



2014 Marine Aggregation

INNOVATE | COLLABORATE | CELEBRATE
February 10 – 13 | Monterey, CA

**Creating a community of business, government, and
the public for conservation success**

Peter Kareiva, Chief Scientist, The Nature Conservancy



The Sixties

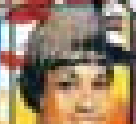
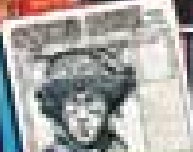


BLACK
POWER

LET'S
STAY
LEAFY

Cannabis

LOVE





EARTH DAY

“I am convinced that the same concern the youth of this nation took in changing this nation’s priorities on the war in Vietnam can be shown for the environment”

New Yorker, April 15,

G. Nelson 9/20/1969

*grassroots public movement led to
pioneering legislation*

- **Endangered Species Act**
- **Clean Air and Clean Water Acts**
- **Global Protected Area System**

EARTH DAY 2013 Nicholas Lemann

“Today’s environmental movement is vastly bigger, richer, and better connected than it was in 1970. It is also vastly less successful. What went wrong?”

Hundreds of millions of dollars spent and Harry Reid could not even bring to a vote climate bill in 2010

**THE DEATH OF
ENVIRONMENTALISM**

**GLOBAL WARMING POLITICS IN A
POST-ENVIRONMENTAL WORLD**

BY MICHAEL SHELLENBERGER AND TED NORDHAUS

THE ECOLOGISTS

in PLANET
" DOOM "





IN FOCUS

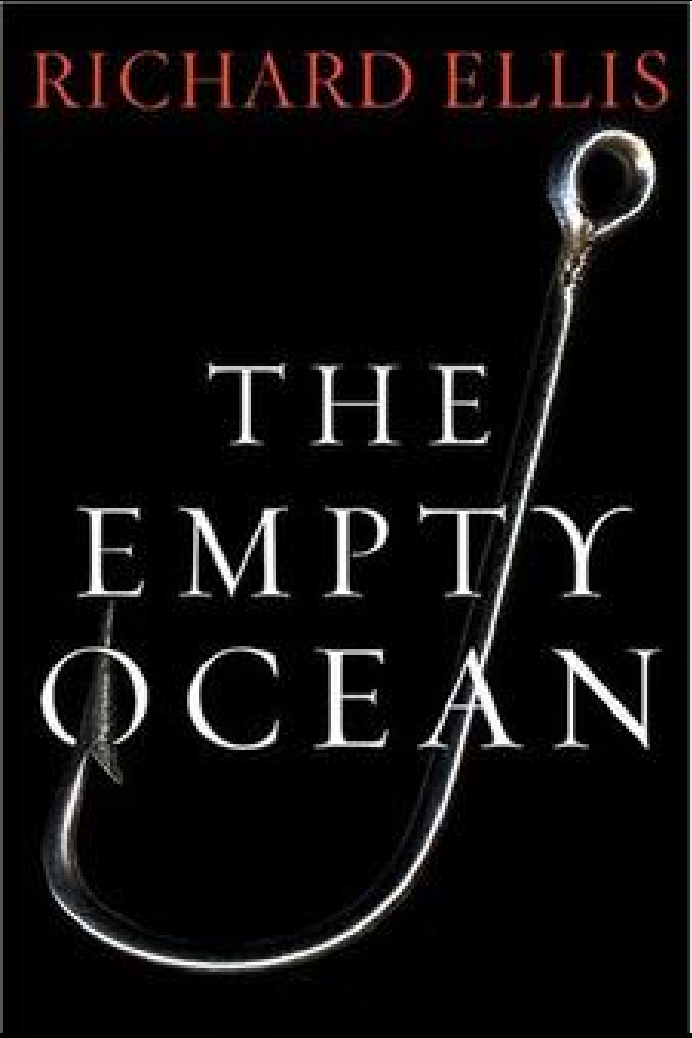
EMPTY SKIES

Have nesting birds that feed in the sky— from nightbirds and eagles in England and France, to raptors from parts of North America, and owls that breed only

Becky Stoumal recalls watching a male peregrine falcon circle above a commercial building in downtown Montreal, Que. in 1985, when she had assumed a high-speed raptor display designed to show tourists that he had nested again, plus he lay eggs. The bird swooped straight down and pulled up in the last second, streamlining his wings forward and creating an audible "boom" as wind rushed through his feathers. "It was so weird. There's a great big moment, when you think it can't fly. It comes in a heartbeat, a heartbeat with North American birds. It's weird. It's incredible, and they ended up nesting right there."

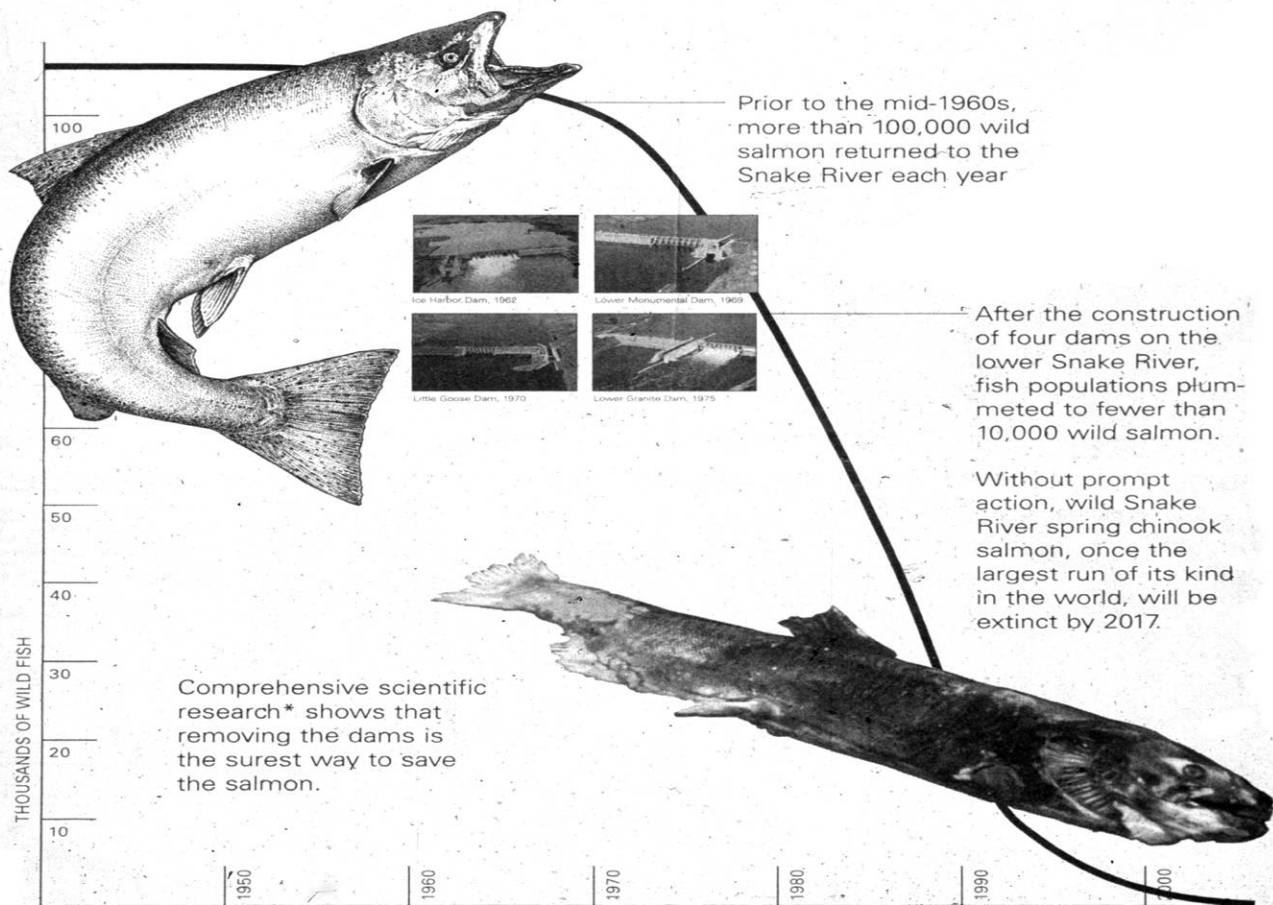
Stoumal was in Montreal in the 1980s, when peregrine falcons were reintroduced to the city after being nearly extinct. She was a wildlife biologist at the time, and she recalls the bird as being "like a living sculpture." She was in Montreal in the 1980s, when peregrine falcons were reintroduced to the city after being nearly extinct. She was a wildlife biologist at the time, and she recalls the bird as being "like a living sculpture."

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Timeline to Extinction

If we don't act, Snake River salmon will disappear forever.



Don't let time run out for the salmon. Vice President Al Gore will help decide their fate. Tell him you care about salmon and want the lower Snake River dams removed.

