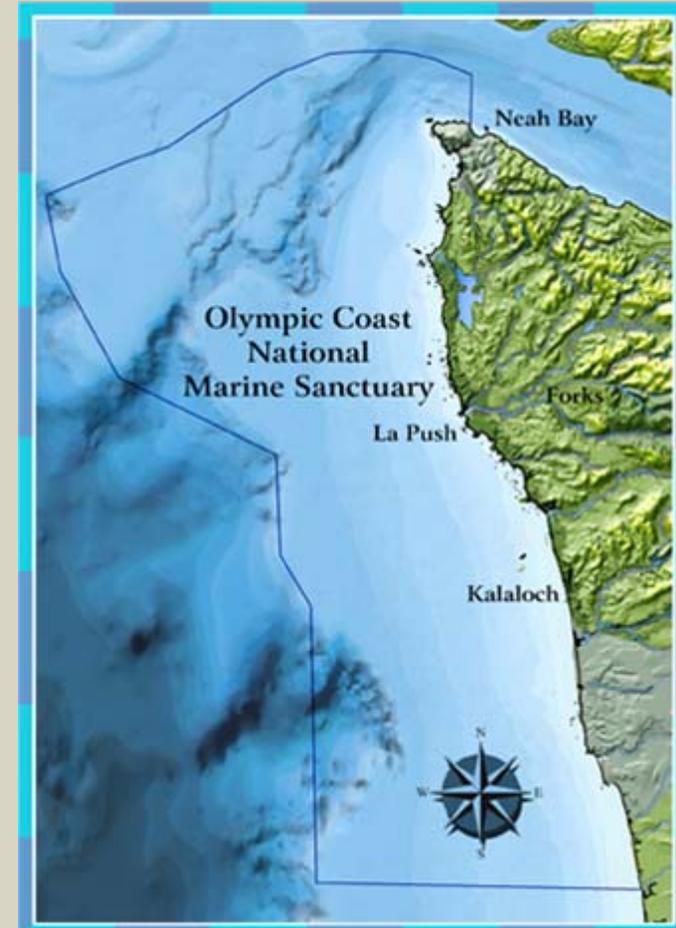




## Seafloor Mapping Effort in the Olympic Coast National Marine Sanctuary

- Outer Coast
- International Boundary
- Straits
