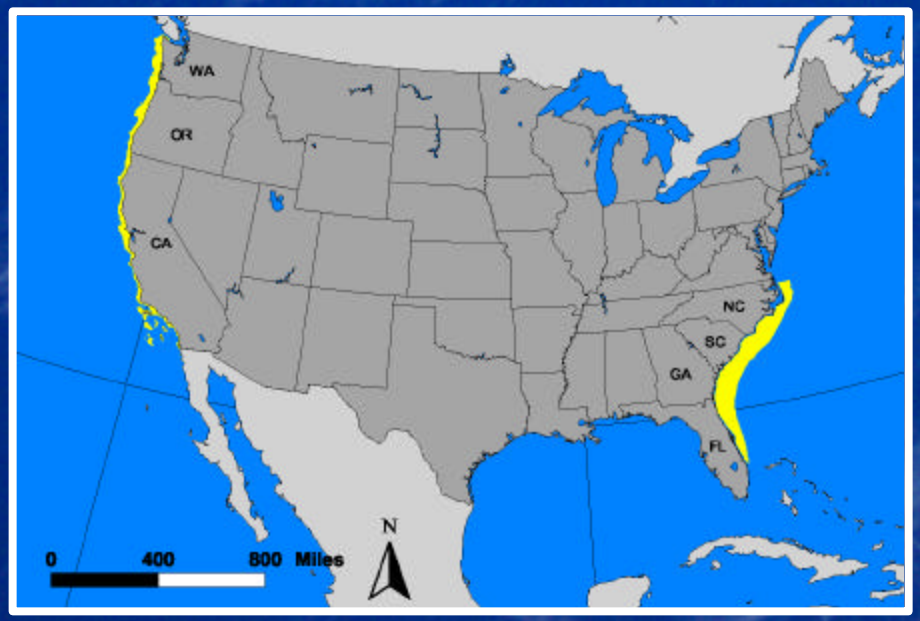
“Assessing Condition of Aquatic Resources in Near-Coastal Waters Along the U.S. Western and Southeastern Continental Shelf”

by J. Hyland, W. Nelson, and K. Summers



Partners

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

NCCOS
NOAA
NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE
science for coastal communities

NOAA
NOAA Marine Operations

NOAA FISHERIES
NATIONAL MARINE FISHERIES SERVICE
NOAA

NATIONAL MARINE
SANCTUARIES

Partners - continued

Purpose

- To assess condition of aquatic resources in near-coastal waters of the U.S. continental shelf (where prior EMAP-type assessments have been lacking)
- To provide quantitative benchmarks for comparisons with any future follow-up monitoring in these waters to determine long-term trends and how environmental conditions may be changing with time

