



Greater Farallones National Marine Sanctuary Marine Debris Program: July, 2012 – June, 2018



Kate Bimrose
Sanctuary Advisory Council
November 14, 2018
San Francisco Zoo





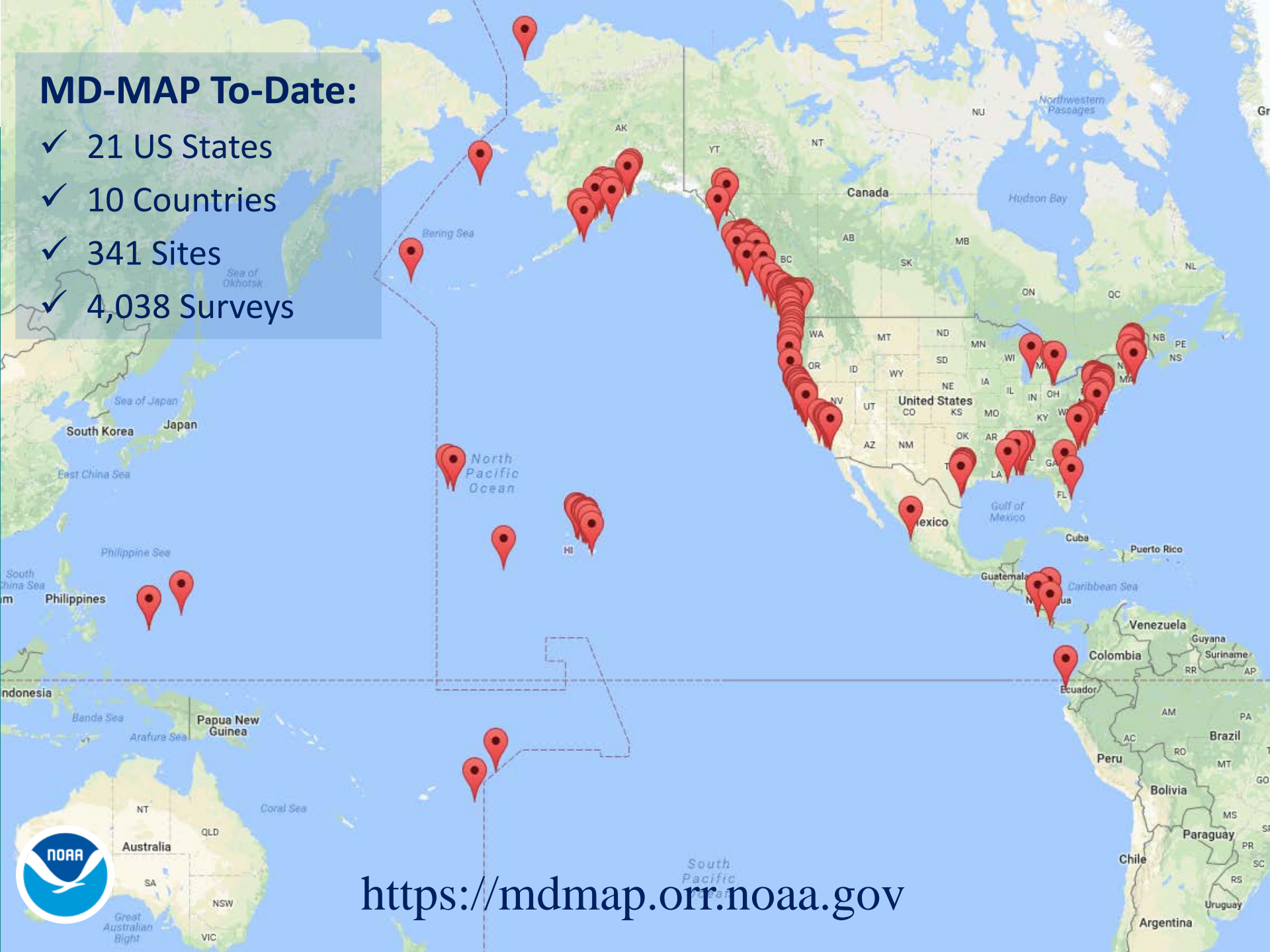
NOAA's Marine Debris Monitoring and Assessment Project (MD-MAP)

- Support research and science-based policies
- Promote standardization
- Provide tools to partners
- Understand spatial and temporal changes in debris loads by material type
- Raise awareness
- **Guide prevention**



MD-MAP To-Date:

- ✓ 21 US States
- ✓ 10 Countries
- ✓ 341 Sites
- ✓ 4,038 Surveys



<https://mdmap.orr.noaa.gov>



March 11, 2011

Japanese Earthquake and Tsunami by the numbers:

20 Thousand lives lost

309 Billion in damages

50 Million in California

5 Million tons of debris

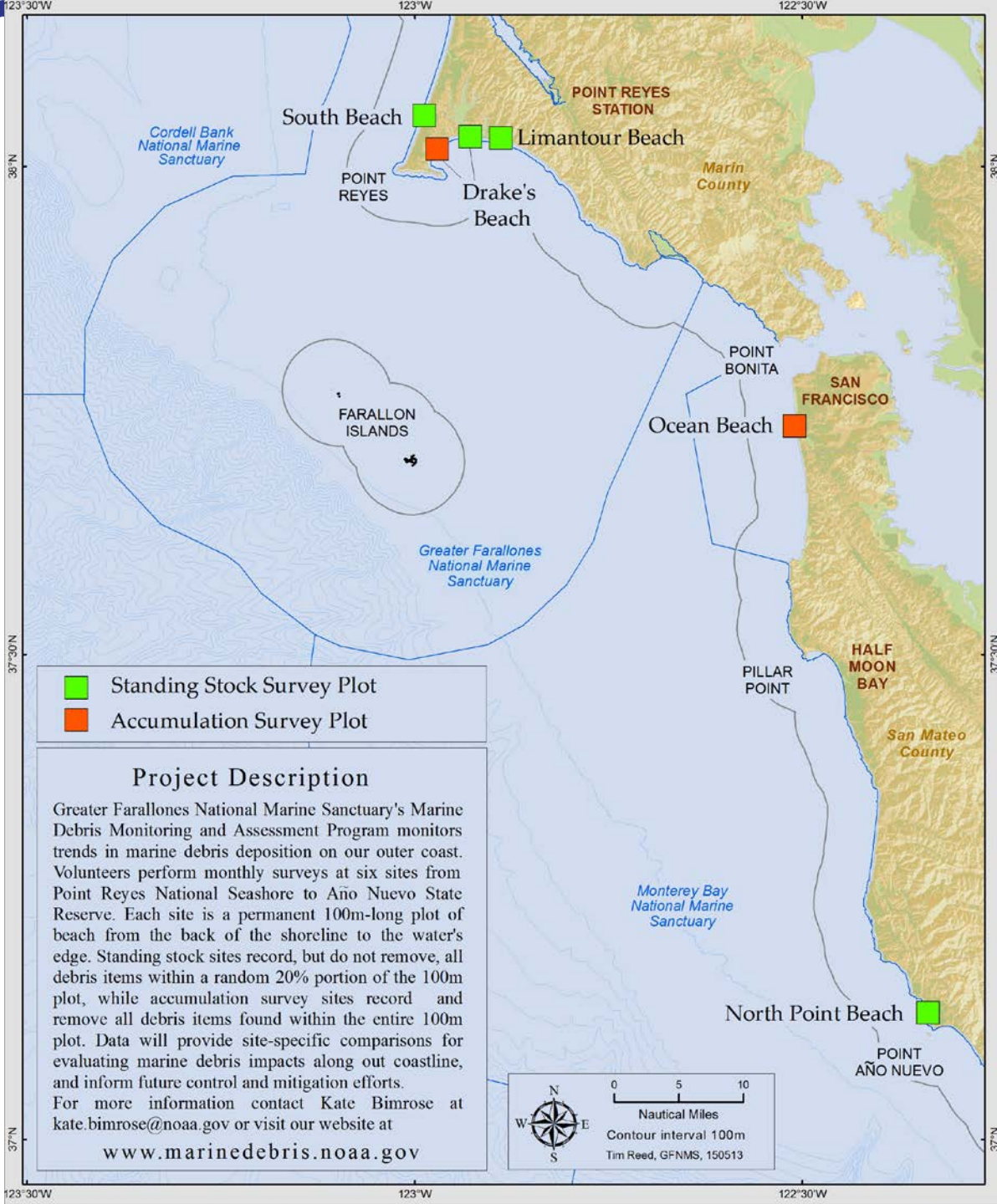
1.5 Million tons headed to U.S.





July 2012 through June 2018

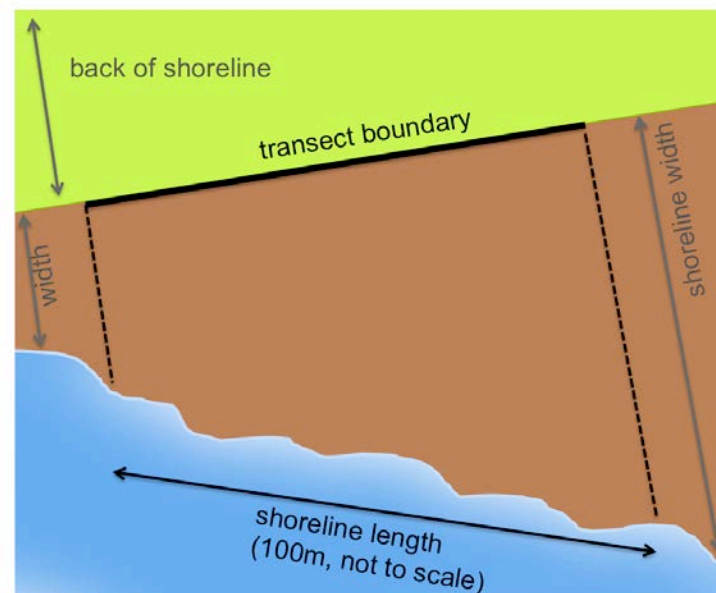
- 6 survey sites
- 334 surveys conducted
- 145 volunteers
- 1,897 volunteer hours
- 28,527 items recorded