- Boundaries
- Ports

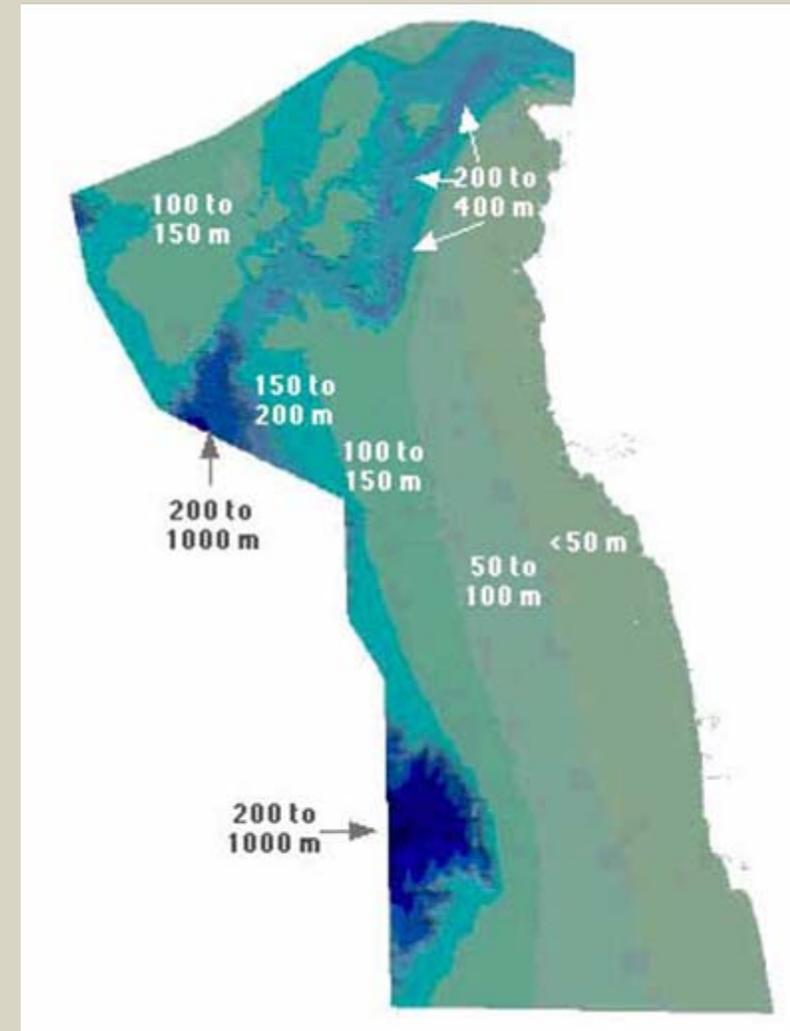
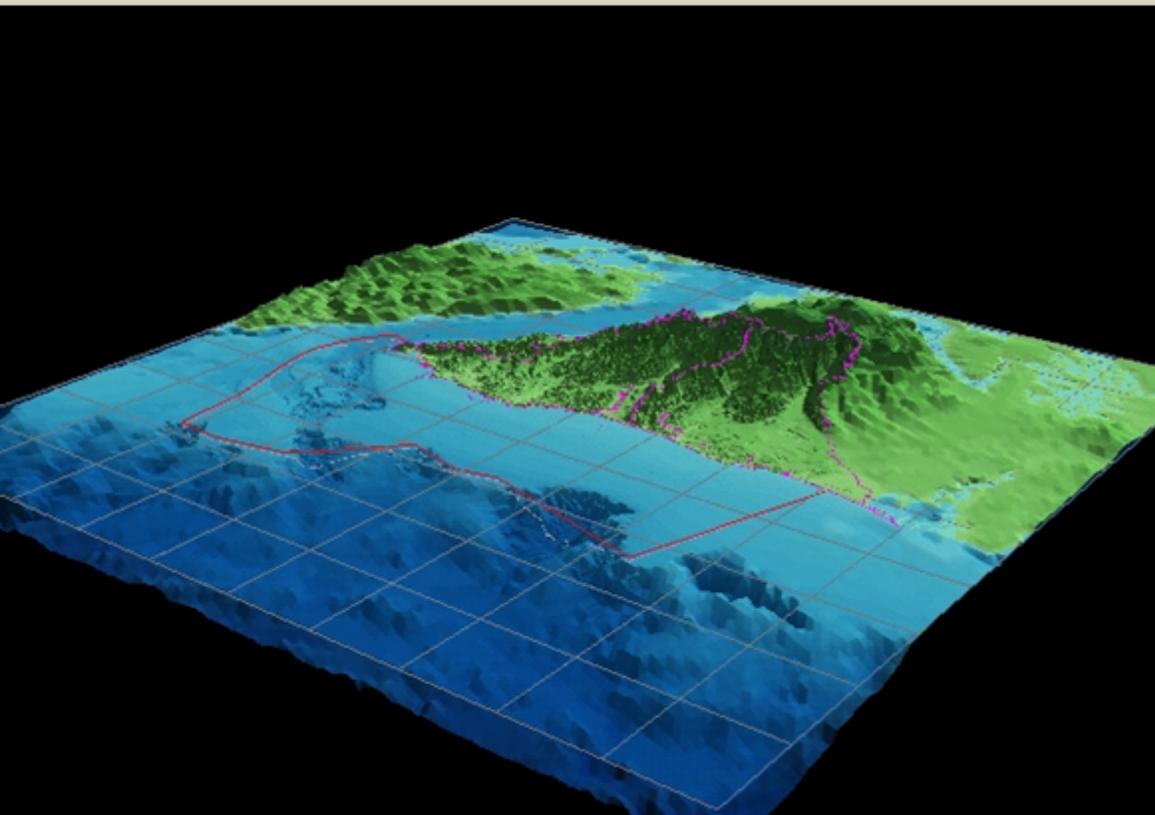
By Ed Bowlby, Steve Intelmann, George Galasso, & Allison Martin





