

Unlocking the archives...



Rescue of historical records of the US Fish Commission and the US Navy

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OUTLINE

- Who we are
- Historical Ecology
- Rescue of Historical Data
- User of Climate Products



- National Marine Sanctuary
- △ Marine National Monument
- ⊕ Proposed for sanctuary designation

Scale varies in this perspective.
Adapted from National Geographic maps.

- To serve as trustee for the US's system of marine protected areas,
- To conserve, protect, and enhance their biodiversity, ecological integrity and cultural legacy.

NATIONAL MARINE SANCTUARY SYSTEM

- ✓ Includes 14 marine protected areas, covering over 160,000 square miles
- ✓ Includes the Rose Atoll Monument, the largest protected area in the US and one of the largest in the world

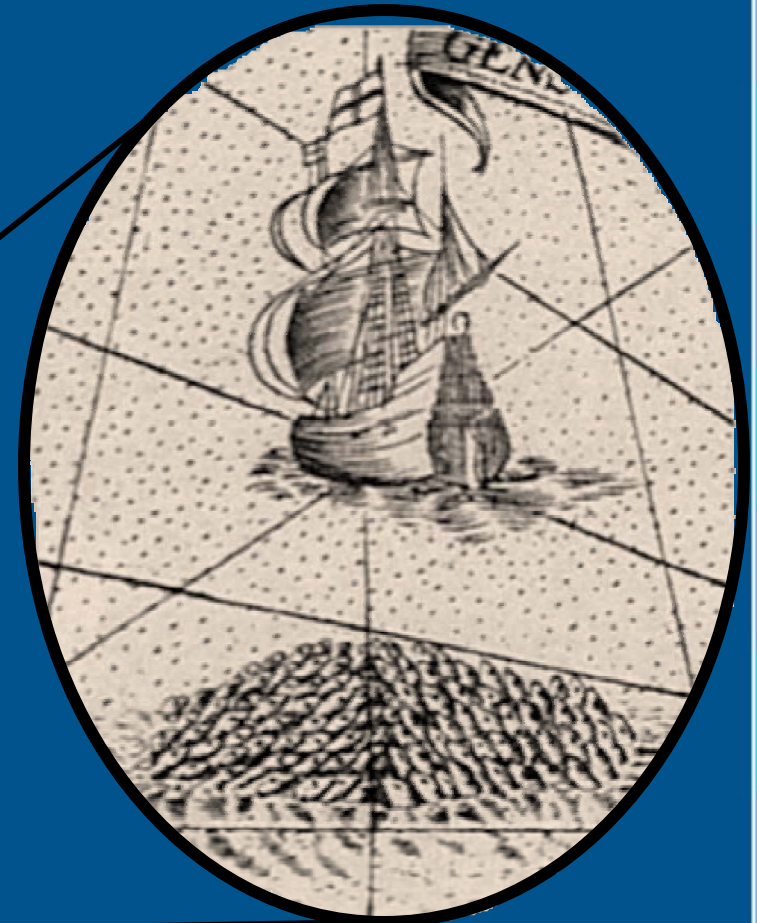
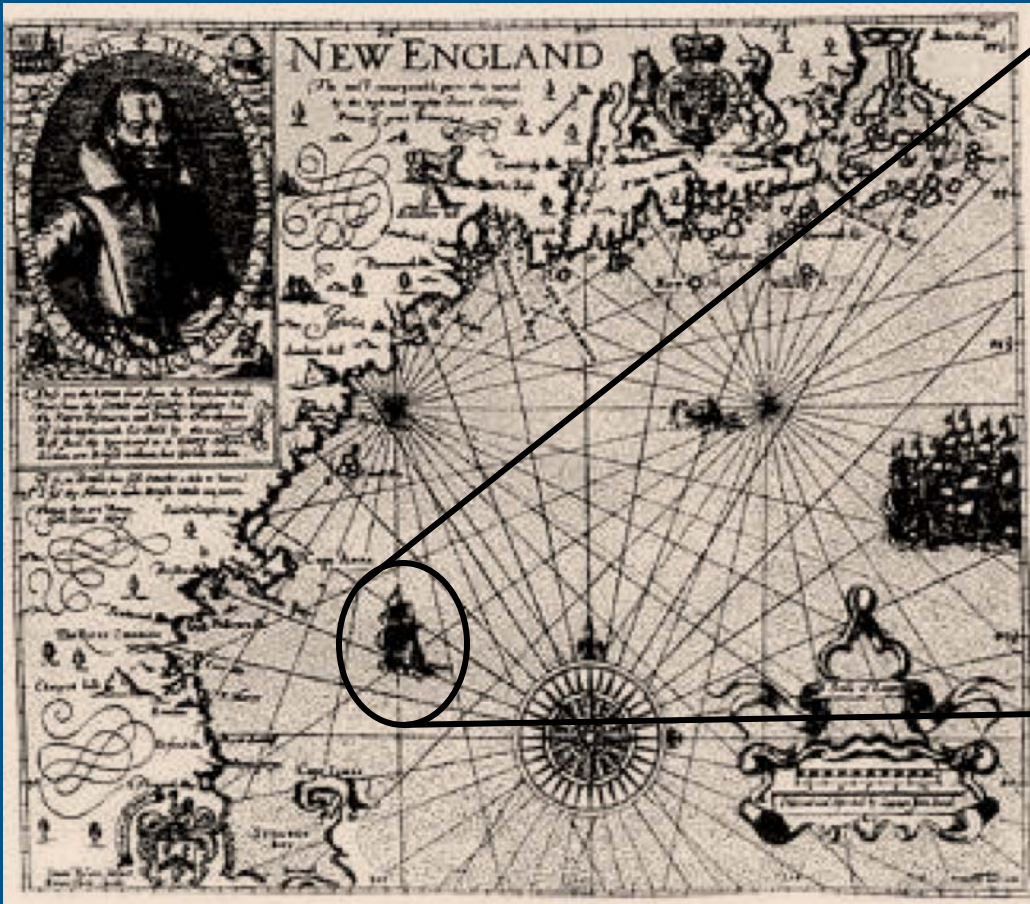