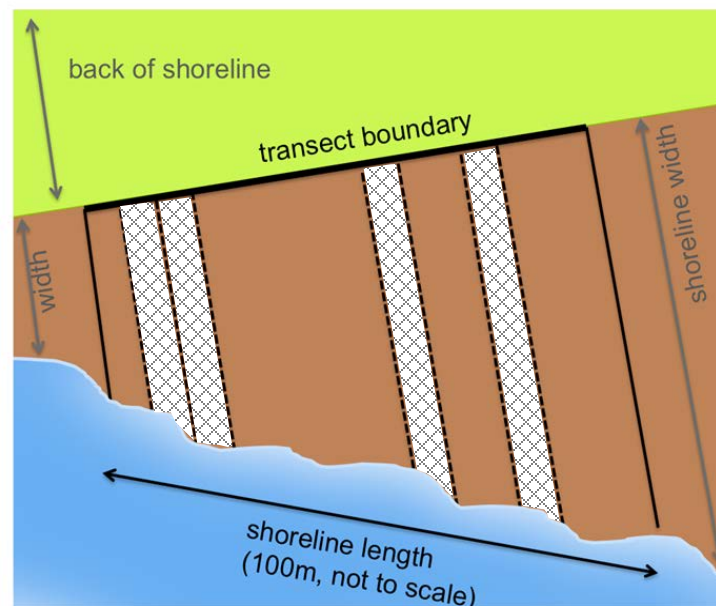


For All Survey Sites

- 100m length parallel to the waters edge
- Year round access
- Sand or pebble substrate
- Away from management zones (endangered species enclosures, restoration areas)
- No disruption to near shore circulation (jetties, breakwaters)
- Manager/land owner permission



Accumulation Site – debris is removed



Standing-Stock Site - no debris removal and away from high recreation and outflows



Record man-made items larger than 2.5cm (1 inch) within seven different categories:

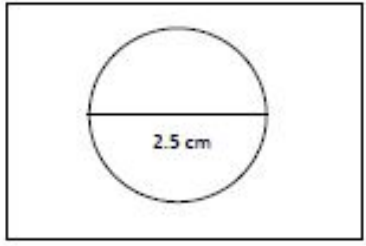
- 1) Plastic
- 2) Metal
- 3) Lumber
- 4) Rubber
- 5) Glass
- 6) Fabric/cloth
- 7) Unclassified





GFNMS Marine Debris Monitoring & Assessment ACCUMULATION SURVEY SHEET	SCHOOL/ ORGANIZATION	# OF SURVEYORS
	DATE	TIME OF LOW TIDE

