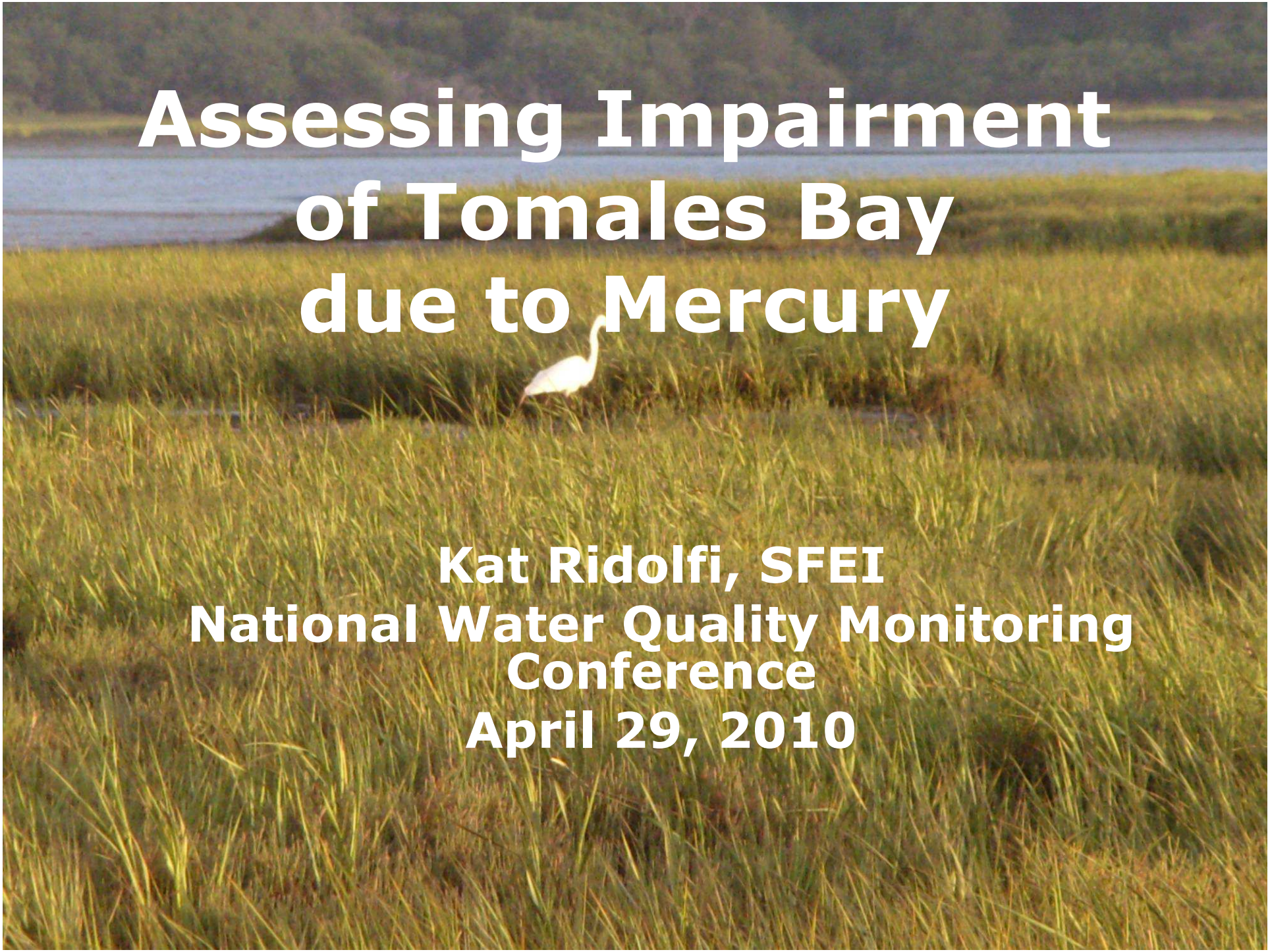


Assessing Impairment of Tomales Bay due to Mercury

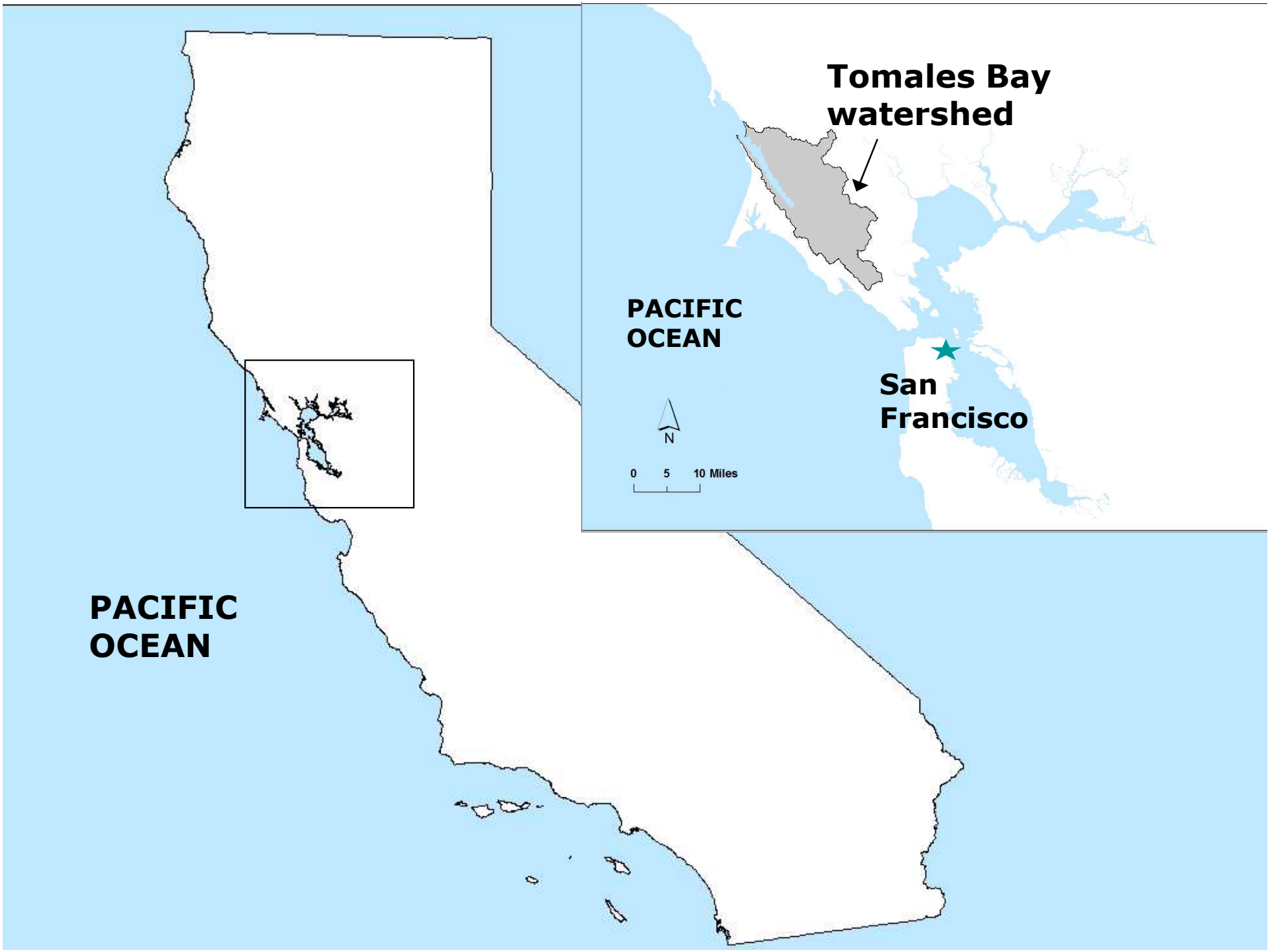
