Reducing Plastic Debris in the Los Angeles and San Gabriel River Watersheds

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P2RX BEHAVIOR CHANGE WEBINAR

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Significance of Plastic Debris

Presence of plastics in the environment is ubiquitous

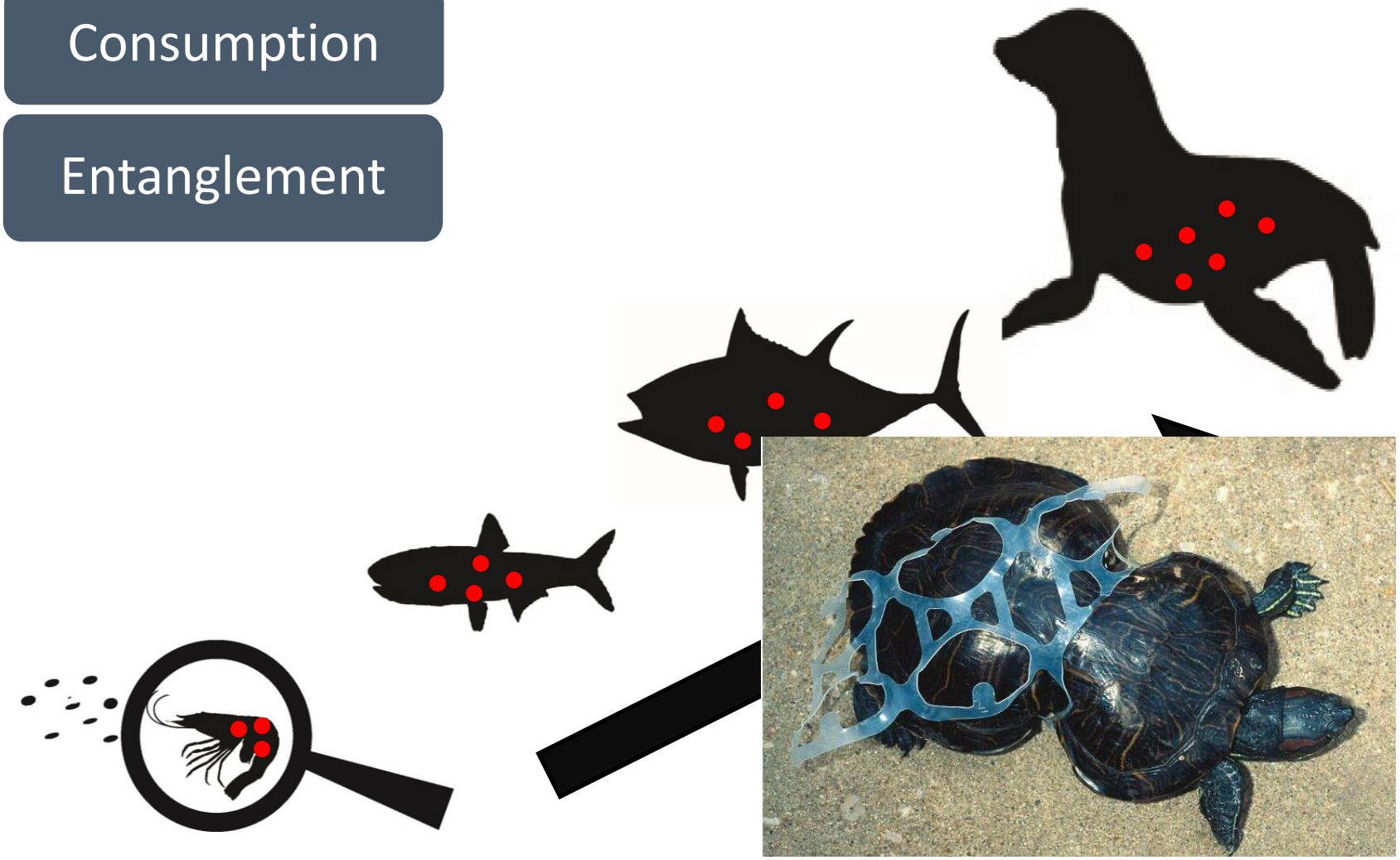
Wind and circulation patterns move plastic debris to ocean gyres

Plastic production is on the rise

Population density is positively correlated with increased plastic debris

The Impacts of Plastic Debris

- Consumption
- Entanglement



Additional Impacts

- Inhibition of sea floor processes
- Transport of invasive species
- Decreased tourism
- Cleanups are expensive

Source: sea.edu

Emerging Impacts

npr

Airplane Search Sheds Light On Massive Marine Pollution

Here & Now
Airplane Search Sheds Light On Massive Marine Pollution
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Captain Charles Moore retrieves plastic debris from the ocean in September 2007. (Algalita Marine Research Institute)

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Search For Flight 370 Turns Up... Tons of Trash

While the search hasn't yet found the plane, it has turned up a lot of floating plastic rubbish.