# OLYMPIC COAST NATIONAL MARINE SANCTUARY

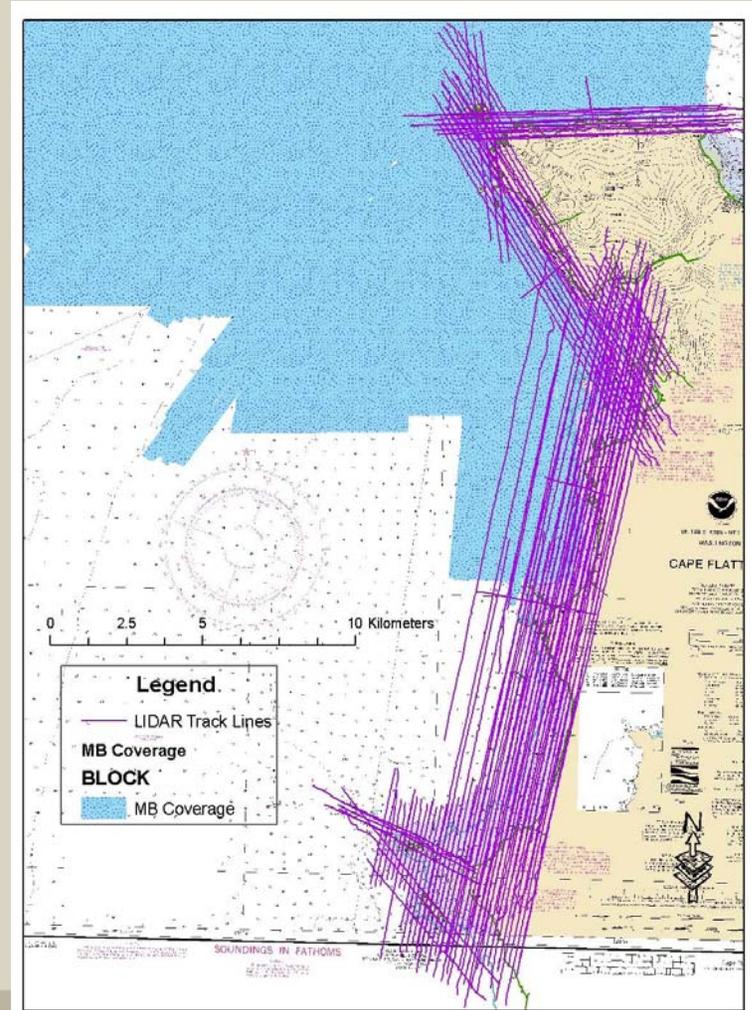
- Continental Shelf
- 3 Submarine Canyons





## LiDAR

- Pilot Project in 2005
- Survey Flights – Cape Flattery to Cape Alava
- Challenging Coastal Conditions
- Intelmann 2006