ALL ITEMS SHOULD BE THE DIAMETER
OF OR LARGER THAN A STANDARD
BOTTLE CAP



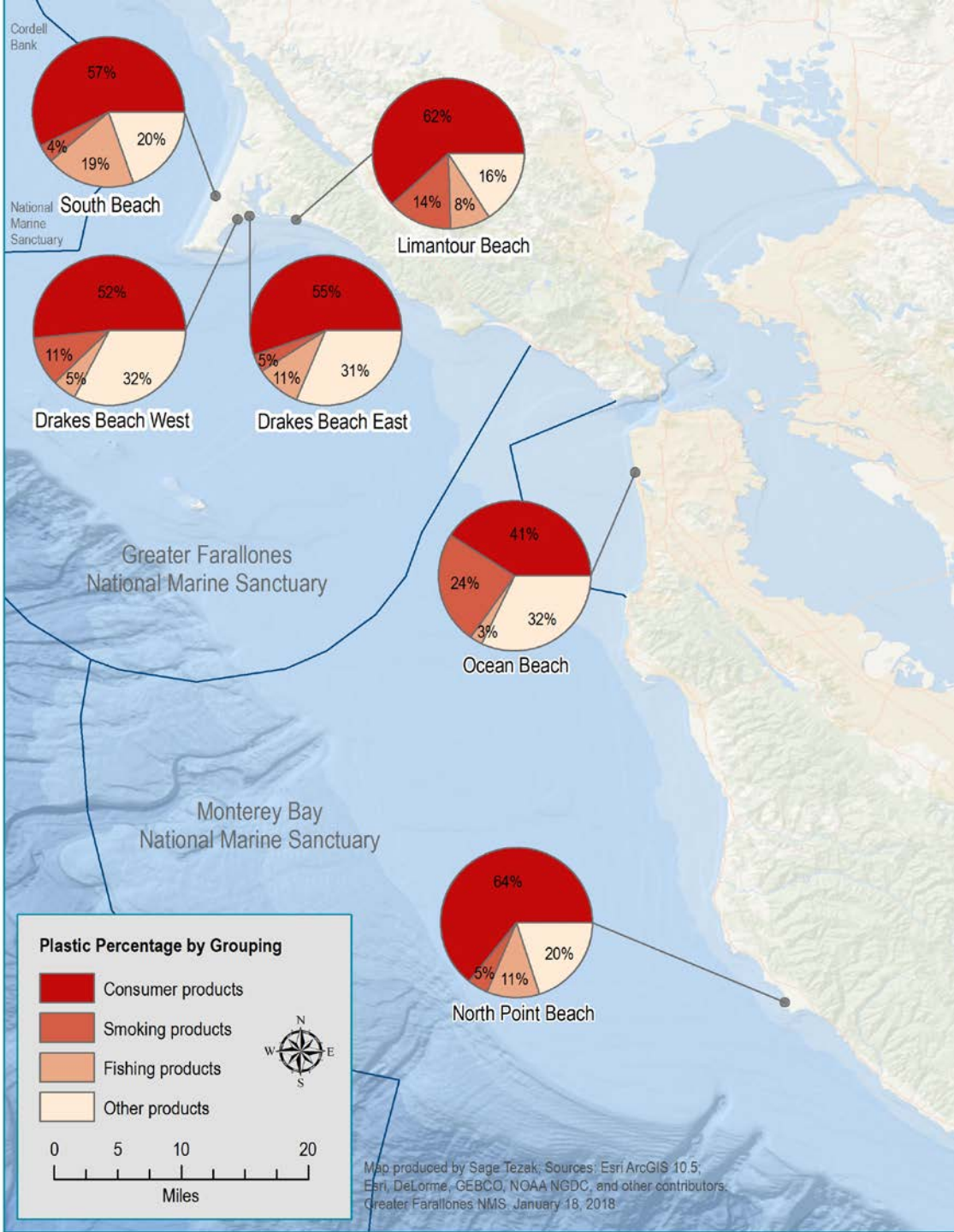
PLASTIC 2.5 cm (1 inch) – 30 cm (12 inches)		TOTAL
Hard Fragment		
Foamed Fragment		
Film Fragment		
Bags		
Balloons		
Beverage bottles		
Bottle/container caps		
Buoys and floats		
Cigar tips		
Cigarette lighter		
Cigarettes		
Cups (includes foam)		
Fishing lures/line		
Food Wrapper		
Other jugs/containers		
Oyster farm debris		
Personal care products		
Plastic rope/ net pieces		