Kat Ridolfi, SFEI

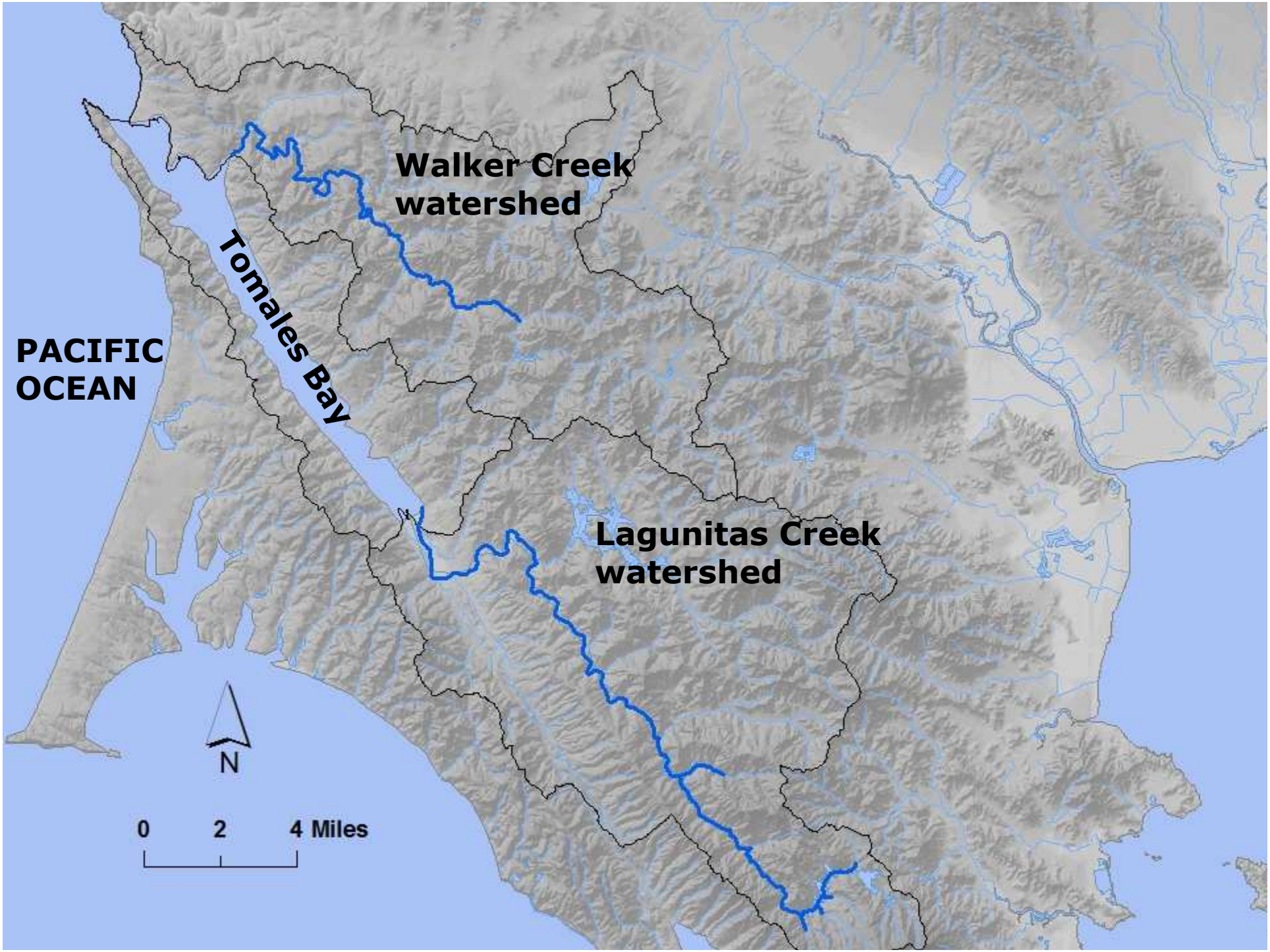
National Water Quality Monitoring Conference