NATURAL AND MARITIME RESOURCES



PROTECTING
THE OCEANS
FOR
FUTURE
GENERATIONS

Historical Ecology



**Embellishment 1635
edition**

John Smith's *Map of New England*,
1616

Courtesy: Karen Alexander

Documenting the Shifting- Baseline



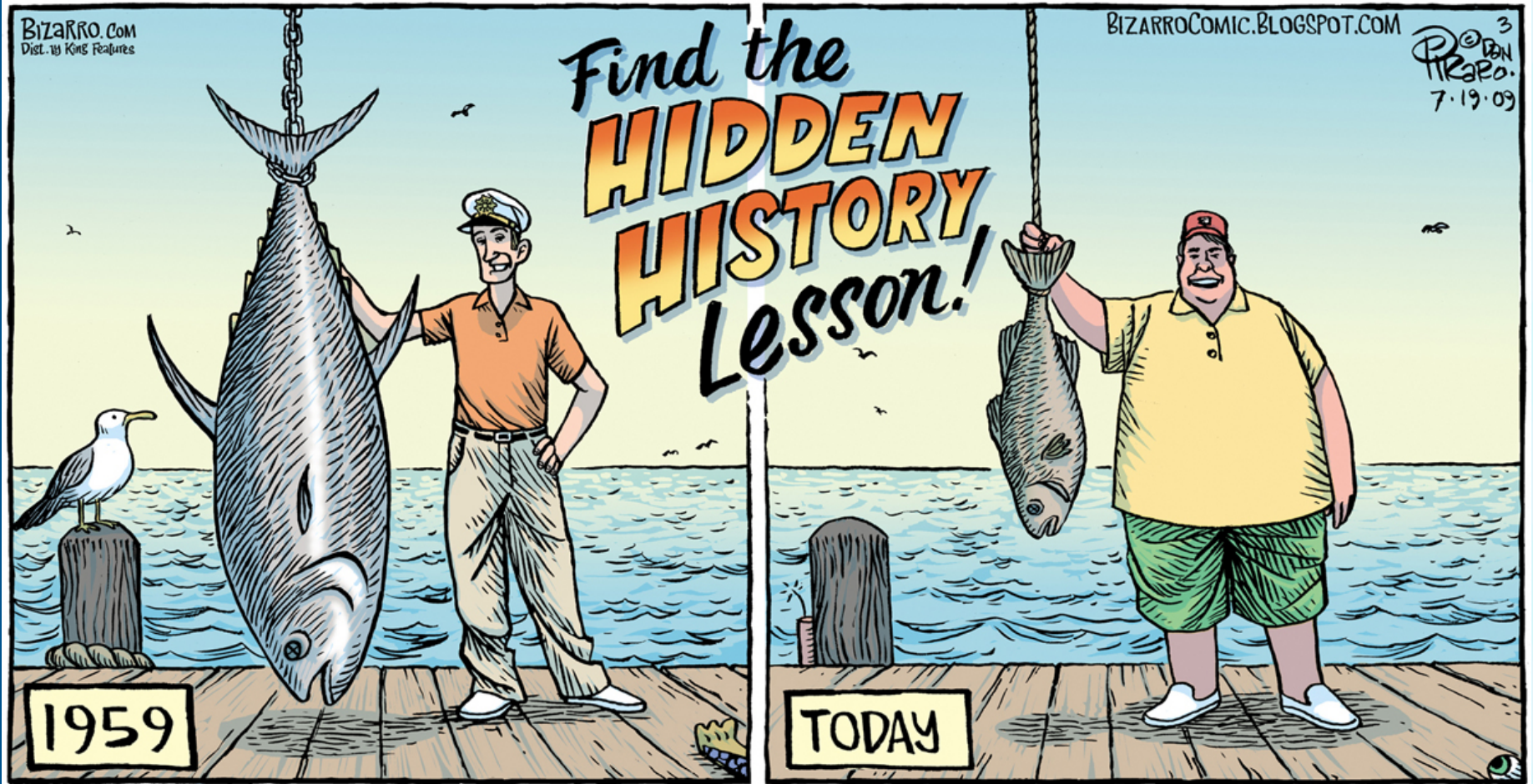
Trophy fish caught on Key West charter boats

Over last 50 years:

- 88% decline in fish weight,
- No decline in cost of fishing trips

Source: McLenachan, L. 2009. Documenting Loss of Large Trophy Fish from the Florida Keys with Historical Photographs *Conservation Biology* 23(3)

Or...



Courtesy: Dan Piraro

What is “natural”, “pristine”?

What are ecological Baselines?