By Douglas Main Posted 03.31.2014 at 3:11 pm

CBSNEWS Video | US | World | Politics | Entertainment | Health | Money

Ocean garbage frustrates search for missing Malaysia Airlines plane

"Any search and rescue attempt will be hampered by untold quantities of debris" - Charles Moore

The Sources of Plastic Debris

~50% of trash entering the ocean is from land-based sources

~50% of that trash is plastic

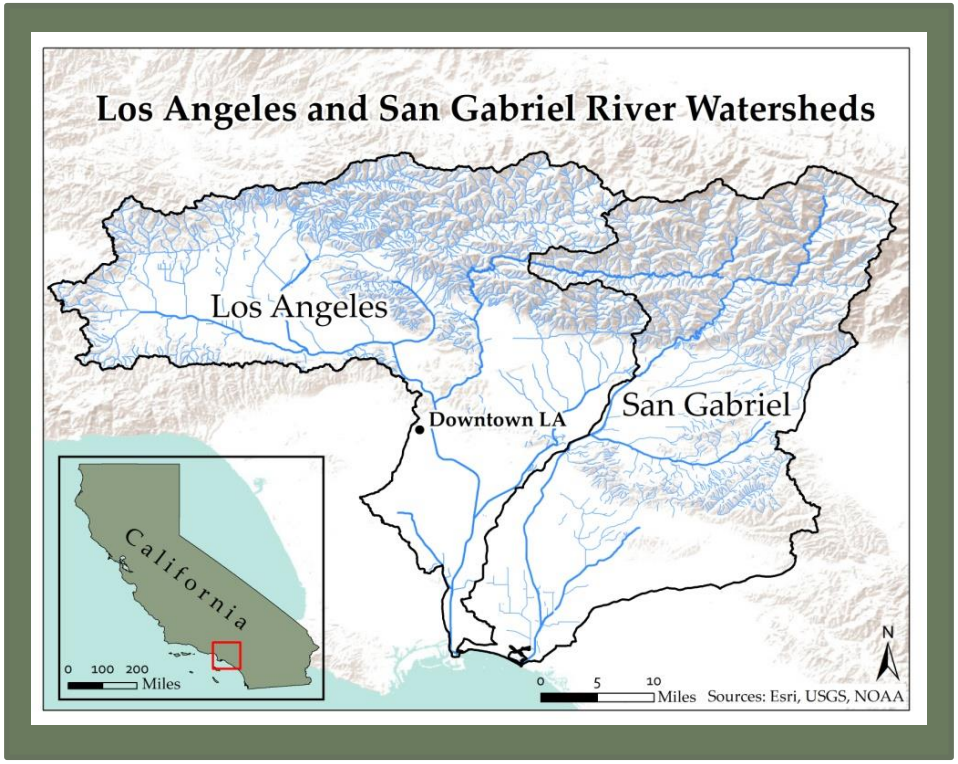
~50% of all trash found in beach and river cleanups is plastic

~50% of all trash is single-use packaging

Project Description

Description

Conduct an analysis of plastic debris in the Los Angeles and San Gabriel River Watersheds and recommend policies to reduce this debris

