

FEATURE ARTICLE

NEW RESEARCH CONFIRMS PLASTIC PRODUCTION IS DIRECTLY LINKED TO PLASTIC POLLUTION *Study Finds That More Than Half of Global Branded Plastic Pollution Can be Tracked to Just 56 Companies*

By: Win Cowger, Ph.D., Moore Institute for Plastic Pollution Research

A [research paper](#) published in Science Advances reveals a direct correlation between plastic production and plastic pollution, such that every 1% increase in consumer goods companies' plastic production is associated with a 1% increase in plastic pollution in the environment. The study finds that fast-moving consumer goods companies disproportionately contribute to the problem more than household and retail companies. The study marks the first robust quantification of the global relationship between plastic production and pollution.

The research, led by scientists from a dozen different universities¹ in the United States of America, Australia, the Philippines, New Zealand, Estonia, Chile, Sweden, Canada, and the United Kingdom, found that 56 global companies are responsible for more than half of all branded plastic pollution. The Coca-Cola Company was responsible for 11% of branded waste, followed by PepsiCo (5%), Nestlé (3%), Danone (3%), and Altria/Philip Morris International (2%). The top companies identified produce food, beverage, or tobacco products.



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President's Corner



Maggie Stack

Happy summer, SoCal SETAC! I hope everyone is enjoying the warmer weather and long days. Here in San Diego, some of my favorite ways to enjoy the summer are trail running through Cuyamaca Rancho State Park early in the morning, or enjoying a nice afternoon of snorkeling with leopard sharks and sea lions in La Jolla. Getting out into nature always reenergizes my passion for the environmental work we do – it's important to get out of the lab sometimes!

Many of us took time away from the lab in April to attend our SoCal

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The five-year analysis used [Break Free from Plastic](#) brand audit data from 1,576 audit events across 84 countries. Brand audits are citizen science initiatives in which volunteers conduct waste clean-ups and document the brands found on the pollution collected. Over five years, more than 200,000 volunteers submitted data through Break Free from Plastic or 5 Gyres' TrashBlitz app.



The strong relationship between consumer goods companies' plastic production and pollution, across geographies and widely varying waste management systems, suggests that reducing plastic production in the fast-moving consumer goods sector is a viable solution to curb global plastic pollution. As world leaders negotiate a Global Plastics Treaty at INC-5 this year in Busan, Korea, this research serves as a tool to support a high-ambition legally binding treaty that includes provisions on corporate accountability, prioritizing plastic production reduction measures, and promoting reuse and refill systems.

[Read the paper here.](#)

Co-Author Quotes:

“When I first saw the relationship between production and pollution, I was shocked. I wanted to throw up, it was the reality of my worst nightmare. It means that producers big and small are toeing the line, despite all the things big brands say they are doing, we see no positive impact from their efforts. But on the other hand, it gives me hope that we can stop the flow of plastic pollution if fast-moving consumer goods companies reduce their plastic production and shifting towards more durable and reusable products.”

- Win Cowger, Board Member of SoCal SETAC and Research Director at The Moore Institute for Plastic Pollution Research

“Our study underscores the critical role of corporate accountability in tackling plastic pollution. We, as individuals, are not responsible for the plastics crisis; the onus lies on these 56 global companies to take decisive action. I urge world leaders at INC-4 to listen to the science, and to consider the clear link between plastic production and pollution during negotiations for a Global Plastics Treaty.”

- Dr. Lisa Erdle, Director of Science & Innovation, The 5 Gyres Institute

“This scientific study affirms what activists and communities impacted by plastic pollution have been saying for years: the more plastic is produced, the more plastic is found in the environment. It's that simple. Yet again, plastic polluters like The Coca-Cola Company, PepsiCo, and Nestlé continue to fail on their voluntary commitment to reduce their plastic footprint. We need a legally binding Global Plastics Treaty that mandates significant cuts in plastic production and stops corporations from flooding the planet with single-use plastic.”

- Sybil Bullock, Associate Campaign Manager, Break Free from Plastic

“The research identifies the top 56 multinational companies contributing to global branded plastic litter. Past studies have ranked countries like the Philippines, Indonesia, Sri Lanka, Bangladesh, Nigeria, etc. among the top sources of plastic waste into the ocean. This has led to a narrative in social media that blames poor countries for global plastic pollution, ignoring the fact that around the 1960s global companies flooded developing countries with cheap, single-use plastics displacing traditional biodegradable materials and sustainable reuse-refill systems which, in the case of the Philippines, dated back to the 16th century. The current study focuses instead on the role of corporations and global plastic production.”

- Dr. Jorge Emmanuel, Adjunct Professor and Research Faculty Fellow, Institute of Environmental & Marine Sciences, and College of Engineering & Design, Silliman University

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FEATURE ARTICLE (continued)



“This research provides the first quantification of global producer contribution to branded plastic pollution. The findings suggest that single-use packaging significantly contributes to branded plastic pollution. This data can help inform ways to address plastic production and reduce plastic waste ending up in the environment.”