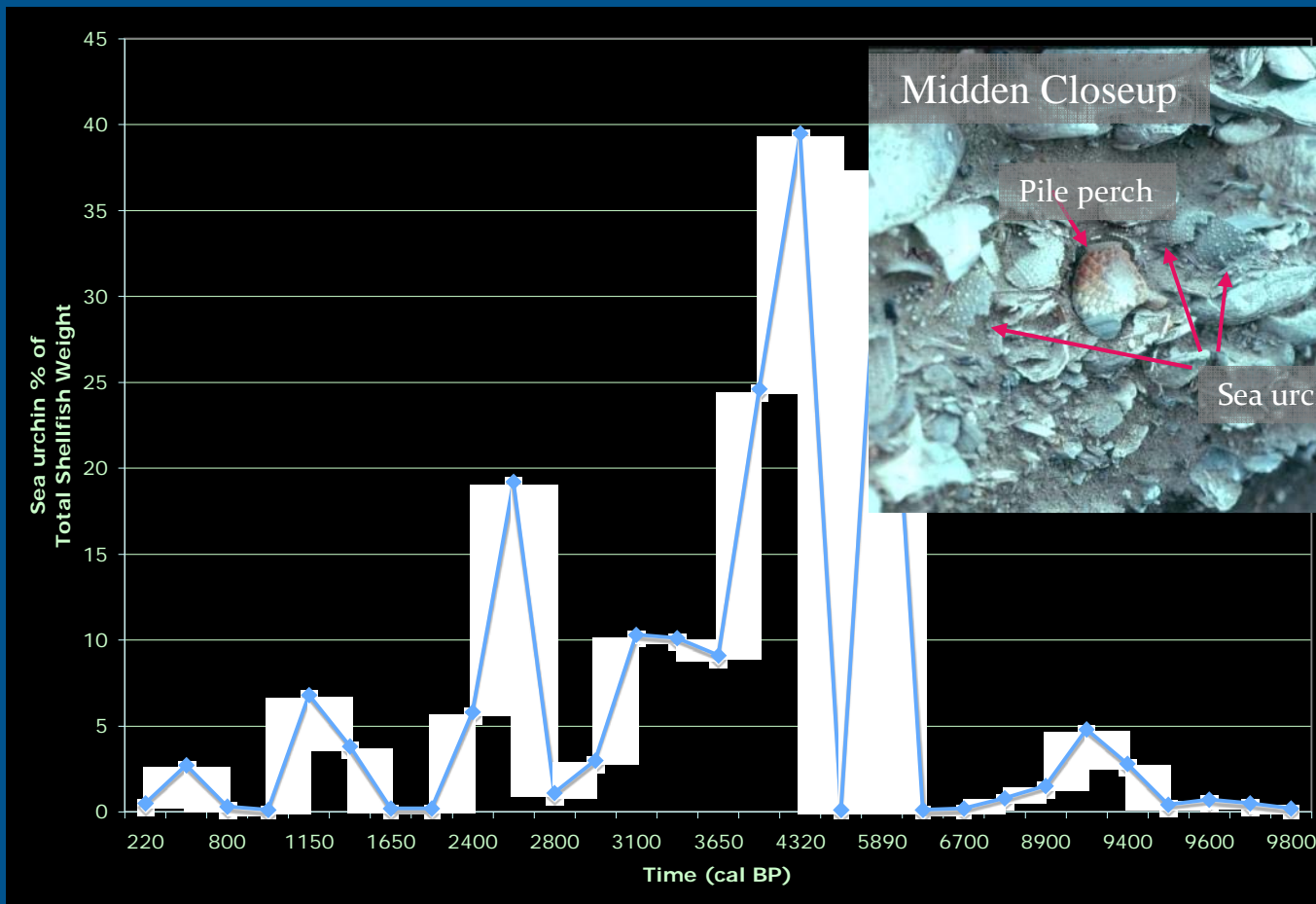
San Miguel Island

Landscape used to be Indian settlement 