**misanthropic, anti-growth, sacrifice,
anti-technology, dogmatic, zealous,
exclusive, preachy, pessimistic**

**“population
plague”**

**Curmudgeon
Conservation
(old men)**



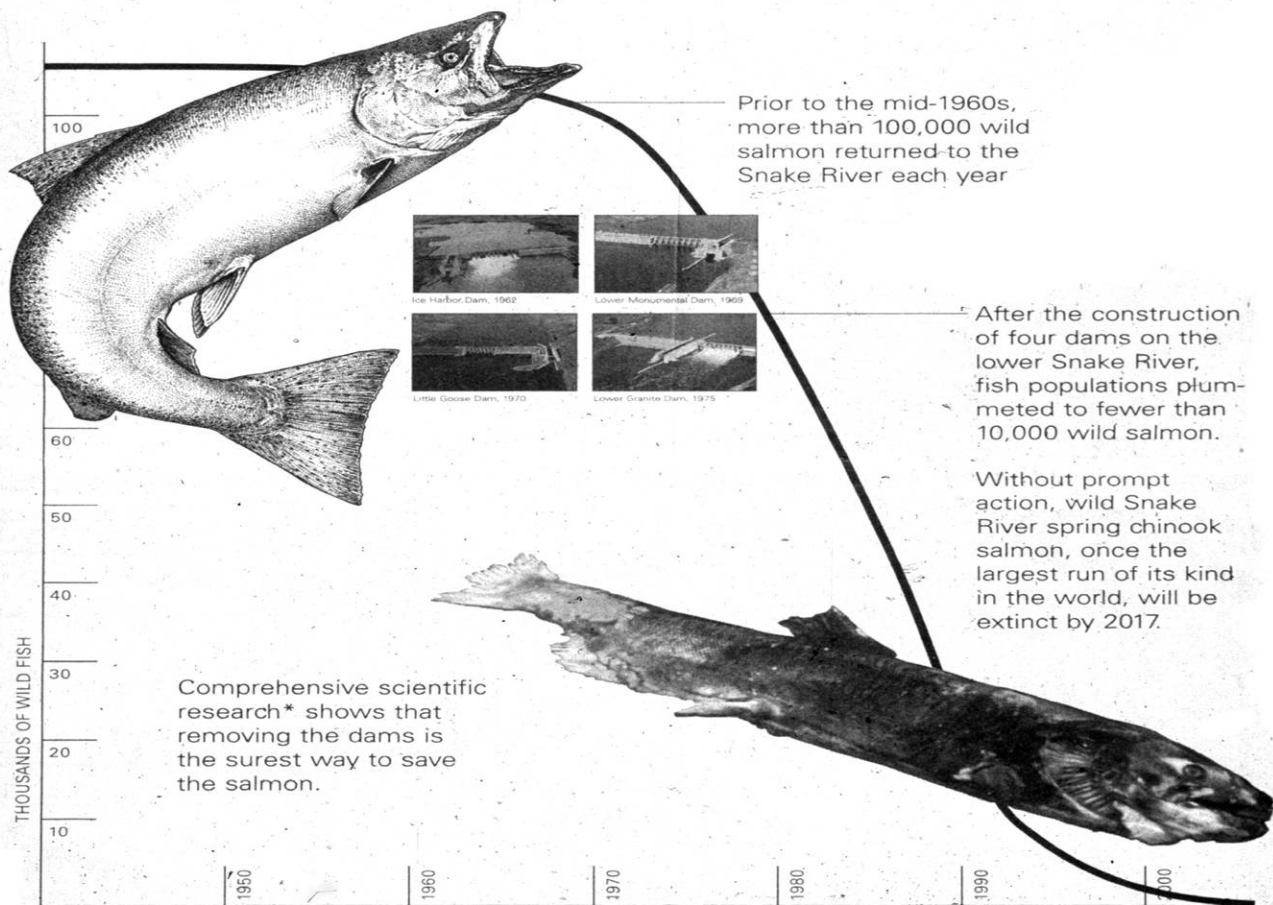
A black and white photograph capturing a protest scene. A large, dark banner is held up across the middle of the frame, featuring the text "SAVE THE PLANET" on the top line and "KILL YOURSELF" on the bottom line in bold, white, sans-serif capital letters. The banner is held by several individuals whose faces are partially visible. In the foreground, the back of a person's head and shoulders is visible on the left. To the right, a person wearing a baseball cap and a dark jacket is seen from the back. The background shows a crowd of people and bare trees, suggesting an outdoor setting in a cooler season. The overall tone is somber and urgent.

**“President Obama
promised to slow
the rise of the ocean
and heal the planet”**

**“..... slow the rise of
the ocean and heal
the planet. My promise
is to help you and your
family”**

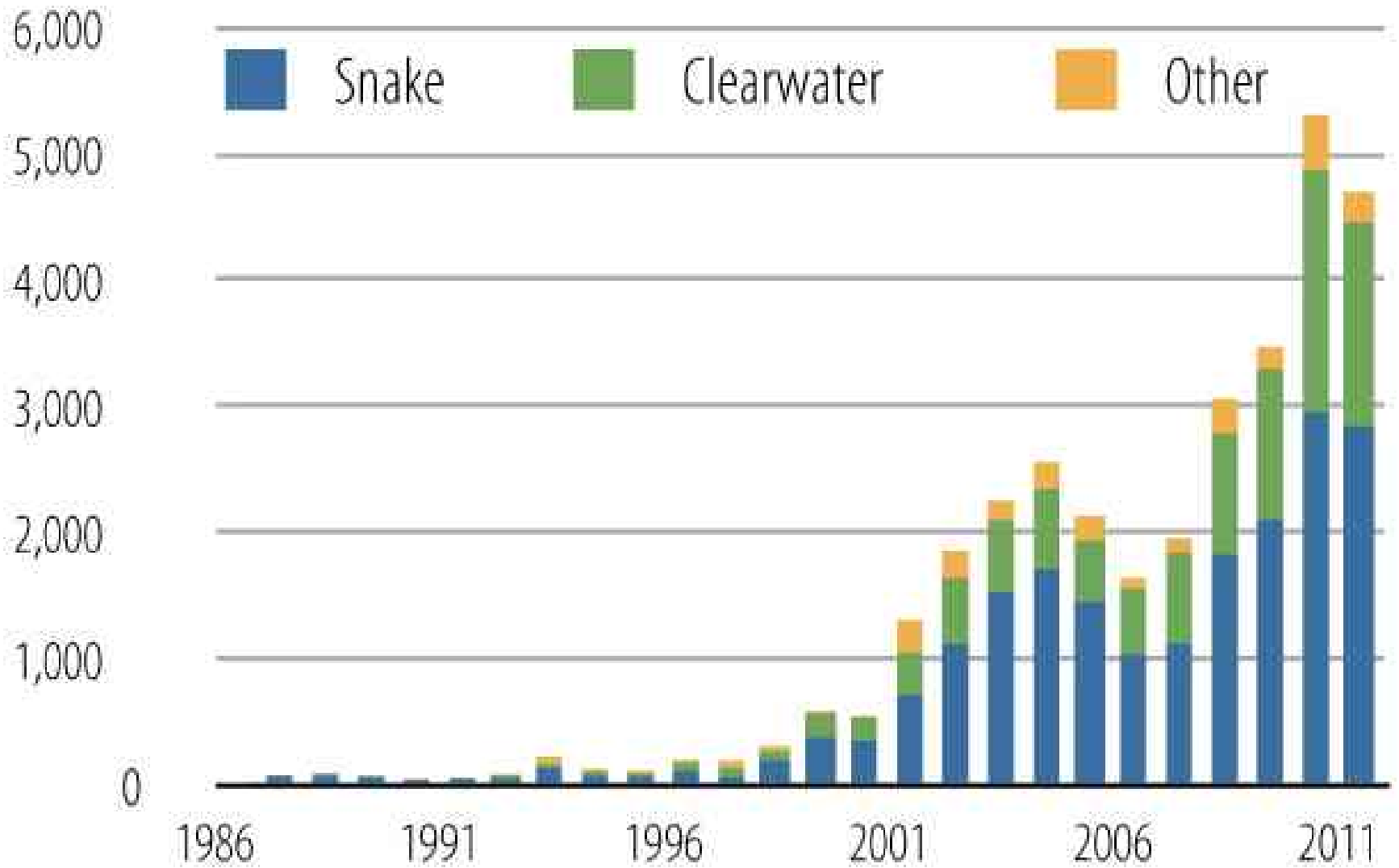
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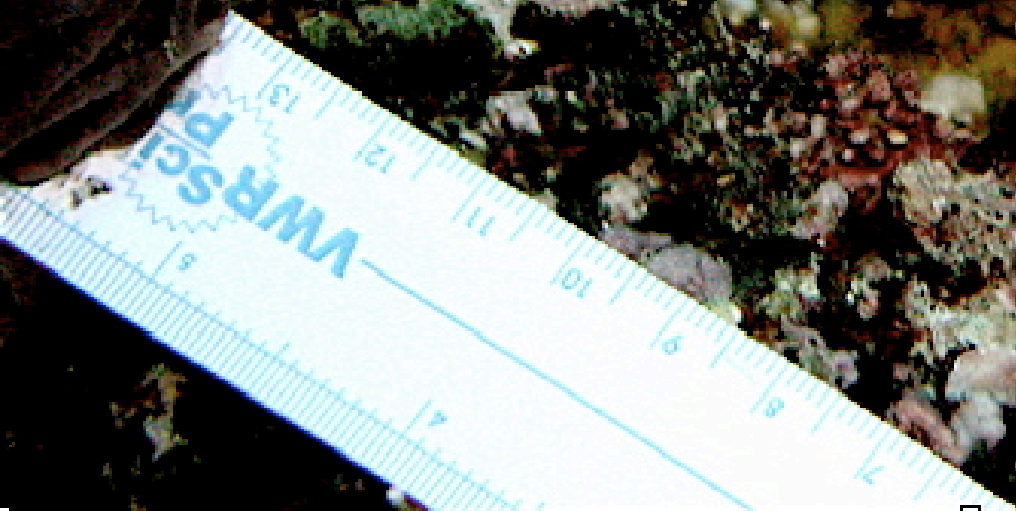
Fall Chinook Redds