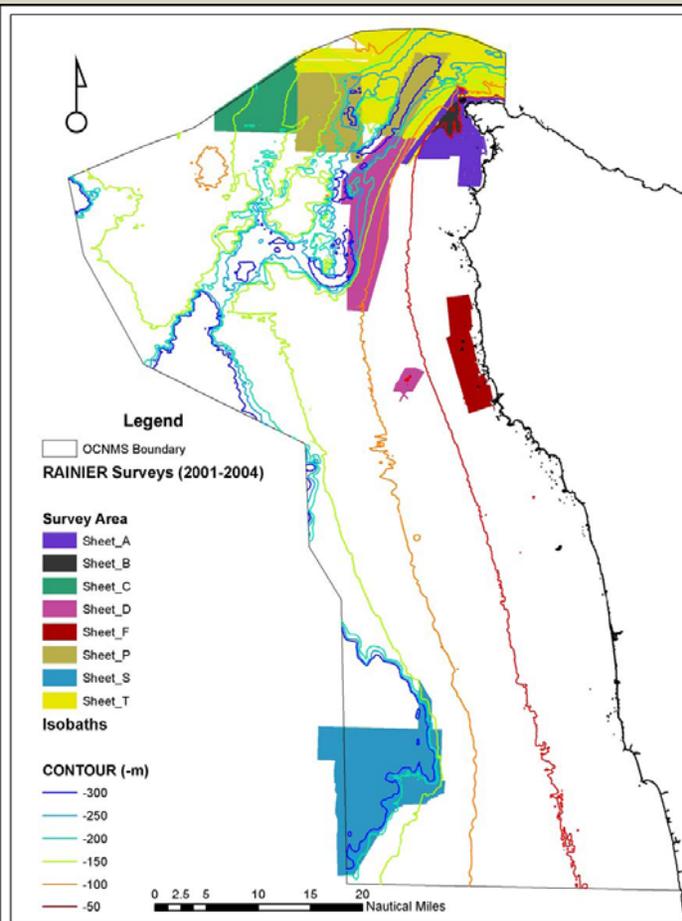
# Offshore & Nearshore Surveys

- NOAA Ships (e.g. *McArthur*, *McArthur II*, *Rainier*)
- R/V *Tatoosh*

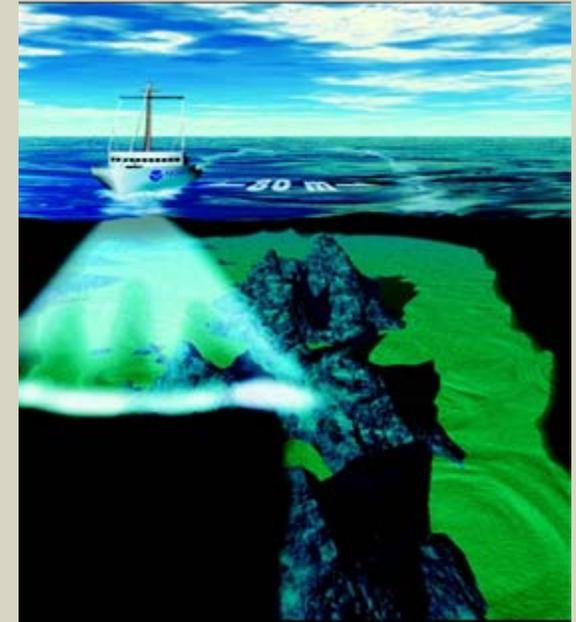




# Multibeam Coverage



- NOAA Ship *Rainier*
- 2001 – 2004, 10 DAS
- Ship & Launches





