Apr 5th, 2:00 PM - 2:15 PM

Toward a standard trash assessment method

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Toward a Standard Trash Assessment Method

Sydney Harris, Washington Environmental Council (formerly ORISE, EPA Region 10)

Salish Sea Ecosystem Conference, Seattle, WA

April 5, 2018

EPA DISCLAIMER

The Escaped Trash Assessment Protocol (ETAP) is currently a draft; EPA intends to incorporate feedback from pilot testers into the protocol and would appreciate your input on any/all aspects, including wording of reference and outreach materials.

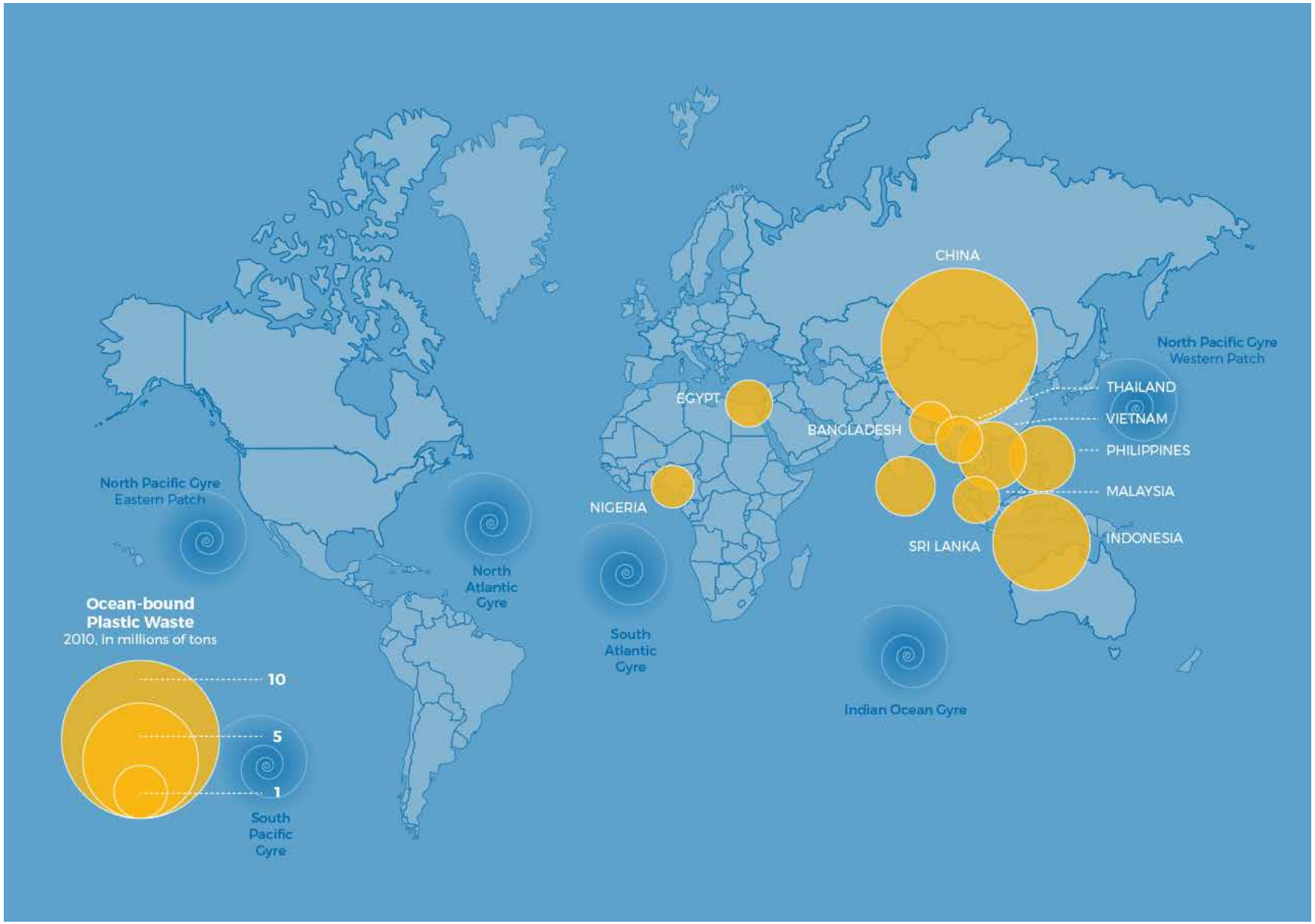
ORISE DISCLAIMER

This project was supported by an appointment to the Internship/Research Participation Program at the Region 10 Office of the U.S. Environmental Protection Agency, administered by the Oak Ridge Institute for Science and Education through an interagency agreement between the U.S. Department of Energy and EPA.