7,500 years ago

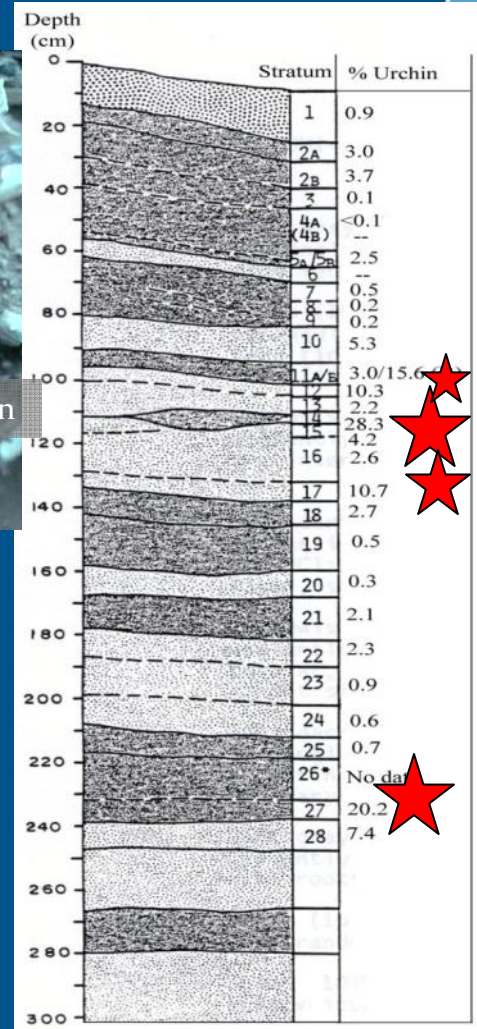
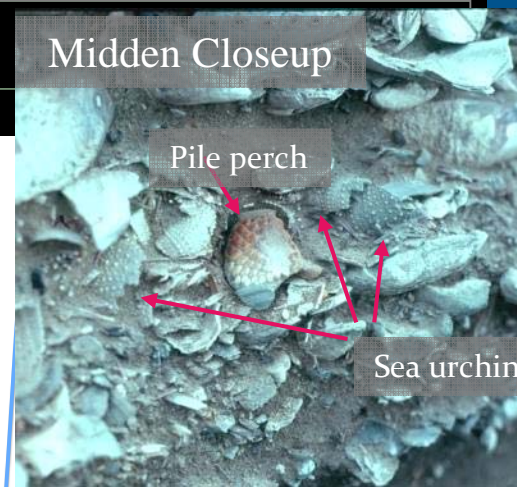