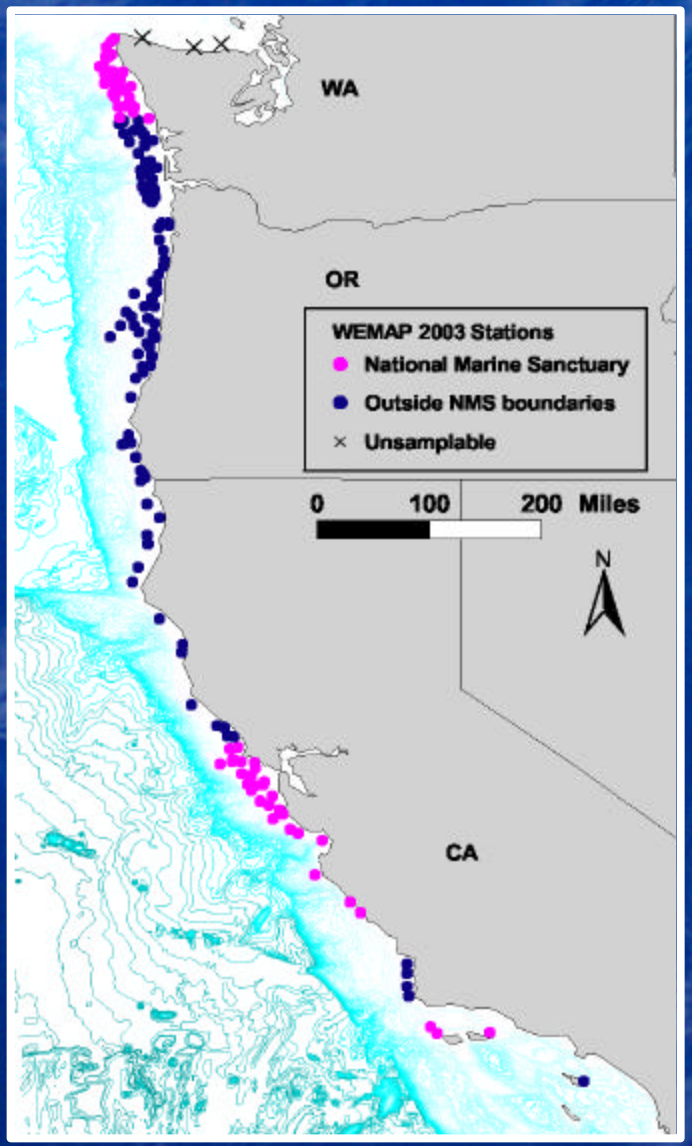
Approach

- Extension of previous EMAP efforts in estuaries and inland waters to near-coastal shelf waters
- Use of probabilistic sampling approach of EMAP to support statistical estimation of spatial extent of condition with respect to measured indicators
- Multiple indicators measured synoptically at each station to support “weight-of-evidence” assessments of condition, and examination of potential associations between presence of stressors and biological responses

Approach - continued

- Nesting of sampling sites across varying spatial scales to enable assessment of condition at state, regional, and national levels
- Sites included in all 5 NOAA NMSs on west coast and Gray's Reef NMS within SAB, thus allowing comparison of condition in sanctuaries vs. surrounding shelf waters.