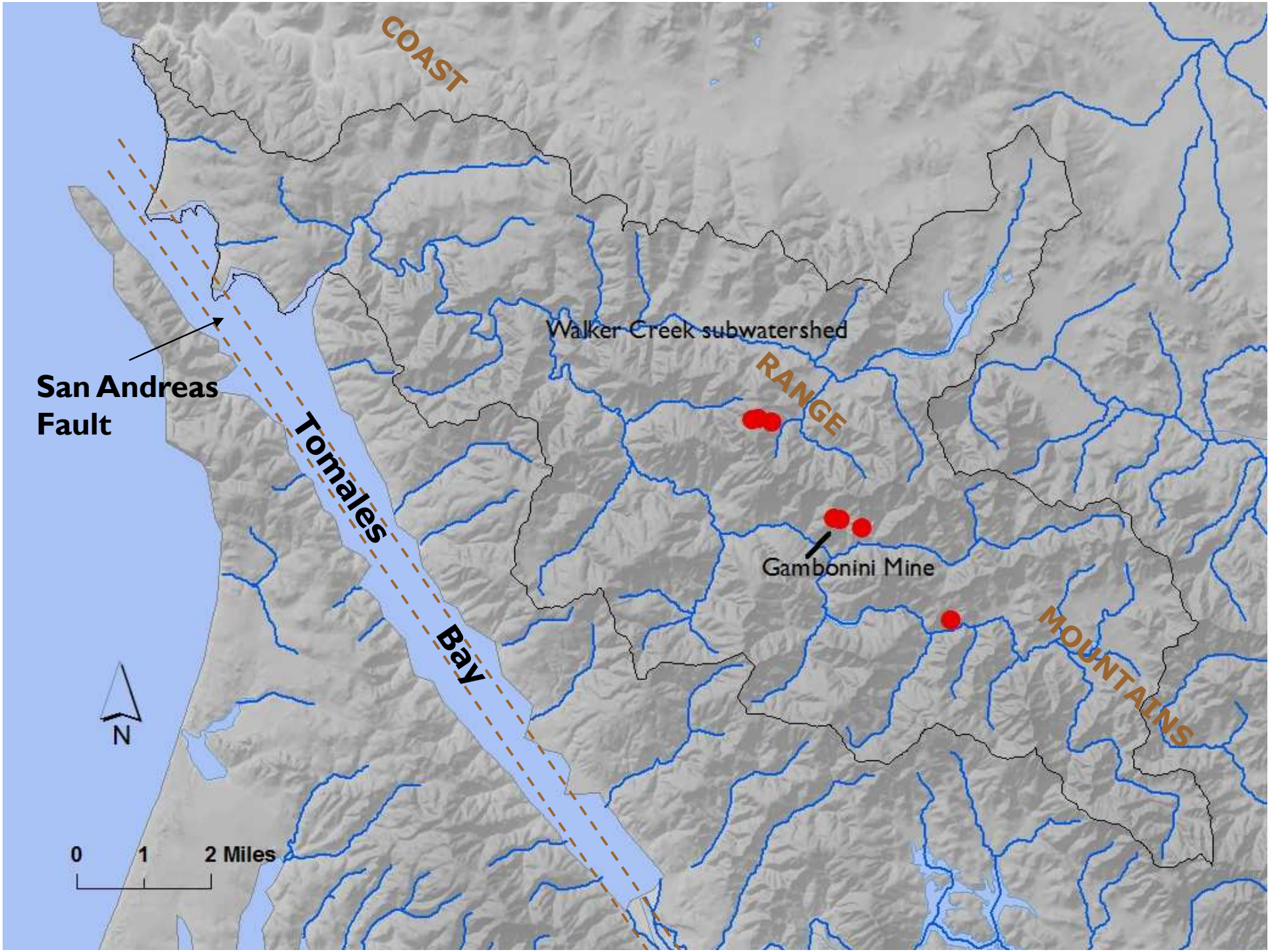
April 29, 2010

TMDL Impairment Assessment

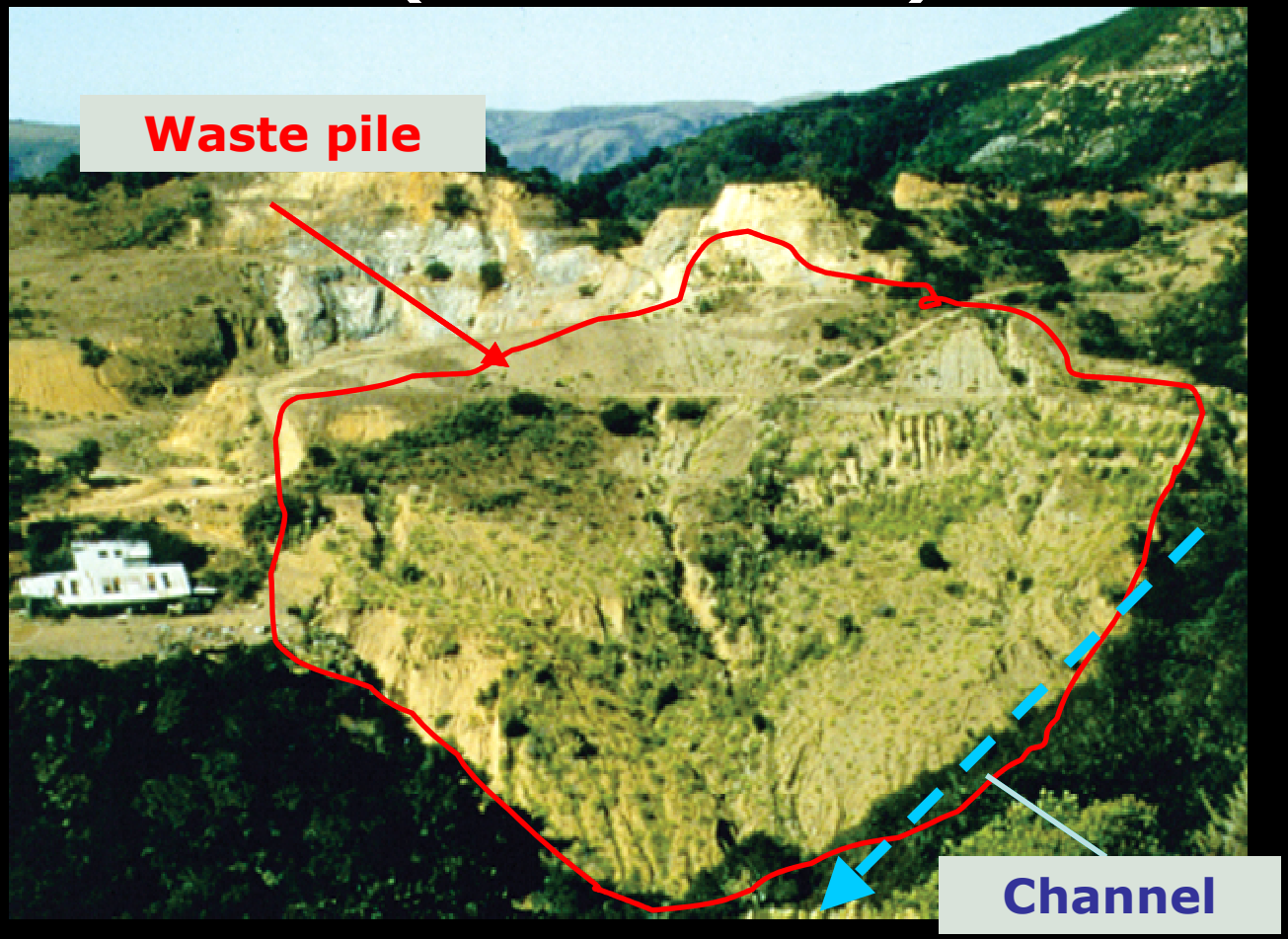
- Mercury mining history
- Previous data
- Wildlife targets
- June 2009 monitoring results
- Next steps and conclusions