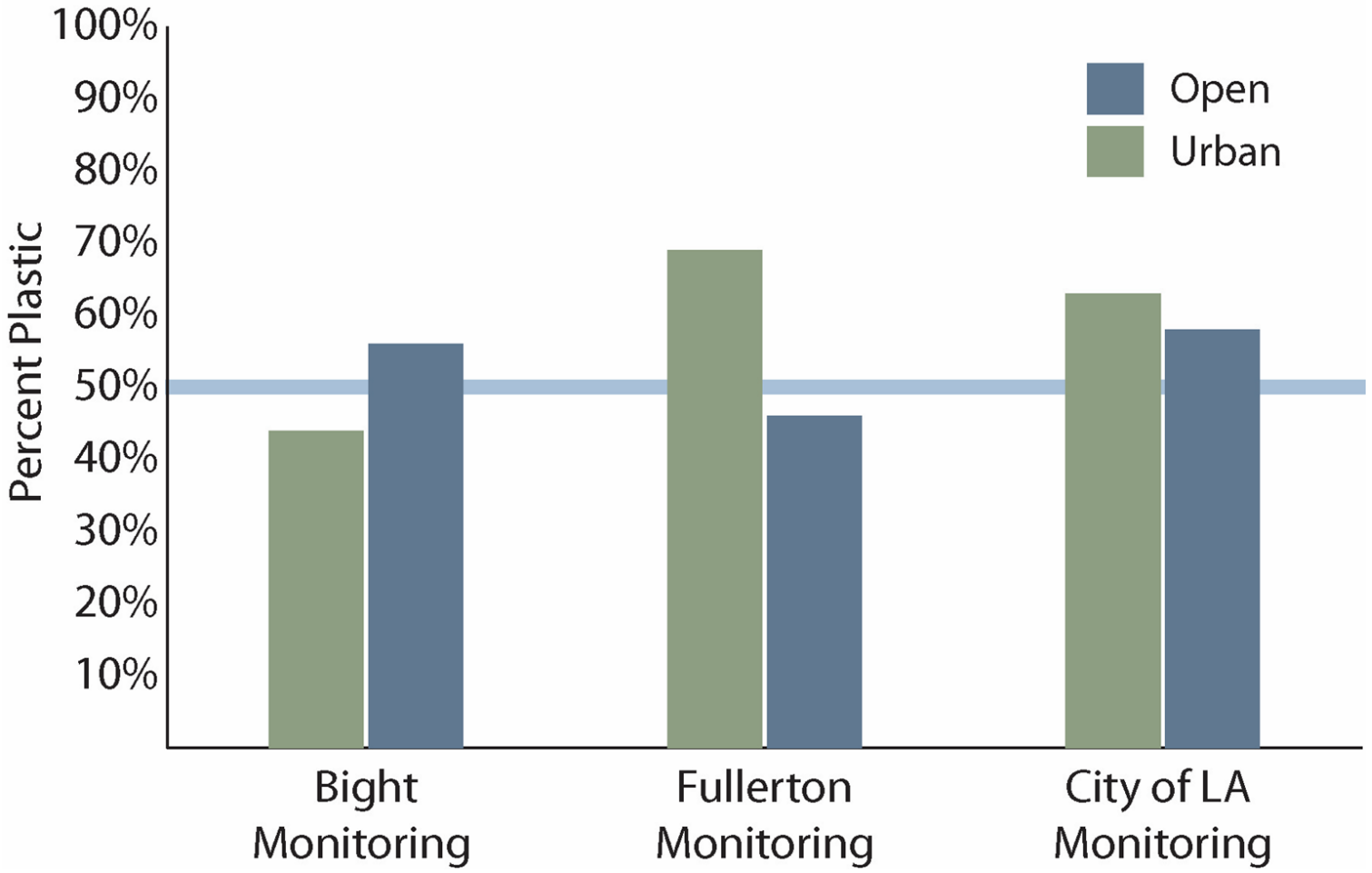


Objectives

- Background Investigation
- Literature Review
- Quantitative Analyses
- **Policy Recommendations**

Objectives: Policy Recommendations

Plastic Debris Quantity in Study Region



Three Common Types of Plastic Debris

Litter

- Often single-use plastic
- Can breakdown into <5 mm pieces, especially polystyrene