- 8 million + tons/year
- 88% plastic
- Plastics do not biodegrade

Let’s Talk (Aquatic) Trash

- 80% of marine debris comes from land…



…**ESPECIALLY** from the U.S. …

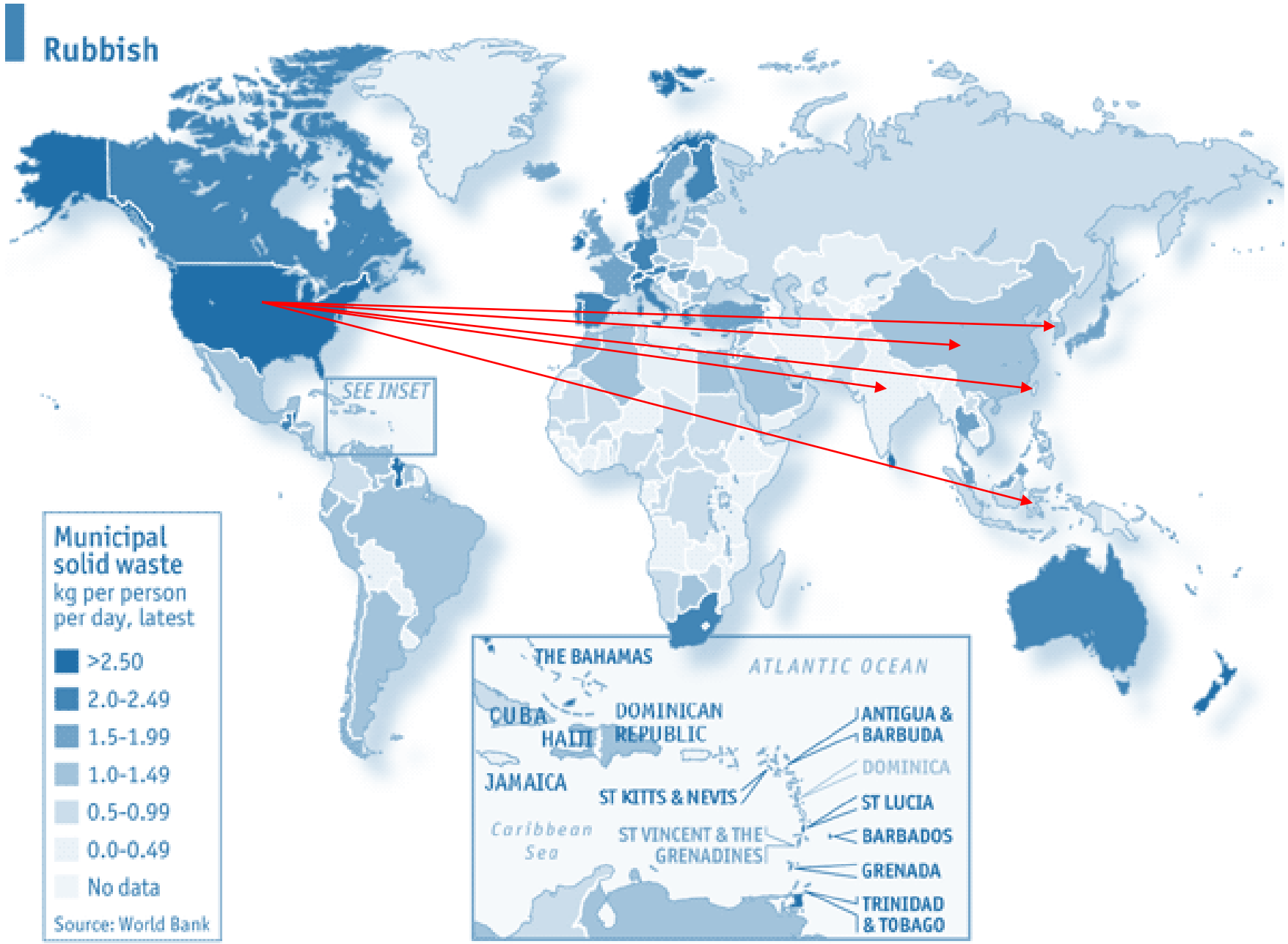
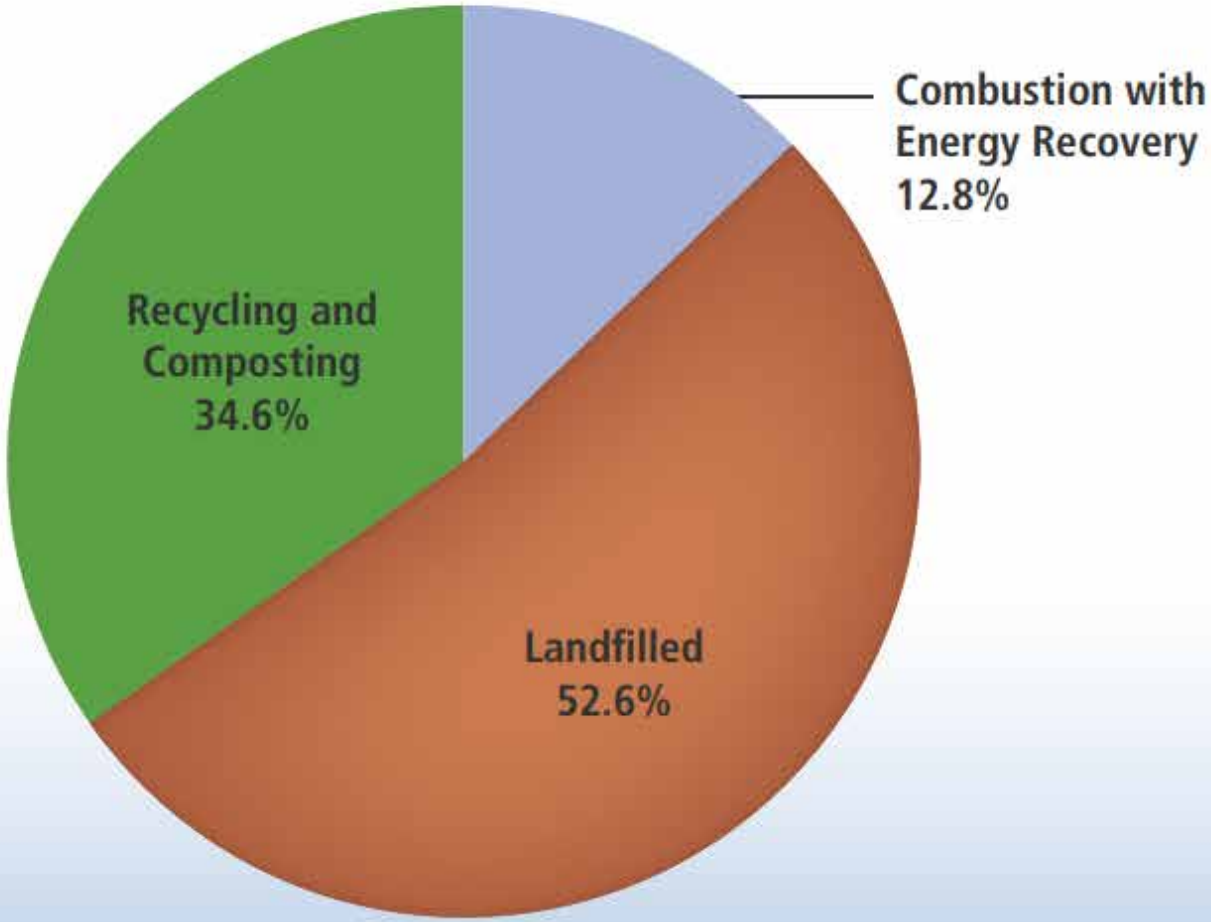


