

The State of Research on Plastics, Microplastics & Microdebris in the Environment



Jeremy L. Conkle
Associate Professor



“Instant” policy implications...

A running list of action on plastic pollution

The world is waking up to a crisis of ocean plastic—and we're tracking the developments and solutions as they happen.

Photograph by Thomas P. Peschak, Nat Geo Image Collection • June 10, 2019



"Instant" policy implications...

A running list of action on plastic pollution

The world is waking up to a crisis of ocean plastic—and

Canada aims to ban single-use plastics by 2021

June 10, 2019

Peru restricts single-use plastic

San Diego Bans Styrofoam Food and Drink Containers

D.C. Plastic Straw Ban Begins

Aquariums band together for "No Straw November"

EU Parliament approves single-use plastic ban

American Airlines cuts plastic from lounges

President Trump Signs Bill to Clean Up Ocean Plastics

California Approves Bill to Limit Straw Use in Restaurants

Chile's Ban on Retail Plastic Bags Stands

Chile's Constitutional Court ratified a bill that bans retail use of plastic bags



NATIONAL GEOGRAPHIC

<https://www.nationalgeographic.com/environment/2018/07/ocean-plastic-pollution-solutions/#close>



Google Scholar search results....

Let's see if there are any
new Microplastics papers
on Google Scholar....



Broad push to keep research on track...



Broad push to keep research on track...



Broad push to keep research on track...



 **Marine Pollution Bulletin**
Volume 146, September 2019, Pages 831-837



An interlaboratory comparison exercise for the determination of microplastics in standard sample bottles

Atsuhiko Isobe^a, R. R. Nina T. Buenaventura^b, Stephen Chastain^c, Suchana Chavanich^d, Andrés Cózar^e, Marie DeLorenzo^f, Pascal Hagmann^g, Hirofumi Hinata^h, Nikolai Kozlovskiiⁱ, Amy L. Lusher^j, Elisa Marti^k, Yutaka Michida^l, Jingli Mu^m, Motomichi Ohnoⁿ, Gael Potter^o, Peter S. Ross^p, Nao Sagawa^q, Won Joon Shim^r, ... Weiwei Zhang^s



In our studies of plastics we...

In our studies of plastics we...

... started with larger debris



In our studies of plastics we...

... started with larger debris

... realized larger debris fragments into smaller...

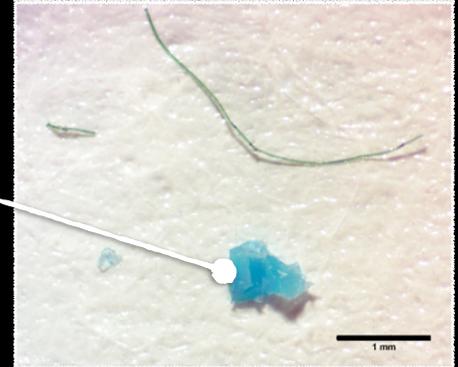


In our studies of plastics we...

... started with larger debris

... realized larger debris fragments into smaller...

... and smaller debris



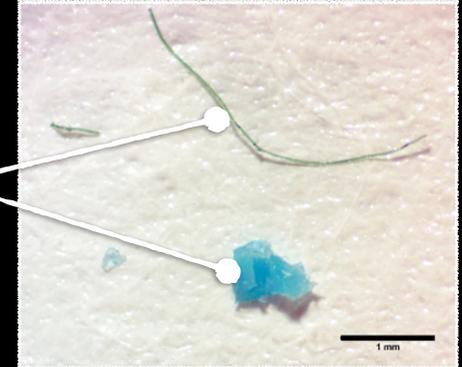
In our studies of plastics we...

... started with larger debris

... realized larger debris fragments into smaller...

... and smaller debris

... while looking for microscopic plastics, we found lots of fibers



In our studies of plastics we...

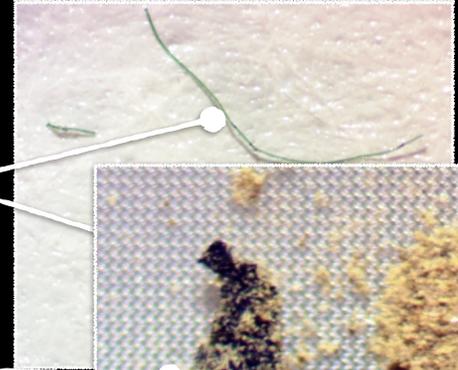
... started with larger debris



... realized larger debris fragments into smaller...



