



SUSTAINED BY THE SEA

Teens4Oceans has steadily gained momentum during the past year. Here's what we're doing to ameliorate the condition of our most precious marine resources.

The greatest hinderances of action are the lack of understanding, education, and connection. Teens4Oceans understands the disconnect between the majority of the population and the marine world, and we're combining outreach, innovation, and education to provide the next generation with the scientific knowledge to make prudent choices as stewards of marine resources. During the 2010-2011 school year, Teens4Oceans grew substantially thanks to the generosity of our supporters and the motivation of involved students, parents, and educators. As an organization, Teens4Oceans installed two webcams in remote marine ecosystems, certified 52 student PADI divers, updated existing technology, registered as a nonprofit organization, and connected with many scientists, marine conservationists and diving communities. Internally, Teens4Oceans has also made several significant advances, including the institution of an Executive Committee and a Youth Advisory Board. Consequently, T4O is structurally stronger than in previous years. The past several months have also seen the establishment of several important partnerships; we've affiliated with Ocean First Divers (OFD), The Ocean Preservation Society (OPS), the Colorado Oceans Coalition (COC), and the National Marine Sanctuaries (NMS) while growing our existing relationships. T4O is also grateful to the Gates Frontiers Fund for generous support in technological pursuits; the benevolence of the Gates Frontiers fund is an inspiration to our organization.

This report details our advancements and projects over the last year, and offers a glimpse of our upcoming endeavors. Here is our updated mission, approved by the Board of Directors:

“Teens4Oceans' mission is to empower our next generation to become impassioned stewards for their oceans through education, experiential learning, scientific research, and innovative technologies.”

Teens4Oceans Website Maintenance

Over the last several weeks, our highly motivated web-presence management team (composed of Emily Griffith and Keegan Cross) has carefully audited every aspect of Teens4Oceans' online presence, including the website and Facebook page. The Facebook group “Teens for Oceans”, an outdated page, has been updated to “Teens4Oceans.” Please be sure to join the updated group. The team has also made important alterations to the website; we've bolstered the image galleries, are developing a login feature to facilitate viewer involvement in T4O activities, and have refined T4O outreach objectives. To learn more, please visit www.teens4oceans.org.

Virgin Islands Update

Students successfully installed a submersible webcam system on St. John Island in June, 2010.

Page 2

Aquarius Project

In June, 2011, T4O installed two new camera systems in Key Largo, Florida.

Page 5

Outreach

Between trade shows and an event with Louie Psihoyos, T4O is branching out to others.

Page 6

National Ocean Policy

Ocean Policy is one of the most relevant national issues today. Here's what it entails.

Page 8



VIRGIN ISLANDS UPDATE

Teens4Oceans Goes to the US Virgin Islands

In June, 2010, Trevor Mendelow led a group composed of Teens4Oceans' students and staff to St. John to install a submersible web camera system. The group was hosted by the Virgin Islands Environmental Resource Station (VIERS), a facility directed by the University of the Virgin Islands. During the nine day adventure, students had the opportunity to participate in the complex web camera installation, and experience many of the unique activities offered by the island. One day, the group visited Trunk Bay, one of the most beautiful beaches on earth. The weather on the day of the Trunk Bay visit discouraged many of the other beach-goers, so the T4O members were fortunate enough to have most of the bay to themselves. The group also chartered a dive boat to take them snorkeling offshore at Booby Rock and in Hurricane Hole, an excellent mangrove system on the eastern arm of the island. The organisms in the Virgin Islands were spectacular, and through the late-night classes led by Trevor Mendelow, they identified many organisms inhabiting the reef, a testament to the effectiveness of hands-on education. One of the most memorable moments of the trip was the night snorkel; one night, Jeremy Lawrence led students on a snorkeling expedition in Little Lameshur Bay. To their delight, each movement in the water disturbed bioluminescent organisms and prompted flashes of neon green and blue. *Continued on the next page.*

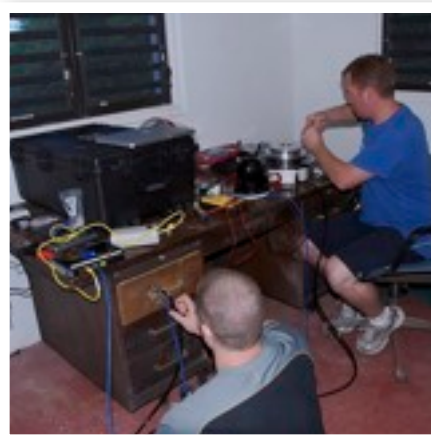


The Virgin Islands Environmental Resource Station

Top: The Virgin Islands camera is located under a dock in Great Lameshur Bay, an inlet on the southern coast of St. John Island. The camera is wired directly from the Virgin Islands Environmental Resource Station (VIERS). VIERS has excellent access to both Great Lameshur bay and Little Lameshur bay, in addition to several of the remote attractions of Virgin Islands National Park.