- Dr. Kathy Willis, Postdoctoral Fellow from CSIRO, Australia’s national science agency

Coauthors' university affiliations



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MEET THE BOARD

Aaron Angel

**Environmental Scientist
Delta Stewardship Council
Delta Science Program**

Hello, SoCal SETAC!

My name is Aaron Angel and I have been serving as co-secretary on the Board since 2022. I was also an active member of SoCal SETAC throughout my graduate studies, presenting at several regional and international SETAC conferences and was awarded the 2021 SoCal SETAC Graduate Research Grant.

I grew up and lived most of my life in the Inland Empire ("IE") before moving to Sacramento last year. When I am not working or watching birds, I enjoy hanging out with my friends, dancing, and enjoying a nice cold brew at a local brewery!

My profound interest in our environment and passion for wildlife has shaped the trajectory of my professional journey. I earned my Bachelor of Science in Biology with a Zoology emphasis, graduating magna cum laude from California State Polytechnic University, Pomona. It was through field trips in my Ornithology course that I fell in love with birds (some might call it an obsession!). During my undergraduate studies, my interest in toxicology was sparked by my involvement with [Planet Rehab](#), a non-profit organization previously in San Dimas, where I served as a board member and volunteer. It was here that I actively participated in various environmental initiatives, including the march against the Keystone XL Pipeline. This activism sparked my pursuit to understand the effects of pollutants on wildlife (especially birds!), driving my interest in studying environmental toxicology.

I continued my studies by completing a Master of Science in Biology at the same institution with the guidance and mentorship of Dr. Andrea Bonisoli-Alquati. My thesis on [Oxidative Stress in the Seaside Sparrow following the Deepwater Horizon Oil Spill](#) was pivotal in solidifying my interest in avian and environmental research and data analysis.

After completing my graduate training, I sought to gain practical experience in the field, leading to a role with Audubon South Carolina. This opportunity allowed me to



immerse myself in hands-on conservation work. My passion for bird banding began during this time, where I assisted with bird banding for several research projects. This interest continues to grow through my involvement with the Monitoring Avian Productivity and Survivorship (MAPS) program and shorebird banding in the Central Valley. These experiences have deepened my understanding of and reinforced my commitment to avian conservation.

Driven by my desire to effect actionable change for ecosystems and wildlife, I pursued a [California Sea Grant State Fellowship](#) with the Delta Stewardship Council (DSC). This role involved extensive work in regional climate change planning and data analysis. Currently, I am an Environmental Scientist in the DSC's Science Program, where I spend most of my time managing and facilitating [independent scientific peer reviews](#) of State and Federal agency science.

I have recently accepted a new role with The Freshwater Trust, a non-profit organization. I am excited about the opportunity to apply my technical skills in data analysis, synthesis, and communication to support freshwater ecosystem conservation. I was also honored to receive an Opportunity Scholarship to attend this year's [Posit Conference](#), which will allow me to deepen my interest and skills in data analysis, further supporting my work in environmental science and conservation.

As I transition to my new role, I will also be stepping down from the SoCal SETAC Board. However, I will not be far and look forward to keeping up with the organization's progress and continuing to support our mission of promoting environmental quality through science.

Connect with me on LinkedIn or X (@_aaron_angel). Cheers!



(Top Left) Banding a Prothonotary Warbler supporting a long-term research project, [Project PROTHO](#)

(Bottom Left) With a banded Long-billed Dowitcher in CA's Central Valley (part of a Point Blue research project)

(Bottom Right) The 2021 Bonisoli-Alquati lab on a game night at BrewWorks!

PRESIDENT'S CORNER (continued)

SETAC Annual Meeting in Lake Arrowhead. Our past president (and organizer of the whole event!), Andrea, provides an in-depth recap later in our newsletter. Andrea's hard work and planning led to another successful meeting, so we express our gratitude for all of his organizing! Over the three days, we heard presentations ranging from microplastics to persistent organic pollutants to hair loss in kangaroo rats. It's always impressive to see the breadth of knowledge and experience that our SoCal SETAC community possesses. We're already looking forward to next year's meeting, which will likely be held in San Diego. If there's a particular session you'd like to see, or a venue you'd like to recommend for the event, please reach out!

In this newsletter, we hear from Dr. Win Cowger about a recent publication that tracked plastic production and plastic pollution. He highlights that 56 plastic-producing companies, including Coca Cola and PepsiCo, were responsible for more than 50% of plastic pollution. This data was collected by recording the brand name on plastic pollution over 5 years. This research demonstrates how important it is for large companies to take responsibility for their environmental impacts. Extended producer responsibility can help affect change upstream and downstream by putting the responsibility for end-of-life products back on the producer. With plastic production predicted to increase over the next several years, finding a solution to plastic pollution is imperative. This publication highlights how our research can have an impact on environmental and human health – we can use data to inform policy and make positive changes for our communities.