1998 MASSIVE BLEACHING



2 YEARS



7 YEARS

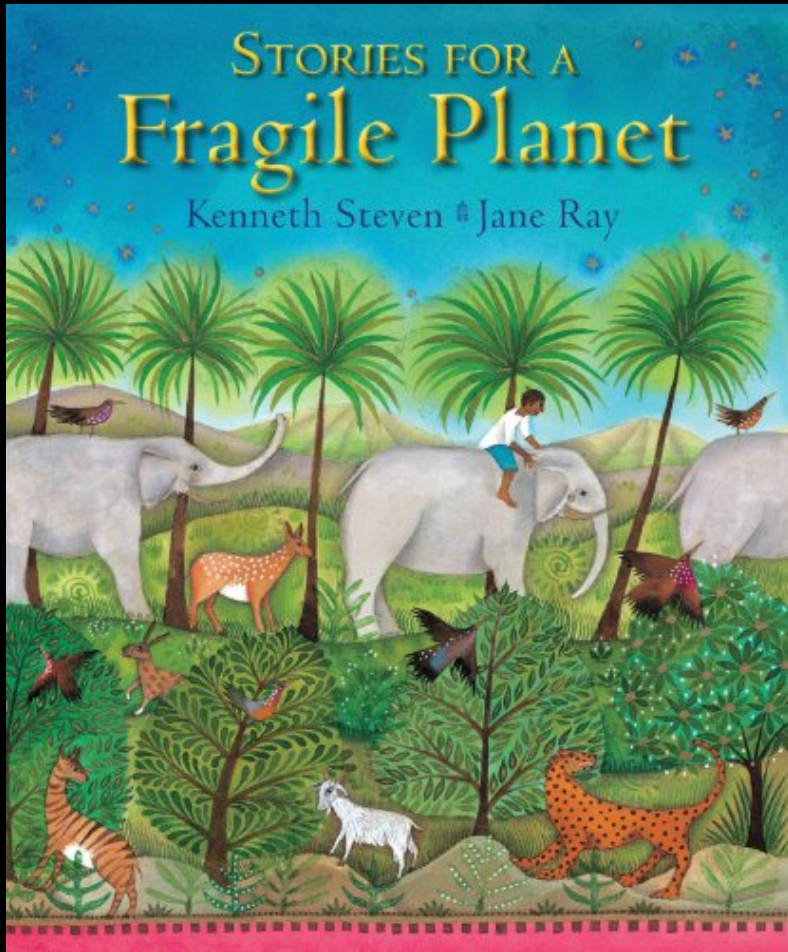


9 YEARS



14 YEARS

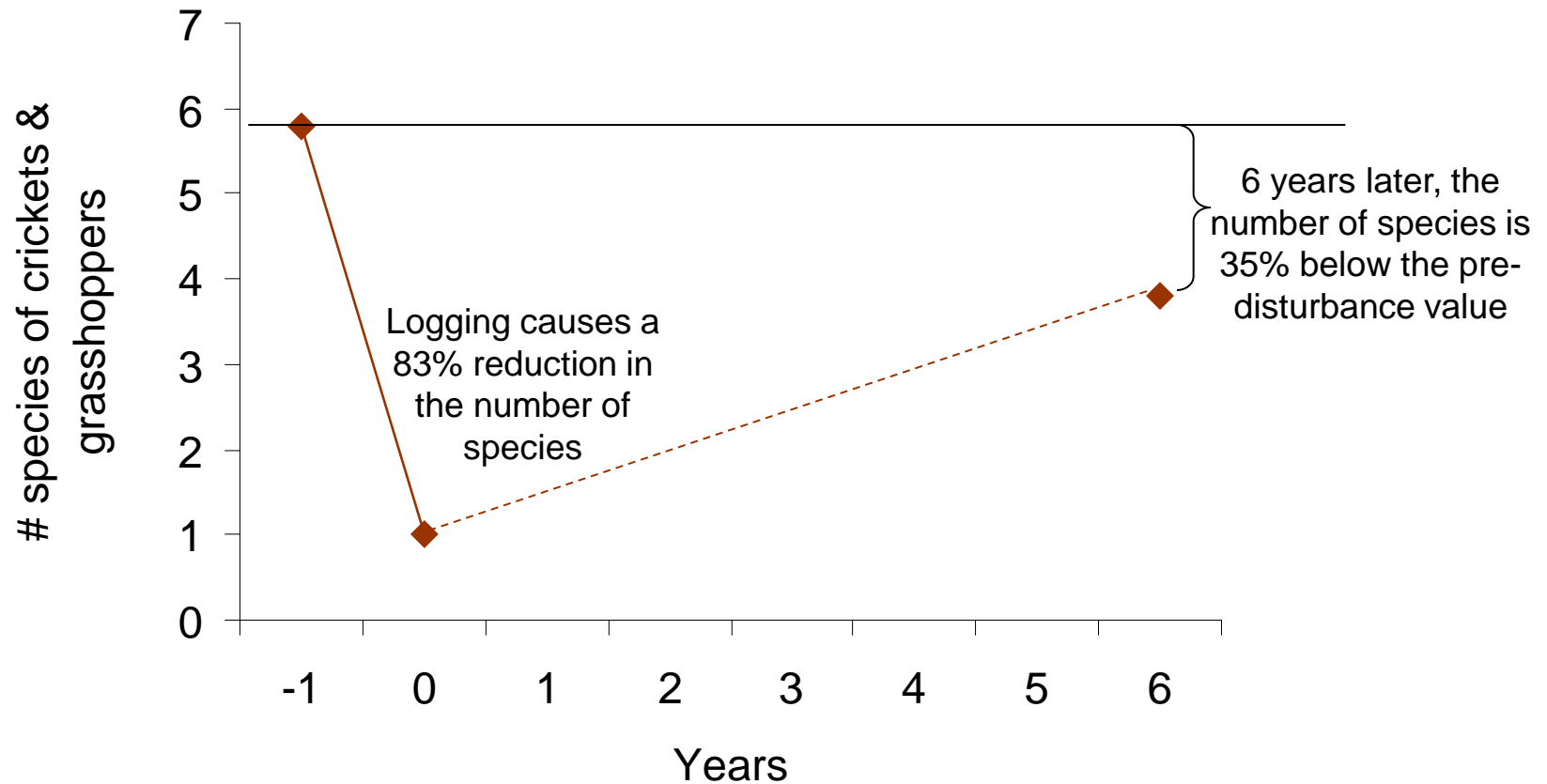




massively damaged ecosystems



Abbott et al. 2003



Return rate is **-8% per year**

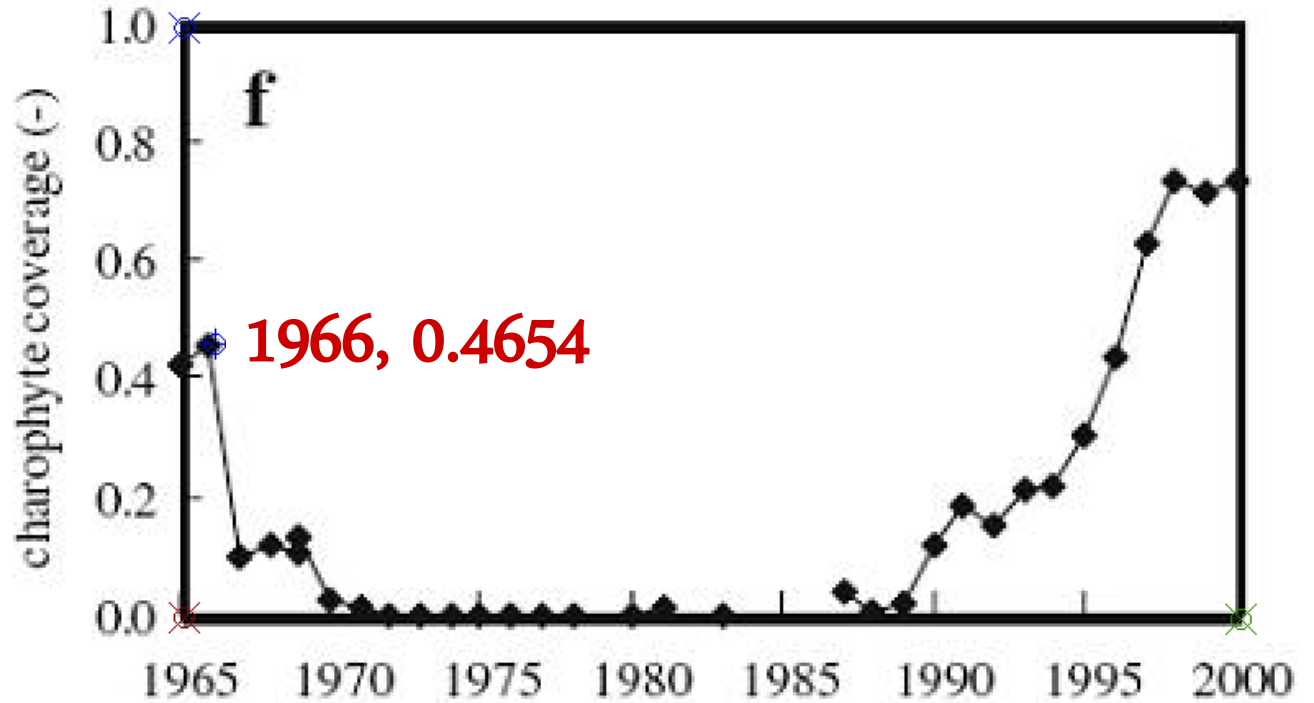
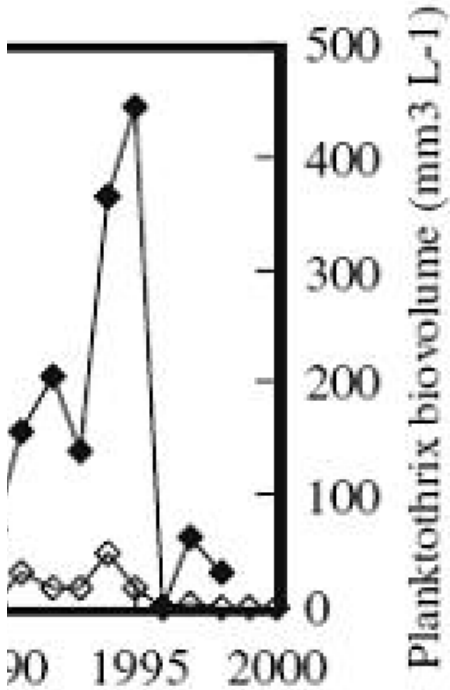
DataThief - Ibelings A.jpg

File Edit Axis Profiles Settings Action Data Help

Ref 0	1965	0
Ref 1	1965	1
Ref 2	2000	0

Start Prev
End Point
Color Next

Trace Settings Message Progress



“Data Thief” : free software

Resilience Index = “exponential decay rate of perturbation”: $\ln (d_t/d_o)$ versus t