Source: Torben Rick, Smithsonian Institution

Sea Urchin Remains Through time on San Miguel Island



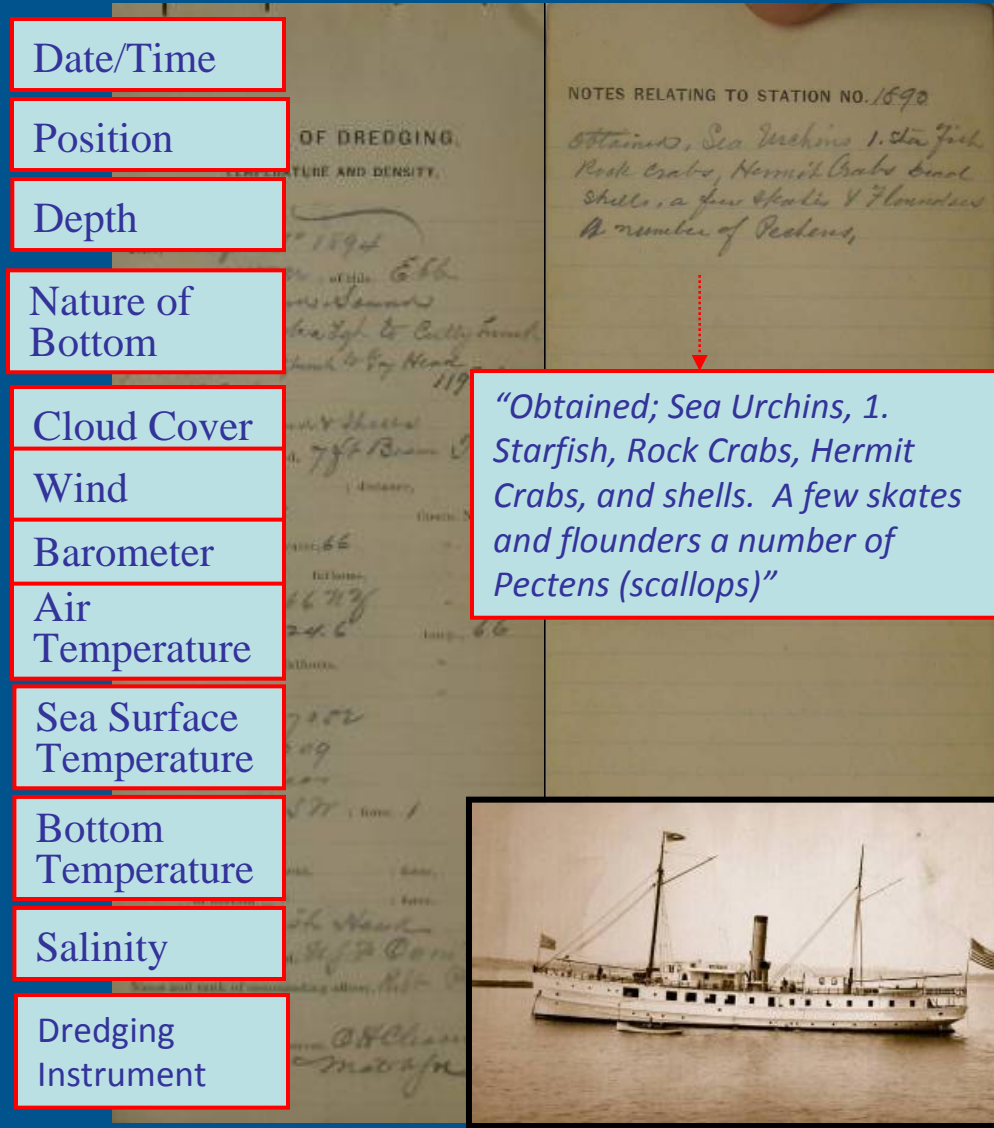
Source: Torben Rick, Smithsonian Institution



