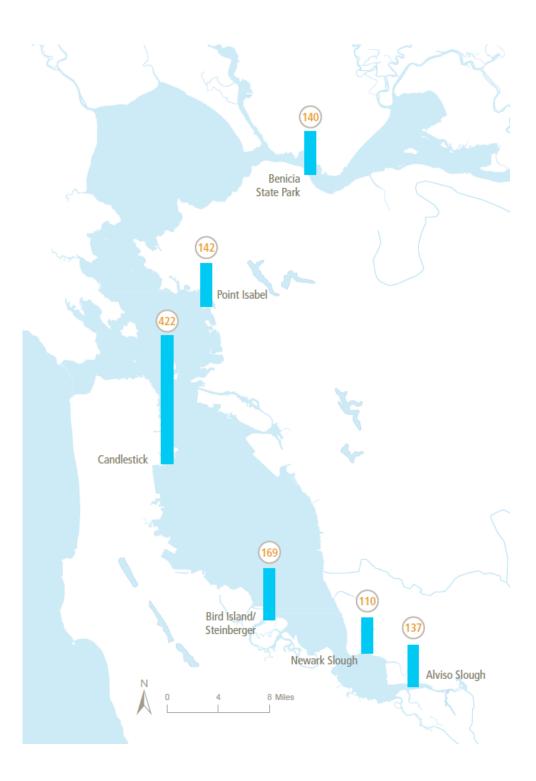




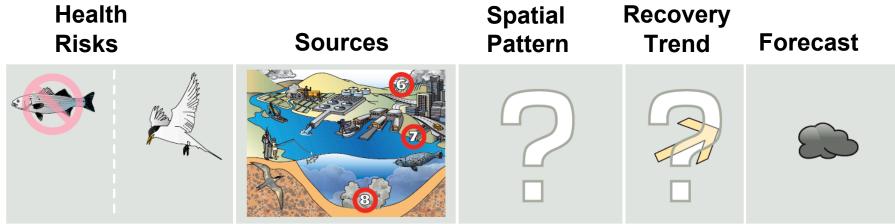
PCBs

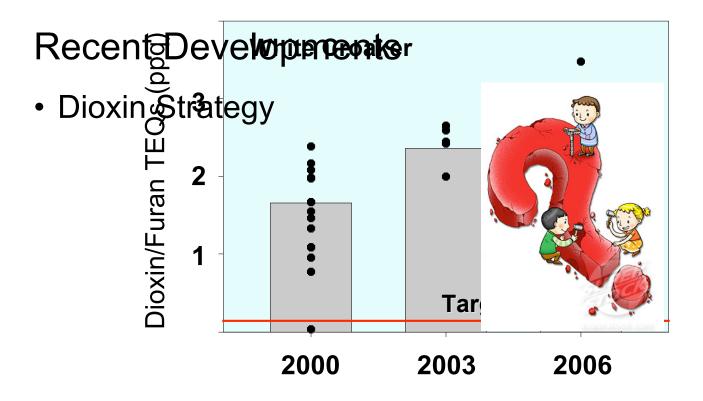
Recent Developments

- Small fish, big concentrations
- A "new" PCB?!
- PCB Strategy



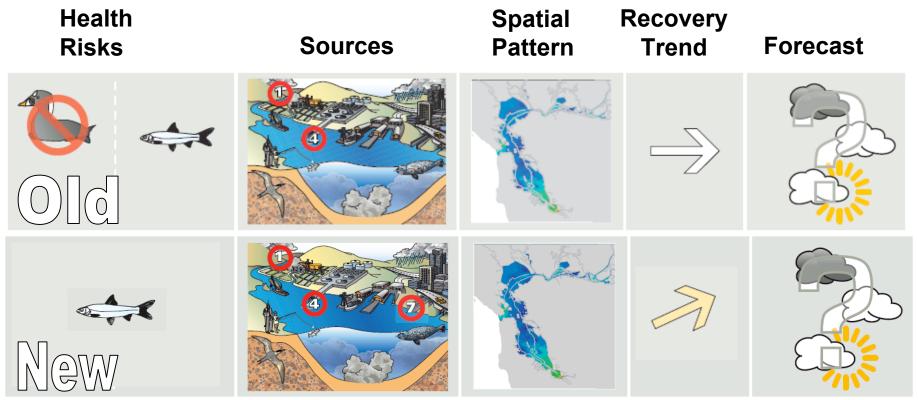
Biggest Problems: Dioxins





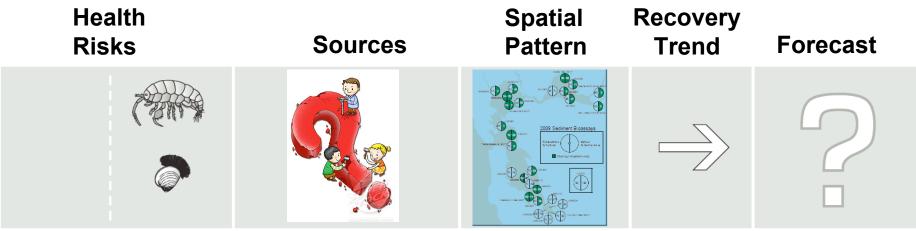
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Other Threats: Selenium

