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upwelling

OPWG
OCEAN POLICY WORKING GROUP

[Cover] Janet Bering, JD/MEM-CEM'22 | Driving along the north coast of Grenada, we stopped to watch a group of local fisherman. This fisherman was assisting as the other side of the net was set, enclosing the fish between the boats and the shore.
[Inside Cover] Anastasia Quintana, PhD Candidate, Marine Science and Conservation | We usually see fishers on boats at sea - but it's only a small part of fishing. Here, a captain who just landed his catch is thinking. Being a captain is a cerebral job: considering gear, fish movement, fish biology, prices, interpersonal relationships with buyers and crew members, and much more. Bahia de Kino, Sonora, Mexico.

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The Ocean Policy Working Group (OPWG) is a student organization at Duke University designed to facilitate cross-disciplinary discussions on human interactions with the ocean. Throughout the academic year, the OPWG hosts a variety of events with the purpose of exposing the Duke community to pertinent issues in our oceans. This working group strives to be a hub for ocean resources.

In this edition

A Note from the Editor:

The tenth volume of UPWELLING showcases work from Duke University students, incorporating position pieces and artwork from the creative minds of undergraduate and graduate students alike.

Dive in and experience how the oceans have impacted the lives of our students. I hope these pieces encourage you to spend more time in the sea and inspire you to do more for the benefit of our oceans.

A warm thank you to the Nicholas School of the Environment, the Nicholas School Student Council, and the Duke University Center for International Studies for their continued support of the Ocean Policy Working Group and UPWELLING.

Sincerely,

Natalie Rodriguez

Natalie Rodriguez
OPWG Publication Coordinator
MEM-CEM '20

SOS Pesca: A Unique Community-Focused Marine Conservation Experiment in Cuba

Lauren A. Mariolis, Emily Melvin, and Catherine Morse, MEM-CEM'20

Our Community -Based Environmental Management course this fall provided the opportunity to delve into the SOS Pesca Project, a unique community-based approach to fisheries management and marine protection in Cuba. Through conversations with Valerie Miller and Eduardo (Lalo) Boné of the Environmental Defense Fund, we learned about this unique initiative, which provides an example of how to successfully involve communities in marine management

Through a participatory planning process that began in 2010, stakeholders identified goals, activities, and indicators of success for the project (Miller, 2018; Miller, Mirabal-Patterson, García-Rodríguez, Karr, and Whittle, 2018) . The overarching activities included MPA capacity building and training; promoting fishery sustainability; promoting sustainable livelihoods and supporting local communities; and promoting networking between fishers and fishing communities (Miller et al., 2018). The project then conducted workshops on a variety of issues designed to address environmental concerns facing the communities, including fish stock assessment, fisheries governance, MPA management, and economic alternatives (Miller et al., 2018) . A holistic approach that integrated experts from all topics into every workshop helped to harmonize competing objectives and was critical to the success of the project (Boné, 2018; Miller, 2018) . Ultimately, the project helped the community develop more environmentally-friendly fishing practices, improve fishing management, establish new MPAs, and establish fishing alternatives, such as oyster mariculture, which provided new jobs (Miller et al., 2018). SOS Pesca ultimately enjoyed wide success at the national, regional, and local levels, making great advances in addressing Cuba's overfishing problems, enhancing MPA management, and improving community way-of-life, family dynamics, and gender

[Top] Time had to be devoted to getting to know each other and building understanding among Playa Florida and Guayabal community members.
[Bottom] Given the need to expand fishing alternatives for the certain communities of Guayabal and Playa Florida, a study was conducted to evaluate the possibility of developing local oyster farms.

[Top] Fishing boats line the beach, waiting to be taken out once again.