RESCUE OF HISTORICAL DATA



Scientific logs of historical US Fisheries Research Vessels



- 6 dedicated research vessels
- Covering 1880s to 1930s
- Broad geographic coverage
- One ship with 3,000 survey stations
- 15,000 weather obs.
- + soundings, + biological

Deck Logs of US Fisheries Research Vessels

Deck Log of the VESSEL *Albatross*
Under the command of *Comdr. M. S. G. ...*

Hour	Wind	Barometer	Air Temp	SST
1	Calm	30.20	45.25	40
2	"	30.21	45.27	40
3	"	30.22	45.27	40
4	"	30.23	45.31	40
5	"	30.24	45.31	40
6	"	30.25	45.31	40
7	"	30.26	45.31	40
8	"	30.27	45.31	40
9	"	30.28	45.31	40
10	"	30.29	45.31	40
11	"	30.30	45.31	40
12	"	30.31	45.31	40
13	"	30.32	45.31	40
14	"	30.33	45.31	40
15	"	30.34	45.31	40
16	"	30.35	45.31	40
17	"	30.36	45.31	40
18	"	30.37	45.31	40
19	"	30.38	45.31	40
20	"	30.39	45.31	40
21	"	30.40	45.31	40
22	"	30.41	45.31	40
23	"	30.42	45.31	40
24	"	30.43	45.31	40

Hourly weather observations

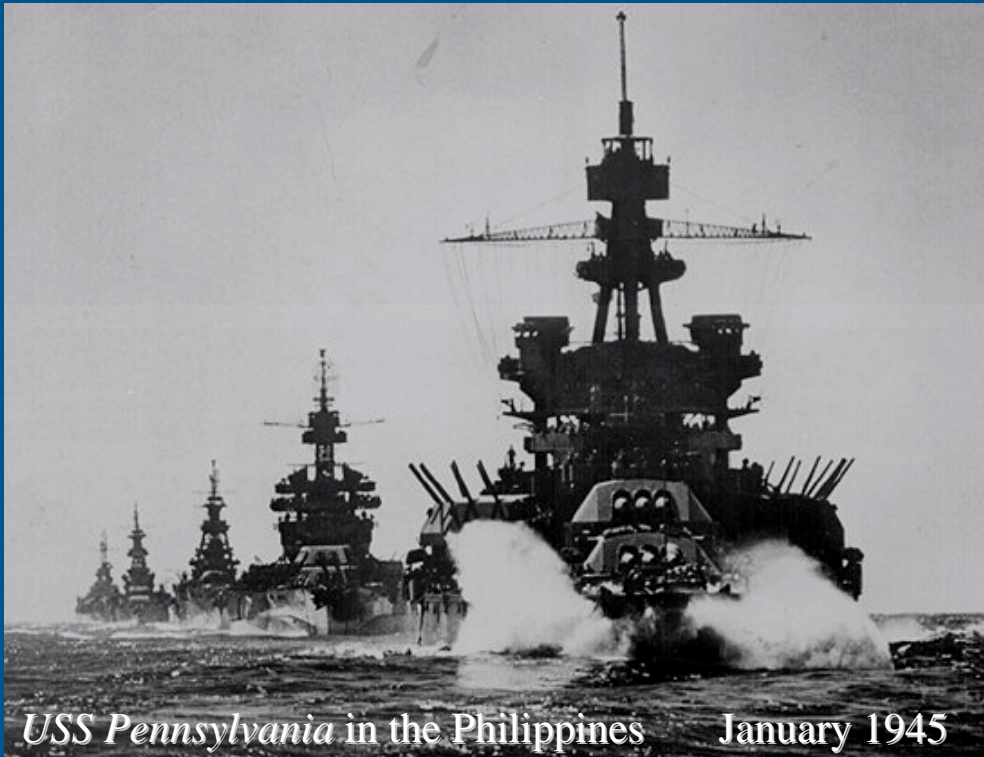
Wind

Barometer

Air Temp

SST

The Ship logs of the US National Archives



USS Pennsylvania in the Philippines January 1945



Wilkes

- **Entire collection of US Navy ship logs!**
Starting 1801 to 1970s
- **Early Exploration (Wilkes, Perry, Surveying, ...)**
- **US Coast Guards ships**
- **Lighthouses**



US Navy Ship Logs



USS Constitution vs HMS Guerriere, 19 August 1812.