Preproduction Plastic

- 1 to 5 mm plastic used in manufacturing

Microplastics

- <1 mm plastics used in cosmetics and clothes

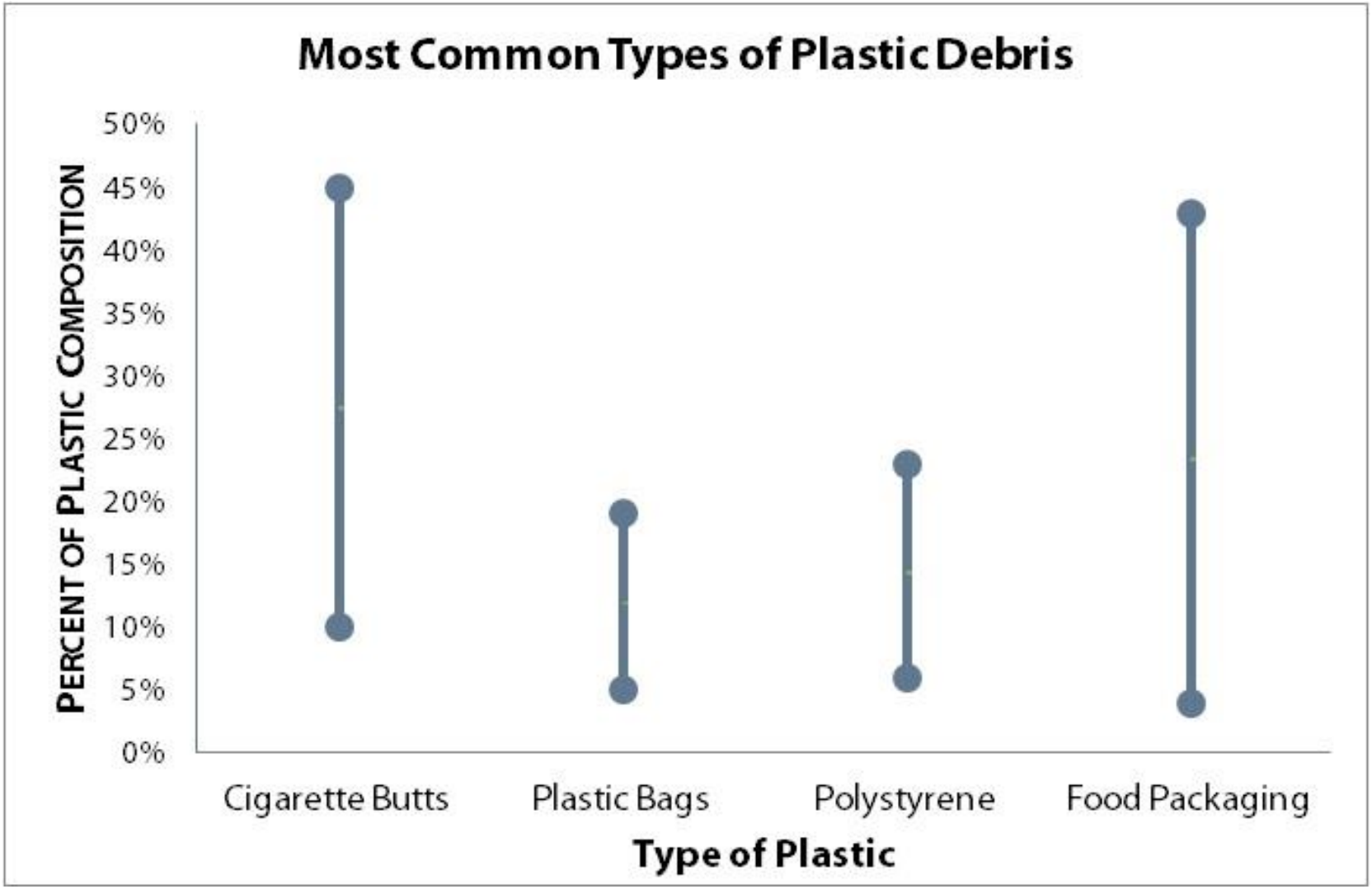
Sources: myplasticchallenge.com, ptmsc.org,, nationalgeographic.com

People Litter – A Lot!

Los Angeles County (2007) found that, ***in just one month***, litter:

- Is thrown on the ground or out of a car 830,000 times
- Blows onto a street more than 800,000 times
- Ends up in a storm drain close to 280,000 times
- LA Police Department gives out ~7,000 tickets per year

Plastic Debris Characterization in the Watersheds



Zero Trash TMDLs are Hit or Miss

Los Angeles River Watershed Trash TMDL

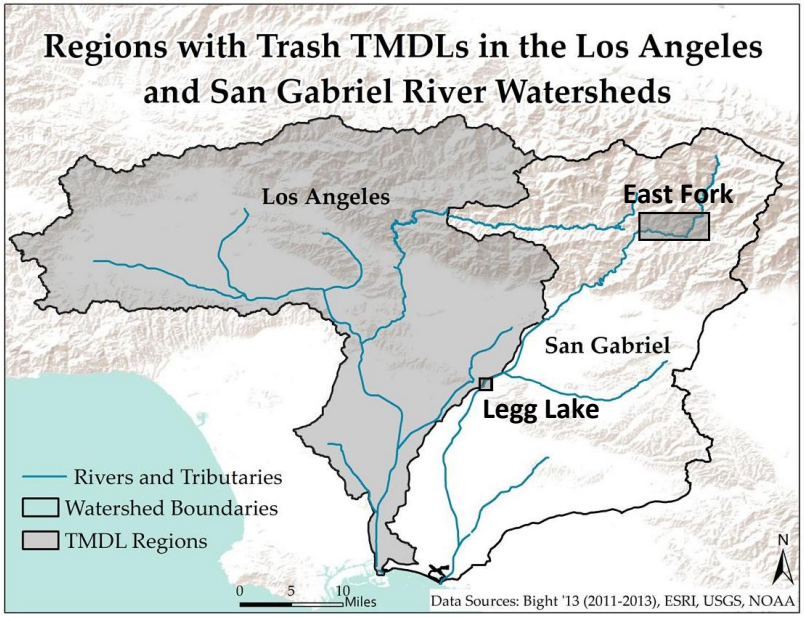
- Catch basin inserts reduce plastic debris
- Inserts miss <5 mm debris
- 25% of cities not in compliance with TMDL

East Fork San Gabriel River Trash TMDL

- Recent trash collection shows high amounts of plastic debris

Legg Lake Trash TMDL

- No annual reports submitted since 2008



Source: stormtekcps.com

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Plastic Facilities Play a Role