[Bottom] SOS Pesca logo translates to "fisheries sustainability project"

equity (Miller et al., 2018). This success was largely due to the community's involvement from the beginning; the NGOs overcame initial skepticisms based on longstanding local connections and their diligent efforts to involve the communities in every stage of the process (Miller, 2018; Mirabal-Patterson and Carrazana, n.d.). Ultimately, the community wholly supported SOS Pesca, as is evident in testimonials at https://www.youtube.com/watch?v=WY6c978rFiY. Moreover, the project has enhanced relationships between the communities and abroad. Networks of scientists, managers, fishers and their families, coastal communities, NGOs, and other stakeholders continue to work together and grow even after the project's formal end in 2016 (Miller et al., 2018) . Representatives from Playa Florida and Guayabal continue to share their experiences with other communities across Cuba, serving as ambassadors for marine conservation (Miller et al., 2018) . Overall, SOS Pesca serves as an example of the lasting benefits of integrating communities at every stage of a marine management initiative.

1. Boné, E. (2018, November 16). Interview with Eduardo Boné, Manager, Cuba Oceans Program, Environmental Defense Fund.
2. Miller, V. (2018, November 13). Interview with Valerie Miller, Senior Manager, Cuba Oceans Program, Environmental Defense Fund.
3. Miller, V., Mirabal-Patterson, A., García-Rodríguez, E., Karr, K., and Whittle, D. (2018). The SOS Pesca Project. MEDICC Review, 20(2), 65–70.
4. Mirabal-Patterson, A. and Carrazana, Y. Á. (n.d.). Training in fishing communities. In SOS Pesca: Comunidades del sur oriente de Cuba al rescate de la pesca sostenible (pp. 52–61).
5. All photos- www.EDF.com

SOS pesca
PROYECTO DE SOSTENIBILIDAD PESQUERA

A Space for Seafood

Kelly Dobroski, MEM-CEM '19

As the sun rose, fishing vessels lined Pier 38 unloading their fresh catch. Fishers had been unloading for hours; a well-oiled machine, Pier 38 is home to the United States' sole fresh tuna auction.

The auction floor is lined with pallets, loaded with iced, fresh fish – including billfish and tunas. Bidders shuffle down the rows of pallets, as the auctioneer shouts prices over the noise, visually inspecting the flesh for the right color and texture before purchase.

The pelagic longline fishery is one of the most sustainable in the US – stocks are regulated through catch limits based on stock assessments, as well as bycatch limits, based upon the best available data. However, not all global fisheries abide by the same restrictions, and illegal fishing activity is difficult to account for when determining total fish landings and bycatch interactions.

The shallow set swordfish fishery interacts with sea turtles, and take limits (i.e. how many sea turtles can be accidentally caught under permit) are set based upon current sea turtle populations. Deep set pelagic gear results in bycatch as well; false killer whales become entangled in longline gear while depredating longline bait or catch. If bycatch limits are met, fisheries may be shut down until the following year, impacting the livelihood of fishers and further endangering protected species.

As the human population grows, there is no longer space for traditional conservation biology in fisheries management. The Food and Agriculture Organization of the United Nations has found that over 4 million people depend upon fish for 15% of their protein intake, and millions more choose to consume fish as a regular part of their diet. To establish successful conservation and sustainability of exploited fisheries, the human dimension must be incorporated. New conservation biology strategies incorporate human well-being into the conservation equation. This hunger for seafood requires alternative fishing solutions to maximize benefits for both people and biodiversity. Without immediate intervention, fisheries will collapse, and more protected species will go extinct. Mariculture is redefining interactions with our oceans' fisheries, allowing seafood consumption with fewer

incidental environmental impacts. Darren Garriques, brood stock manager of Kampachi Farms LLC, works to maximize production efficiency and limit negative impacts to the environment and on other species.

"Kampachi is good for white table dining," Darren explained, "…it's a fatty, firm, white fish, similar to yellowtail."

Kampachi farming has moved to the sea – in large copper-mesh sphere cages. Nutrient impacts from the fish is localized and limited, as ocean currents dilute waste immediately. Because it's caged, capturing the fish has no impact on local endangered species – initial brood stock harvest is targeted by employing barbless hooks and pole-and-line practices, further reducing impacts on non-target species. "[Kampachi] lends itself to agriculture" Darren added, "it has a high food conversion ratio, it takes less resources than tuna to farm."

The success of this farmed species has resulted in products shipping both nationally and internationally, as well as expanding production to regions such as Baja, California and La Paz, Mexico - these practices may soon replace wild caught fisheries, promoting conservation of both the target species and their traditional bycatch.