Right: A view of the 18th century ruin that overlooks Little Lameshur



Mike Park and Jeremy Lawrence assemble the networking cables.

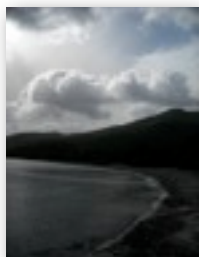
Overcoming Challenges on St. John

While installing the device, the T4O crew faced several challenges. First, the group had to install cable from the resource station to the dock because the camera is a wired device. The team spent the first two mornings of the trip digging a trench to house the wires. The wireless network at VIERS was not sufficient to support the amount of data sent from the Resource Station to T4O's media servers in New Jersey, so they painstakingly updated the network technologies. This proved difficult because they had to coordinate remotely with the technology company and the management staff at VIERS. Ultimately, T4O was granted permission to move the satellite dish from the VIERS camp to the roof of the resource station. The population of hornets on the roof did not facilitate the dish installation. Finally, they submerged the camera system and covered the cable trenches. Two days after they departed the islands, the device was struck by lightning and destroyed. Fortunately, thanks to the generosity of T4O's web following, students, and partners, the device was successfully replaced. We appreciate the assistance!

VIRGIN ISLANDS UPDATE

More than a camera installation - A learning experience

Continued from previous page.



During the night dive, the team investigated the seagrass beds that line Little Lameshur Bay, but for safety reasons, was unwilling to extend to the reefs at the edge of the bay.

Above all, the night snorkeling experience demonstrated a stark contrast between the sea by day and the sea by night. While the ocean is a foreign climate for humans during the day, the mystery of the ocean at night is unsurpassable.

Exploring the Island

During the trip, students also experienced several of the attractions offered by the Virgin Islands National Park, including several ruins from the 18th century, a collection of pictographs created in the same era near a waterfall, and a manor that fell into disrepair in the early 1900's, after the mysterious death of the last proprietor.



Teens4Oceans offers unmatched opportunities to each student member. In addition to leadership, educational, and engineering roles, Teens4Oceans encourages students to find and pursue their personal interests.



Preparing the Camera

Above: Annalise Downey helps connect a cable to the underside of the dock in Greater Lameshur Bay. The cable runs from the Environmental Resource Station to the device, which is positioned directly underneath the dock.

Right: Graham Dewey and James Callison use picks to dig a trench to house the cabling from the Environmental Resource Station to the dock. The first two days of the Virgin Islands expedition was designated to digging, drilling, and preparing the submersible camera.



SCUBA CERTIFICATION



Exploring Casa Cenote

Top: Addy Wagner rests in the sandy shallows after a tour of underwater crevices.

Bottom: The cenote dive allowed T4O students to investigate a mangrove ecosystem. Visible at the bottom of the roots are the algal and bacterial mats that coat the bottom of the cenote.

T4O in Akumal

In late March, 2011, thirteen T4O students became certified Open Water SCUBA Divers in Akumal, Mexico. Though the purpose of the Akumal trip wasn't a camera installation, students were provided with other educational

experiences; perhaps most importantly, the discovery of a SCUBA diver's role as a steward of the marine environment. The crew arrived in Akumal after an overnight layover in Houston, and then snorkeled in the bay that kissed their resort.

Strong winds and strong currents forced T4O to postpone the PADI certification for two days. Instead, students snorkeled in a lagoon, and investigated the organisms populating brackish water. The next day, the group went to a cenote for their first open water diving experience. The mangroves and rock formations at the floor

of Casa Cenote formed mysterious caves and crevices, and the algal mats contributed to the intrigue of the environment. Afterwards, the instructors led student divers through the half of the skills required for certification in the shallower, sandy end of the cenote.