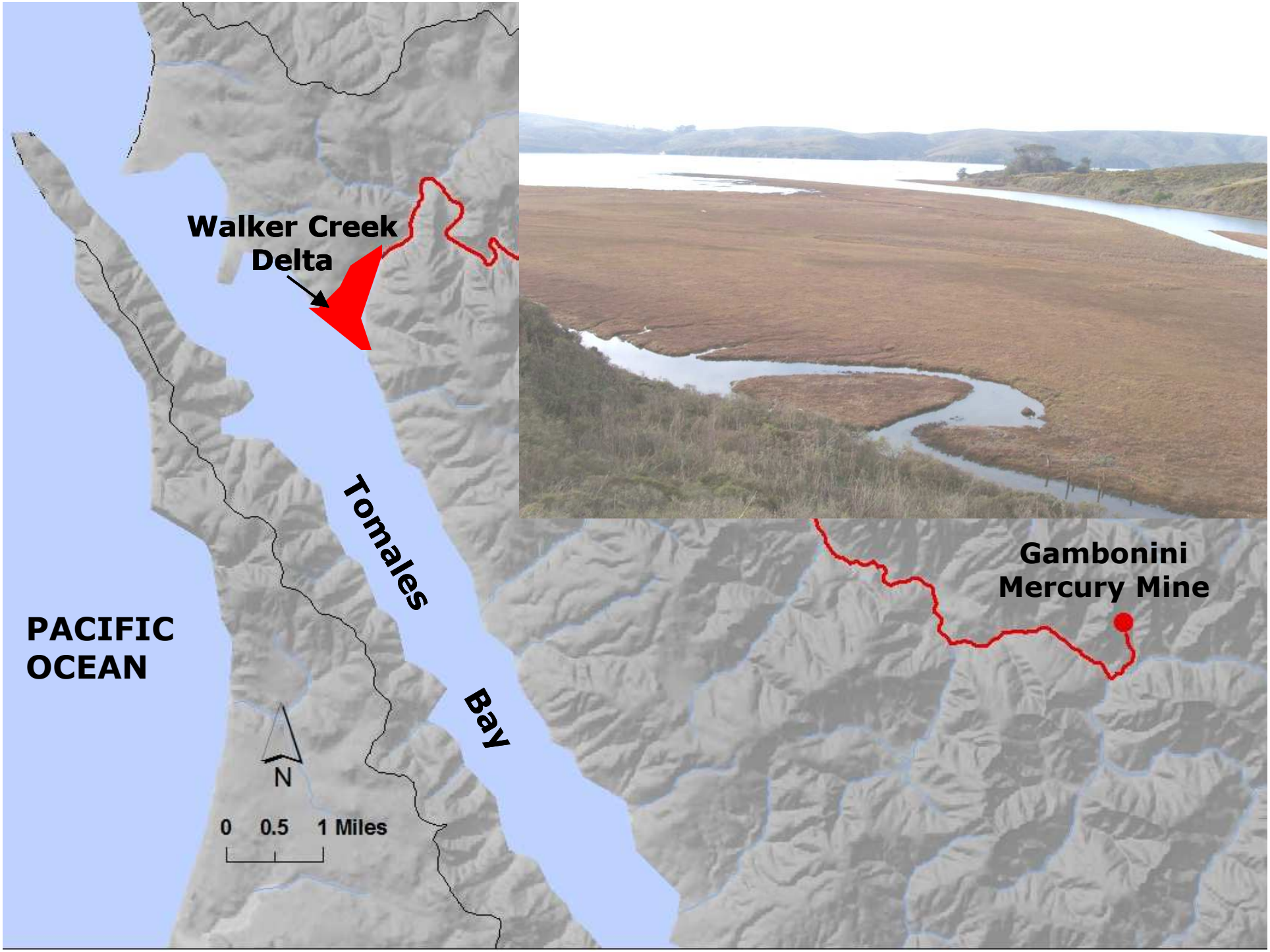

Tomales Bay
watershed
PACIFIC
OCEAN
San
Francisco
N
0 5 10 Miles
PACIFIC
OCEAN

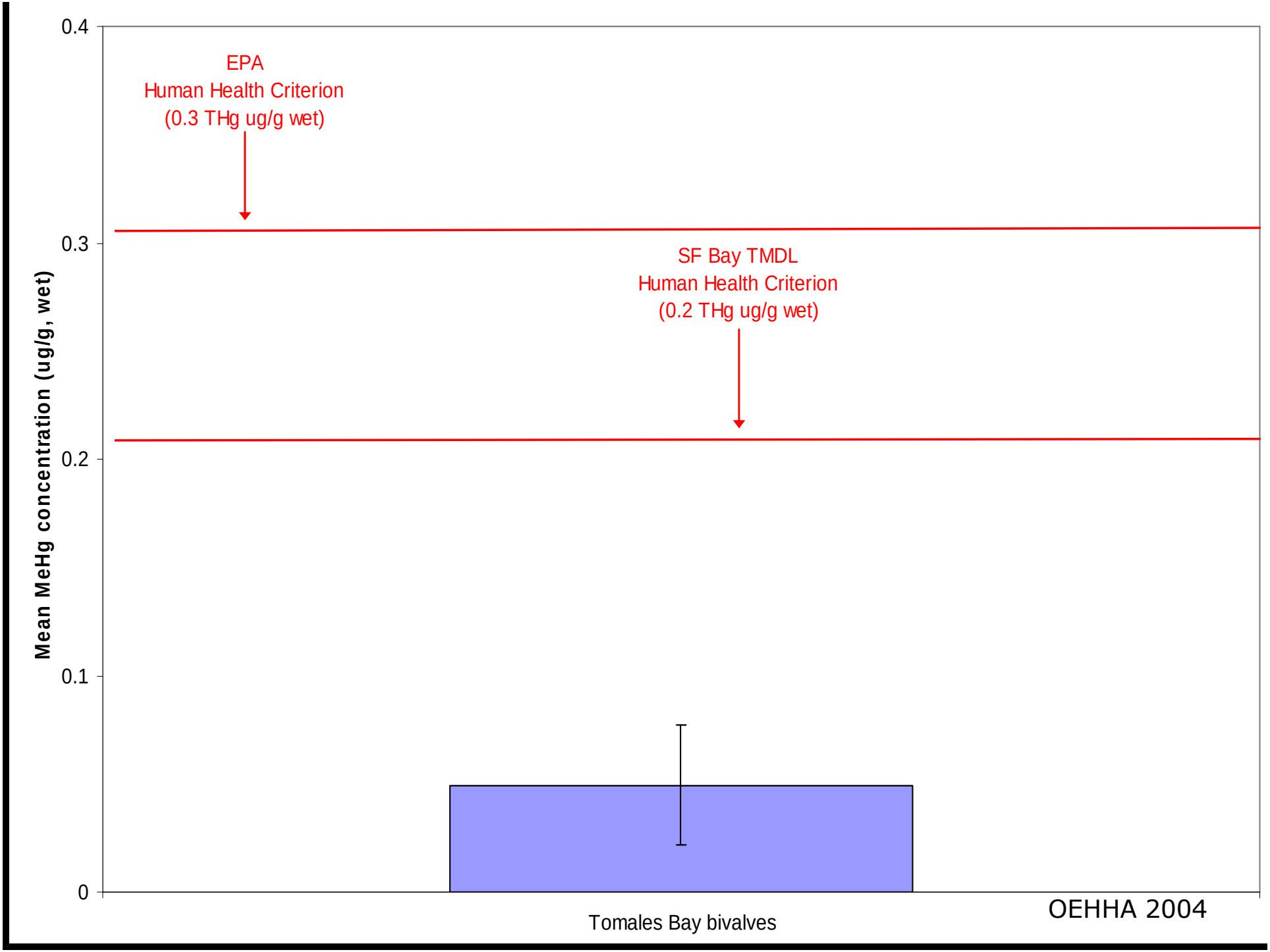

Walker Creek
watershed
Tomales Bay
PACIFIC
OCEAN
Lagunitas Creek
watershed
N
0
2
4 Miles


COAST
Walker Creek subwatershed
RANGE
San Andreas
Fault
Tomales
Bay
Gambonini Mine
MOUNTAINS
N
0
1
2 Miles

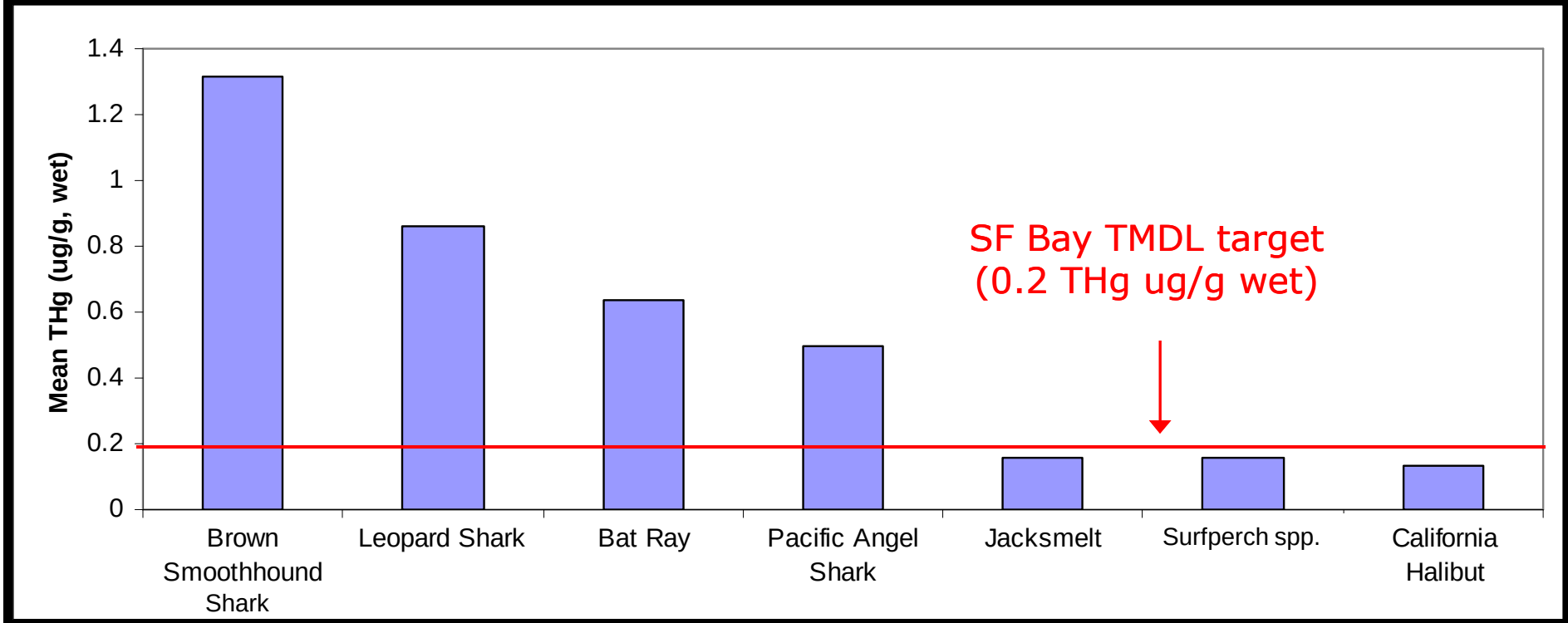
Gambonini Mercury Mine (Cinnabar)