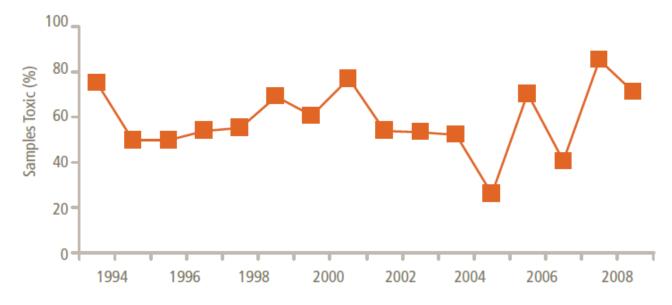


- New TMDL underway for North Bay
- Recent clam concentrations 50% those of mid-1990s (forthcoming from Stewart et al.)

Other Threats: Sediment Toxicity



- New sediment quality objectives
- Studies underway to identify causes



Other Threats: Trash

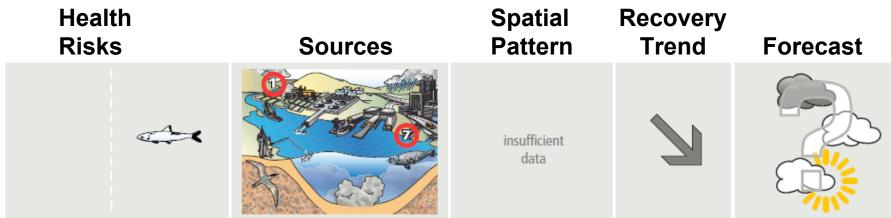
Health Risks	Sources	Spatial Pattern	Recovery Trend	Forecast
Wildlife Aesthetic impacts	Urban runoff Local tributaries Direct deposition	Shoreline areas Tributaries	\mathbf{P}	

- New proposed addition to 303(d) List
- Aggressive MRP goals
- Future depends on success of management

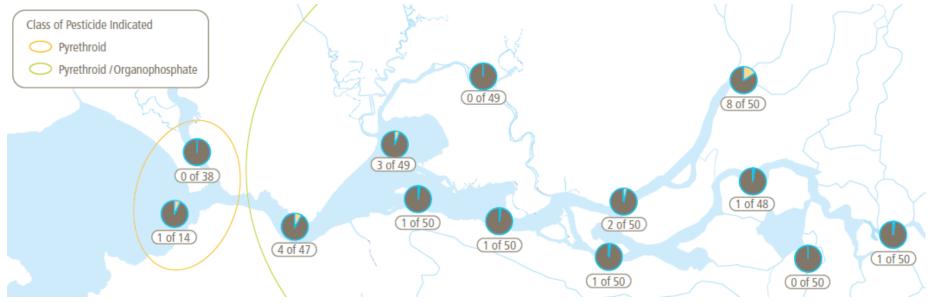


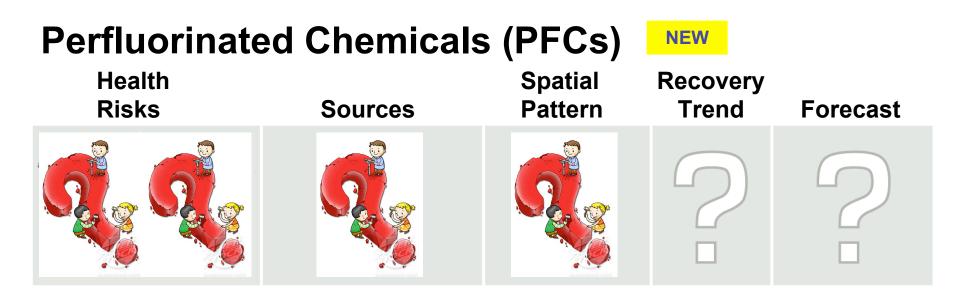
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Rising Concerns: Pyrethroids 1

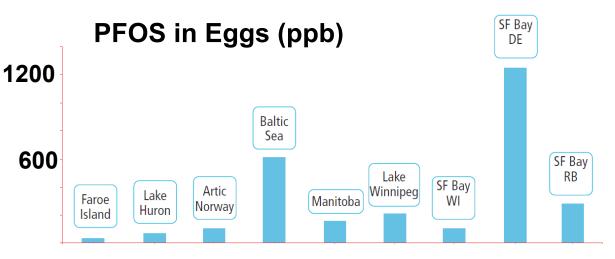


 Mounting evidence of impacts in Bay and especially urban runoff





- High concentrations
- No regulatory thresholds in effect
- RMP studies underway



Status in 20 Years?

- Largely depends on:
- Management
- Improved understanding
- Green Chemistry, early detection, proactive management

Still Problems	Total/Methylmercury	
	PCBs	
	Dioxins	
???	Exotic Species	
	Selenium	
	Sediment Toxicity	
	Trash	
	PAHs	
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