"In Action" by Michel Felice Corne (1752-1845)
U.S. Naval Academy Museum

U. S. Frigate Constitution.
Isaac Hull, Capt. Commander.
February 17, 1812

- 41 logbooks, 1803-1934
- Extensive metadata
- each day at sea: hour, ship speed (knots and fathoms) and course, direction of wind, general remarks

	H	K	F	Course	Wind	Remarks on Monday August 17 th 1812
3 P.M. 109 lbs	1	"	4	by S. by E.	by N. by E.	Commenced, with fresh breeze and cloudy, at 30 minutes after
by 10 M. 1	2	"	4	South	by S. by E.	observed, saw ship to the Southward, at 1 P.M. shot the topmast
19 rounds of 24 lbs	3	1	4	S. by E.	North	of the Mizzen, and also shot out of the main and Mizzen topmast
29 rounds of 24 lbs	4	1	4	"	"	at 4 P.M. 1 shot Mizzen top Gallant Mast, and shot the top
31 rounds of 24 lbs	5	1	"	"	"	out of the main top sail, at 5 P.M. got out the Flying Jib Mast at
of 10 lbs	6	"	"	"	"	1/2 past 5 P.M. Crossed top Gallant Mast, at 4 P.M. Moderately and
	7	2	4	S. by E. 2/3 S.	"	Sun. B. O. 26
	8	3	6	S. by E. 1/2 S.	"	When 4 to 5 P.M. a light air from the Southward
						and then at 5 P.M. lost to Gunter, and exercised the Crew