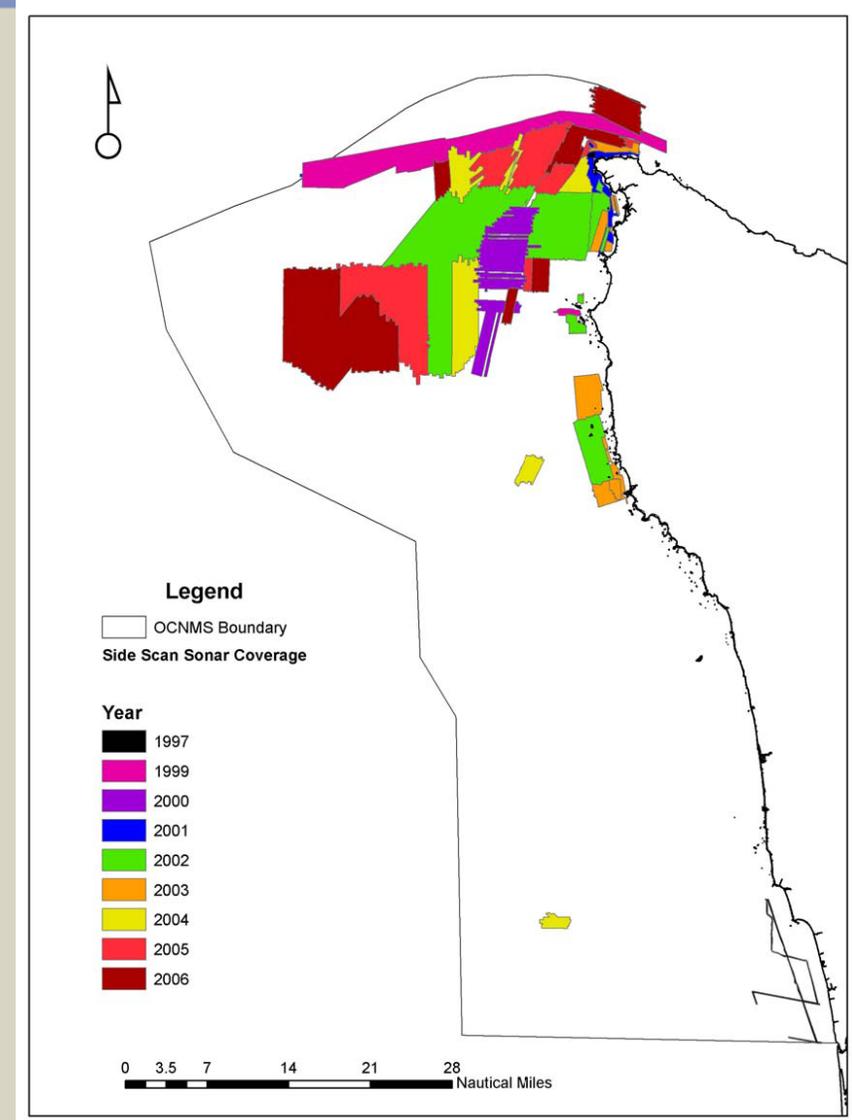
# Side-Scan Sonar





## Side-Scan Coverage

- 1997 – 2006
- Depths 20-350 m





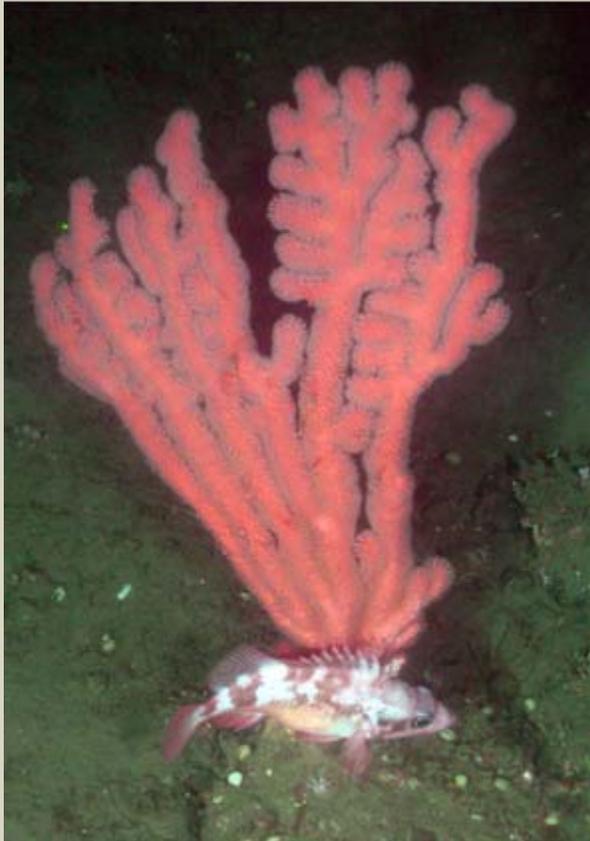
# Groundtruthing

- Photography
- Bottom Grabs



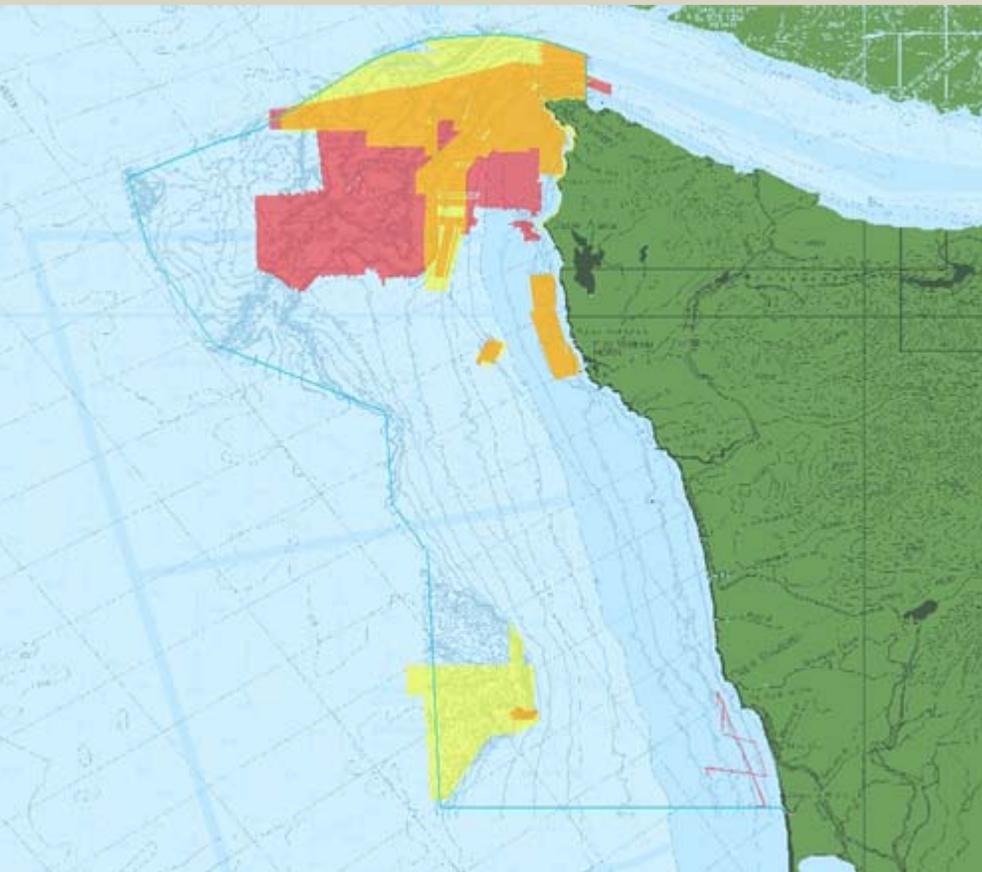