In addition to continuing important research, our SoCal SETAC community has a few other exciting items to look forward to in the coming months. The election for our new board will be ongoing throughout the month of July, and we are happy to announce that we'll have an Election

Social at the beginning of August at Tortilla Mia in Carlsbad on August 8 where we'll announce the results! Keep an eye out for more information on the event.

Once again, I'd like to thank everyone in our SoCal SETAC community for their ongoing support and contributions to our Chapter. If you ever have questions, suggestions, or feedback, please reach out to us. We want to support our members as best we can!

2023 Annual Meeting Recap

By Andrea Bonisoli-Alquati

It was great to be again at the UCLA Lake Arrowhead Lodge in Lake Arrowhead for our Chapter's Annual Meeting, on April 21–23. The Meeting overlapped with Earth Day, and the significance of this was not lost on us. For two full days, we talked about environmental contaminants in Southern California and beyond, our approaches to researching and assessing them, and the results of our professional efforts. Most importantly, we met old and new friends, caught up and made plans, and had some genuine fun.



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ANNUAL MEETING RECAP (continued)

The venue was the same as last year. This choice was something we had discussed quite extensively within the Board, whether we needed to switch to a different venue – so we could ensure a certain novelty factor – or we could instead trust the excellent spot found last year and build on that experience. In the end, we went with what we knew: A picturesque resort nestled within mountains and overlooking a tranquil lake, with excellent food, a spacious conference room where we could hold our scientific sessions, and a not-so-spacious room for our poster social. From a logistical point of view, reliance on a known venue allowed the Board of our Chapter to focus on innovation in other aspects of the meeting. For the first time in a decade or so, we started the meeting with optional training workshops, by offering the expertise of members of our Board and our Chapter at large. The two training workshops were one on the policy and regulation of microplastics, and the other on spectroscopic analysis of microplastics, and best practices for data analysis and reporting. By all accounts, the workshops were a resounding success. For this, I want to extend a big thank you to the instructors, who dedicated time and energy to preparing quality materials and activities. We hope to continue to implement these training workshops in the future, on these or other matters of interest. Let us know the topics that you would be curious to learn.

Another innovation in this year's program was a roundtable discussion on careers in environmental toxicology and chemistry. Expertly led by our Board Member Katie Payne, and populated by representatives from all sectors that SETAC represents (i.e., academia, government, private), the panel moved quickly through the meandering steps that make up the careers of many of us. This initiative was meant especially for students. However, the discussions turned out to be truly illuminating, irrespective of sector and career stage. We may continue to incorporate this format in future meetings, and even elaborate on this template a bit. Once again, let us know if you have any thoughts about what worked and what else you'd like to hear.



The bulk of the meeting were its scientific sessions. This year we had two special sessions – one on persistent organic pollutants and one on plastic and litter pollution –, plus a general session and a poster social. All sessions featured contributions on a variety of topics, showcasing the creativity of students and professionals in our region. Long-standing issues like DDT contamination coexisted with emerging ones like PFAS and organophosphate esters. In the session on litter and plastics, talks spanned a broad range of approaches, from the purely methodological to the toxicological. I remarked about this at the Meeting, and I'll repeat it here: Colleagues everywhere pay attention to the work done by members of our Chapter. In a sense it's expected, because science is supposed to cross borders. But I am still proud that so many relevant new findings may first be presented at the meetings of our regional Chapter. What starts as a ripple at our Annual Meeting may well end up a tidal wave sweeping the world. This also applies to the students that participate in our meetings: Their career may start within our region, but their influence will extend far beyond. After all, regional meetings have this great quality that students may use them as a steppingstone towards broader (and more challenging) venues and audiences. As an advisor, I know this first-hand. I see students grow in their confidence and expand their horizons to target

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ANNUAL MEETING RECAP (continued)

SETAC North America Annual and other national and international conferences. The unfolding of this process is reason enough for us to continue to participate in and support our Chapter’s meetings.

To conclude, it was a pleasure to organize this year’s Annual Meeting. By definition, this act is the last major responsibility of anyone who served as a President of our Chapter. For me this was a distinct honor. The meeting would not have been possible without much work from all the members of the Board, and especially our officers, Aaron Angel, Molly Colvin, Joe Freas, Leslie Nanninga, Barbara Orelo, and Maggie Stack, and the workshops’ instructors, Win Cowger and Sean Anderson. My gratitude goes to them for all they did and everything I learned from them. A big thank you also to the sponsors who helped support students’ participation. I will continue to attend our Chapter’s meetings and encourage my students to do the same. I hope to see you all next year.