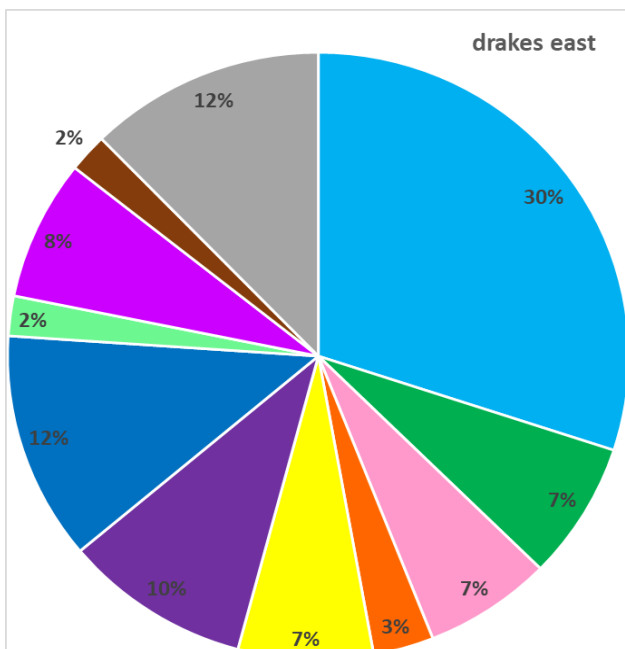
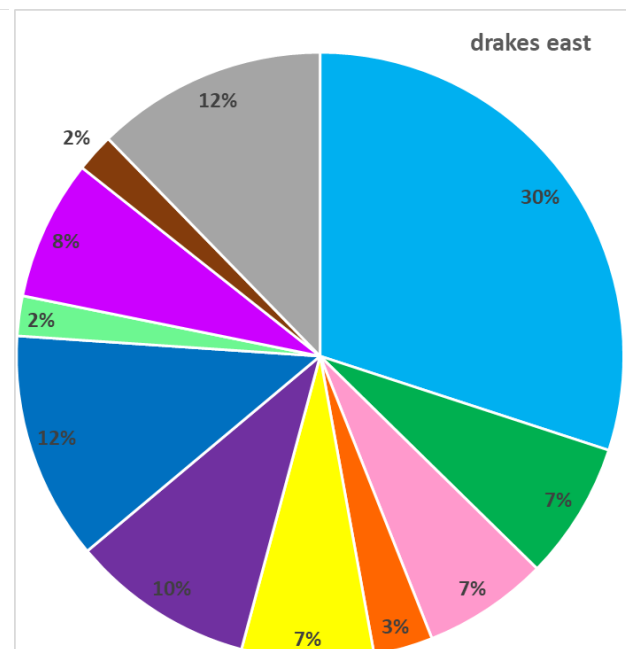
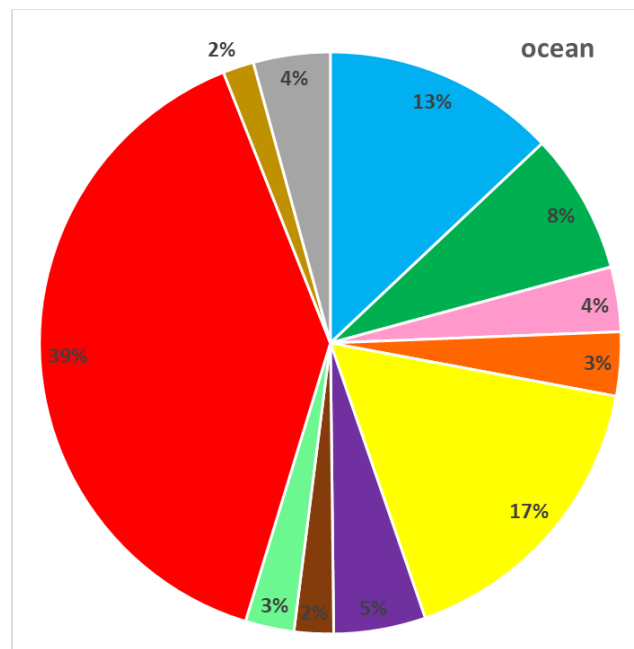
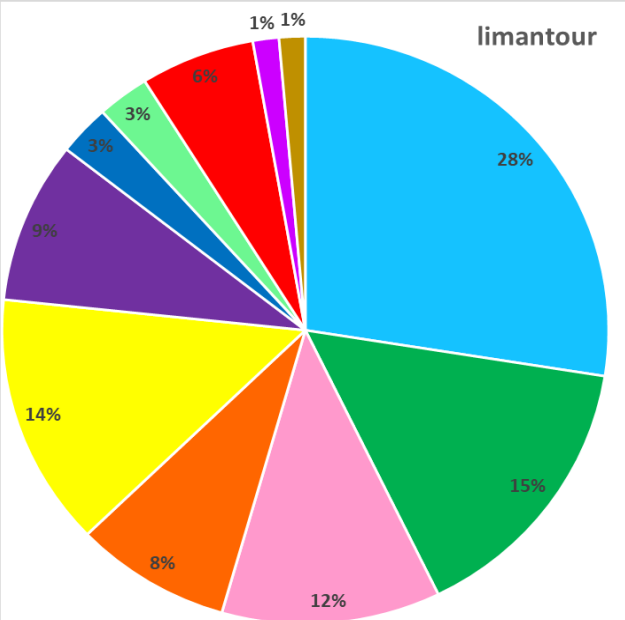
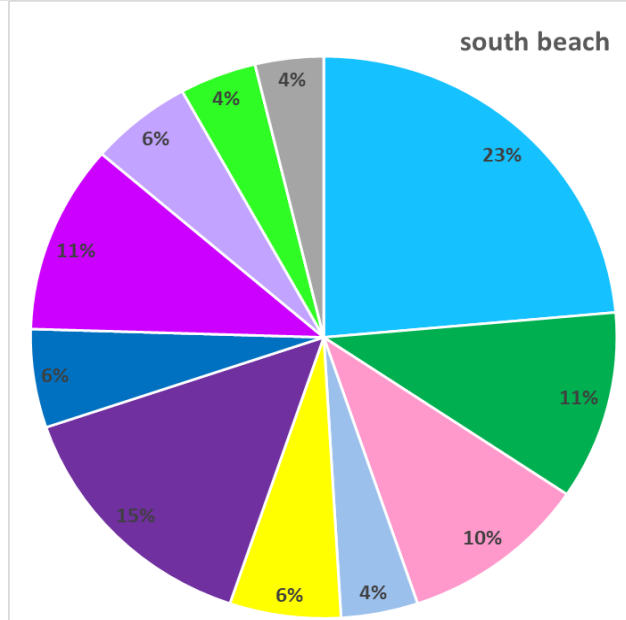
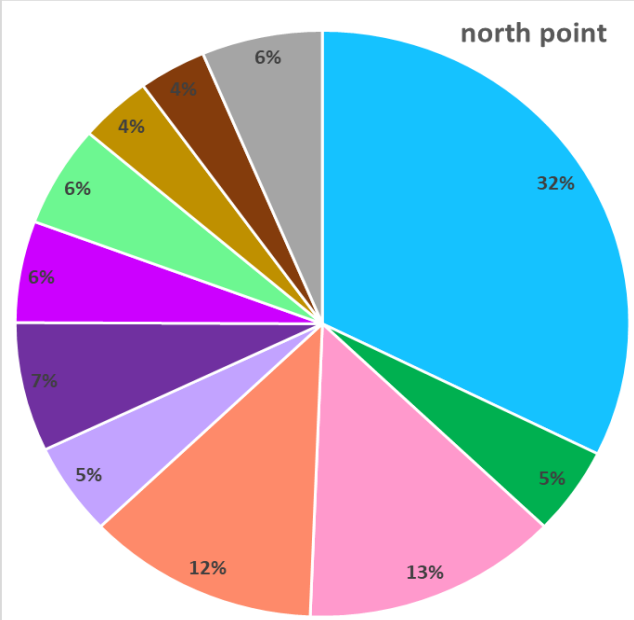
METAL		TOTAL
Aerosol cans		
Aluminum/tin cans		
Metal fragments		
Other		
GLASS		TOTAL
Beverage bottles unbroken		
Jars unbroken		
Glass fragments		
Other		
RUBBER		TOTAL
Flip flops		
Gloves		
Rubber fragments		
Other		
LUMBER		TOTAL
Cardboard cartons		
Lumber/building materials		
Paper bags		
Paper & cardboard		
Other		
CLOTH/ FABRIC		TOTAL
Clothing and shoes		
Fabric pieces		
Gloves		