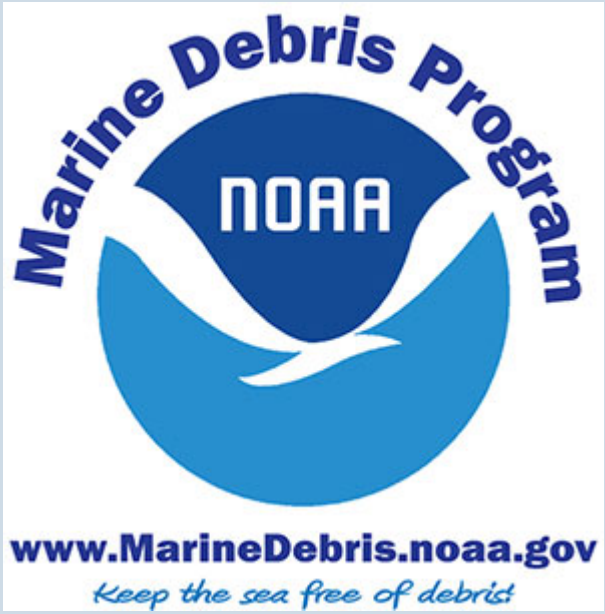
Figure 4. Management of MSW in the United States, 2014



“This assumption is not quite accurate, as some MSW is littered or disposed on-site. These amounts are believed to be a small fraction of total discards.”