# Substrate Types – Associated Biotic Communities





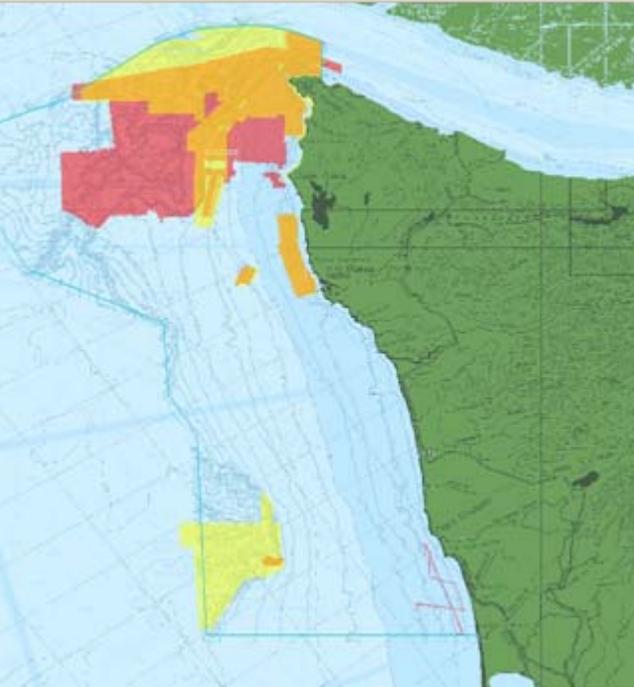
# Mapped Areas Through 2007



- Red = Side Scan  
Yellow = Multibeam  
Orange = dual coverage
- < 25% Mapped
- Data Catalog at OCNMS  
web site:  
<http://olympiccoast.noaa.gov/research/mapping/welcome.html>