Map produced by Sage Tezak; Sources: Esri ArcGIS 10.5; Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors. Greater Farallones NMS, January 18, 2018

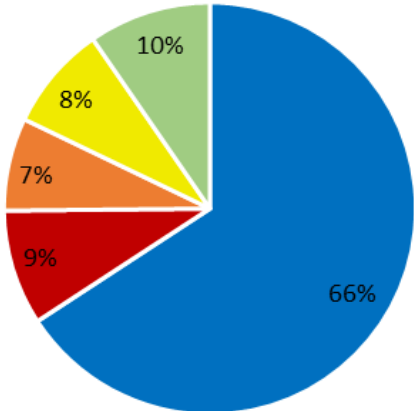




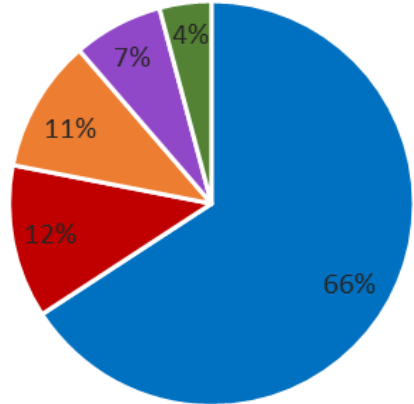
- bottle caps
- straws
- shotgun wads/shells
- cigar tips
- food wrappers
- rope
- oyster farm debris
- personal care
- cigarettes
- beverage bottles
- utensils