[Page 10] The auction floor is lined with pallets, loaded with iced, fresh fish – including billfish and tunas.
[Page 11 Top Right] Kampachi logo posted at Pier 38
[Page 11 Bottom] Kampachi farming has moved to the sea – in large copper-mesh sphere cages. (www.kampachifarm.com)

"[Kampachi] lends itself to agriculture… it has a high food conversion ratio, it takes less resources than tuna to farm."

Reflections on Grenada

Janet Bering, JD/MEM-CEM '22

My first trip to the Eastern Caribbean was in 2013, a few months after I graduated from college. I was working as an assistant scientist, sailing and exploring and totally enthralled by the vibrancy of the islands we visited. These photos are from Grenada, which was the first stop on that trip. We visited a fish market in St. George's, and I took photos while my friend Skye asked questions of the fishmongers.

At the time, I didn't think to ask the questions that swirl in my head today. When I look at these photos now, I think about the tension between conservation and food security in developing island nations. I wonder about the long-term sustainability of the reef fishery in Grenada. I wish I could go back and ask those women about what it is like to work in a fish market, or the man I saw fishing on the pier what he was catching with his baitfish.

curious coi

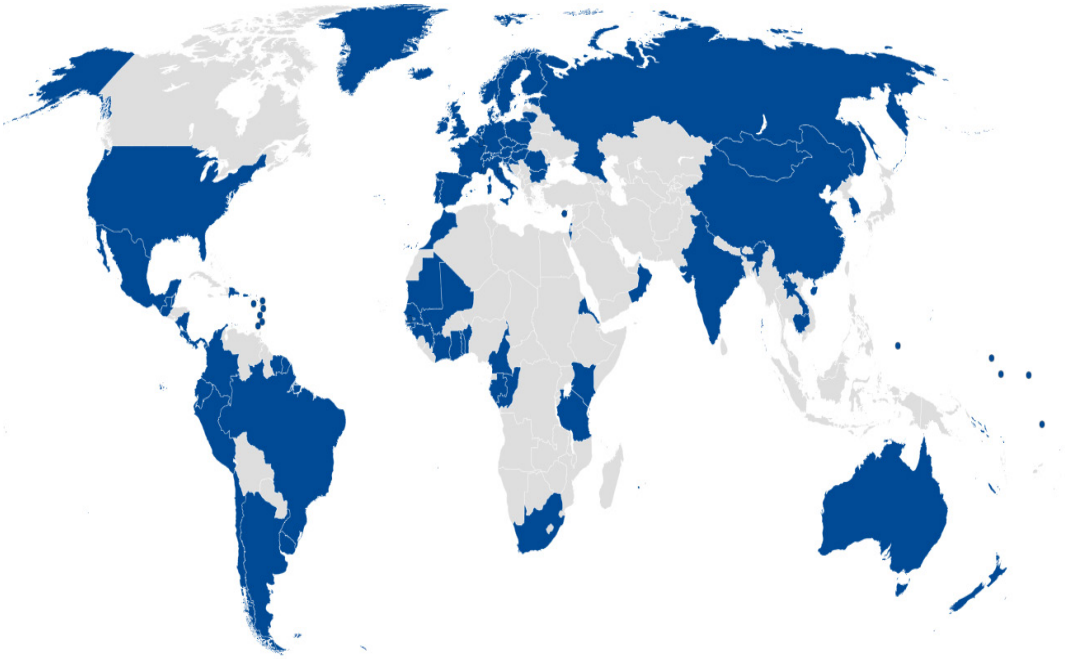
By Alexie Rudman

endless pursuit

By Alexie Rudman

The Trump Administration and the International Whaling Commission

Rafaella Lobo, PhD Student in Marine Science and Conservation



The readers of this magazine may be familiar with the Pelly Amendment to the Fishermen's Protective Act of 1971, and the Packwood/Magnuson Amendment to the Fishery Conservation Management Act of 1976. The first gives the President the option to deny any country access to one of the greatest American assets: Its international market. If a country is allowing illegal fishing operations or undermining a fisheries' conservation program, this country can be certified by the U.S. Secretary of Commerce. The President can then ban all fisheries imports from the non-abiding country - a powerful economic sanction. As a complement to the Pelly Amendment, the Packwood Amendment to the Magnuson Fishery Conservation and Management Act was created to certify any country that is conducting trade that threatens the success of any international program created to protect endangered or threatened species.