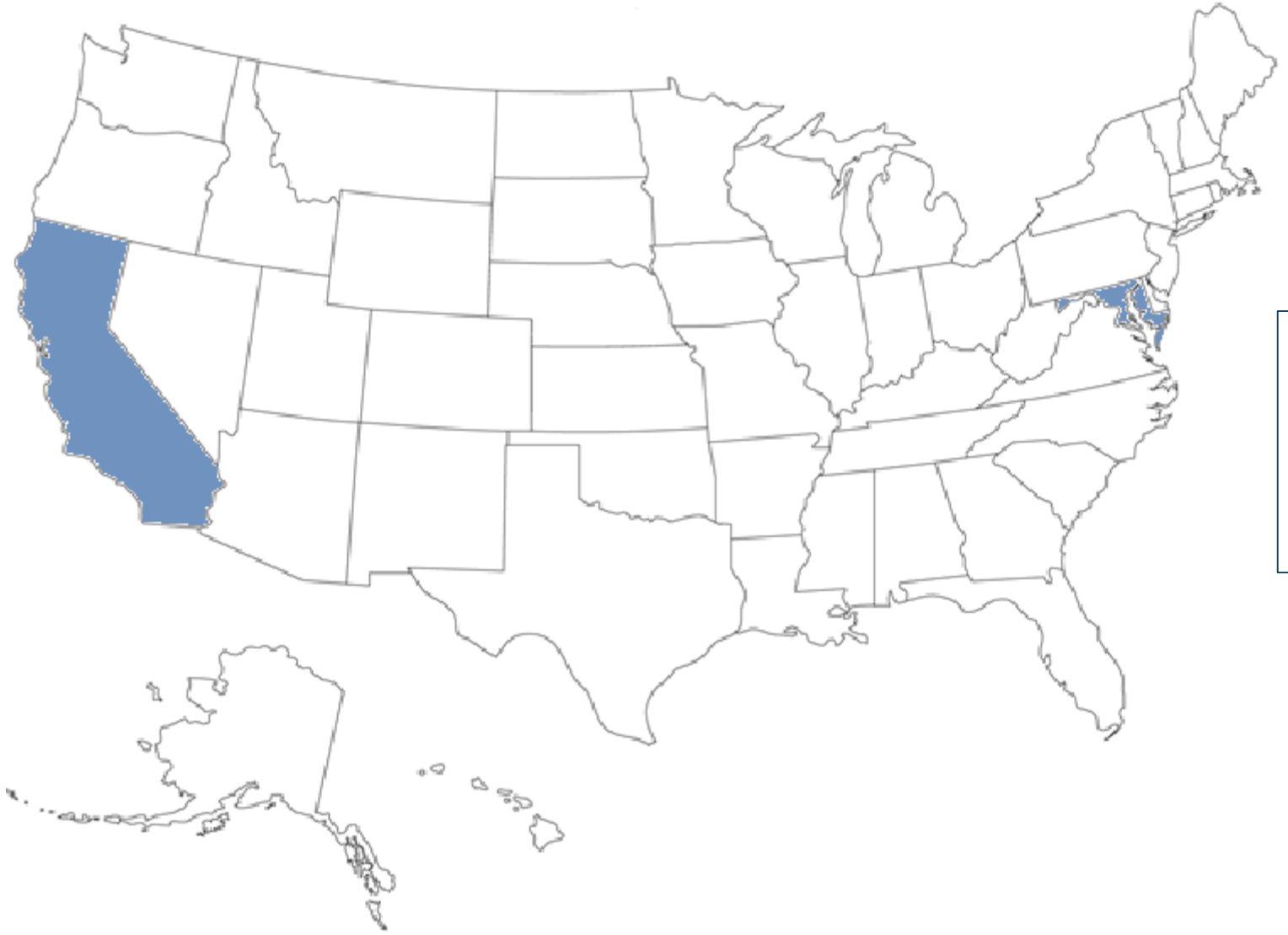
… but we’re not counting it.

Extensive Data is Collected...



OSPAR
COMMISSION

Protecting and conserving the North-East Atlantic and its resources



U.S. States that list waterway impairments due to trash

… but states aren't using it.

ETAP:

Escaped Trash Assessment Protocol

A universal method

- All environments – density
- Water Quality Standards – threat assessment
- Upstream source ID/reduction – materials management alignment

EPA's Trash Free Waters Program:

"Reducing the volume of trash entering U.S. waterways."

- Research
- Prevention, Control & Reduction
- Regulatory Initiatives
- Public-Private Partnerships

www.epa.gov/trash-free-waters

Process & Team Members

- Core working group: Margaret McCauley (EPA R10); Molly Martin (EPA R4); Amanda Hong (EPA R8); Gayle Hubert (EPA R7); Sydney Harris (ORISE, EPA R10)
- Intern support: Sydney Barnes-Grant (UW Capstone); Katie Hunger (UW Capstone)
- Additional input: Romell Nandi (EPA HQs); Andrew Horan (EPA HQs); Liz Ottinger (EPA R3); Emma Maschal (ORISE, EPA HQs); Dylan Laird (ORISE, EPA HQs)
- External peer review: Dr. Jenna Jambeck (University of Georgia); Sarah DaSilva (Environment and Climate Change Canada); Karen Morrison, Allyson Williams, Cynthia Dunn and Nancy Carr (CalRecycle); Heather Trim (Zero Waste Washington)

Sample Existing Protocols

- NOAA – Marine Debris Monitoring and Assessment Project (MDMAP)
- Ocean Conservancy – International Coastal Cleanup
- 5 Gyres – Plastic Beach/Plastic Ocean/Plastic Observe
- COASST (UW) – Marine Debris Survey
- Surfrider – Multiple beach cleanup methods, chapter-based
- Keep America Beautiful – National Visible Litter Survey
- Bay Area Stormwater Management Association (BASMAA) – On-Land Visual Trash Assessment (VTA)
- State of California Surface Water Ambient Monitoring Program (SWAMP) – Rapid Trash Assessment (RTA)
- Alliance for the Great Lakes – Adopt-A-Beach Litter Monitoring

Sample Existing Platforms

- Marine Debris Tracker (NOAA MDP; SEA-MDI)
- Ocean Conservancy – Clean Swell
- Pirika/Takanome
- Litterati
- Global Partnership for Oceans (GPO) – Global Alert