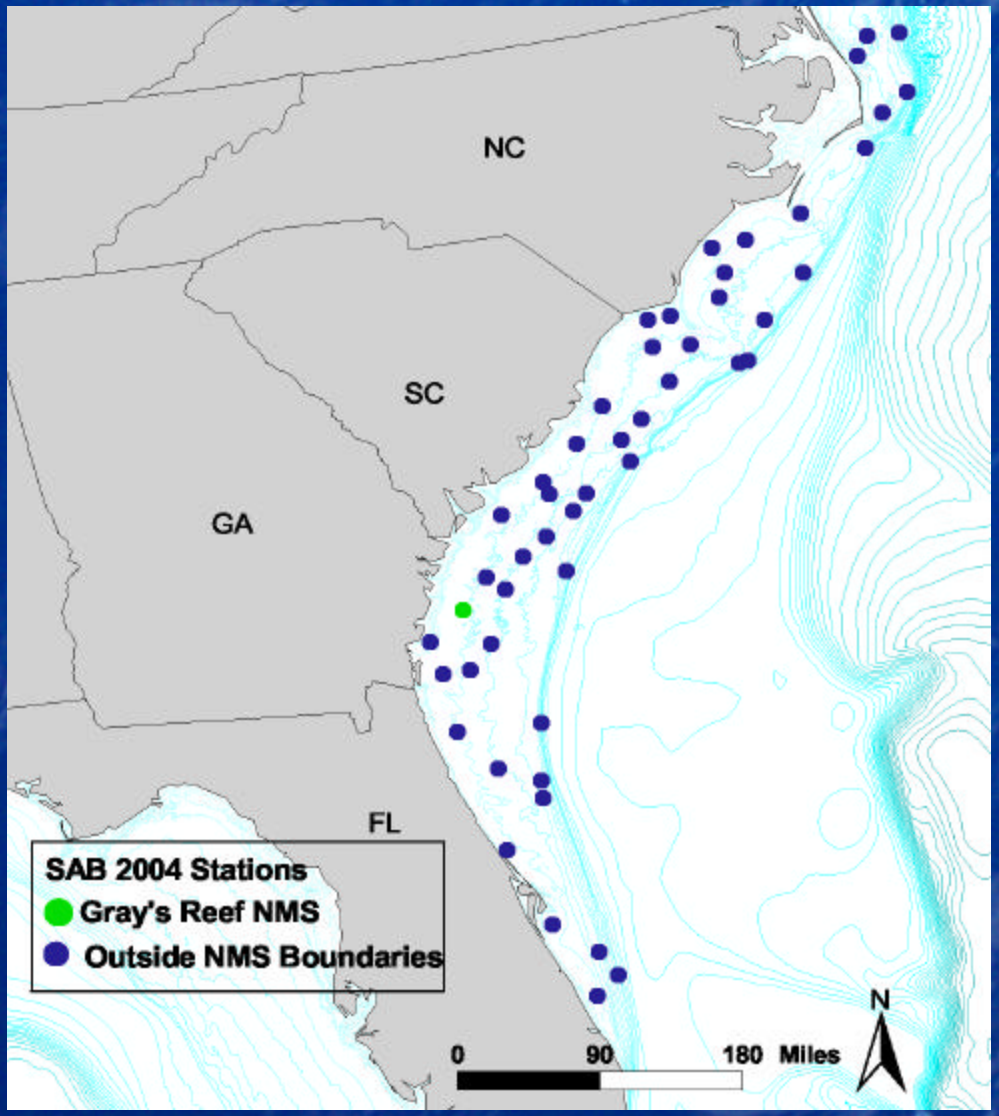
West Coast Shelf (30-120 m): June 03



Partners:
NOAA (NCCOS, NMSP, NMFS)
EPA/ORD/NHEERL
States of WA, OR, CA, AK
SCCWRP
MLML

Sampling Parameters:
Habitat Characteristics (T, S, DO, Nutrients, Grain-Size, TOC)
Stressors (Chemical Contaminants in Sediments & Biota)
Biological Condition (Benthic Infauna, Chlorophyll A, fish pathology)

SAB Shelf (~10-100 m): April 04



Partners:
NOAA (NCCOS, NMSP)
EPA/ORD/NHEERL
States of FL, GA, SC, NC

Sampling Parameters:
Habitat Characteristics
(T, S, DO, Nutrients, Grain-Size, TOC)
Stressors (Chemical Contaminants in Sediments & Biota)
Biological Condition
(Benthic Infauna, Chlorophyll A, fish pathology)

Observations/Lessons Learned

- **Need for large ships for sampling in offshore waters**

KNOTS
DEG
50
100
ASTERN
150
200
SINGER

Observations/Lessons Learned

- Need for large ships for sampling in offshore waters
- **Hook-n-line works well for fish sampling offshore**