Facilities use preproduction plastic

- Spills are common and accepted within the industry
- Industry is dominated by small volume producers (< 1 million pounds per year)

Operation Clean Sweep

- Only 13% participation rate in California
- Only 8 facilities in LA River Watershed and 4 facilities in SG River Watershed

Source: California State Water Board

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Microplastics are an Emerging Concern

- <1 mm and used in cosmetics and clothes
- Discharged from wastewater treatment plants
- Assumed to end up in biosolids, but fate is unknown

Source: motherjones.com

Actions to Reduce Plastic Debris

Industry

- Better Plastic Facility Tracking
- Improved Data Collection
- Extended Producer Responsibility
- Operation Clean Sweep Program Improvements
- Incentivize Packaging Innovations
- Develop Marine Biodegradable Plastics

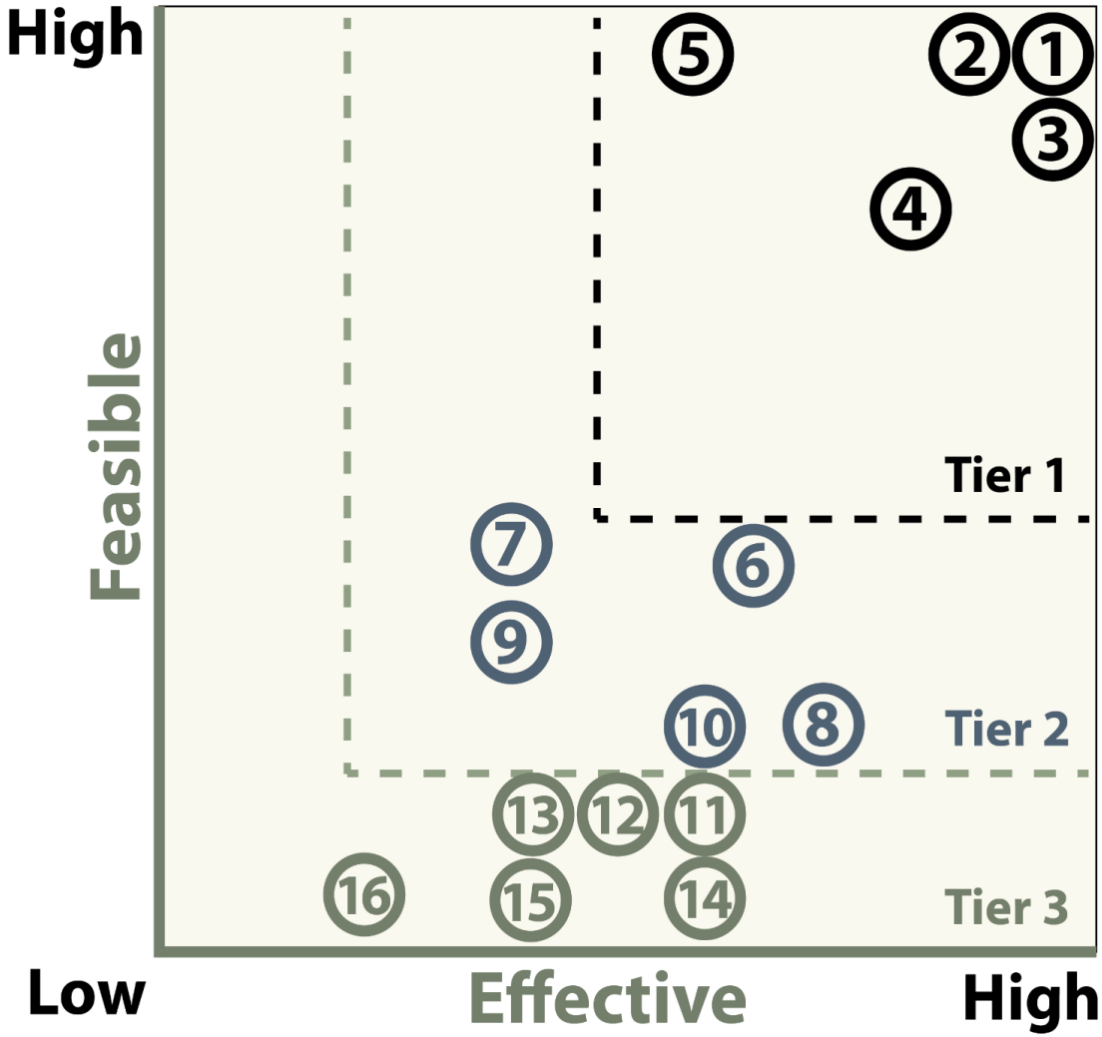
Agency

- Develop a Comprehensive San Gabriel River Watershed TMDL
- Amend LA River Watershed TMDL
- Enact Comprehensive Statewide Legislation
- Trash Boom Improvements
- Declare Plastic as a Hazardous Substance
- Address Homeless Encampments Litter