Walker Creek
Delta
Tomales
Bay
PACIFIC
OCEAN
N
0 0.5 1 Miles
Gambonini
Mercury Mine

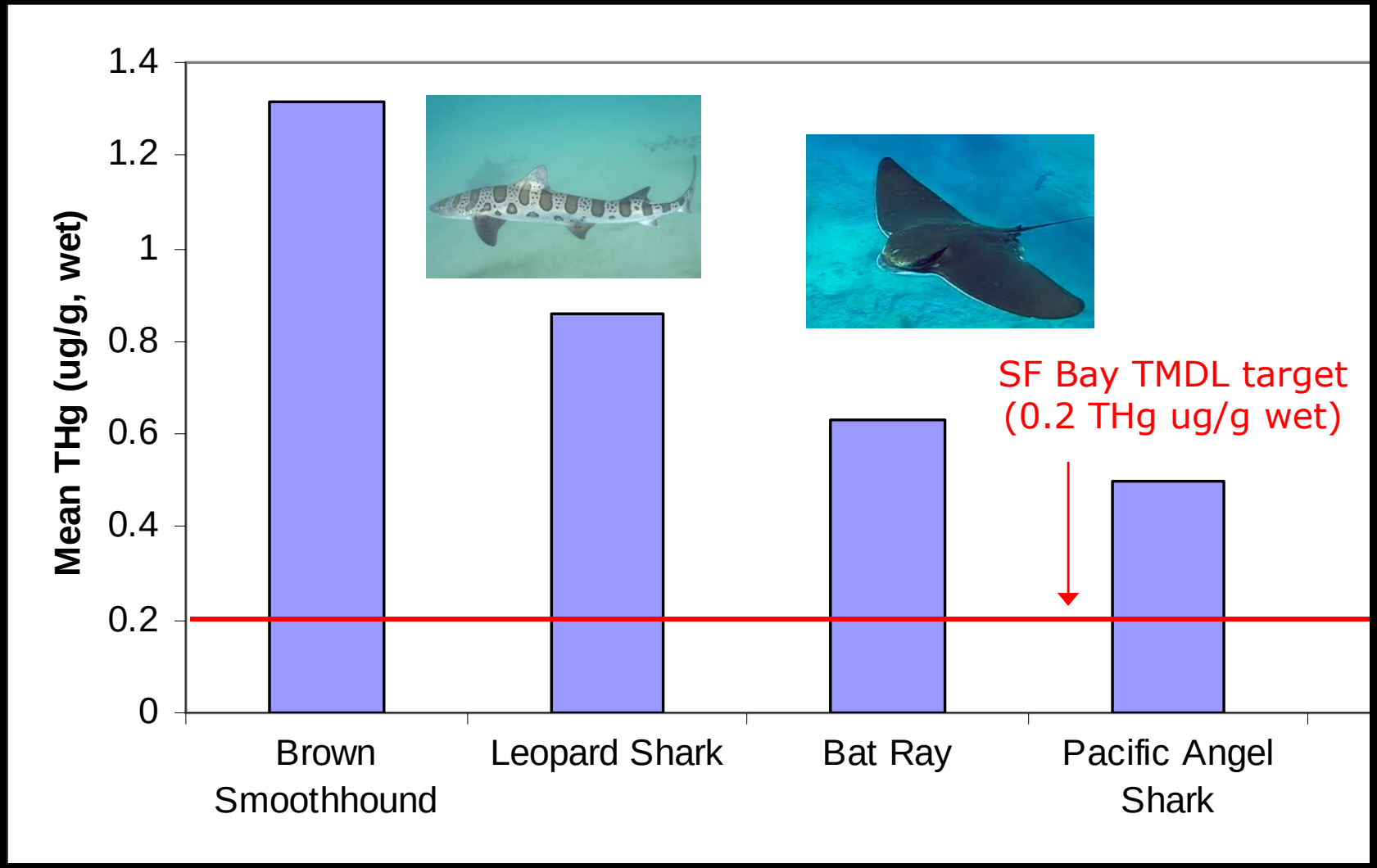

0.4
0.3
0.2
0.1
0
Mean MeHg concentration (ug/g, wet)
EPA
Human Health Criterion
(0.3 THg ug/g wet)
SF Bay TMDL
Human Health Criterion
(0.2 THg ug/g wet)
Tomales Bay bivalves
OEHHA 2004