So, following Japan's withdrawal from the International Whaling Commission (IWC) last December, I expected we would hear a lot more about these policies on the news. The Pelly and Packwood/Magnuson amendments threats have proved to be an important mechanism on the whaling issue. It had been particularly effective on Japan, which not only stayed in the IWC for decades (almost blatantly "against its will"), but also removed its reservations to the moratorium, unlike other whaling nations.

It is important to note that these tools are options even if the actions are considered legal in the country that is conducting them. The threat of, or the actual sanction/certification, have been used by the U.S. countless times. The U.S. ban on shrimp imports from countries that did not use turtle excluding devices (TEDs) to avoid bycatch of endangered species led to great debate in the World Trade Organization (WTO), and was ultimately successful. Likewise, it has successfully persuaded many countries to stop commercial whaling, remove reservations and/or stay in the IWC against their will. These include, for example, Brazil, Peru, Chile, Taiwan, South Korea, Norway, and of course, Japan. Notably, and more recently (2014), the Obama administration actually certified Iceland over fin whale hunting and its trade with Japan.

[Bottom Left] A turtle escapes a fishing net through a turtle excluding device (sero.nmfs.noaa.gov)
[Middle left] Member states of the IWC (wcoffice.org)
[Top Right] A minke whale caught in research whaling is unloaded in Ishinomaki, Miyagi Prefecture. (Asahi Shimbun file photo)

Some authors have considered it "a small diplomatic miracle" that Japan stayed at the IWC this long, and many consider the threat of sanctions/certification under the Pelly and Packwood Amendments the reason why it tried so hard to find a diplomatic solution. I believe the timing of Japan's withdrawal is telling. The Trump administration's dismantling of domestic environmental regulation and disregard for global environmental governance is rippling beyond the EPA or the Paris Accord. If there ever was a time Japan felt it would be safe to break from the IWC, this was probably it. Global environmental treaties, much less domestic environmental issues, are not on the Trump administration's radar. It is a great, if sad reminder, that domestic cues and positions impact issues at the international level, particularly when coming from a country as powerful as the U.S.. What remains to be seen is whether the IWC can use this diplomatic failure to make some much needed reforms, move past its constant stalemates and become more effective, or if this will be the end of an organization which, for all its flaws, did succeed in saving many whale species from extinction.

1. A zero-catch limit passed in 1982 to be effective from the 1985/1986 season onwards, and has never been lifted.

2. Joyner C., and Tyler, Z. (2000). Marine Conservation versus International Free Trade: Reconciling Dolphins with Tuna and Sea Turtles with Shrimp. Ocean Development & International Law 31, 127-150.
3. DeSombre, E. (2005) Whaling. In: The Global Environment and World Politics. Continuum studies in global politics. London: Continuum, 2005, c2002.
4. https://obamawhitehouse.archives.gov/the-press-office/2014/04/01/memorandum-pelly-certification-and-icelandic-whaling
5. Stoett, P. (2011). Irreconcilable Differences: The International Whaling Commission and Cetacean Futures. Review of Policy Research, 28. P.631.

Can we Avioid "Fake News" in Fisheries Conservation?

Rachel Cohn, Duke Biology '19

Bycatch is only a problem "if you buy into that sort of thing," claims John Kaneko, Program Manager for the Hawaii Seafood Council in Honolulu, referring to the insular stocks of endangered false killer whales that are 1) very real, and 2) caught all too often by pelagic longline vessels in the fleet.

The question of fisheries sustainability is one that Kaneko claims the United Fishing Agency sees as its "mandate" and addresses constantly in their tuna fishery, but the extent to which their practices apply current scientific literature is unclear. As one of the most regulated fishing industries of its kind, the Hawaii Seafood Agency touts catch limits, caps on boat permit allowances, and take reduction practices for protected species as central to their conservation strategy. Many of these regulations of the first of their kind in the industry and have attracted buyers from companies that support ocean-friendly practices.