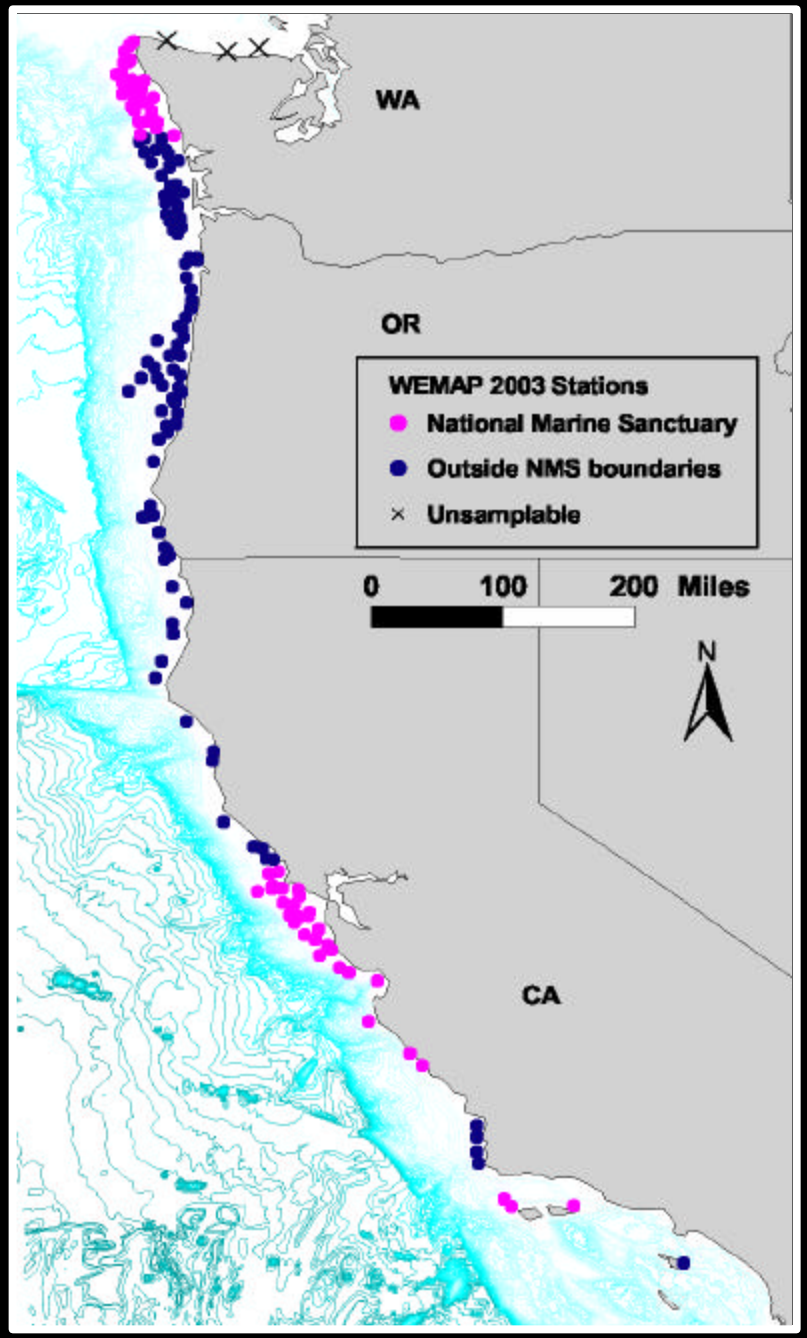
Target Fish Species Caught

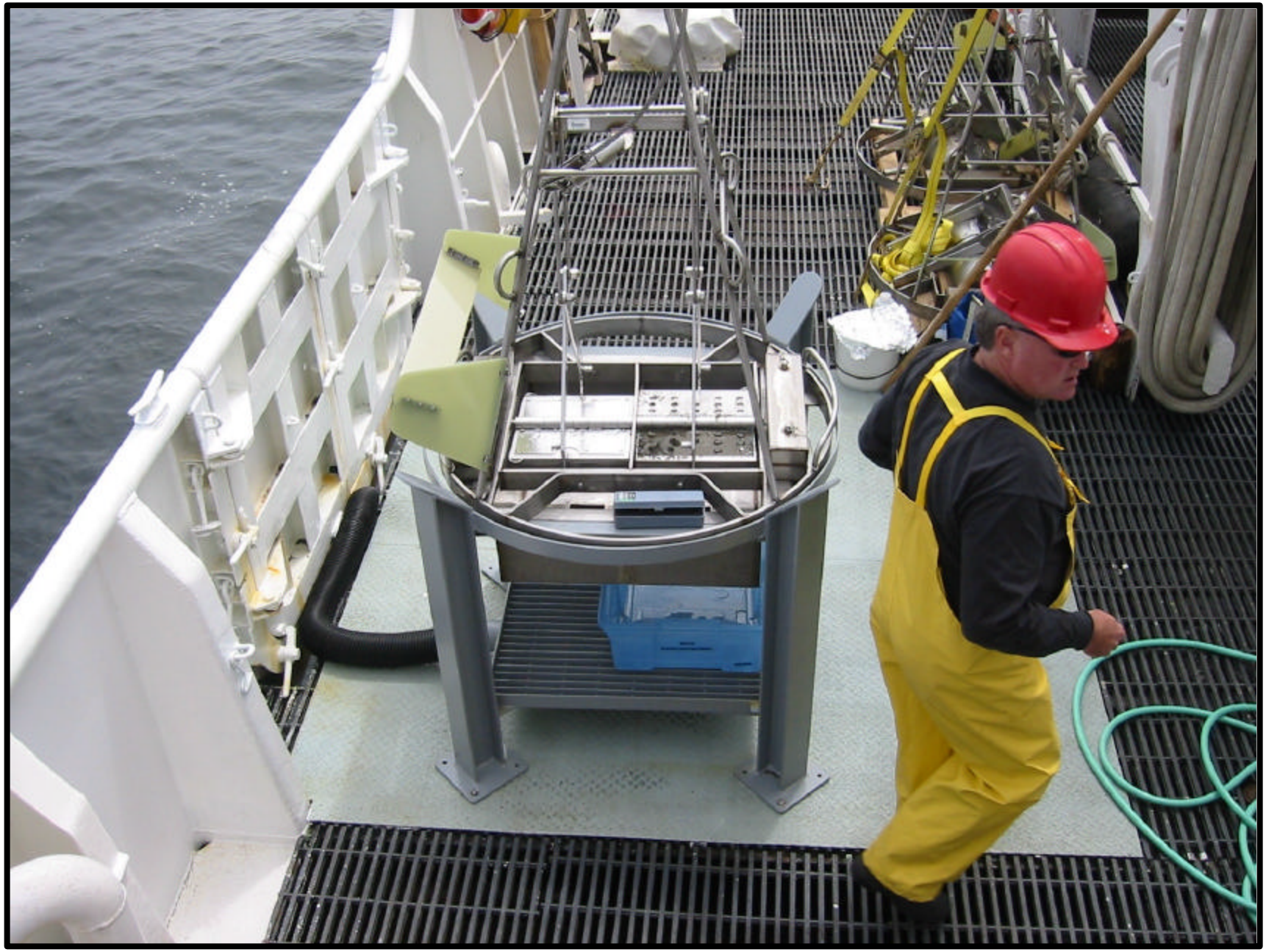
West Coast Survey (48 of 146 sites*):	SAB Survey (15 of 50 sites*):
• Pacific sanddab • Speckled sanddab • Butter sole • Dover sole	• Sand perch • Black sea bass • Lizard fish • Snake fish • Dusky flounder • Porgy, grunts, & tomtate (sporadically)