Total Hg in Sport Fish



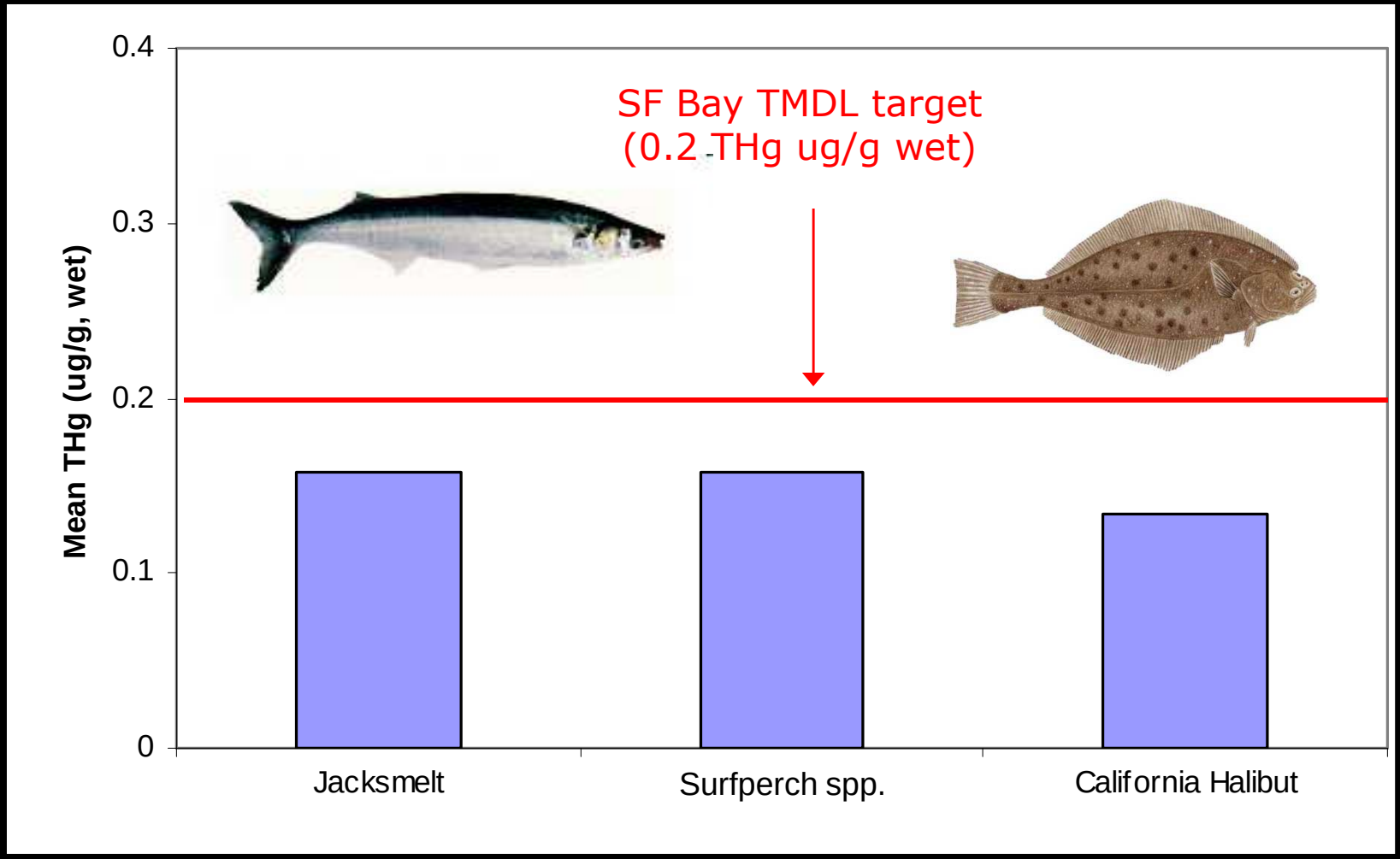
OEHHA 2004

Exceed SF Bay Human Health Criterion (0.2 THg µg/g, wet)



OEHHA 2004

Safe to Eat, in Moderation



OEHHA 2004

Who Do We Want to Protect?

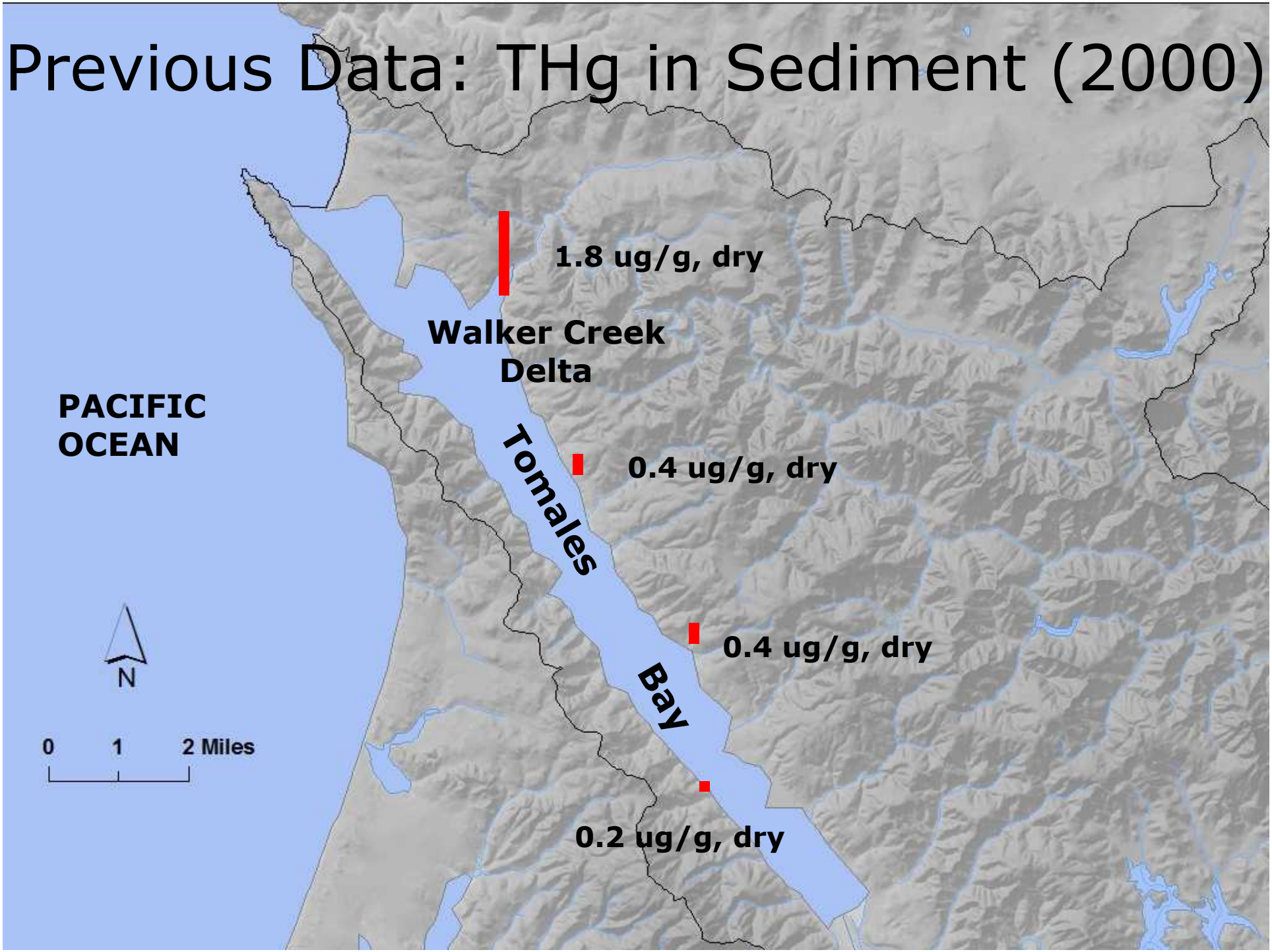
Humans?

Piscivorous Wildlife?