Consumer

- Litter Law Enforcement and Education
- Bans (Plastic Grocery Bags and Polystyrene)
- Single-Use Plastic Reduction
- Increased Recycling Efforts

Actions to Reduce Plastic Debris



Tier 1
1) Litter Law Enforcement & Education
2) Bans (Polystyrene and Plastic Bags)
3) New San Gabriel River TMDL
4) Single-Use Plastic Reduction
5) Better Plastic Facility Tracking

Tier 2
6) Amend LA River TMDL
7) Better Data Collection
8) Extended Producer Responsibility
9) Increased Recycling Efforts
10) Improved Operation Clean Sweep

Tier 3
11) Incentivized Packaging Innovations
12) Address Homeless Encampments
13) Enact Statewide Legislation
14) Trash Boom Improvements
15) Declare Plastic as Hazardous
16) Marine Biodegradable Plastics

Litter Law Enforcement and Education is a High Priority

Source: California Water Boards. From the Erase the Waste Campaign

- Implement civil administrative penalty enforcement
- Educational outreach – Erase the Waste Campaign

Ban Single-Use Plastic Bags and Polystyrene

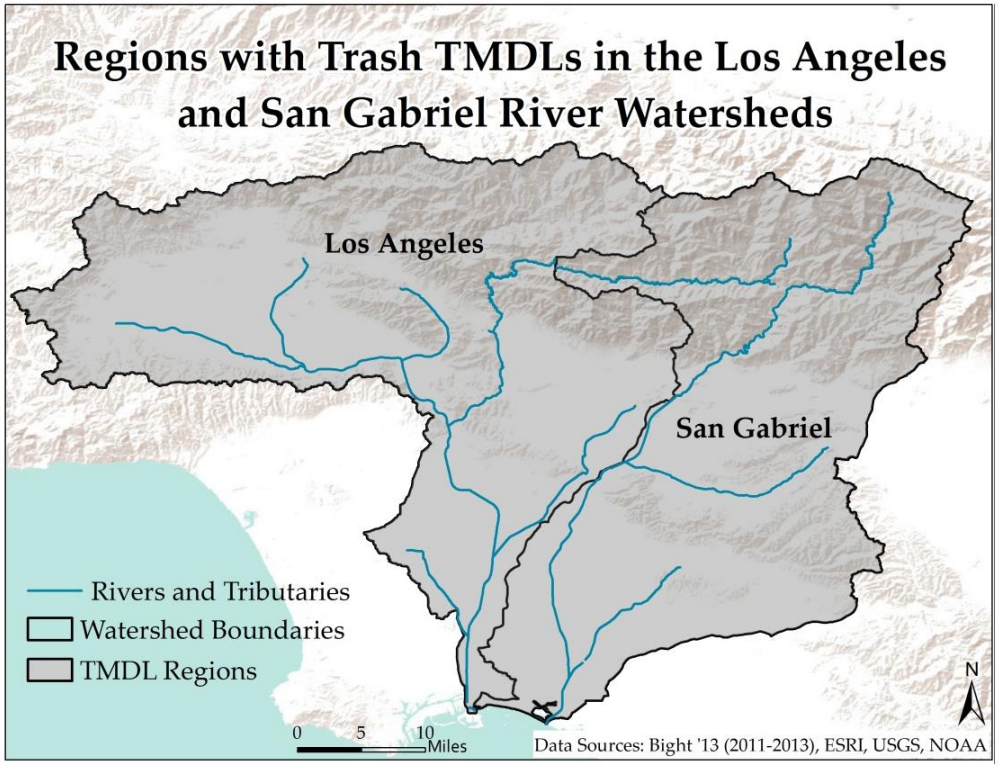
Single-use plastic bag bans	• Already banned in 87 cities in California • Three states considering bans - California, Massachusetts, and Washington
Single-use polystyrene (e.g., Styrofoam™) bans	• Already banned in 33 cities in California

Source: Miramar Landfill utsandiego.com

Implement San Gabriel River Watershed Trash TMDL

Introduction of a Comprehensive Zero Trash TMDL

Include monitoring for effectiveness and for improvement



Reduce Single-Use Plastic

Assess Point-of-Sale Fees on Common Litter Items

Expand Items Covered Under the California Redemption Value Program (CRVs)

