

Exploring a Range of Human Impacts on Marine and Freshwater Species, and Offering Management Solutions

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THE DAY WAS BRIGHT AND SUNNY, and I got to the Marriott Hotel without mishap and on time. In fact, I had enough time to drink a soda and wander through the lobby. A multitude of displays were on hand, ranging from your standard national and state park advertising to the effects of unleaded bullets on blocks of gelatin and the environment. It was fairly crowded and noisy and I eventually made my way to my conference room, number 208. This session was made up of six speakers, and the topic was aquatic animals and their significance to ecological concerns. Some were pleas for preservation of endangered species, while others were literally asking us to consume more of the invasive ones.

The first speaker's chief concern was light pollution and its effects on endangered sea turtles. In the locations of Pensacola Beach, Santa Rosa, Fort Pickens, and Perdido Key in the Gulf Islands National Seashore, Florida Keys, sea turtles have been laying their eggs for thousands of years. Development on these islands, however, has resulted in many bright lights that stay on all night. Turtles hatching at night are confused by the lights and head inland instead of towards the sea. After doing some research, the participants of Turtle T.H.I.S. (an organization of volunteer youths and scientists) discovered that turtle hatchlings are sensitive to the blue spectrum of visible light, the same spectrum that is strongest in moonlight. They have tried being physically present when the eggs hatch and "steering" the hatchlings towards the ocean, but this is an unreliable method at best. They have been successful in getting a few property owners to shut off or dim their lights at night, but this isn't enough to solve the problem. All lights must either switch to yellow spectrum bulbs or be dimmed significantly, if not shut off completely or the problem will go on; and unfortunately the sea turtle's status as endangered is likely to continue.

In addition, the first speaker (I missed her introduction and she forgot to write her name on the board) pointed out that light pollution is a major problem worldwide, causing confusion in many animal species all over the globe. Slides were presented showing the rapid progression of light pollution starting from the 1950's till today, and it is staggering. In the USA and other industrialized nations, it is actually difficult to find places that are naturally dark at night. On a recent camping trip, I met adults who had never seen the natural night sky with their own eyes. If it wasn't for summer camp in my teens, I would have to include myself with them.

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The second speaker, Sarah Codde, spoke on climate temperature and its effects on elephant seals at Point Reyes National Seashore and Drake's Bay. Rising temperatures are making it more difficult for seal mothers and pups to survive the weaning period, which is spent almost entirely on land. Mothers and pups have opposing thermo-regulatory needs, and the weaning period is extremely stressful on the mother seal's body. During the 28 days she spends on land, she loses 40% of her body mass. Meanwhile, the pups must gain roughly 55% during the same period of time, or their chances of survival in the water are markedly decreased. Research is ongoing, and Sarah is experimenting with new infrared cameras and devices to get the data she needs. In the past data was gathered using thermometers, and I can't imagine the seals were too happy about that!

The third speaker, an NPS fishery biologist, David Anderson, is tracking summer steelhead (threatened status) in Redwood Creek, located in the northern area of California. The yearly survey started in 1981, and is the longest running survey in Redwood National Park. The survey is conducted by putting on snorkels and wetsuits and wading through the river for a week every summer, measuring the populations of several species of fish, as well as river otters, beavers, lampreys and freshwater mussels. Overall, the temperature of the river is falling, which is good; however, the temperature is still higher than average, which is bad. In addition, it has been discovered that as much as 24% of the river is being diverted to marijuana farms. As a result of all this, the summer steelhead is being classified at high risk for extinction.

The fourth speaker, who spoke too rapidly for me to get his name down, talked about the implications of the invasive lionfish. The lionfish is an extremely tough, voracious, venomous, and adaptive species, and has been discovered as far north as Maine and as far south as South America. The main problem areas are in the Caribbean Sea and Biscayne National Park in Florida. He recommended active removal of the lionfish every six weeks, introducing natural predators, designing better fish traps, and consuming more of them at restaurants in the hopes of turning them into a "cash crop."

Next up was Scott Gende, who is keeping watch over the salmon run in the Lincoln River at Sitka National Park, Alaska. In paraphrasing conservation philosophy "more is better," and Scott asked the question, "How many salmon is too many?" There are other overabundant species present in North America, such as white tailed deer, Canada Geese, and some invasive. To further complicate matters, there is the Sheldon Jackson salmon hatchery located at the mouth of the Lincoln River, raising concerns about how many salmon are "natural" and how many are "grown," and is the local species being bred out of existence? Scott's answer is that is a moot question at this point; the salmon population has been hybridizing with hatchery salmon since the 1970s and the average of hatchery salmon in the local population is about 18%. What Scott did bring up as a point of interest was the existence of the hatchery itself. The Sheldon Jackson Hatchery was part of the larger Sheldon Jackson College until the school closed in the 1990s due to insolvency; however, the hatchery remained and is used today to train salmon hatchery managers. It has no commercial motive other than that; its salmon exist simply for the purpose of education. While still keeping track of salmon populations and oxygen levels in the river (which depleted below legal standards in 2013), Scott is searching for a recommended policy.

By the time the last speaker came up front, the entire rook was restless. I failed even to take notes. It was something about fish in the desert. Kids were involved, somehow. After it was over, everyone hurried out and, I imagined, raced to the nearest coffee barista.

Reflection

I knew the presentations would interest me, as I have always been attracted to the sciences. I

was startled by some of the information given; some of it was depressing (I have a soft spot for turtles), and some of it was alarming (the lionfish is a “badass fish,” to quote the speaker), and I was impressed at how most of the speakers were able to combine science ideas and terms with some humor in a way that made it not only easy to comprehend but also easier to remember. As I go through my notes I am reliving the conference in my mind, and it is easy to pull out specific information. The displays were impressive, and the sheer amount of free literature was amazing. There were maps and posters that could easily go for \$80 or more in specialty stores free for the taking. It’s too bad that the fee for attending the conference is so high (relatively speaking, as a starving student). I may have to pester you for another free pass next year!