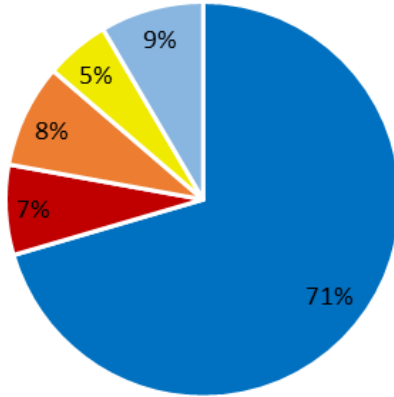
South Beach



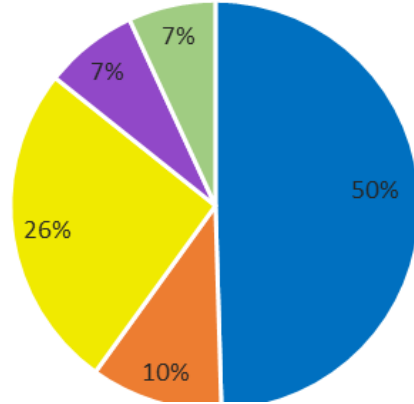
Drakes Beach East



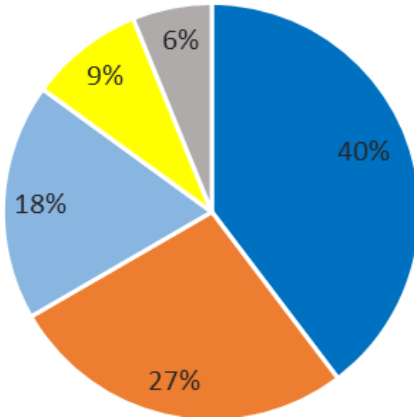
Limantour Beach



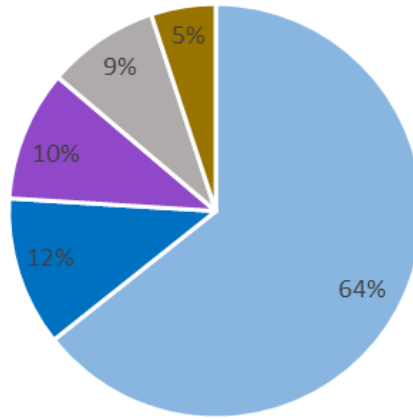
North Point Beach



Drakes Beach West



Ocean Beach

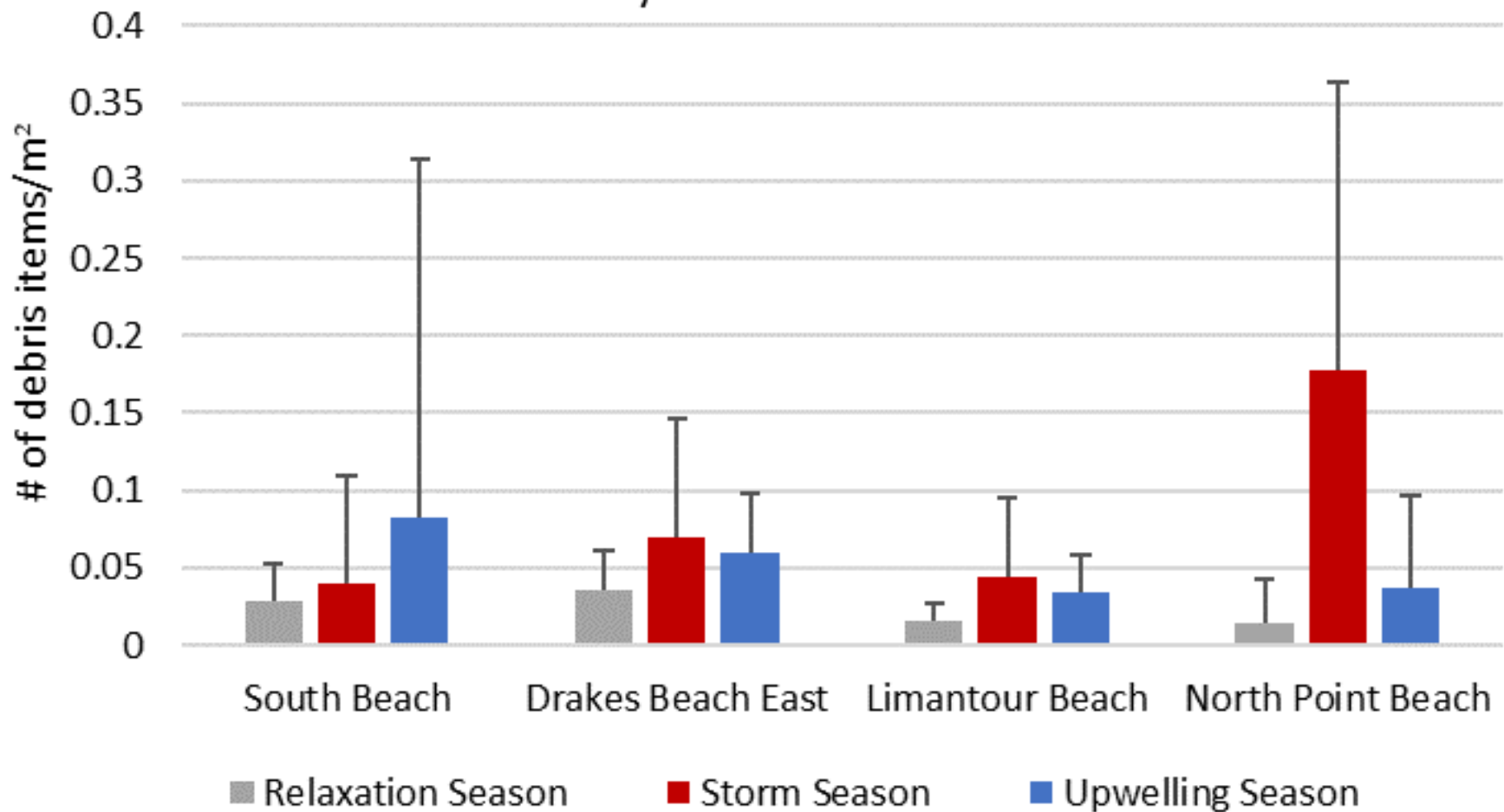


- lumber/building material
- processed lumber other
- glass fragment
- rubber other
- fabric pieces
- unclassified
- paper/cardboard
- aluminum can
- metal other
- glass beverage bottles

