Earth Systems Senior Capstone Symposium
Friday March 11, 2016
Y2E2 299, 3:00 PM-5:00 PM

Program Schedule and Abstracts

3:00 PM – 3:15 PM: Welcome and Introduction, Katie Phillips
3:15 PM – 3:45 PM: Student Presentations
3:45 PM – 4:00 PM: Closing Comments, Richard Neve
4:00 PM – 5:00 PM: Poster Viewing and Reception

3:15 PM – 3:45 PM (Student Presentations)

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<td>Bringing Ugly Produce to Stanford Co-ops</td>
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<td>Laboratory Waste: Obstacles and Solutions</td>
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<td>Increasing Organic Food Purchases in Stanford Dining</td>
<td>Lazara Ramos,</td>
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<td>Piecing Together the Palm Oil Puzzle: An Interdisciplinary Study of</td>
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<td>Sanibel – Experiences in Environmental Education</td>
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We have partnered with Stanford’s Office of Sustainability to make this a sustainable event.
Abstracts:

Melissa Do
Track: Biosphere
Mentors: Rashmi Sahai, Manager of Stanford Cardinal Green Labs Program; Julie Muir, Waste Reduction and Recycling Manager for Stanford/PSSI; Diane Chermek, Lab Manager for Carnegie Institution of Science: Depts. of Plant Biology and Global Ecology; Katie Phillips, Earth Systems Senior Capstone Instructor

Title: Laboratory Waste: Obstacles and Solutions
While the quest for scientific knowledge has led to many advancements in society, the current pursuit of it has left a trail of waste in its wake. Most of the nonhazardous waste produced in laboratories ends up in landfills. The waste comes in many forms: plastics from pipette tips, glass from beakers, and polystyrene containers from chemical shipments, to name a few. Through extensive research on the complexities of laboratory wastes and the recycling industry, this project aims to explore the barriers that make recycling laboratory materials difficult and current recycling and sustainability programs that attempt to address these issues. By organizing this material into an easily understood and simplified format, it is hoped that laboratory managers and sustainability leaders can use this resource to take their own actions towards establishing a more environmentally friendly laboratory.

Chloe Koseff
Track: Sustainable Food and Agriculture
Mentor: Dara Olmsted Silverstein of Stanford R&DE

Title: Bringing Ugly Produce to Stanford Co-ops
This project has evolved from its initial goal to increase sustainability in the dining halls into a potential plan to introduce ugly produce into Stanford cooperative housing. Ugly produce is a term that refers to fruits and vegetables with small cosmetic imperfections that prevent them from passing the standards for retail, despite the fact that they are completely safe to eat. Stanford Residential & Dining Enterprises recently began purchasing a wide variety of ugly produce for the dining halls in a campaign they call “Deliciously Imperfect,” with the hopes of increasing the amount in the coming years. The project began by seeking potential ways to increase the amount of ugly produce delivered to Stanford dining. Background knowledge was gathered through interviews with local farmers, and through the compilation of this information, a preliminary idea for a system directly related to co-ops was developed. Interviews were then conducted with kitchen managers from various houses to learn about the food purchasing system of their co-op, and their opinion on the feasibility of the project. The final product is a written report summarizing the findings from the interviews.

Kara Matsumoto
Track: Biosphere
Mentors: Lynne Zummo (Stanford Graduate School of Education), Richard Nevle (Earth Systems Program)

Title: Sanibel – Experiences in Environmental Education
This past summer, I served as a teaching assistant for a subtropical zone ecology program run by my high school. I had also participated on this program several years ago as a student. The program runs for six weeks throughout the summer, with the first four spent on Sanibel Island and the last two on
Pigeon Key. The program is divided into three equal components: morning class focused on marine science and ecology; evening class emphasizing environmental literature and personal journal entries; and an individual research project designed by the students, ranging from photography portfolios to research projects on individual organisms. This program has meant a lot to me, both as a student and teaching assistant. So, for my senior capstone project, I wanted to write a nonfiction essay about these experiences, particularly through the lens of environmental education and my own personal reflections.

**Name: Jaclyn Phi**  
Track: Oceans  
Mentor: Richard Nevle (Earth Systems Program)

Title: *Piecing Together the Palm Oil Puzzle: An Interdisciplinary Study of the Palm Oil Supply Chain*  
You may not realize it, but palm oil is everywhere. From soap to chocolate bars, at least half of the products on the shelves of an average supermarket contain palm oil. There has been a substantial increase in palm oil production in recent years, coupled with a surge in deforestation rates and social conflicts in Indonesia, the nation with the largest amount of palm oil production. For my senior capstone project, I decided to explore two aspects of the palm oil supply chain in Indonesia. First, I investigated the benefits and losses to every major stakeholder and dimension, and analyzed the role of NGOs, consumers, corporations, palm oil workers, as well as at the ecological, social, health, and policy effects of palm oil production. Secondly, I wanted to delve deeper into the palm oil supply chain to understand what triggered companies to become more responsible in their sourcing of palm oil. To do so, I conducted case studies on four companies – Nestlé, Kraft Foods, Dunkin’ Donuts, and Starbucks – that were the best and worst at sourcing palm oil responsibly.

**Lazara Ramos**  
Track: Sustainable Food & Agriculture  
Mentor: Dara Olmsted Silverstein (Stanford Dining Sustainable Food Program Manager)

Title: *Increasing Organic Food Purchases in Stanford Dining*  
Thousands of meals are served each day on the Stanford campus in dining halls, cafes, and restaurants. Intrigued by the massive volume of food that flows through campus, I chose to work with Stanford Dining to understand the role that organic/local/sustainable foods may play in these eating spaces. Over the past three months, I have worked on three different projects. First, I researched the environmental/health benefits of organic produce to determine how important it was that Stanford Dining continue to increase organic purchases. Second, I analyzed the economic purchasing data of Stanford dining halls to quantify the increase of organic purchases in the past year. Third, I held two educational pop-ups in Arrillaga Dining and Roble Hall to engage students in a conversation about organic food, and treat them to organic herbal teas! In the end, I feel that I have gained a new understanding of organic foods, and have hopefully contributed to the campaign to steadily increase organic and sustainable produce purchases in Stanford dining halls.