* Fish caught at ~ 1/3 of sites

Observations/Lessons Learned

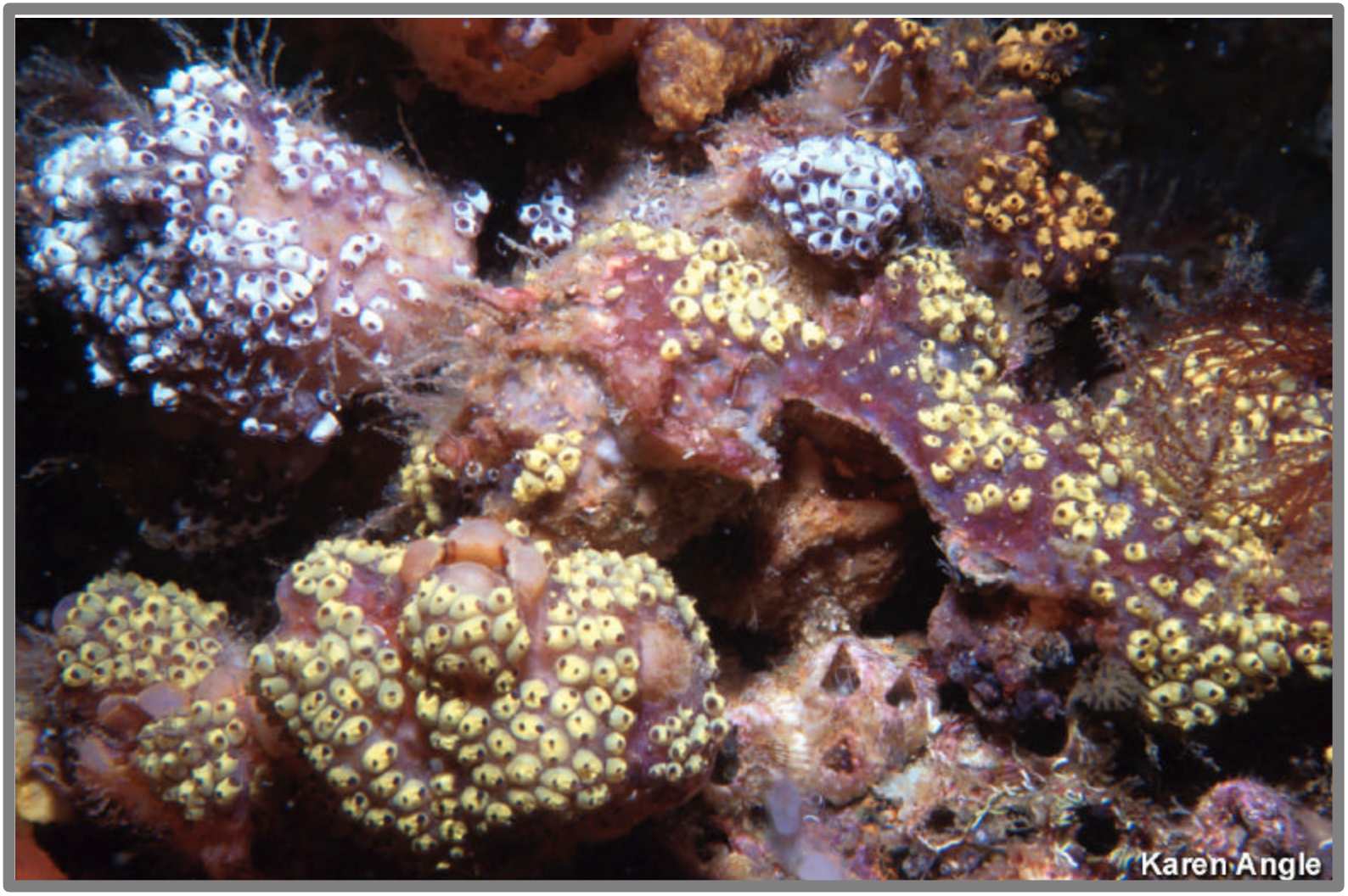
- Need for large ships for sampling in offshore waters
- Hook-n-line works well for fish sampling offshore
- **Bottom substrates are samplable with grabs in most areas; large double van-Veen works well offshore**


WA
OR
CA
WEMAP 2003 Stations
National Marine Sanctuary
Outside NMS boundaries
Unsamplable
0
100
200 Miles
N



Observations/Lessons Learned

- Need for large ships for sampling in offshore waters
- Hook-n-line works well for fish sampling offshore
- Bottom substrates samplable with grabs in most areas
- **Opportunity to report on condition of sanctuaries is a bonus (given value of these resources)**