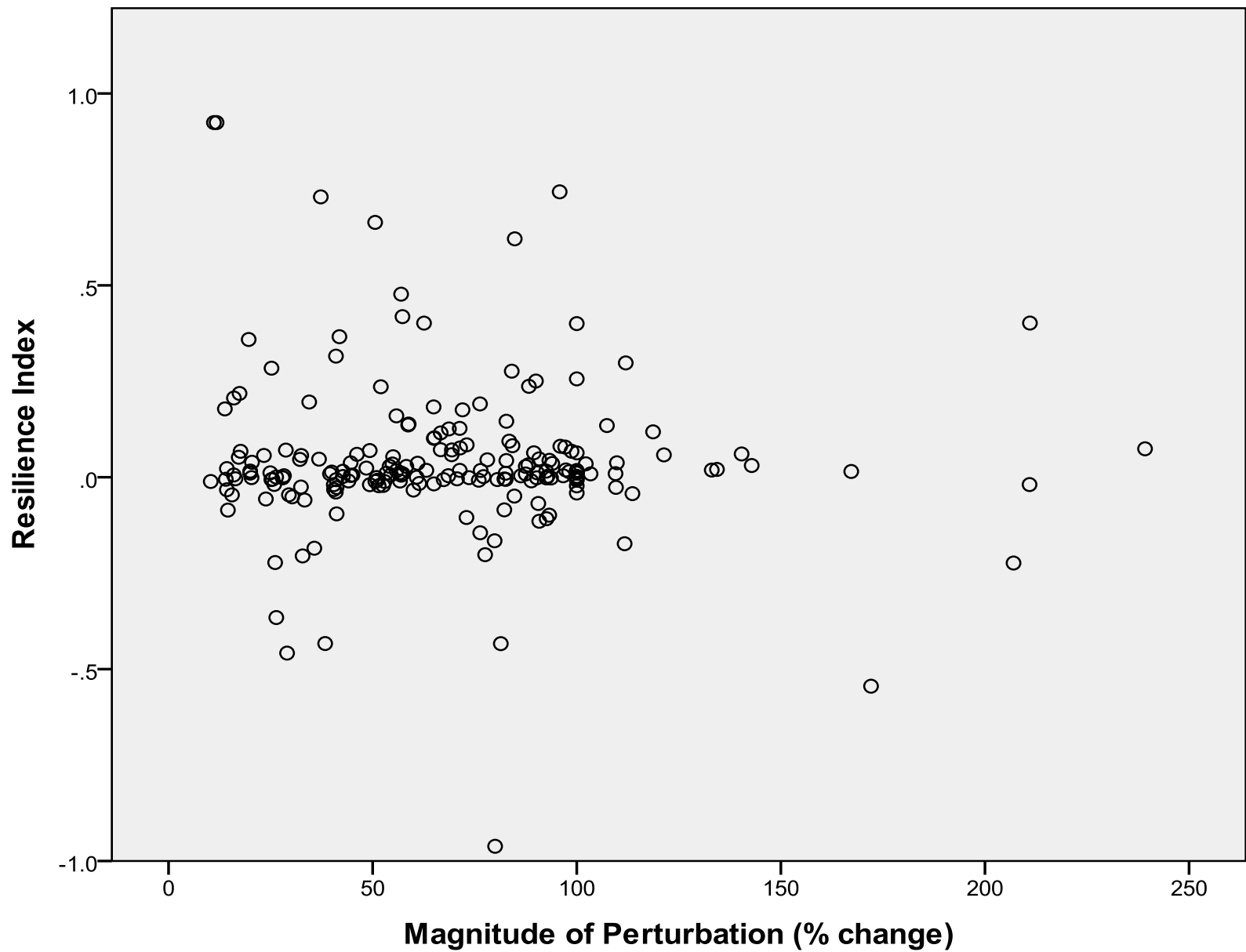
d_o = initial perturbation size (difference between reference metric and metric following oil spill, deforestation, eutrophication, etc)

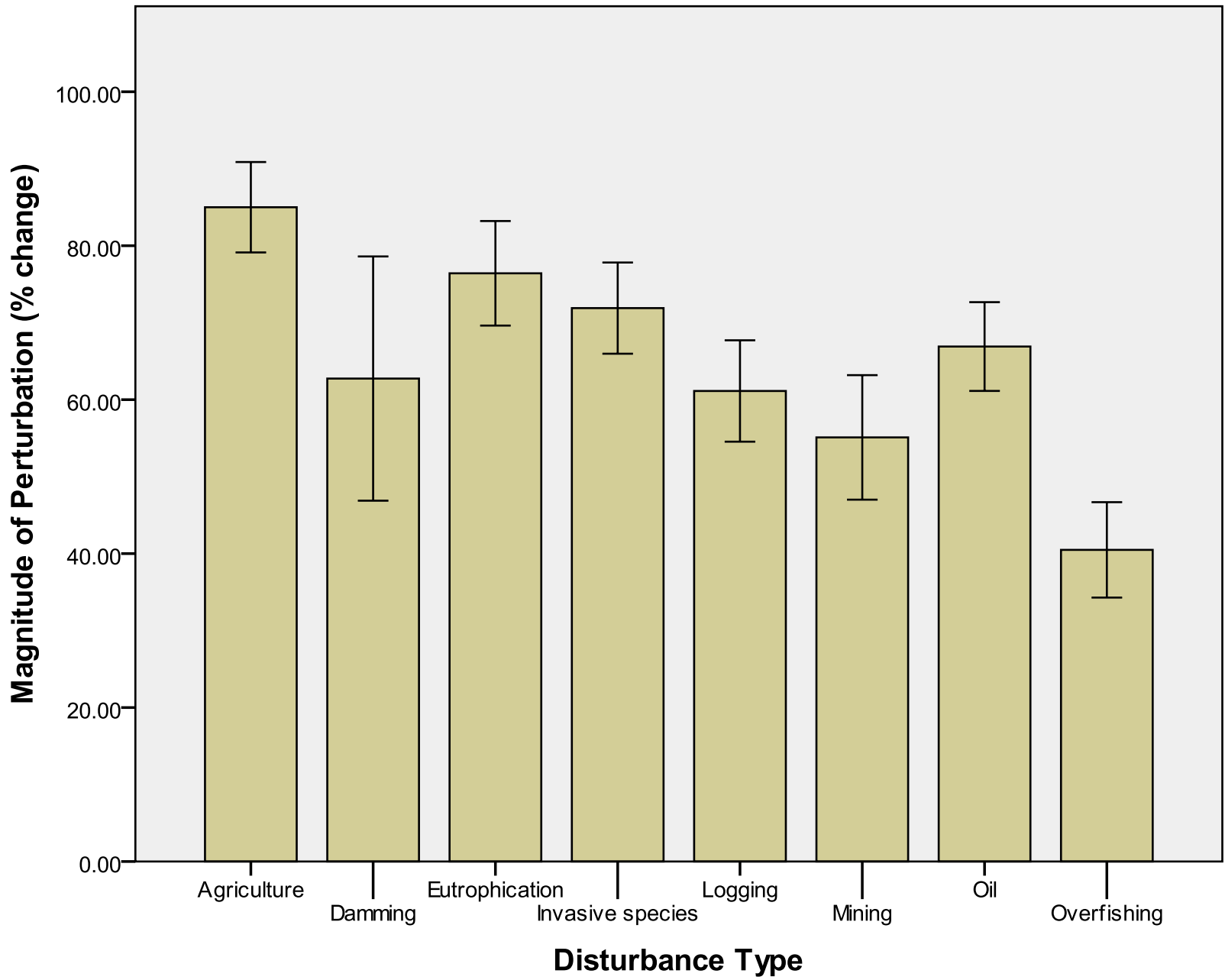
d_t = perturbation after removal of stress (nutrient inputs into lake), or simply after the “pulse” of oil stops, t = time elapsed