STEP 1: Site Selection

- Use existing site

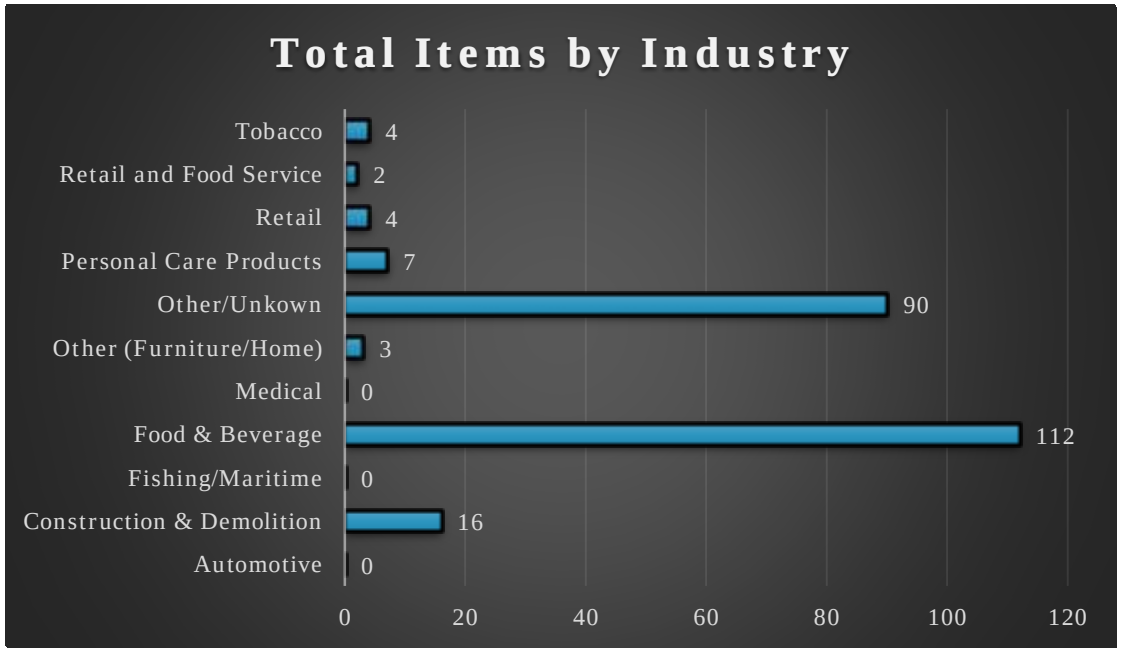
OR:

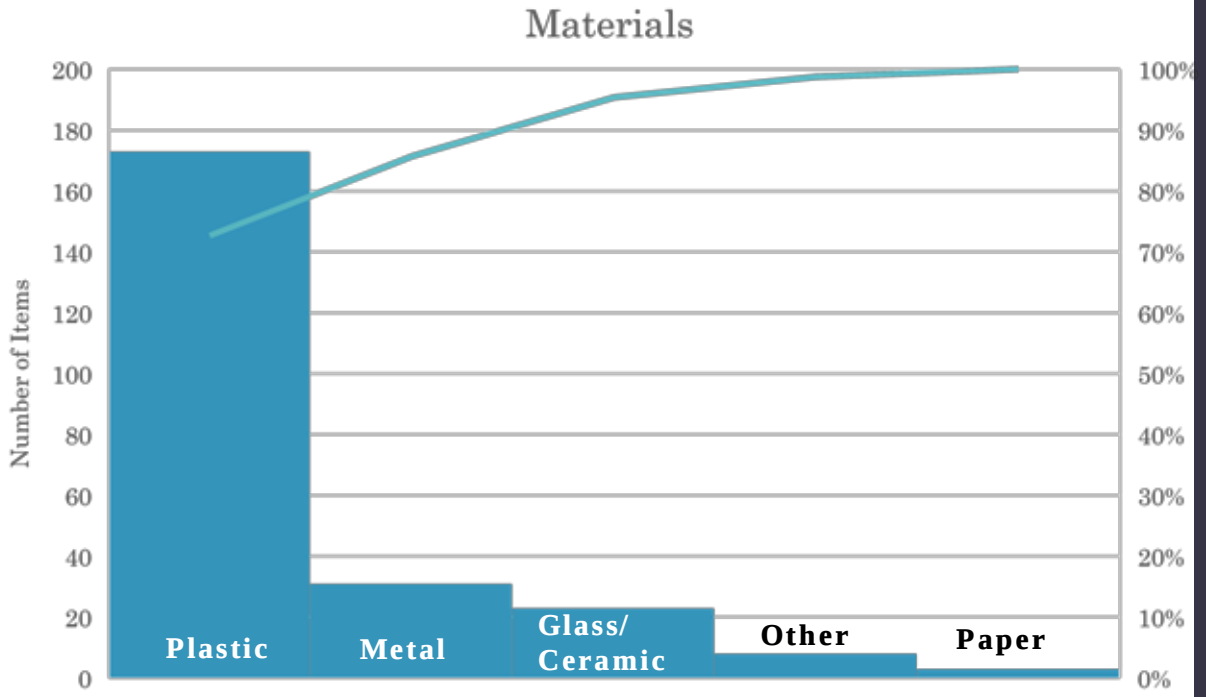
- VTA* at randomly-selected sites
- Select highest priority (lowest-scoring) site/s