Next Step: Logbook in Museums and Private Collections

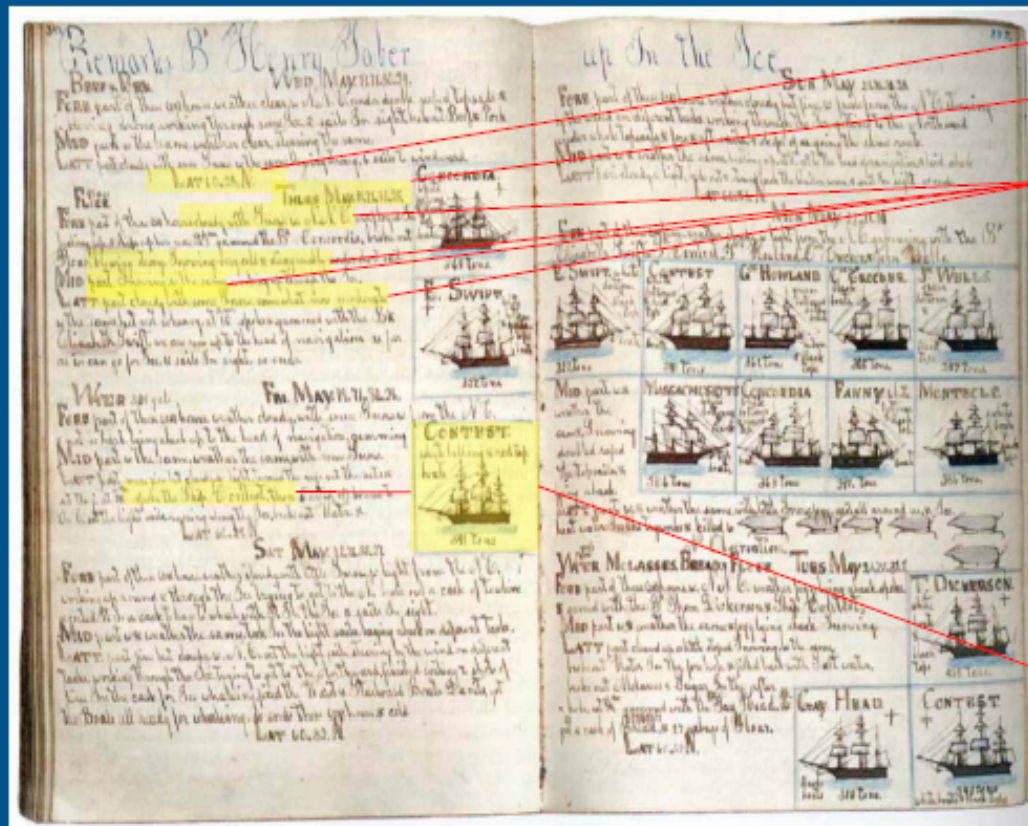
MYSTIC SEAPORT

THE MUSEUM

OF AMERICA

AND THE SEA

SAMPLE LOGBOOK PAGE



Position

Date

Weather

Observations

(four observations in the same daily log entry) ...

"Cloudy with snow w. NNE"
"Snowing very cold and disagreeable"
"Snowing as the same", partly cloudy with some snow, somewhat more moderate"

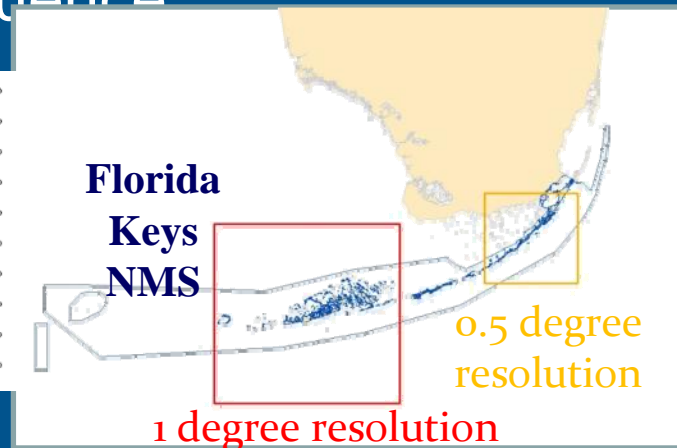
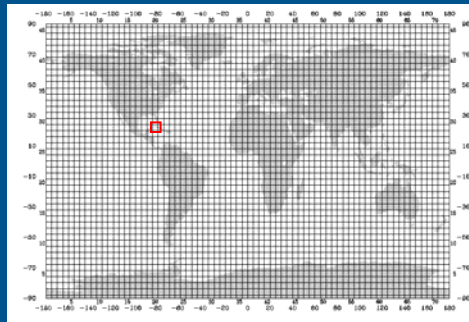
Potential sources for additional info and verification

Log of the HENRY TABER (within a little more than four months from these entries, she would be lost and abandoned in the ice off Wainwright)

Sanctuaries as users of Climate products

Global Climate Models vs Resource Management

- Managers need information or research results scaled to their sphere of influence



From Reanalysis to Tailored Products

- Linkages with ACRE
- Outreach to *Unsophisticated/non-scientific* Users
 - How is climate change impacting resources?
 - How will it affect communities?

Conclusions

1. Mining historical scientific and deck logs for their full environmental potential (not just weather)
2. Access to historical records in archives, museums/private collections, other countries...
3. Confluence of climate and ecology – need for data at the global scale for local purposes
4. Beyond Scientific curiosity: Management implication of this work: need to understand the extent and causes of environmental changes, whether climate or ecological.
5. Challenges to historical reanalysis:
 - Finding and identifying historical sources
 - International pursuit: In the case of former colonies such as the US, the records can be in Spain, France, the UK, Russia.
 - Historical context when data was taken – equipment used, methods, historical purpose of data gathering
 - Imaging and keying the data

Upcoming WMO workshop: International Workshop on Climate and Ocean Fisheries

Rarotonga, Cook Islands

3 – 5 October 2011

The workshop topic is climate and oceanic fisheries, focused on the Pacific. The workshop is being convened by WMO (through CAgM and JCOMM).

Other co-sponsors to-date include Australia (through the Bureau of Meteorology, CSIRO and AusAID), University of Auckland, SPC, Cook Islands Meteorological Service

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National Marine Sanctuaries
National Oceanic and Atmospheric Administration



The future
generation was
us!

*Photo from Miami Herald. 1929
Courtesy Loren Mclenahan*