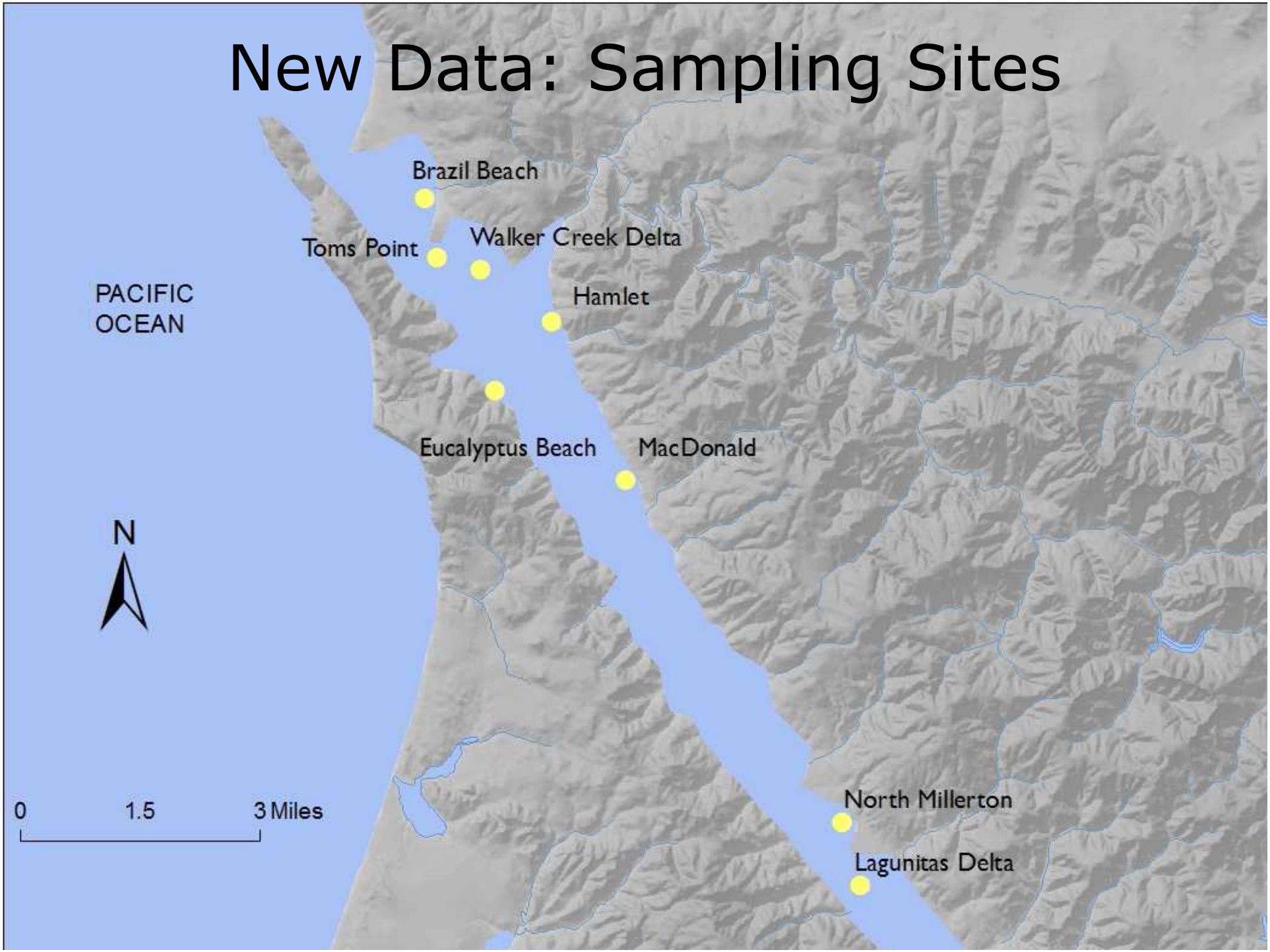
Numeric Targets for Piscivorous Wildlife

Target THg (µg/g, wet)	0.05	0.17
Species protected	**Belted Kingfisher**	**Black-crowned Night-Heron**
Fish length	5-15 cm	>15 cm

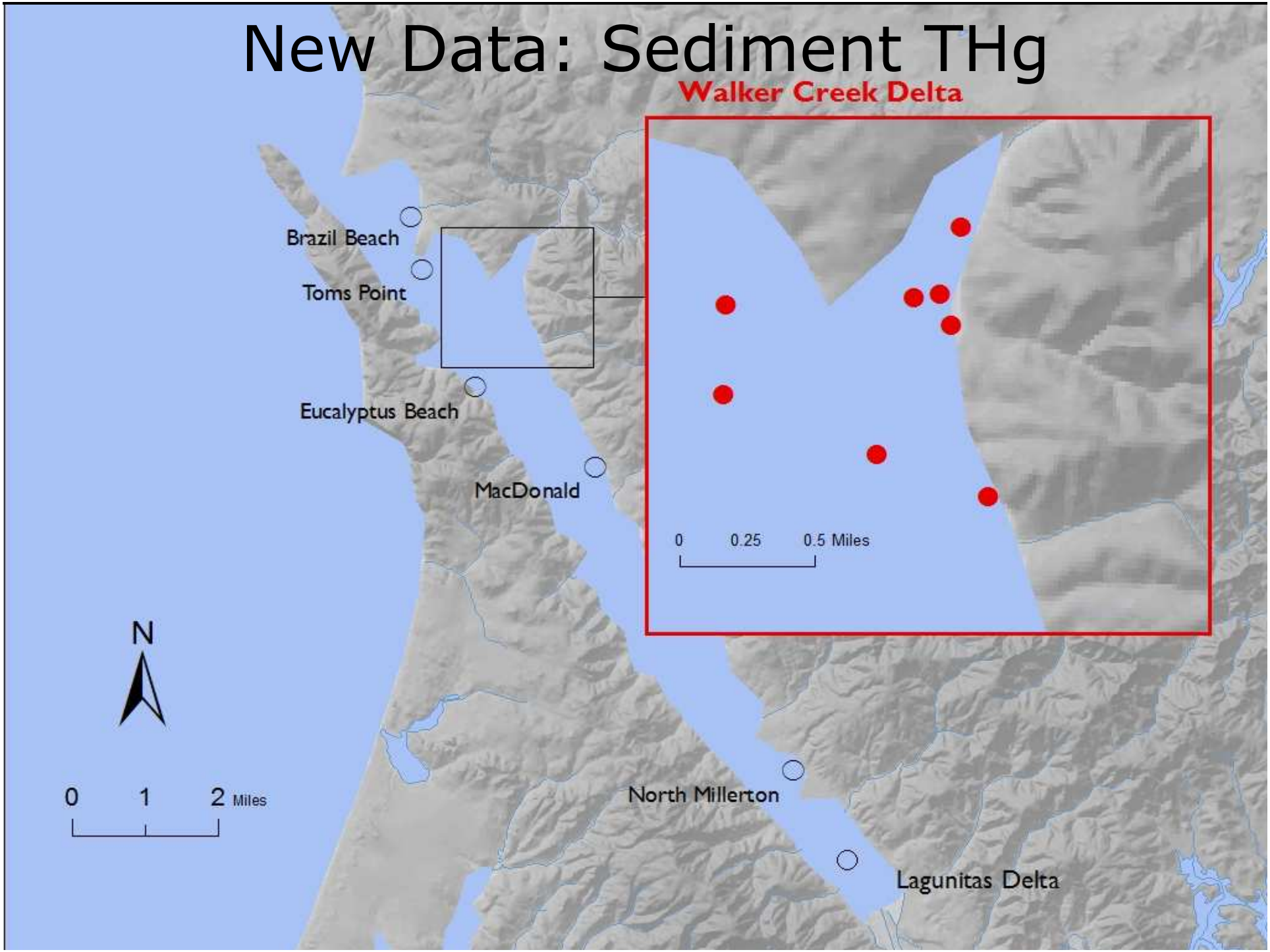
Previous Data: THg in Sediment (2000)