# Current Mapping Trends for 100 % Coverage

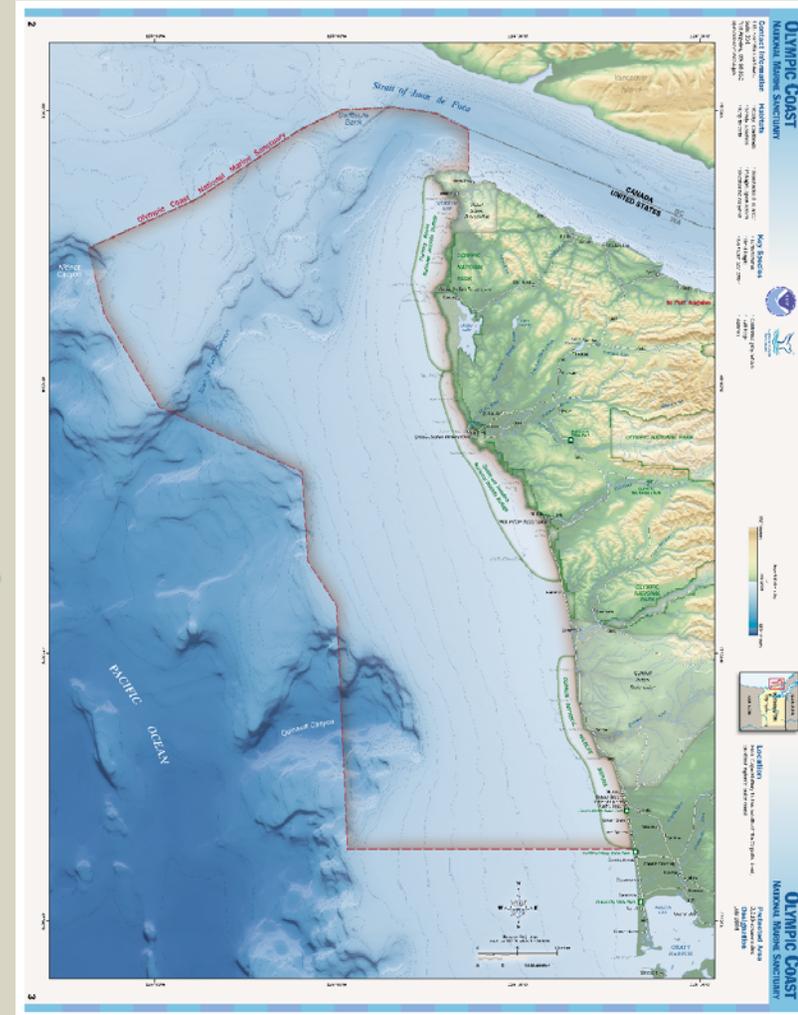


## Side Scan

- Nearshore: 25 yrs
- Offshore: 6 yrs

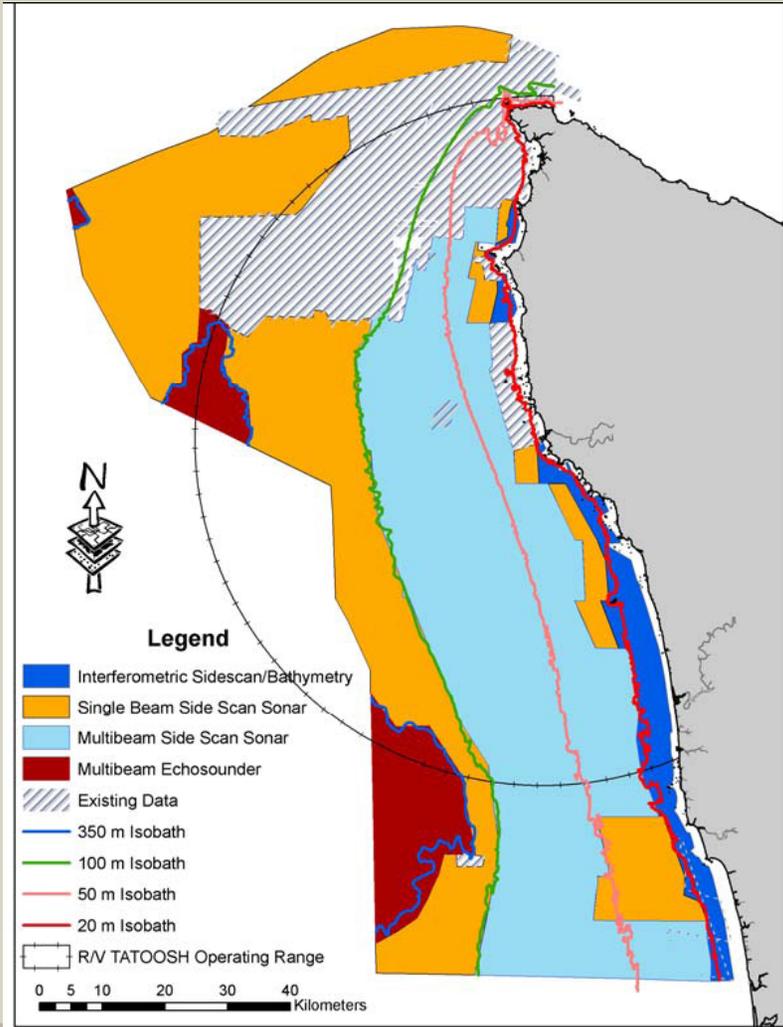
## Multibeam

- Nearshore: 13-40 yrs
- Offshore: 7-11 yrs





# Optimal Survey Strategy



- Intelmann 2006
- Existing Data
- Inner Shelf
- Outer Shelf/Canyons



## Seafloor Mapping Documents in OCNMS

Available from NMSP's Marine Sanctuaries Conservation Series

<http://www.sanctuaries.noaa.gov/science/conservation/>

- Intelmann and Cochrane. 2005. Benthic Habitat Mapping in the Olympic Coast National Marine Sanctuary: Classification of side scan sonar data.
- Intelmann, Beaudoin, and Cochrane. 2006. Normalization and characterization of multibeam backscatter: Koitlah Point to Point of the Arches, Olympic Coast National Marine Sanctuary.
- Intelmann. 2006. Comments on hydrographic and topographic LIDAR acquisition and merging with multibeam sounding data acquired in the Olympic Coast National Marine Sanctuary.
- Intelmann and Cochrane. 2006. Olympic Coast National Marine Sanctuary Habitat Mapping: Survey report and classification of side scan sonar data.
- Intelmann. 2006. **Habitat Mapping Effort** at the Olympic Coast National Marine Sanctuary – Current Status and Future Needs.
- Intelmann, Cochrane, Bowlby, Brancato, and Hyland. 2007. Survey report of NOAA Ship McArthurII cruises : Habitat classification of side scan sonar imagery in support of deep-sea coral/sponge explorations at the Olympic Coast National Marine Sanctuary.
- Intelmann, Cutter, and Beaudoin 2007. Automated, objective texture segmentation of multibeam echosounder data - Seafloor survey and substrate maps from James Island to Ozette Lake, Washington Outer Coast.



## 2008 Survey Prospects

- NOAA Ship *McArthur II*  
May or June – SSS, \$\$\$
- R/V *Tatoosh*  
May – Sept., SSS
- R/V *Manta* – March, SSS
- R/V *SRVx*
- NOAA Ship *Okeanos Explorer*