Why go to all of this trouble?
metrics matter

**Are larger, more severe perturbations
harder to recover from ?**

**Does generation time influence
recovery or resilience?**





Resilience Index

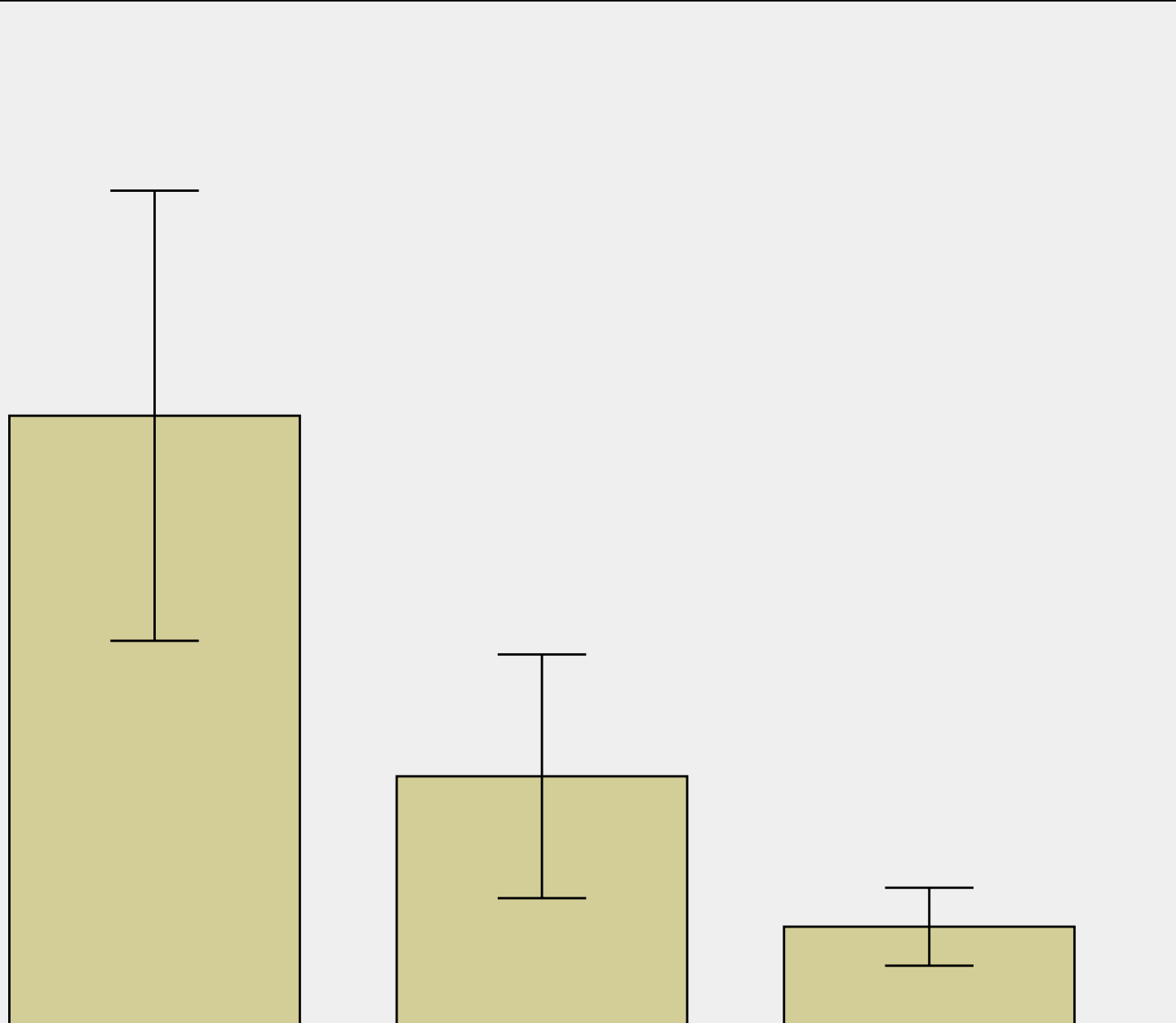
0.10
0.08
0.06
0.04
0.02
0.00

approximately annual

medium

long

Generation Time



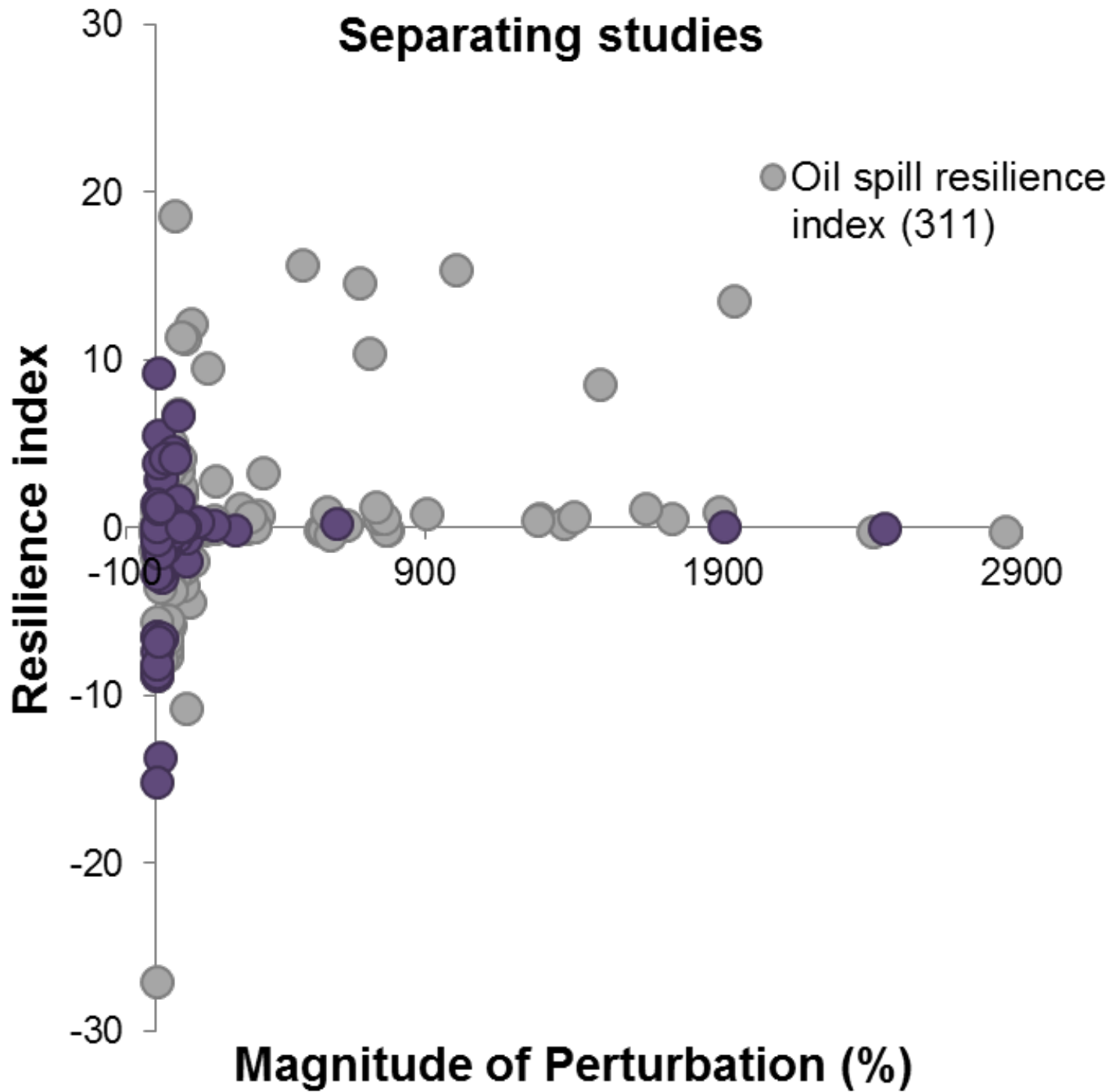
OIL SPILLS

305 measurements of perturbation
and how changed through time
(23 studies)

CORAL REEF DISTURBANCE

165 measurements of perturbation
and how changed through time
(12 studies – many more reefs)