... and smaller debris



... while looking for microscopic plastics, we found lots of fibers

... but we've also found other interesting things.



In our studies of plastics we...

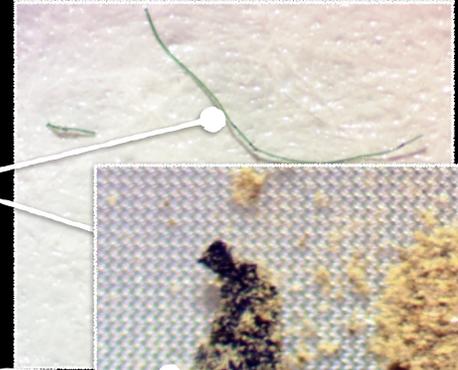
... started with larger debris



... realized larger debris fragments into smaller...



... and smaller debris



... while looking for microscopic plastics, we found lots of fibers

... but we've also found other interesting things.



Now that we are looking, what will appear next?

What are the results telling us...



What are the results telling us...

... microplastics & microdebris are everywhere



What are the results telling us...

... microplastics & microdebris are everywhere

... especially fibers



What are the results telling us...

... microplastics & microdebris are everywhere

... especially fibers

... lots of different materials...



What are the results telling us...

... microplastics & microdebris are everywhere

... especially fibers

... lots of different materials...

... both fully and semi-synthetic



What are the results telling us...

... microplastics & microdebris are everywhere

... especially fibers

... lots of different materials...

... both fully and semi-synthetic

Does it matter?



What are the results telling us...

... microplastics & microdebris are everywhere

... especially fibers

... lots of different materials...

... both fully and semi-synthetic

Does it matter?

... no/yes, maybe... when?



Where does research go now...



Where does research go now...

Improved method standardization and harmonization



Where does research go now...

Improved method standardization and harmonization

Hypothesis driven research, less focus on presence/quantification



Where does research go now...

Improved method standardization and harmonization

Hypothesis driven research, less focus on presence/quantification

When does harm occur...



Where does research go now...

Improved method standardization and harmonization

Hypothesis driven research, less focus on presence/quantification

When does harm occur...

... for fully and semi-synthetic plastics



Where does research go now...

Improved method standardization and harmonization

Hypothesis driven research, less focus on presence/quantification

When does harm occur...

... for fully and semi-synthetic plastics

... for other microdebris



Where does research go now...

Improved method standardization and harmonization

Hypothesis driven research, less focus on presence/quantification

When does harm occur...

... for fully and semi-synthetic plastics

... for other microdebris

Tease out impacts between different plastics, chemicals and misc. variables



Tools & Solutions

Individual actions help, but **SYSTEMIC CHANGES** are required

Less single use plastics

Industry/Manufacturers/Producers must adapt

Improved techniques/methods/materials use in textiles

Best/easiest/cheapest solution is always prevention over cleanup

??????????



Tools & Solutions

Individual actions help, but SYSTEMIC

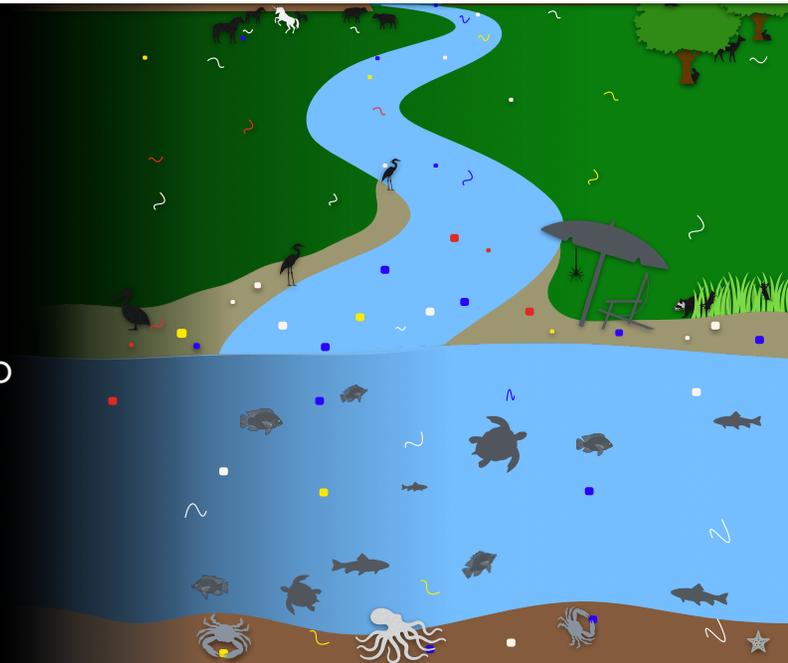
Less single use plastics

Industry/Manufacturers/Producers must adapt

Improved techniques/methods/materials use in textiles

Best/easiest/cheapest solution is always prevention over cleanup

??????????