Karen Angle

Karen Roeder

Gray's Reef National Marine Sanctuary

Tony Chess

Steve Fisher

Examples of Marine Mammals of west-coast National Marine Sanctuaries

Humpback whales

Orcas

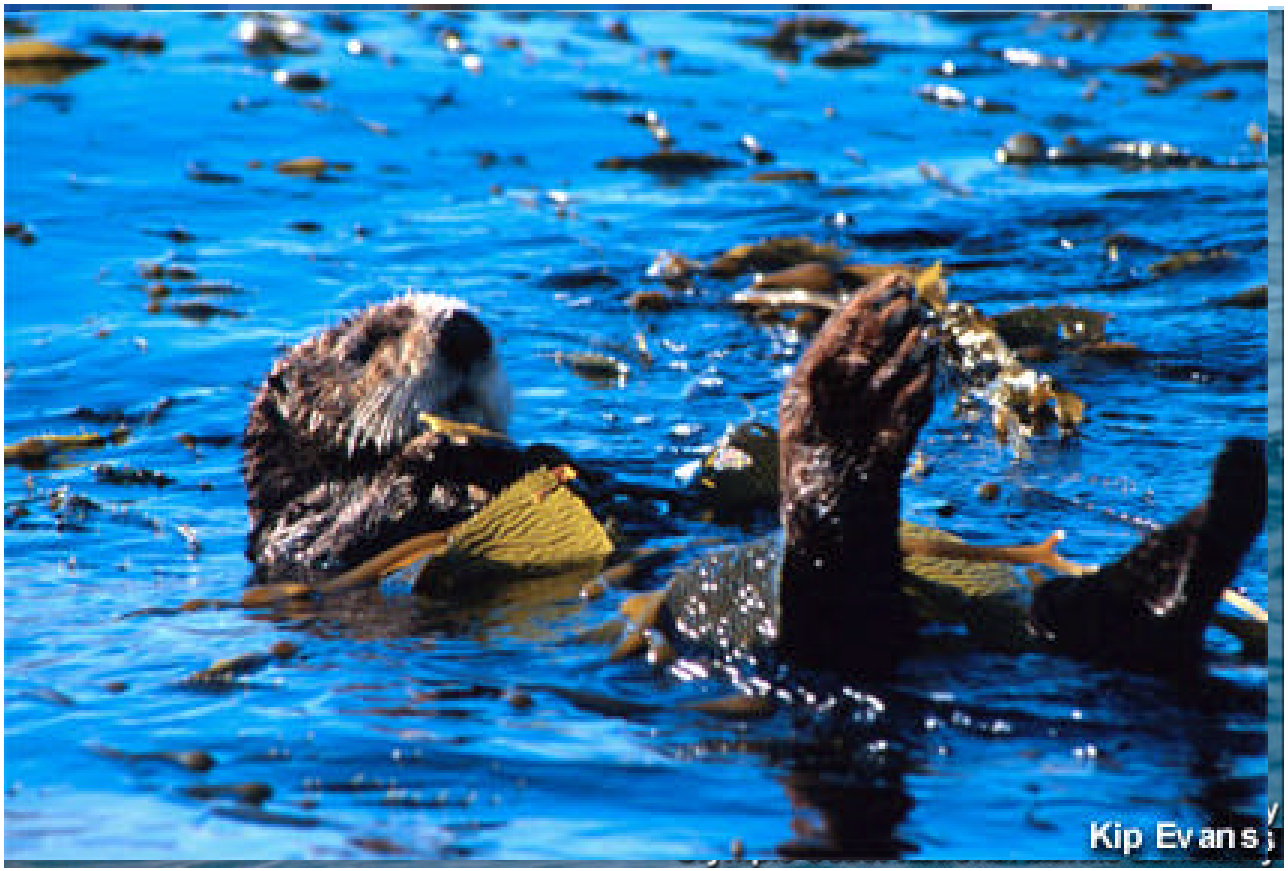
Elephant seals

Sea lions

Harbor seals

Dolphins

Sea otters



Observations/Lessons Learned

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- Hook-n-line works well for fish sampling offshore
- Opportunity to report on condition of sanctuaries is bonus
- Bottom substrates samplable with grabs in most areas
- **Ability to examine important oceanographic patterns & processes (e.g., influence of major river plumes).**