*VTA = On-land Visual Trash Assessment

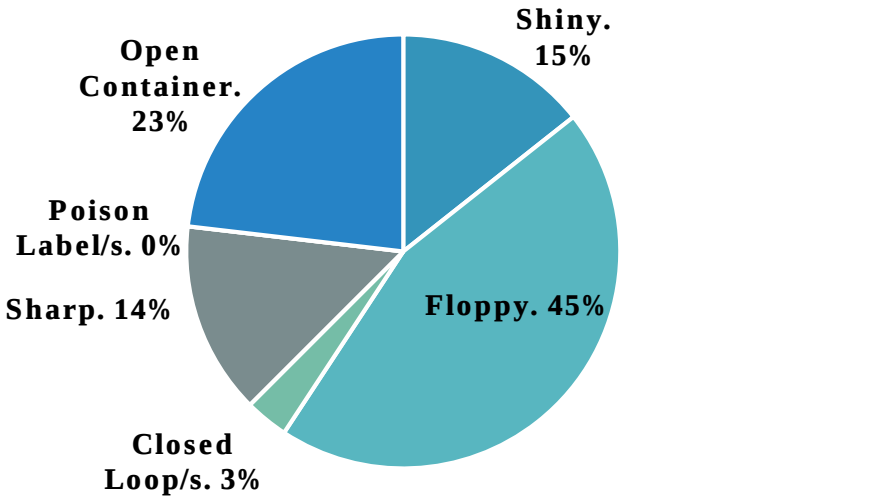
STEP 2: Data Collection

- Initial site characterization
- Cleanup trash
- Catalogue trash (using data card)
  - Item Types & Materials
  - Threat Assessment
  - Item Condition
  - Notes



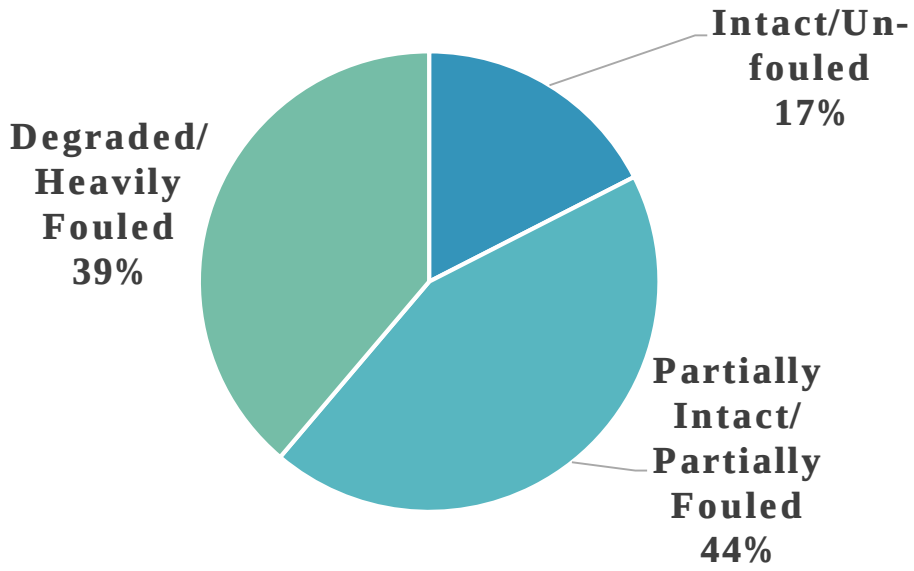


Threat Assessment



*No Poison Labels Found

Item Condition



Adaptive Management

- Test land use changes
- Design targeted interventions
- Measure policy effectiveness
- Analyze major events
- List impaired waterways?

Pilot Testing in WA

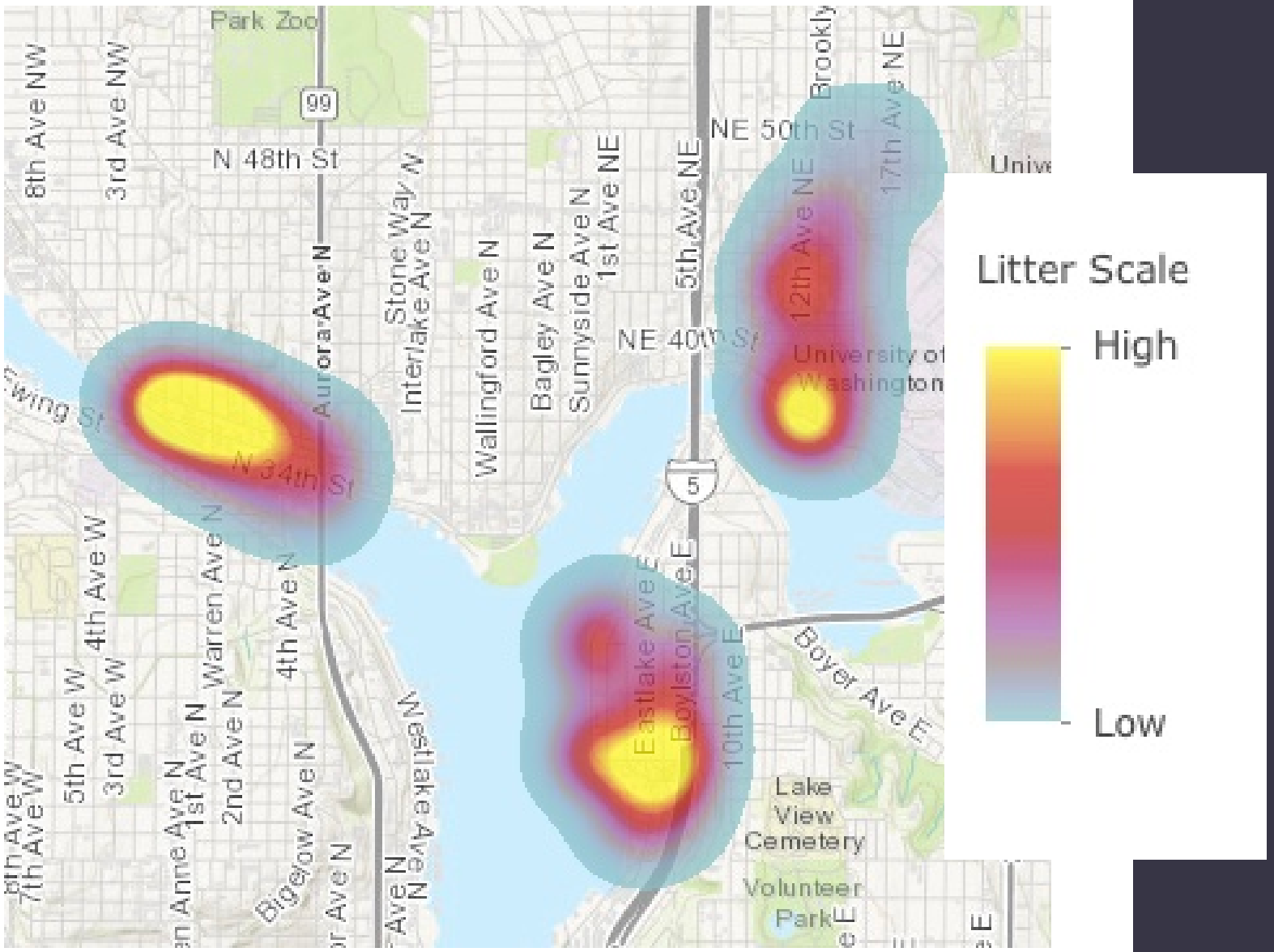
- EPA provides ETAP & reference materials
- Zero Waste Washington leads pilot testing
- Site Leaders lead individual events; sign off on data & provide feedback