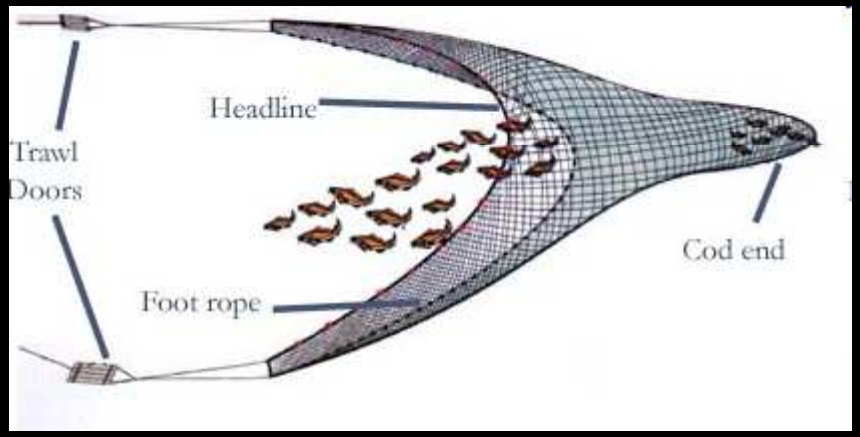
New Data: Sampling Sites



New Data: Sediment THg

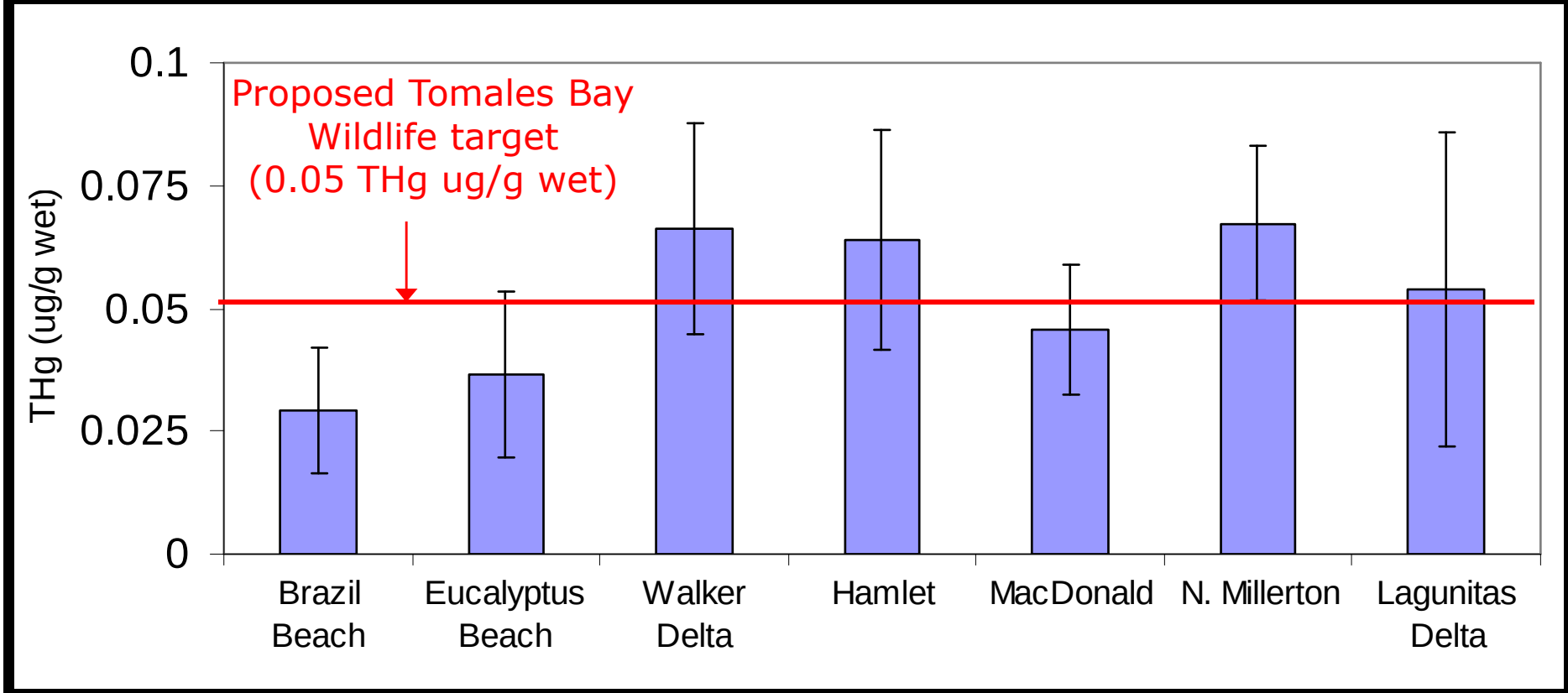


Fish Monitoring Methods



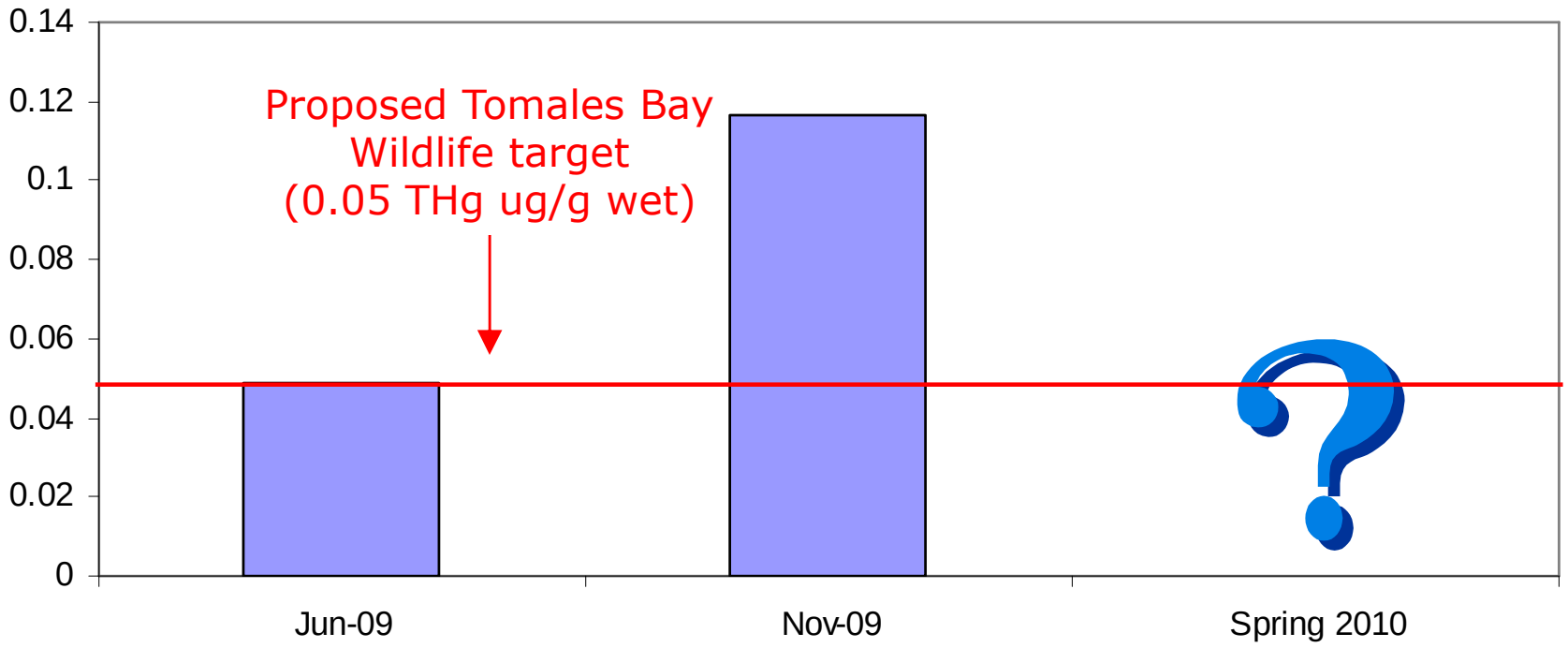
- Catch methods
- Composite samples
- Size classes
- Target species

Small Fish THg (µg/g, wet)



North → **South**

Small Fish THg Seasonality



Next Steps

- Develop cost effective, easily replicable monitoring program to assess temporal trends in:
  - Sportfish Hg
  - Invertebrate Hg
  - Small fish Hg (seaonality)
- Regional Board writes TMDL

Conclusions

- Developed science to support Mercury TMDL
- Reviewed previous data
- Collected new data to fill data gaps
- Small fish THg had three surprises
- Next steps
  - Water Board writes TMDL
  - Long-term monitoring

Thanks

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Questions….