During the second half of the adventure, the conditions at sea improved, allowing the group to explore the reef ecosystem offshore of Akumal. Trevor Mendelow chartered a dive boat and two excellent dive instructors, one local and the other from OFD, to lead the diving certification. During two dives, students practiced the remaining skills necessary for diving

proficiency. On the last day of the adventure, the new divers split into two groups for a final adventure in the ocean; during the 70 foot descent, students explored the coral reef ecosystem and enjoyed their first recreational dive experience.



T4O in Key Largo

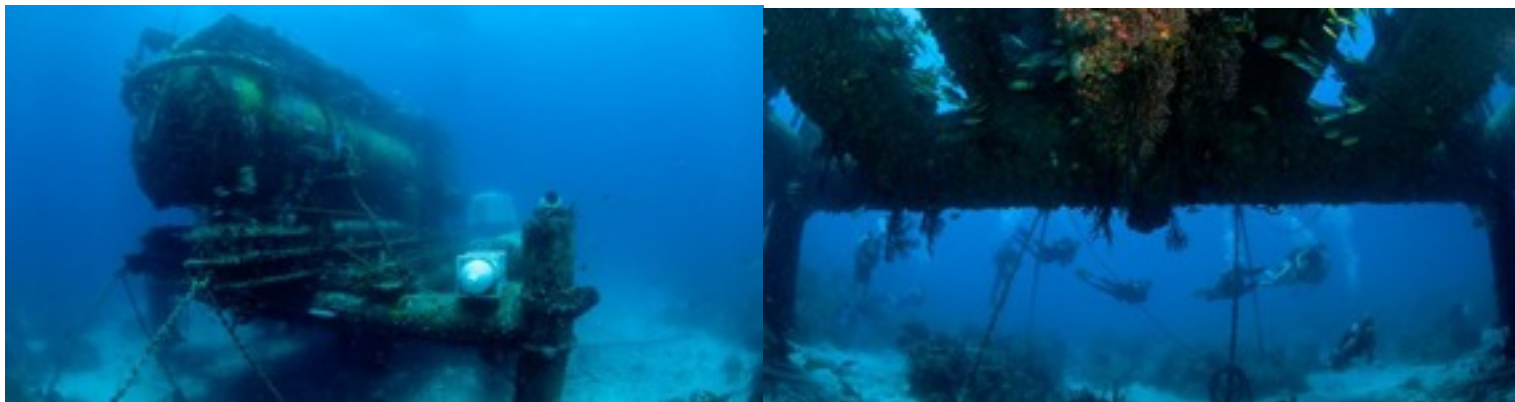
In November 2010, Teens4Oceans traveled with 18 high school seniors to Key Largo, Florida on the inaugural T4O Scuba Certification trip. In cooperation with Ocean First Divers of Boulder, Colorado, 17 students completed their PADI Open Water certification and one, Jack Rosenberg, successfully earned his PADI Rescue Diver certification. The trip solidified the relationship between Teens4Oceans and Ocean First Divers and opened doors to the underwater world for all of the students. Teens4Oceans is proud to partner with Ocean First Divers!



Right: One of the student divers jumps into the water off of the Sea Dweller dive boat. Key Largo, Florida, November 2010.



AQUARIUS INSTALLATION



Reef Survey and Installation

In December 2010, Teen4Oceans' students traveled to Key Largo, Florida to attain PADI Advanced Open Water Certification and survey the area surrounding NOAA's Aquarius Underwater Reef Base. The purpose of the survey was to find locations for two high definition submersible cameras. The project was supported by T4O, The National Marine Sanctuaries, and Florida-Keys.com.

Examining the current structural infrastructure allowed the students to design two camera systems, which were deployed in June 2011. The Aquarius Habitat offers a unique opportunity for T4O, because the research facility has a solution to four key elements that have limited the deployment of a camera on a deep-water reef: security, high-bandwidth network, power, and regular maintenance visits. The cameras can stream high-definition video from the structure 24/7 anywhere within the local area network, including at the Eco-

Discovery Center in Key West and the Key Largo NOAA facility. T4O will also work with partners to disseminate the content around the nation, and build user generated content and interpretive materials to divulge the beauty and wonder of one of America's healthiest reefs.