Thanks & Questions

Presentation PDF



More Questions?



jeremy.conkle@tamucc.edu

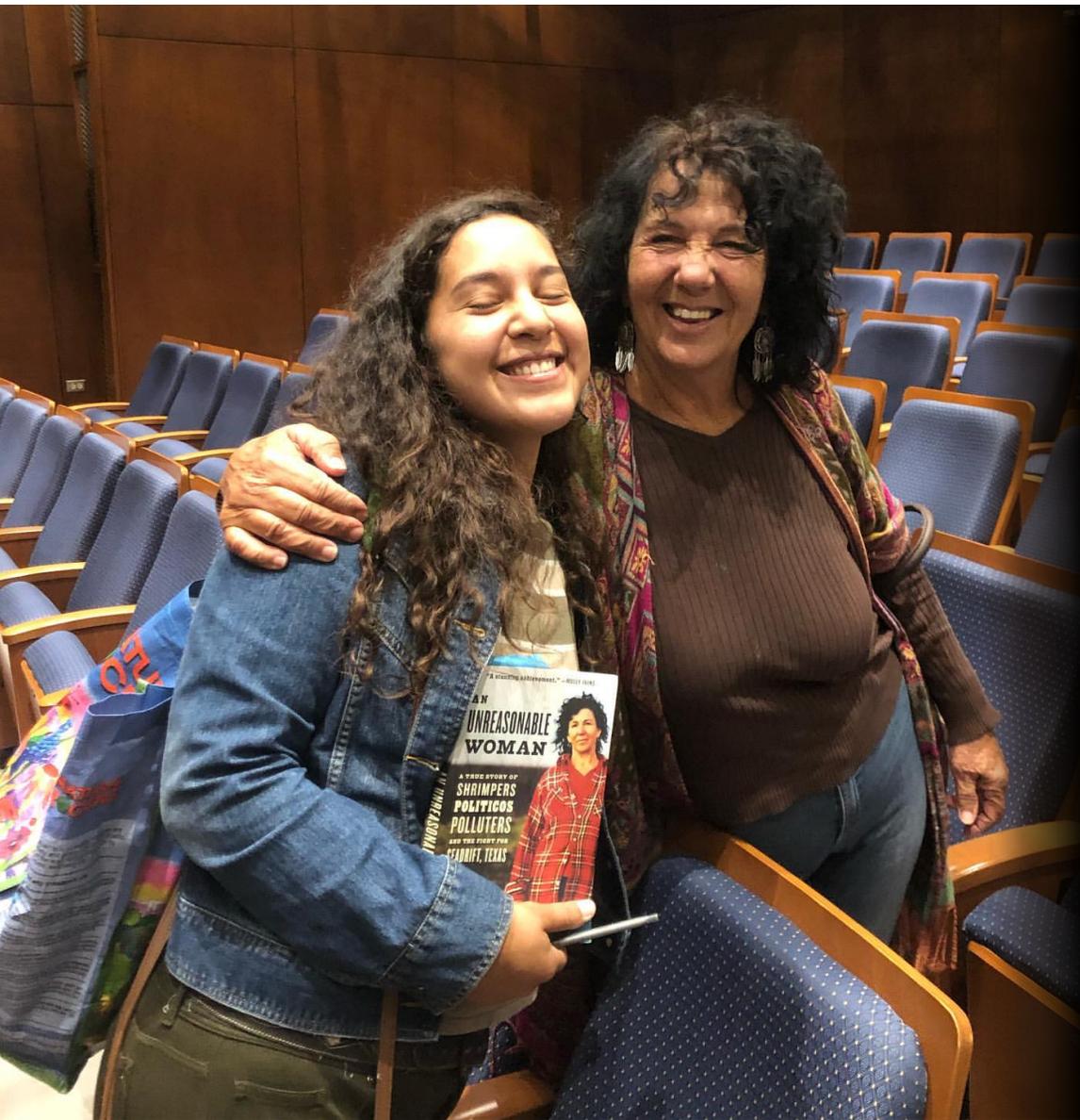


c-hawq.org



[@C_HaWQ](https://twitter.com/C_HaWQ)





“Unless someone like you
cares a whole awful lot,
Nothing is going to get
better. It's not.”

- *Dr. Seuss, The Lorax*