Questions re EPA TFW: mccauley.margaret@epa.gov
Questions re WA Pilot: heather@zerowastewashington.org
Questions re Puget Sound: sydney@wecprotects.org

Site Criteria

- Continuous area
- Consistent land use type/s

à Ideally: connect to GIS platform for community-scale mapping of VTA scores



Site Characterization

- Latitude and Longitude (4 corners OR central point + total area)
- Land Use/s
- Proximity to water, storm drain or critical habitat
- Preventative Measures
- General Observations
- VTA Score

Site Characterization

Receptacles Present

Public Transit Hub

Residential

Water-Adjacent

Cleanup & Catalogue

- Two Parts OR Two Teams:
  - Part/Team 1: Cleanup
  - Part/Team 2: Catalogue

à Note: Cleanup and cataloguing can be conducted simultaneously or in two phases (if trash can be stored).

Part/Team 1: Cleanup

- Fan out; collect all trash within site borders
- No information collected except items that are not moved (heavy/hazardous)
- Double-check to ensure all trash collected

Part/Team 2: Catalogue

- As bags arrive from Team Cleanup OR at a later time
- Catalogue each item in pairs; record on data card
- REPEAT one bag with new pair – field duplicate
- Sort catalogued items into piles by material type
- Weigh & photograph completed piles

Data Cards

Testing two options

Escaped Trash Data Card: Option 1 Date_____ Initials_____ Site/Segment #_____ *(In each column, please reco*

		Material						Item condition			Threat assessment				
	Item List	Plastic (incl. film, foam, wrap	Glass/ Ceramic	Metal	Paper	Other (rubber, textile, wood, mixed)		Intact/ Un-fouled	Partially Intact/ Partially Fouled	Degraded/ Heavily Fouled	Shiny	Floppy	Closed Loop/s	Sharp	Po Lab
FOOD AND BEVERAGE	1. Beverage Bottle - disposable														
	2. Beverage Cup - disposable														
	3. Beverage Other Container - disposable														
	4. Beverage Container - *durable*														
	5. Beverage container cap - disposable														
	6. Beverage container lid - disposable														
	7. Beverage container cap or lid - *durable*														
	8. Beverage packaging other - disposable														
	9. Straw or Stirrer - disposable														
	10. Straw or Stirrer - *durable*														
	11. Coozy/Beverage Sleeve - disposable														
	12. Coozy/Beverage Sleeve - *durable*														
	13. Food Container/Packaging - disposable														
	14. Food Container/Storage - *durable*														
	15. Food container cap or lid - disposable														
	16. Food container cap or lid - *durable*														
CARRYING/UTENSILS	17. Napkin/Tissue - disposable OR durable														
	18. Utensil, Plate/ServiceWare - disposable														
	19. Utensil, Plate/ServiceWare - *durable*														
	20. Cooler - disposable														
	21. Cooler - *durable*														
	22. Bag - disposable														
	23. Bag - *durable*														
OUSEHOLD/COMMERCIAL/REC	24. Product Packaging (non-food/bev)														
	25. Medical Supplies														
	26. Personal Items - disposable OR *durable*														
	27. Cigars/Cigarettes/Cannabis and Packaging														
	28. Fishing/Maritime Gear														
	29. Furniture/Home Goods														
	30. Electronics														
	31. Car Parts/Accessories														
	32. Construction Debris														