Separating studies

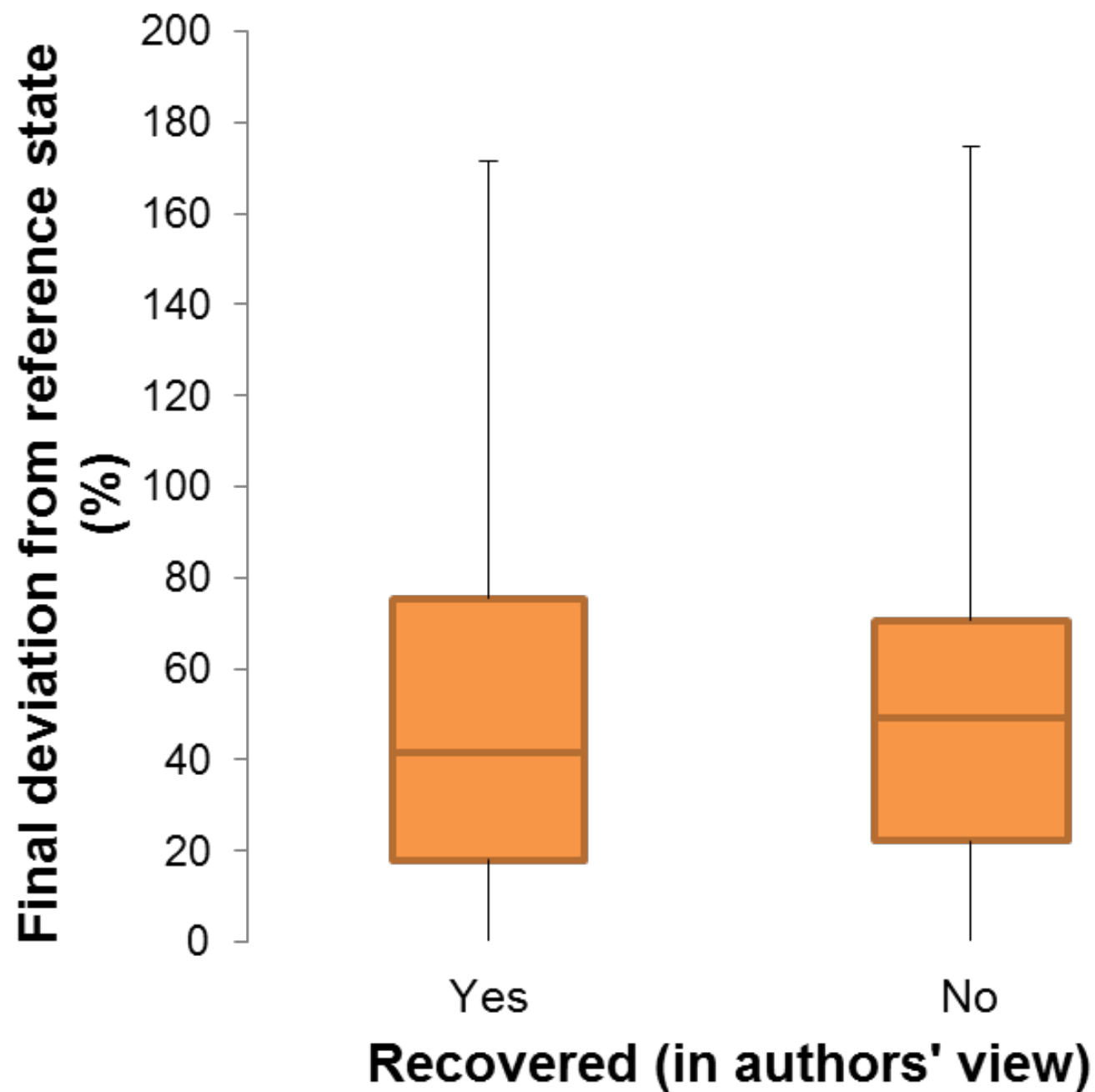


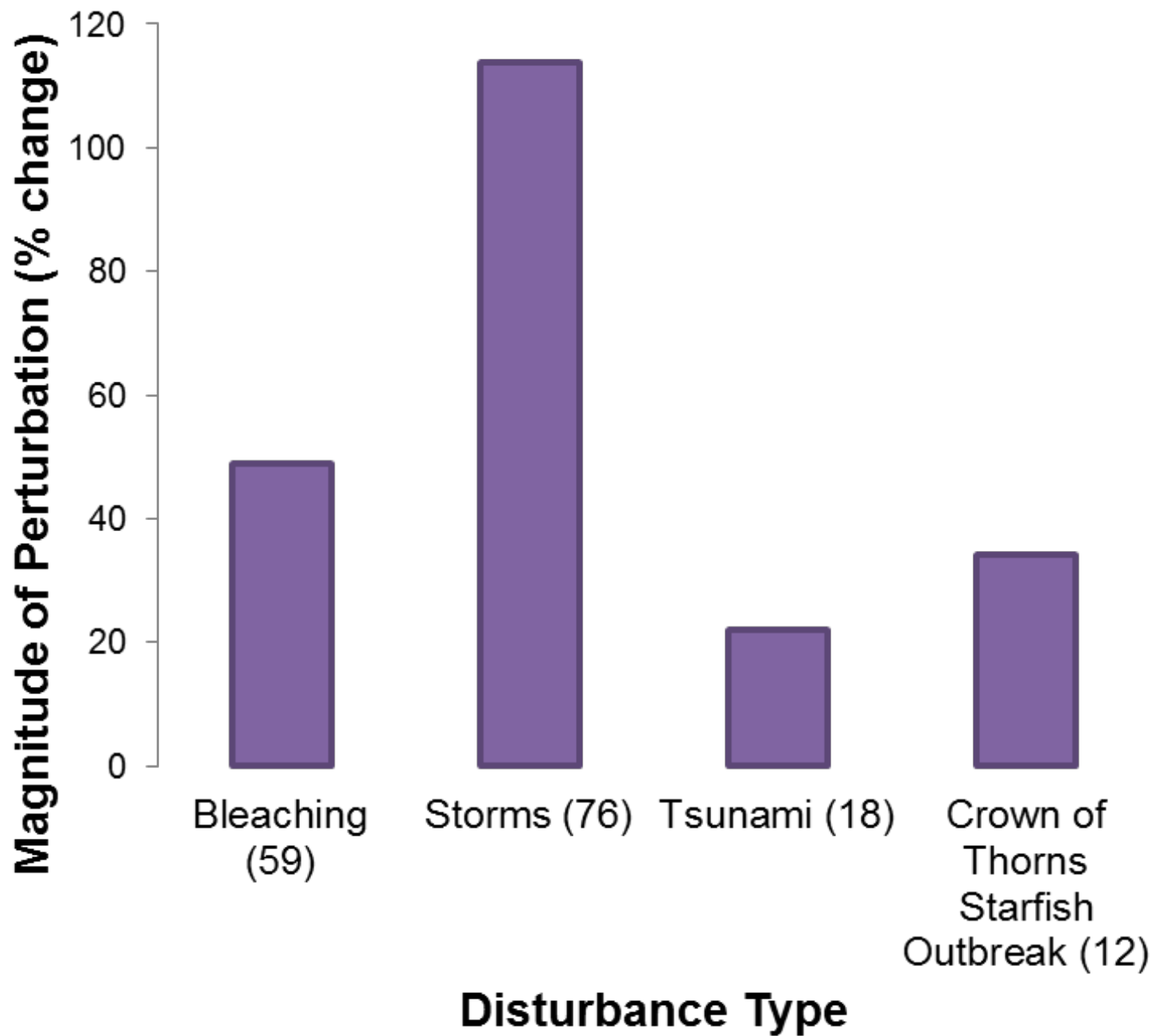
authors might say:

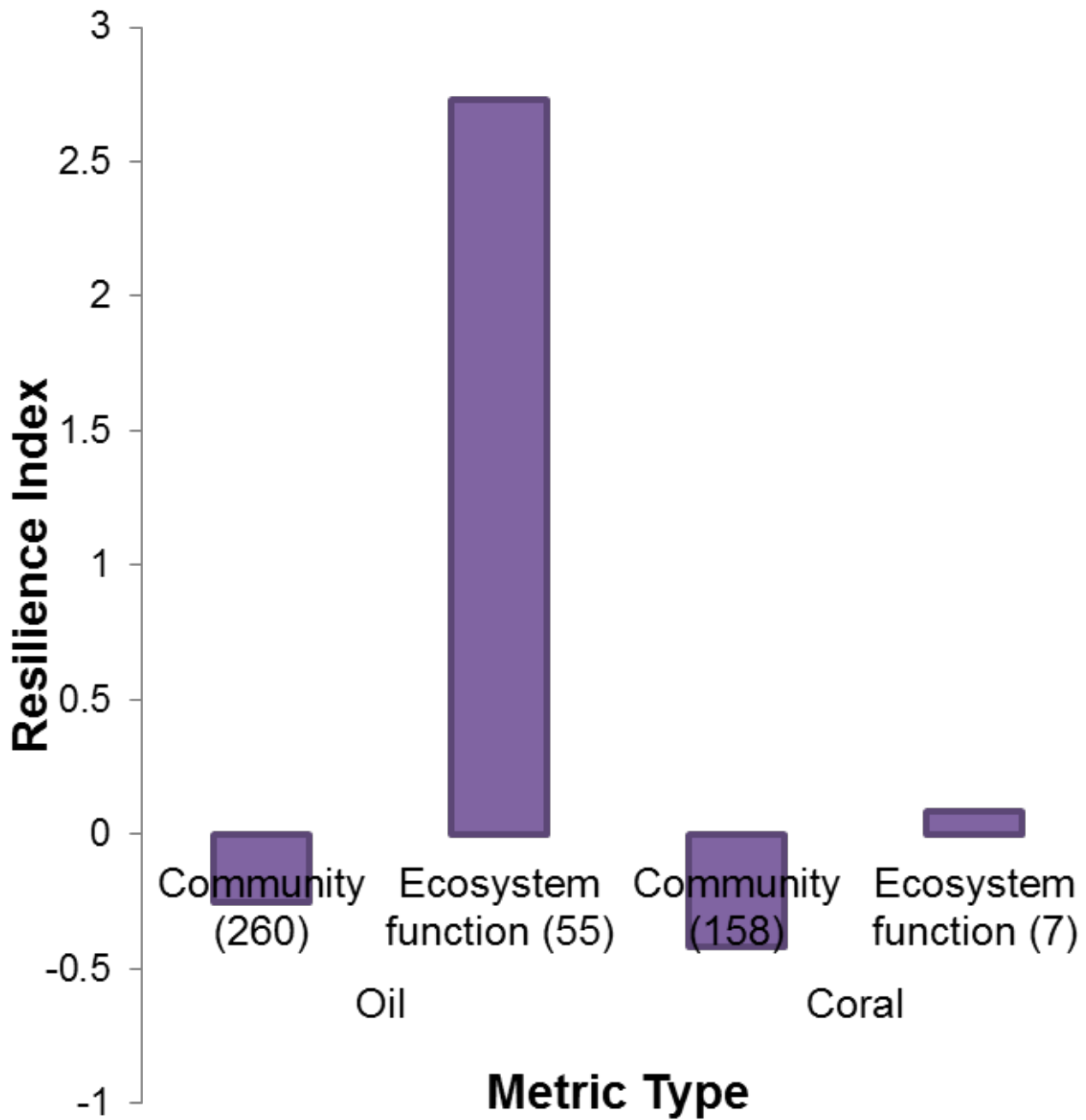
- system recovered
- not recovered
- mixed
- no statement

Out of 485 metrics, 266 were for systems categorized by authors as recovered or not