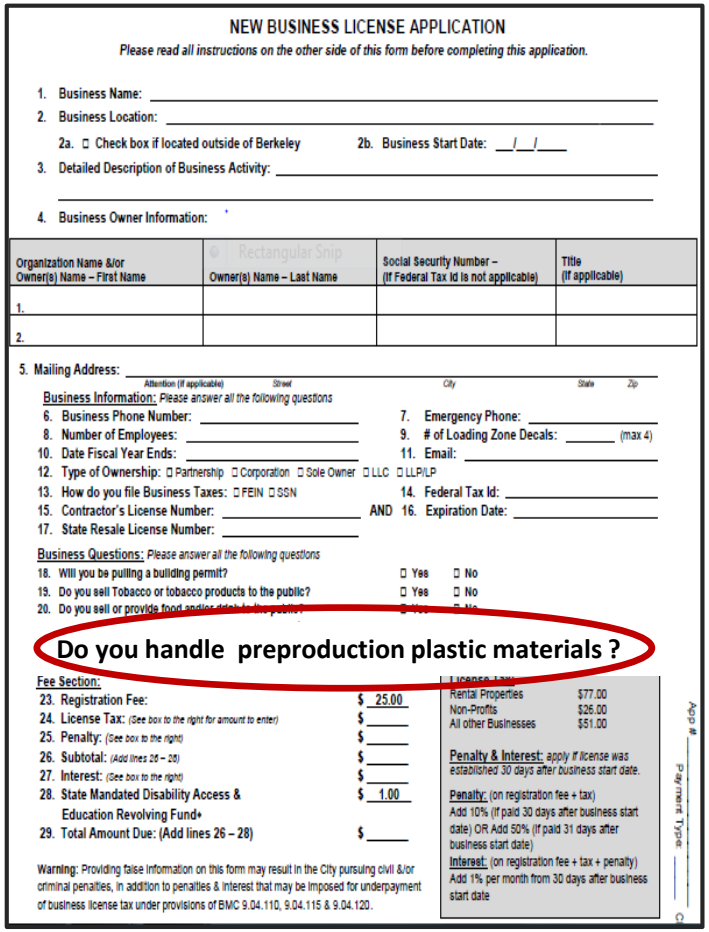
CRV Eligible Items	Not Eligible Items
Wine coolers and distilled spirit coolers	Milk jugs
Carbonated fruit drinks, water or soft drinks	Medical food
Coffee and tea beverages	Infant formula
100% fruit juice less than 46 oz.	Wine
Vegetable juice 16 oz. or less	Spirits
Sports drinks	100% vegetable juice more than 16 oz.
	Food and other non-beverage containers

Source: CalRecycle.com

Collect Better Business License Information to Track Industry

Gather industry information on which facilities handle preproduction plastic

Compile a shared database between cities and regional water boards



NEW BUSINESS LICENSE APPLICATION

Please read all instructions on the other side of this form before completing this application.

1. Business Name: _____
2. Business Location: _____

2a. ☐ Check box if located outside of Berkeley 2b. Business Start Date: __/__/____

3. Detailed Description of Business Activity: _____
4. Business Owner Information:

Organization Name &/or Owner(s) Name – First Name	Owner(s) Name – Last Name	Social Security Number – (If Federal Tax Id is not applicable)	Title (If applicable)
1.			
2.			

5. Mailing Address: _____ (Attention (if applicable) Street City State Zip)

Business Information: *Please answer all the following questions*

6. Business Phone Number: _____
7. Emergency Phone: _____
8. Number of Employees: _____
9. # of Loading Zone Decals: _____ (max 4)
10. Date Fiscal Year Ends: _____
11. Email: _____
12. Type of Ownership: ☐ Partnership ☐ Corporation ☐ Sole Owner ☐ LLC ☐ LLP/LP
13. How do you file Business Taxes: ☐ FEIN ☐ SSN
14. Federal Tax Id: _____
15. Contractor's License Number: _____ AND 16. Expiration Date: _____
17. State Resale License Number: _____

Business Questions: *Please answer all the following questions*

18. Will you be pulling a building permit? ☐ Yes ☐ No
19. Do you sell Tobacco or tobacco products to the public? ☐ Yes ☐ No
20. Do you sell or provide food and/or drink to the public? ☐ Yes ☐ No

Do you handle preproduction plastic materials ?

Fee Section:

23. Registration Fee: $ 25.00
24. License Tax: *(See box to the right for amount to enter)* $ _____
25. Penalty: *(See box to the right)* $ _____
26. Subtotal: *(Add lines 24 – 25)* $ _____
27. Interest: *(See box to the right)* $ _____
28. State Mandated Disability Access & Education Revolving Fund+ $ 1.00
29. Total Amount Due: (Add lines 26 – 28) $ _____

Warning: Providing false information on this form may result in the City pursuing civil &/or criminal penalties, in addition to penalties & interest that may be imposed for underpayment of business license tax under provisions of BMC 9.04.110, 9.04.115 & 9.04.120.