Even so, Kaneko remains resentful of some of the sustainability actions that the agency has been forced to take under federal regulations like the Endangered Species Act. Interactions with protected species "are an economic impact on the boats," he states, and he worries that new technologies proven to decrease bycatch could put workers in physical danger. In the end, it all comes down to economics: regarding future sustainability initiatives of the organization, Kaneko says the real question is "are you [the consumer] willing to pay any more?"

One of the tenets of the new conservation movement, spearheaded by Peter Kareiva of TNC and other researchers in the past decade, is that "conservationists must work with corporations." Industry's large-scale impacts are simply too powerful to ignore. Even so, greenwashing, or deceptively marketing practices as sustainable, poses real threats. Like other "fake news" as of late, it can be misleading and is often so brilliantly marketed that it slips through the cracks.

Enter, science. Michael Soulé, father of modern conservation biology,

asserts that conservation must be holistic, including "scientific and technological studies of individual components." A robust strategy combining science with industry and community knowledge can alleviate issues that lead to greenwashing, but finding spaces where genuine exchange can occur is tricky.

Fortunately, Take Reduction Teams (TRTs) – comprised of NOAA scientists, academics, boat captains, and more – provide regulated opportunities for knowledge to be shared, weighed, and implemented. Erin Oleson of the NOAA Cetacean Program in Hawaii says that these "TRTs provide a unique opportunity" – it's not every day that so many stakeholders sit down at the same table.

With so many different perspectives and sources of information though, it can be challenging to come to consensus. In the spring of 2018, the false killer whale TRT failed to reach any conclusion on new conservation measures, leaving many species at risk, and ultimately resulting in closure of the Southern Exclusion Zone for the year.

The longlines are back in the water though now that it's 2019, and we have to ask ourselves, what are we willing to pay for the truth?

[Page 4] Red snapper litter a table waiting to be purchased.
[Page 5] Tuna caught by the Hawaii longline fleet being unloaded at Honolulu's Pier 38.

1. Bradford, A. L., Baird, R. W., Mahaffy, S. D., Gorgone, A. M., McSweeney, D. J., Cullins, T., … Zerbini, A. N. (2018). Abundance estimates for management of endangered false killer whales in the main Hawaiian Islands. Endangered Species Research, 36, 297–313. https://doi.org/10.3354/esr00903
2. Ward, P., Lawrence, E., Darbyshire, R., & Hindmarsh, S. (2008). Large-scale experiment shows that nylon leaders reduce shark bycatch and benefit pelagic longline fishers. Fisheries Research, 90(1–3), 100–108. https://doi.org/10.1016/j.fishres.2007.09.034
3. Kareiva, P., & Marvier, M. (2012). What Is Conservation Science? BioScience, 62(11), 1–10. https://doi.org/10.1525/bio.2012.62.11.5
4. Soulé, M. E. (1985). What is conservation biology? BioScience, 35(11), 727–734.
5. Dawson, T. (2018). False Killer Whale Team Fails to Reach Consensus on Protection New Measures. Environment Hawai'i, May, 6–7.
6. Rauch, S. D. I. (2018). Pacific Island Pelagic Fisheries; False Killer Whale Take Reduction Plan; Closure of Southern Exclusion Zone. Federal Register, 83(138), 33848–33851.

[Pictured here] Janet Bering, JD/MEM-CEM'22
Homer, Alaska. A sea otter floats by in this calm fishing harbor.
[Back Cover] Molly Bruce, JD/MEM-CEM'21
Calanque du Petit Caneiret, Saint-Raphaël, France. Waves crash along a rocky shoreline.

From left,
Emily Melvin,
Molly Bruce,
Janet Bering,
Cameron Adams,
Waverly Reibel,
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Submit to UPWELLING

UPWELLING is a biannual journal that allows the Duke community to share their thoughts, opinions and research pertaining to the oceans and ocean policy. We are interested in any ocean-related work, including short research articles, OpEds, photographs, maps and other creative content. Content is fairly flexible, and topics may include a summer internship experience, a conference that you attended, the research that you are currently involved in, or other experiences. We welcome work from Duke University students in any department, researchers, faculty, alumni and professors.

Please send submissions to dukeOPWG@gmail.com.

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