In June 2011, T4O returned to Key Largo, Florida to install two submersible camera systems. In addition to deploying two high definition cameras on the Aquarius Reef Base, T4O students were busy with PADI certification. Ocean First Divers successfully helped 8 students attain their PADI Advanced Open Water Certification, and 2 students gained PADI Open Water Certification. T4O was ecstatic to be joined by two inspirational students and their teacher from the New York Harbor School. The relationship between T4O and the New York Harbor School started in Washington, D.C. during the Blue Vision Summit. Cesar, Jericsson, and their teacher, Joe, were extremely helpful and an important addition to the T4O crew. Prior to the install, the

group visited the onshore Aquarius Control Station and was briefed on our dives at the Aquarius site. The diving was exceptional, including dives on the Aquarius Reef Base, a shipwreck called the Spiegel, and the numerous reefs surrounding the Key Largo area. For most of the students, the dive on the Spiegel took them to their deepest depth in their scuba diving career; some students achieved depths in excess of 100 feet. After certification was complete and the cameras were deployed, the group ventured south to Bahia Honda State Park in the Florida Keys, and conducted a transect survey of the reef, as well as performing maintenance on the camera stationed on the island. The trip was extremely successful and T4O is currently developing educational content using the new camera systems. In addition, T4O looks forward to continuing to build its relationship with the Harbor School. Finally, T4O would like to thank the many great people who work at the Aquarius Reef Base (ARB) and provided assistance in the camera installation process.



OUTREACH



Contacting Ocean Activists in DC

During the third Blue Vision Summit, T4O contacted with many marine conservationists. Louie Psihoyos attended the summit, and T4O learned more about him and his message during their lobbying sessions with Rep. Polis, Sen. Bennett, and Sen. Udall. T4O also contacted Vicki Nichols Goldstein and the Colorado Ocean Coalition; since the Blue Vision Summit, T4O has worked with Ms. Goldstein to build the coalition. We staffed a booth at a farmers market, and are now starting to branch out to local high schools and youth organizations. The New York Harbor School attended the summit and T4O invited two students to the Aquarius installation after hearing their inspiring

Investigating Ocean Conservation

Teens4Oceans students attended the third Blue Vision Summit, a three day series of seminars detailing issues pertinent to the oceans. The Summit was held between May 20-23 in Washington DC. Each panel was led by an expert on the subject; lecturers included senators, non-profit leaders, retired United States Coast Guard officials, and college professors. The subjects ranged from Acidification to the Deepwater Horizon Oil Spill and its effect on the Gulf region of the United States. Each member of T4O at the summit attended seminars that matched their interests and learned about how concerned individuals can shape public policy. Also, we were introduced to National Ocean Policy, an increasingly relevant element of US ocean and coastal management.

Lobbying on Behalf of the Oceans

May 24, 2011 was Capitol Hill Ocean Day, and to celebrate, Teens4Oceans joined other Blue Vision Summit attendees in talking to Senate and House of Representatives staffers. T4O students met with the offices of Senators Bennett, Udall, and Reid, and Representative Polis. The importance of the coalition was vividly demonstrated by T4O's experiences in Senate and House offices. To gain attention on Capitol Hill, it's important that T4O command a large and powerful constituency. Teens4Oceans is helping the Colorado Ocean Coalition to build a local constituency to facilitate legislation that heightens ocean awareness.

Branching out to the SCUBA market

In November 2010, Teens4Oceans students staffed a booth at the DEMA trade show in Las Vegas. Aside from sharing the innovative camera systems, T4O also offered a marine organism identification game. Surprisingly, of the thousands of DEMA exhibitors and attendees, Teens4Oceans students were the only young people in attendance. During the four day event, members of T4O contacted several potential partners for web camera installations. Students were surprised by the level of interest demonstrated by the diving constituency in Teens4Oceans; the dive community seemed shocked by advanced robotics and engineering entailed by the submersible camera systems. The fact that students lead Teens4Oceans and are involved in every activity is the factor that makes the organization unique. Additionally, the innovation involved in creating the camera systems impressed trade show attendees; the devices are very effective methods of viewing the sea. DEMA was an effective way of connecting with our constituency in the dive industry and investigating potential partners.



The T4O crew gathers around the submersible camera system

OUTREACH

**Excerpt from Sofia Rainaldi's****Introduction of Mr. Psihoyos:**

Sofia is the co-chair of the Teens4Oceans youth advisory panel.

"In November a group of students visited the DEMA trade show in Las Vegas, to the chagrin of our parents. There, far from any ocean, we were the only youth organization at a gathering of divers, underwater photographers, and ocean activists, a group that comprised almost 40,000 people. This is what sets Teens4Oceans apart. The fact that students are actively involved as leaders characterizes our organization as unique, because we know that our generation will soon decide the health and ultimate success of our most precious natural resources."