- *Andrea Bonisoli-Alquati*



Student Corner - 2023 Meeting Awards!

Congratulations to all of our students for great presentations!

Best Undergraduate Poster:

Jimmy Ho, University of California, Los Angeles

Best Graduate Poster:

David Landis, Cal Poly Pomona

Best Undergraduate Presentation:

Tina Tran, San Diego State University

Best Graduate Presentation:

Evan Tjeerdema, Scripps Institution of Oceanography, University of California, San Diego

Travel Award Recipients: Jacob Schmidt (UCSB), Evan Tjeerdema (UCSD – Scripps), John Hoang (UCR), and Andrea Cázares Morales (Center for Research and Advances Studies of the National Polytechnic Institute).

Special THANK YOU shout-out to sponsors for student travel awards that helped get students to the annual meeting to present their work!

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Connect with us to stay up-to-date on all events, job opportunities, grants, and more!

Southern California SETAC:

<https://www.linkedin.com/company/southern-california-setac/>

Have you checked out the Student Resources Page on the SoCal SETAC Website?

This page is available to help students find resources that will assist them in continuing to learn and engage with community and prepare for the next steps. Check it out and please email Leslie Nanninga, lnanninga@sandiego.gov if you have any additional resources or tips to share!

<https://www.socal-setac.org/student-resources>

CALENDAR OF EVENTS**September 2024**

September 6

SETAC Northern California Regional Chapter Annual Meeting, Sacramento, CA, USA
[SETAC NorCal Annual Meeting](#)

September 21 - 25

SETAC Asia-Pacific 14th Biennial Meeting, Tianjin, China
[SETAC Asia-Pacific 14th Biennial Meeting](#)

October 2024

October 21 - 23

California Stormwater Quality Association 20th Annual Conference, Sacramento, CA, USA
[Annual Conference | California Stormwater Quality Association \(casqa.org\)](#)

October 20 - 24

SETAC North America 45th Annual Meeting, Fort Worth, TX, USA
[SETAC North America 45th Annual Meeting](#)

November 2024

November 28 - December 1

Department of Defense's (DoD) Energy and Environment Innovation Symposium, Arlington, VA, USA
[DoD Energy & Environment Innovation Symposium](#)

March 2025

March 17 - 20

AEHS 34th Annual International Conference on Soil, Water, Energy, and Air, San Diego, CA, USA
[AEHS Foundation 34th Annual Conference](#)

May 2025

May 11 - 15

SETAC Europe 35th Annual Meeting, Vienna, Austria
[SETAC Europe 35th Annual Meeting](#)

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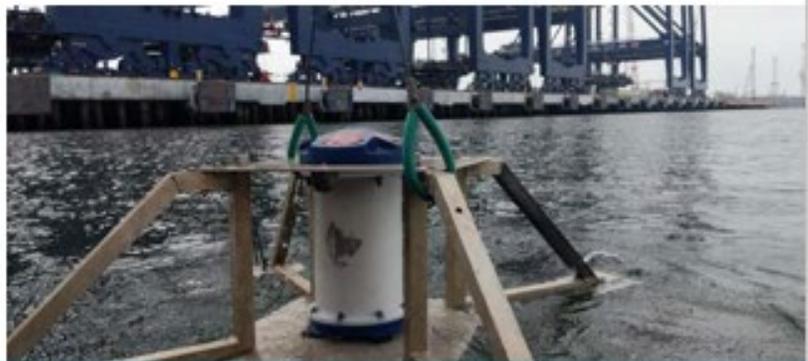
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Board Member (2022–2024) Student	Jenna Wiegand , University of California Riverside jwieg002@ucr.edu

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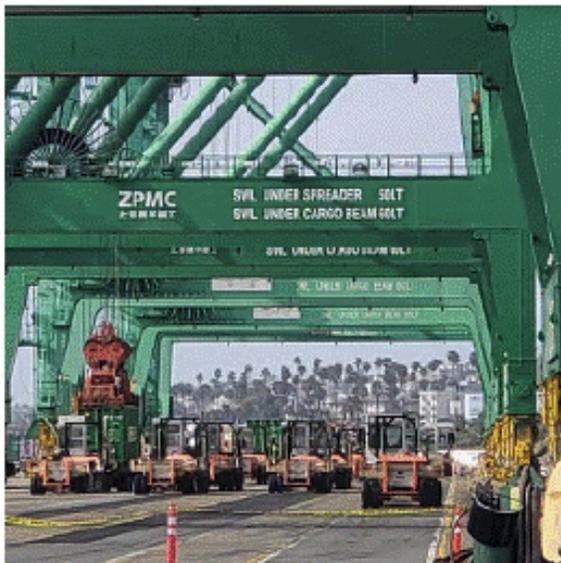
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