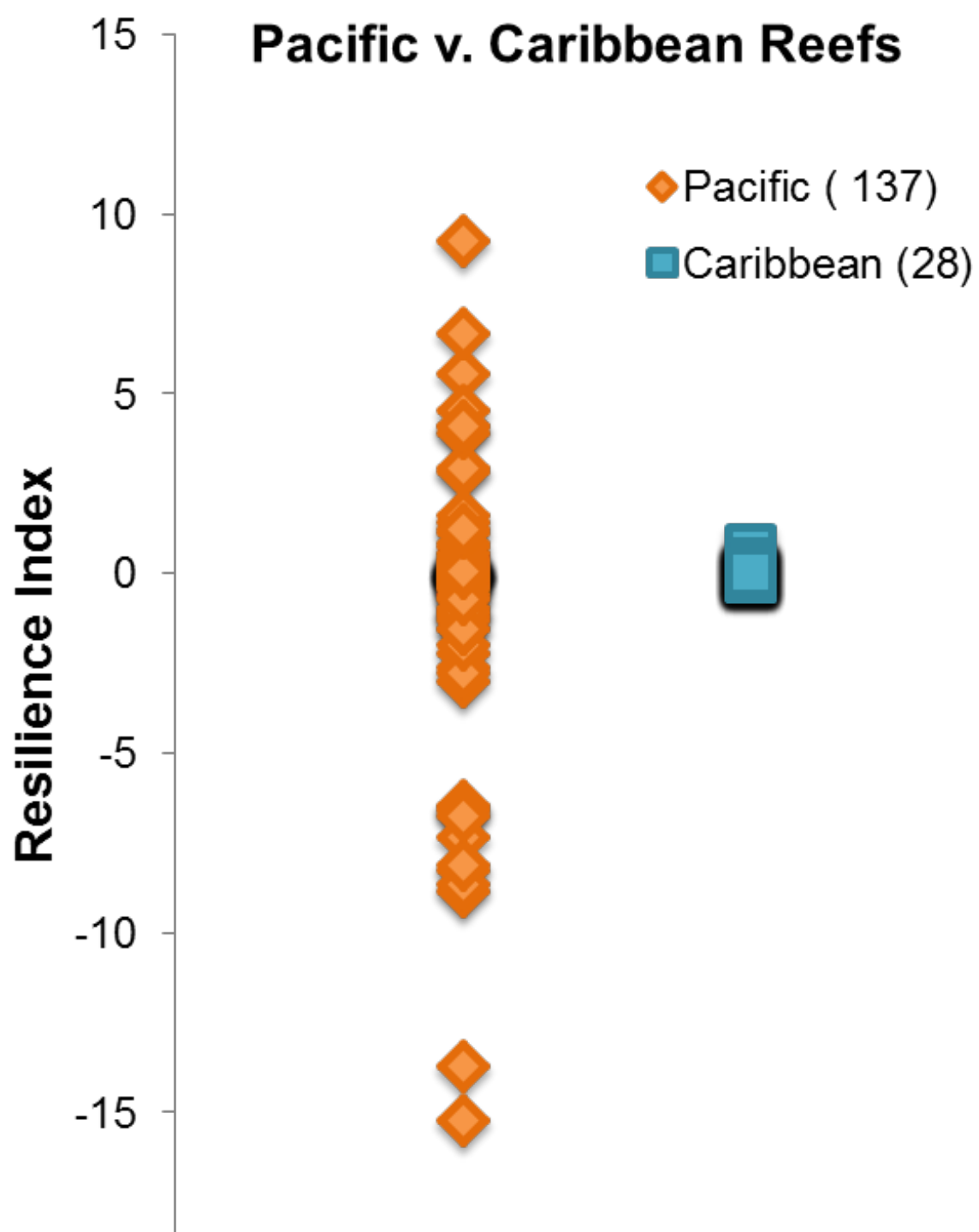
Box plot after removing outliers



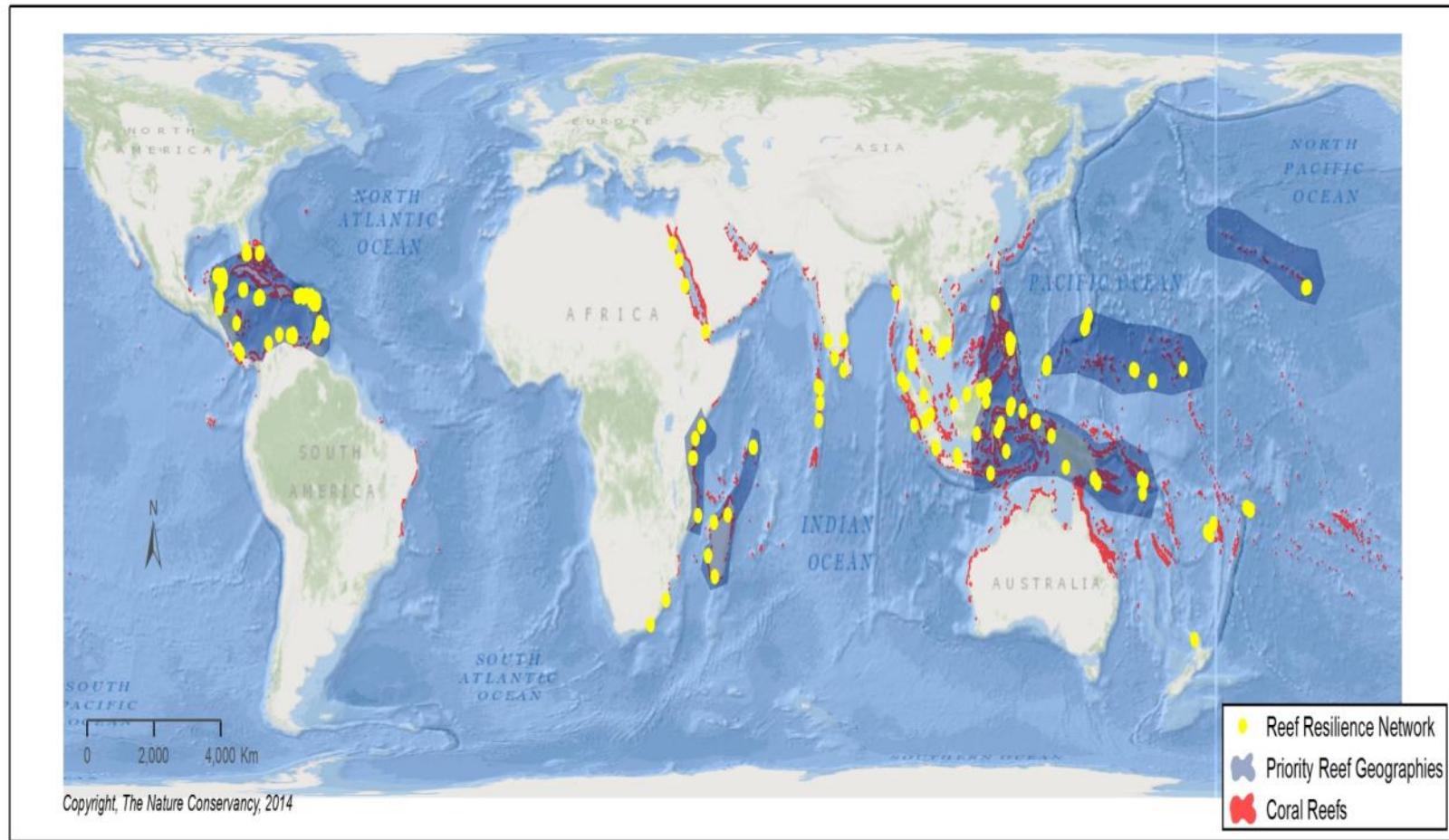




Pacific v. Caribbean Reefs



GEOGRAPHIC PRIORITIES REEF RESILIENCE NETWORK



no scientific advance

without standardization

common measurements

common metrics

common analyses

if you had those, could do

“bright spot” analysis

“positive deviance analysis”

Jerry Sternin of Save the Children




height and weight of
children

asked mothers of
positive deviants, what they did
differently?



Finding bright spots, and not just failure
but also connecting to people.....relevance

A photograph of two young boys running on a sandy beach towards the camera. The boy on the left is wearing a white short-sleeved shirt and blue shorts, while the boy on the right is wearing a white polo shirt and dark shorts. They are both smiling and appear to be in motion. The background shows the ocean with gentle waves under a clear sky.

IT'S A GOOD DAY TO
**GO TO THE
BEACH**
IN ALABAMA

2012 November elections in US

TNC ballot measures: won 11 of 13, \$629M

Overall > \$1 billion raised for conservation at ballot b

Alabama:

**in October 2011, 75% population against any
State money for conservation**

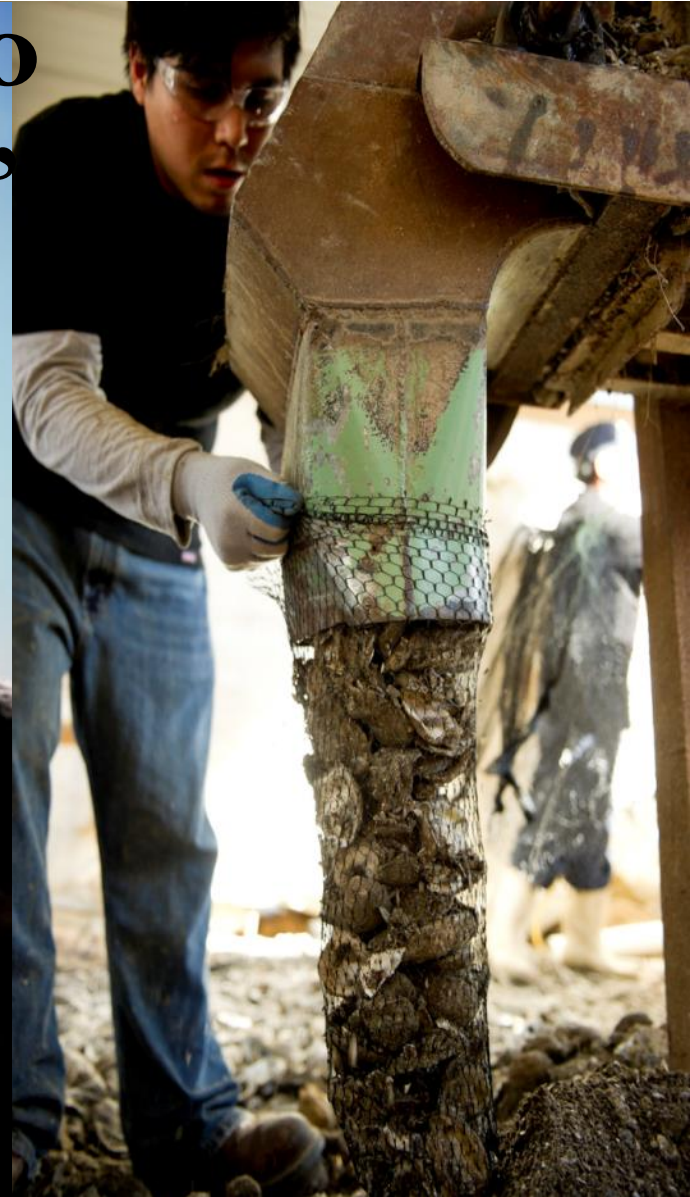
**in November 2012, 75% voted for conservation
wild lands ballot measure**

**Note conservation got more votes than Romney in
Alabama: 75% to 60% !**



“You have given hope to those who had no hope”