Observations/Lessons Learned

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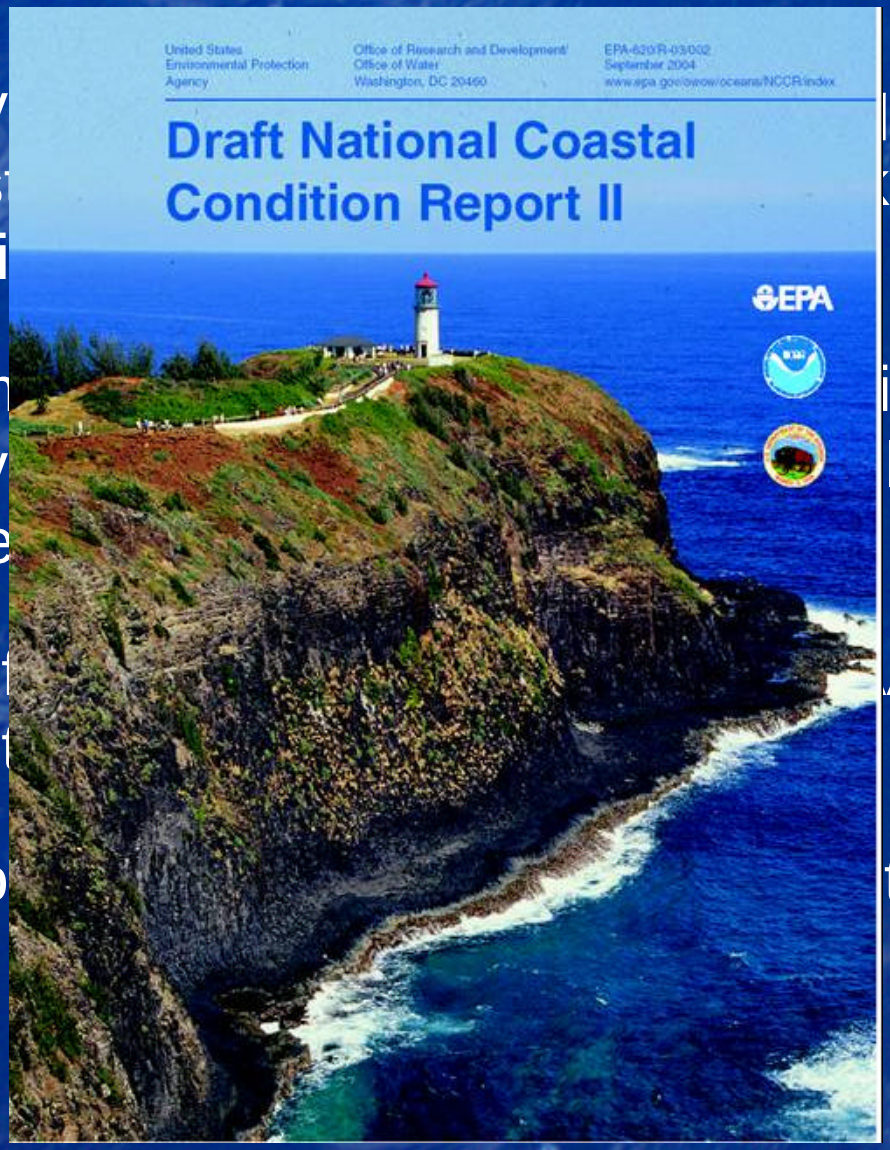
- Hook-n-line works well for fish sampling offshore
- Opportunity to report on condition of sanctuaries is bonus
- Bottom substrates samplable with grabs in most areas
- Ability to examine important oceanographic patterns & processes (e.g., influence of major river plumes).
- **One study limitation is that, although chemical contaminants are being measured, other potential sources of human disturbance in offshore waters (e.g., commercial trawling) are not.**

SOFA
Olympic Coast National Marine Sanctuary

Summary/Value

- Studies prov…uatic resources in near-coast…king) and at varying spati…
- Synoptic san…indicators allows for ev…lation to stressor leve…
- Opportunity f…A NMSs in comparison t…
- New input fo…tion Reports



Summary - continued

- Opportunity to enhance understanding of broad-scale oceanographic patterns and processes
- Demonstration of benefits of performing science through partnerships
- Results will serve as benchmarks for any future long-term monitoring
- Future efforts should perhaps include additional stressor indicators of importance in offshore waters.

The End