Data Card Option 1:

Identify product, then material

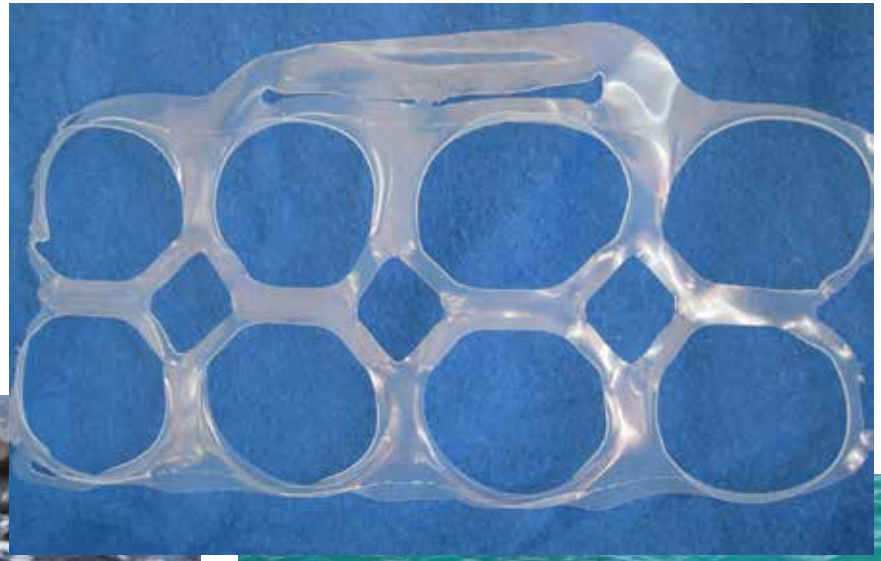
Escaped Trash Data Card: Option 2 Date_____ Initials_____ Site/Segment #____

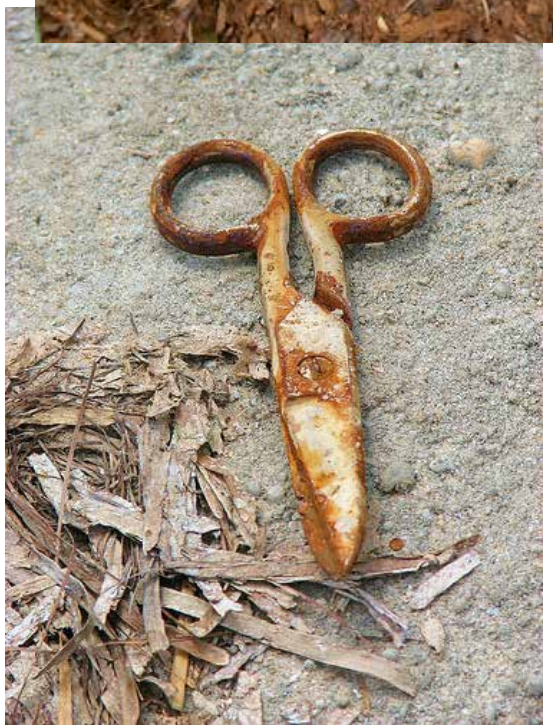
		Item condition			Threat asse			
	Item List	Intact/ Un-fouled	Partially Intact/ Partially Fouled	Degraded/ Heavily Fouled	Shiny	Floppy	Closed Loop/s	Sha
PAPER	Cardboard							
	Bags							
	Newspaper, Junk Mail and Office Paper							
	Cups							
	Beverage and Food Cartons							
	Other Fast-Food Service Items							
	Other Food and Beverage Packaging							
	Receipts							
	Other Paper							
GLASS	Beverage Bottles and Containers							
	Food Packaging							
	Other Glass							
METAL	Beverage Cans and Containers							
	Bottle Caps and Beverage Packaging							
	Food Packaging							
	Other Metal							
PLASTIC	Beverage Bottles and Containers							
	Water Bottles							
	Straws and Stirrers							
	Bottle Caps							
	Other Beverage Packaging							
	Food Wrappers							
	Foam Fast Food Service Items							
	Other Fast Food Service Items							
	Food and Drink Pouches							
	Other Food Packaging							
	Bags							
	Fragments							

Data Card Option 2:

Identify material, then product

Threat Assessment





Item Condition – Intact/Un-fouled

Item Condition – Partially Intact/ Partially Fouled

Item Condition – Degraded/ Heavily Fouled

Item Sorting & Weighing

- Material
- Item Type
- Disposal Method (Recycle, Compost, Landfill)
- Other??

STEP 3: Data Analysis

- Enter data from paper forms into Excel/Google Form
- Auto-analysis features:
  - Industry type
  - Packaging/product
  - Plastic/non-plastic
  - Total items tallied
  - Total threats flagged
  - Trash & threat density calculation

à Ideally: Data stored in universal, GIS-enabled database that is free-to-access by the public

QA/QC Measures

- Volunteer training
- Cleanup: Double-check site to ensure all items collected
- Catalogue:
  - Categorize items in pairs
  - Preserve one randomly selected bag before sorting – field duplicate
- Photos of sorted piles
- Site leader – sign off on data before submitting