Grace Scíre, Boat People SOS

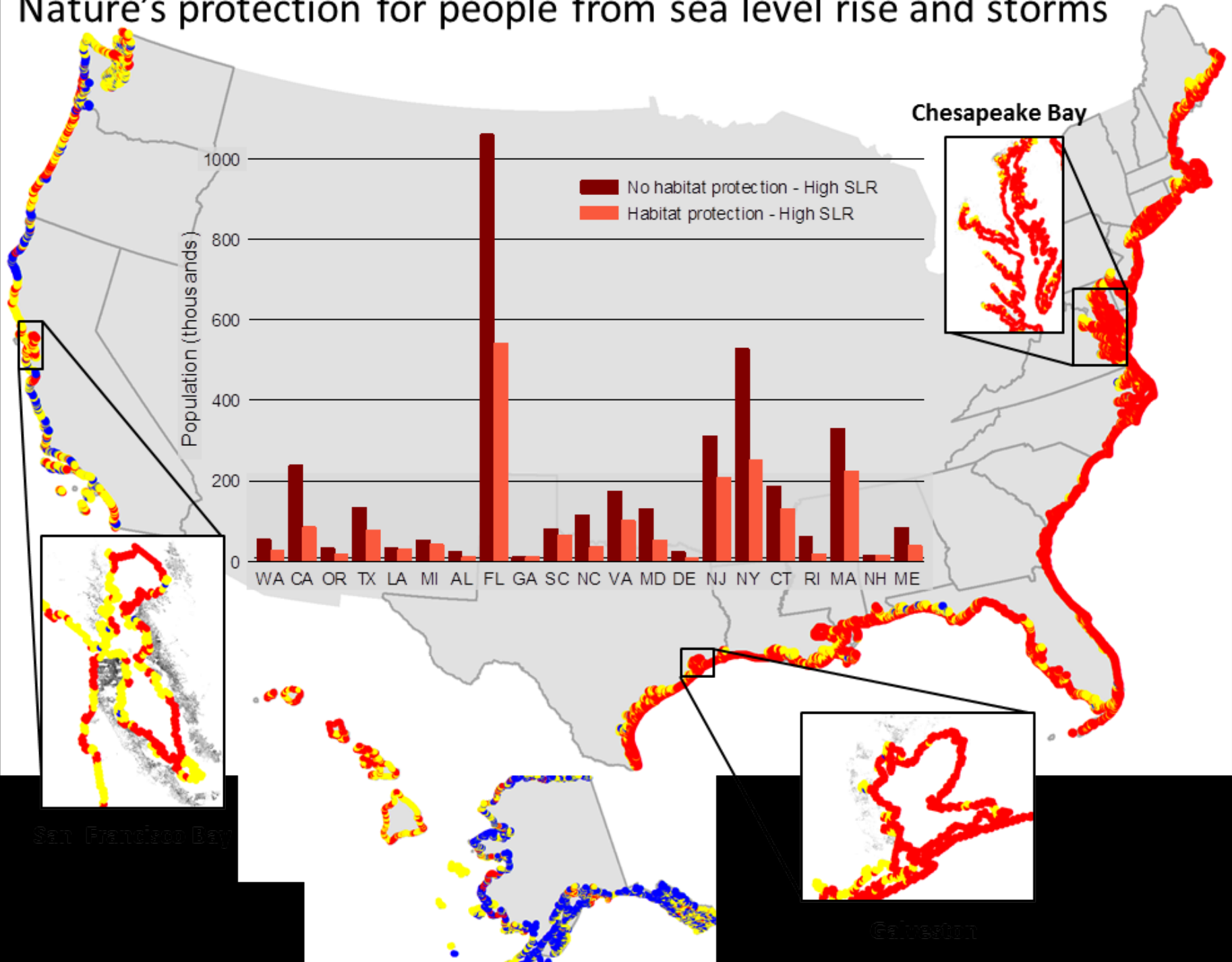


Create almost 3000 permanent
jobs

And greater than 24,000
construction jobs

Pay for itself in 10-15 years

Nature's protection for people from sea level rise and storms



San Francisco Bay

Chesapeake Bay

Galveston



Brand and
reputation
matter

Google™

In modern global world “brand” and
reputation translates into economic value:

In 1975 on average 80% company’s
value in US was equity –meaning goods,
land owned, buildings, equipment

Today only 20% is equity –rest is
“intangibles” – e.g., social, environmental
and innovation reputation

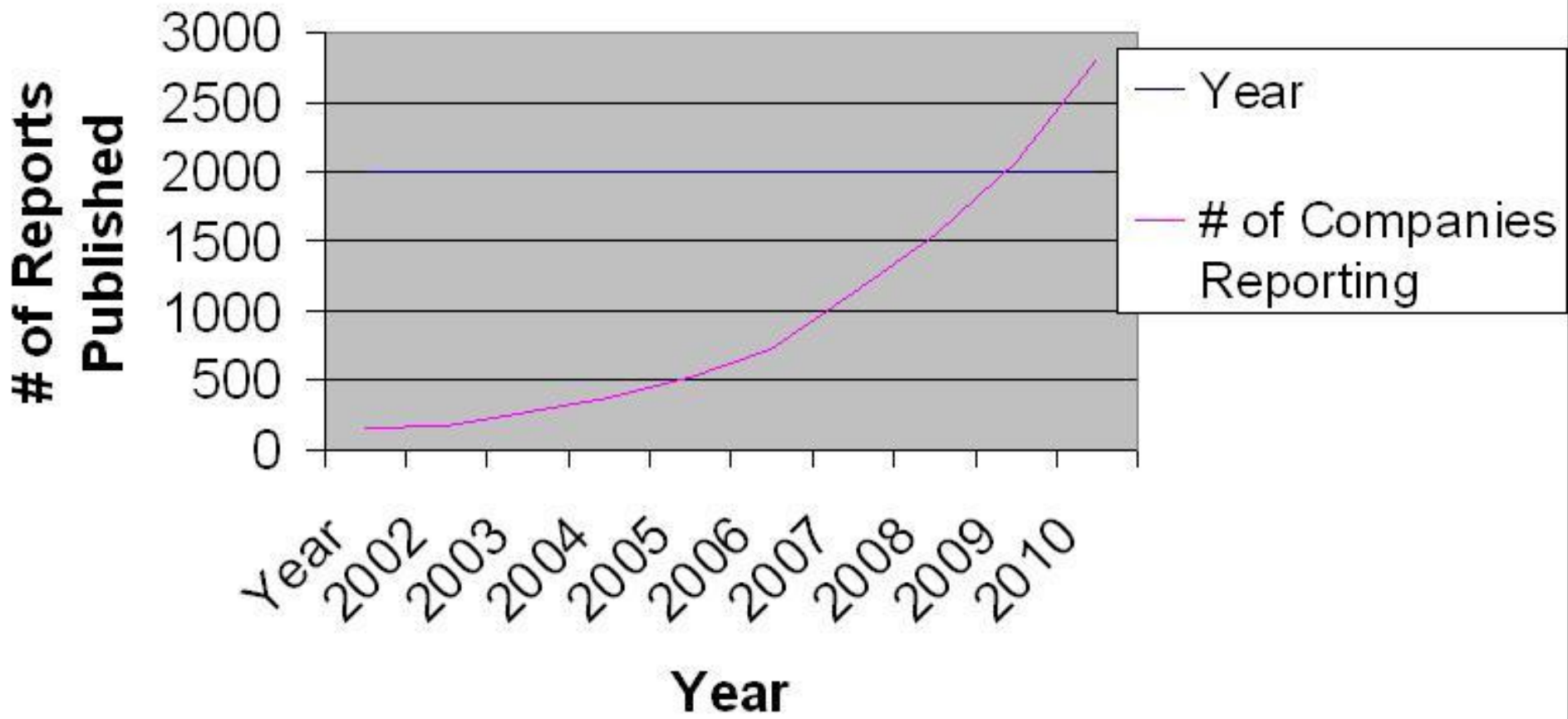
Investors and lenders are pushing global corporations towards “Green Behavior” (as risk management):

Investors network on climate change manages
\$11 trillion in assets – press companies to adopt
carbon disclosure and reporting

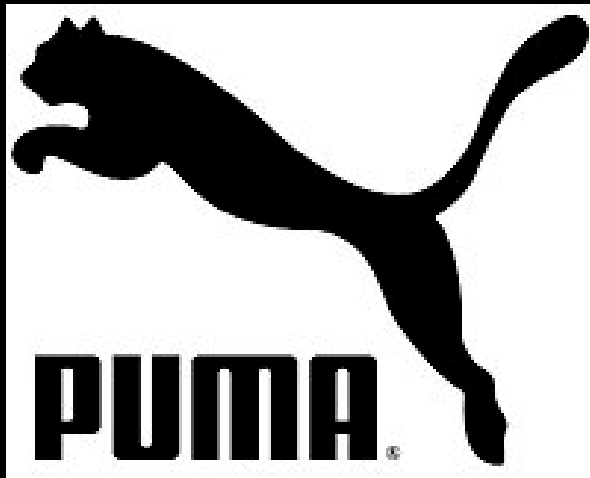
California retirement fund (largest in US) requires social
and environmental filter on investments (CalPERS)

Banking for Environment Initiative: NY Mellon Bank, Barclays, China construction bank,
Deutsche Bank, Lloyds banking group, Nomura, Northern Trust, Santander, Sumitomo Mitsui,
Westpac

Sustainability Reports Published on GRI Website: 2002 - 2011



Tenfold increase in # of companies issuing sustainability reports



Running shoes,
sports clothes

Environmental profit and loss account

Treats planet as supplier and reports what the costs would be to Puma if they had to pay for clean water, cleaning up pollution, land use, etc

For 2011 they “owed” the planet \$191 M dollars

PUMA's EP&L Account

	Water use	GHGs	Land use	Air pollution	Waste	TOTAL	
	€ million	€ million	€ million	€ million	€ million	€ million	% of total
	33%	32%	26%	7%	2%	100%	
TOTAL	47	47	37	11	3	145	100%
PUMA operations	<1	7	<1	1	<1	8	6%
Tier 1 – manufacturers	1	9	<1	1	2	13	9%
Tier 2 – processors	4	7	<1	2	1	14	9%
Tier 3 – raw material processors	17	7	<1	3	<1	27	19%
Tier 4 – raw material producers	25	17	37	4	<1	83	57%
Geographic analysis							
EMEA	4	8	1	1	<1	14	10%
Americas	2	10	20	3	<1	35	24%
Asia/Pacific	41	29	16	7	3	96	66%
Segmental analysis							
Footwear	25	28	34	7	2	96	66%
Apparel	18	14	3	3	1	39	27%
Accessories	4	5	<1	1	<1	10	7%

- Wal-Mart sales higher than GDP of all but 25 countries

its 2,100,000 employees outnumber the populations of 100 nations

World's largest grocer

In 2010 Walmart made commitment
to achieve 100% of its seafood MSC
certified – 73% in 2012

12 % catch
over 200 fisheries
(only 7 in 2005)





TNC Marine Conservation Focus

Integrated Ocean Management

Sustainable Fishing

**Conservation/Restoration to Reduce Coastal Community
Vulnerability**

people, community, government business ?



WHAT
MONEY
CAN'T
BUY

*The Moral Limits
of Markets*

MICHAEL J.
SANDEL

AUTHOR OF THE INTERNATIONAL
BESTSELLER *Justice*



Selling out on nature

need this “new
conservation”

but not crowd
out values



Remarkable television and billboard campaign

“crying Indian campaign” 1971

crying about litter along highways and in parks, and pollution in water (crying as canoed through polluted rivers) –resonated with public

Reduced litter by 88% –changed behavior of nation

not about breaking even, nostalgia for the past

**Building
a Better Future**

Construction, I can do that...

enter

 **NAWIC**
National Association of Women in Construction

Email babf@nawic.com.au
www.buildabetterfuture.com.au

Building a Better Future is supported by NAWIC and is funded by the Australian Government through the Women's Leadership and Development Programme.

Science of a better future – jobs, opportunity,
freedom, fairness, feeling connected

**“President Obama
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**“..... slow the rise of
the ocean and heal
the planet. My promise
is to help you and your
family”**

How we do conservation ?

- broad public support (earth day 1973)
- government policy (ESA, clean air and water act)
- business buy-in (MSC, Walmart, etc)

**optimistic, restore, reconnect, people,
communities, education and jobs,
technology for nature, green infrastructure
economic growth**

**“better future”
“social networks”**

**Opportunity
Conservation**



marine aggregation: why are you here?

BOWLING ALONE



Robert D. Putnam