License Taxes:

Rental Properties	$77.00
Non-Profits	$26.00
All other Businesses	$51.00

Penalty & Interest: *apply if license was established 30 days after business start date.*

Penalty: (on registration fee + tax)
Add 10% (if paid 30 days after business start date) OR Add 50% (if paid 31 days after business start date)

Interest: (on registration fee + tax + penalty)
Add 1% per month from 30 days after business start date

App #

Payment Type

Conclusion

Interviews, literature review, site visits, and data analyses demonstrate the magnitude, sources, and types of plastic debris

A suite of approaches is needed now to reduce plastic debris

Plastic reduction can result in healthier ecosystems and economies

Onsite visit to San Gabriel River with advisor Derek Booth
Source: Michael Mori

Acknowledgements

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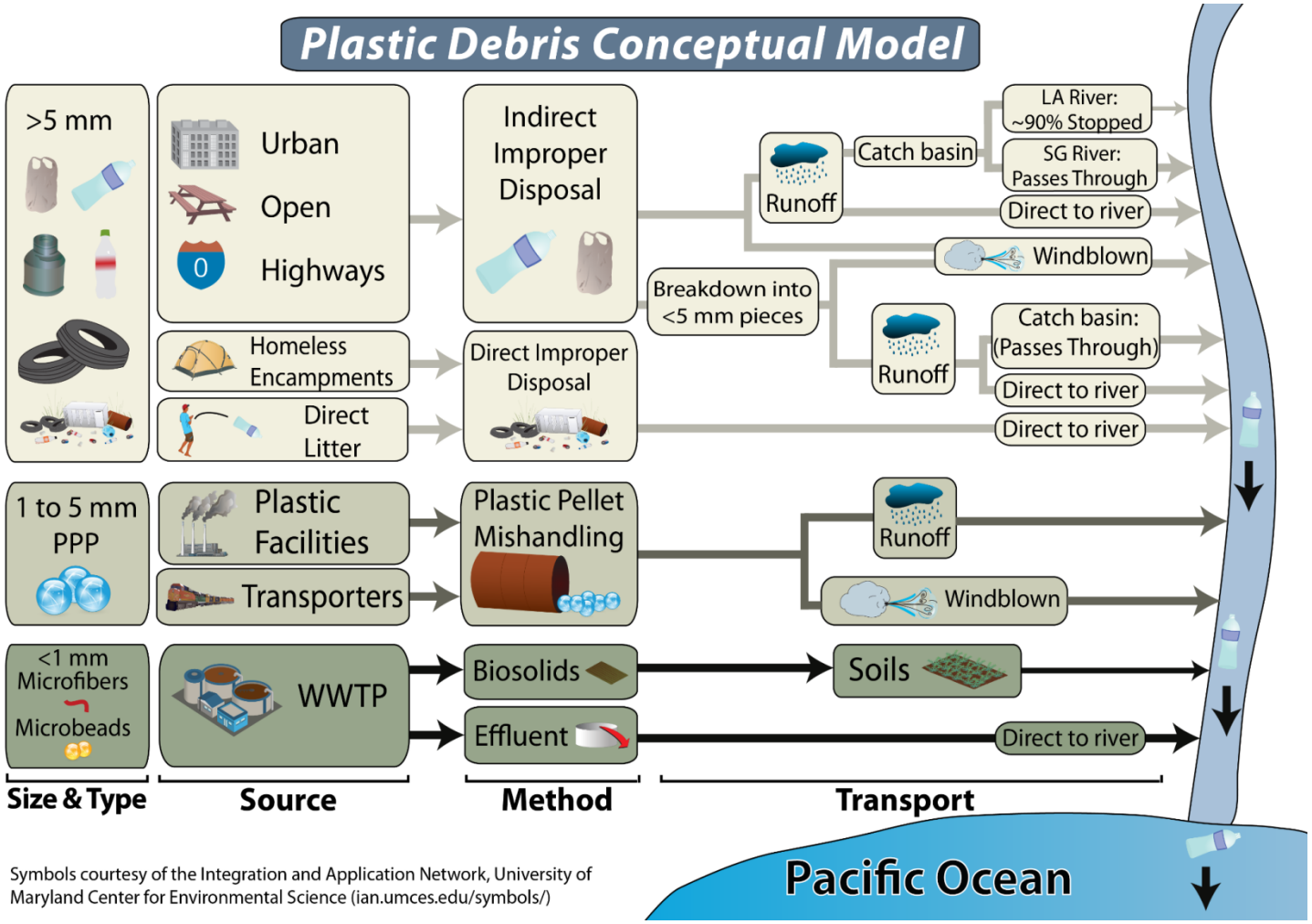
The Bren School

Faculty and Staff



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