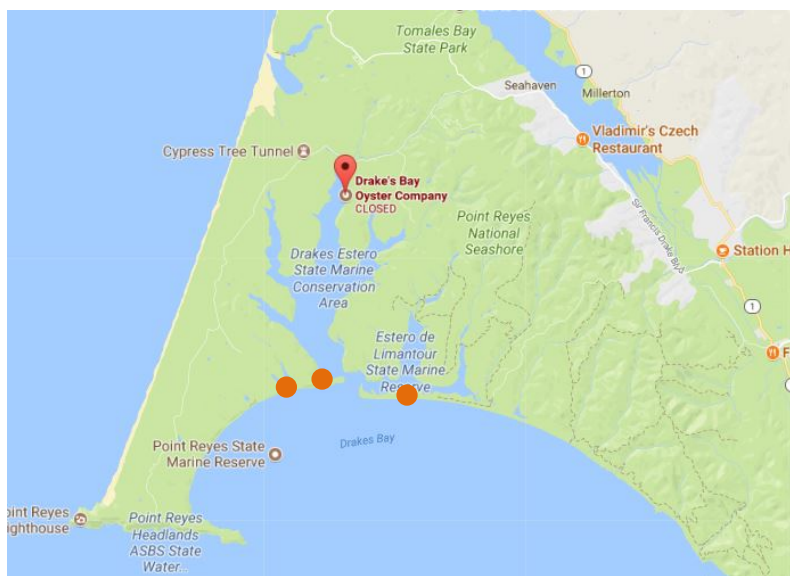
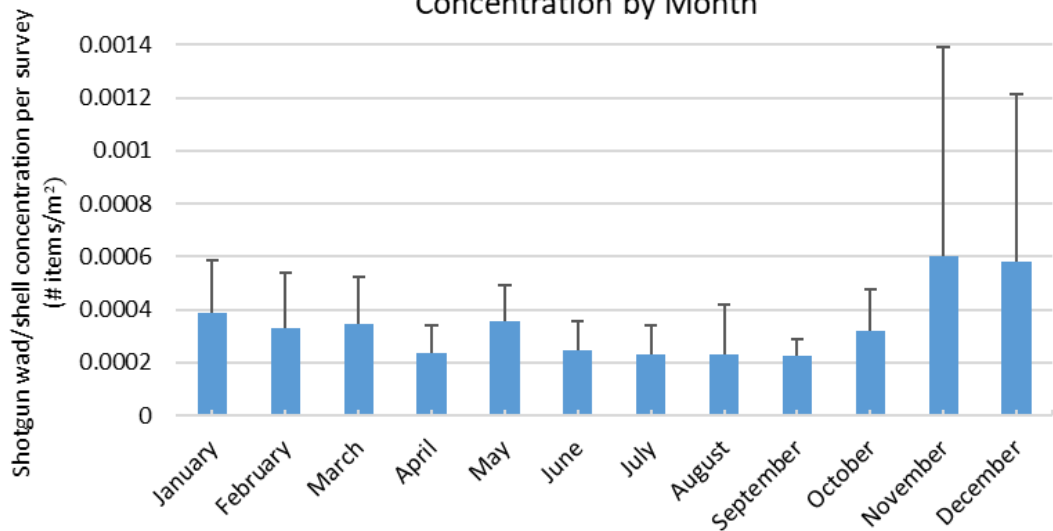




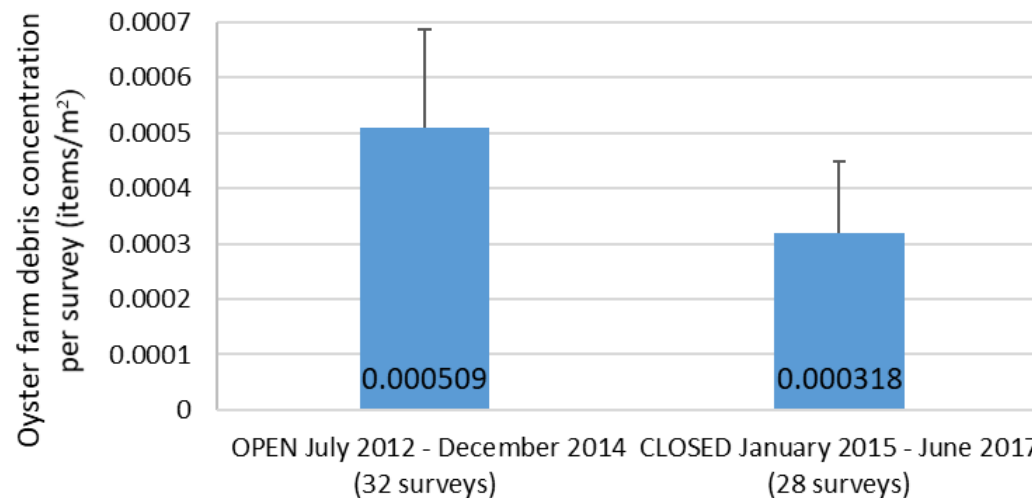
Standing Stock Sites Mean Seasonal Debris Concentration July 2012 - June 2017

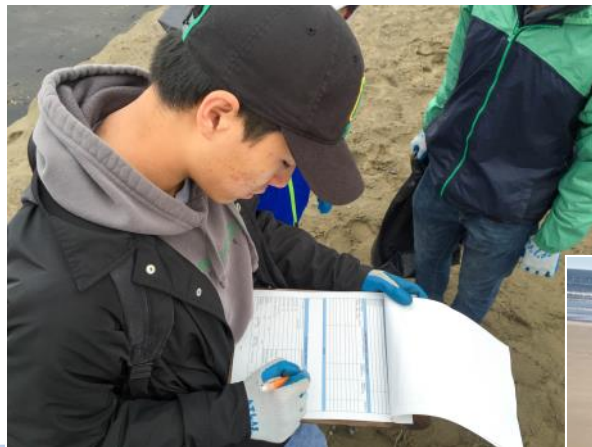


Standing Stock Shotgun Wad/Shell Concentration by Month



Drakes Beach East Oyster Farm Debris Concentration per Survey Before and After Oyster Company Closure







Results

- Distribution between debris categories
- Interannual, seasonal, and storm related deposition patterns
- Sites comparisons
- Provide management and policy recommendations
- Education and outreach opportunities



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