Fundraising with Academy Award Winner Louie Psihoyos

In May, 2011, the day before our departure for the third Blue Vision Summit, Teens4Oceans hosted a fundraising event with Academy Award winner Louie Psihoyos. Mr. Psihoyos is celebrated for his work on *The Cove*, a film that exposes dolphin slaughter, one of the many morally reprehensible manifestations of human abuse of ocean resources. Mr. Psihoyos is widely regarded as one of the most talented photographers on earth, and his prowess is confirmed by the visually and mentally haunting scenes of *The Cove*. Mr. Psihoyos described his experience while making the film and with ocean conservation, and outlined his vision for better ocean policy. Teens4Oceans is extremely grateful for his help at the fundraising event and is inspired by his work.



Louie Psihoyos addresses the crowd at Kent Denver's Anschutz Theater on May 19, 2011.

OUTREACH

Teens4Oceans participates in World Oceans Day



Teens4Oceans and the Colorado Oceans Coalition were active during World Oceans Day, and in addition to interviewing on Boulder's KGNU, students staffed a booth at the Boulder Farmer's Market to recruit for the Colorado Ocean Coalition. The booth included the organism identification game available at DEMA, and several coloring activities for young children. We were surprised by the popularity of the coloring sheets; they attracted children (and some adults) throughout the afternoon. The event was important because it allowed T4O students to connect with members of their community, which is often overlooked because Colorado is a landlocked state. Some of the people that visited the T4O booth had listened to the morning interview at KGNU. It was gratifying to know that people had listened to the radio program and accepted our invitation to celebrate World Oceans Day. Eight Teens4Oceans students carpooled from Denver to attend the farmer's market and the radio broadcast. To learn more about the Colorado Ocean Coalition and view images of the World Oceans Day Booth, please visit the Colorado Ocean Coalition page on Facebook.

"One of the problems with the media... is that you see all of these gorgeous reefs and pristine waters... and the reality is, that's a very small percentage of our ocean, and that the more you dive, you realize that the ocean is more polluted, and less pristine than on TV."

- Allison Kolberg on KGNU
June 2011

KGNU Radio Interview

Early in the morning on World Oceans Day, Teens4Oceans was interviewed at KGNU, an independent community radio based in Boulder, Colorado. Nathaniel Newman, Keegan Cross, Emily Griffith, and Allison Kolberg used the interview as an opportunity to explain T4O's mission and explain why America's Marine Resources are so important. Although it was the first live interview for each of the students, their passion for the ocean and knowledge of it's peril allowed them to speak confidently on the subject. Teens4Oceans is grateful to KGNU and Len Houle for the time on air. The audio of the full interview is available at www.teens4oceans.org/radio/MorningMagazine_2011-06-08.mp3



NATIONAL OCEAN POLICY

Teens4Oceans' mission is to provide the public with the facts necessary to make informed decisions relevant to ocean policy.

As an educational organization, Teens4Oceans is responsible for offering details on issues concerning our seas. Although we can't make decisions for you, we can provide you with the facts requisite in making responsible choices. An increasingly important measure facing the nation is Barack Obama's proposed National Ocean Policy, which establishes a National Ocean Council (hereafter NOC). The NOC is designated nine National Primary Objectives to ameliorate the condition of American coastal, oceanic, and Great Lakes resources while respecting established Federal, State, tribal, local, and regional policy. National Ocean Policy postulates that the implementation of the nine primary objectives will strengthen ocean, coastal, and Great Lakes governance and provide a framework for comprehensive and sustainable management of resources. The nine primary objectives outlined in National Ocean Policy are:

1) Ecosystem-Based Management
Ecosystem-based management is deemed important by National Ocean Policy because "traditional management has focused on individual species with limited consideration for how the management practices of one might impact the sustainability of another." Ecosystem-based management is defined as a holistic approach to resource management; according to National Ocean Policy, recognizing the interconnectedness of processes (through science) is integral to effectively maintaining ecosystems.

2) Coastal and Marine Spatial Planning
Coastal and Marine Spatial Planning (CMSP) suggests the implementation of planning that guides and balances judicious allocation of ocean resources and reduce conflict among uses and reduce cumulative externalities associated with human employment of marine ecosystems.

3) Inform Decisions and Improve Understanding
This section of National Ocean Policy stresses the importance of disciplinary and interdisciplinary scientific research. It is important that we understand marine ecosystems before the decision making process, and therefore better scientific knowledge is a requisite of understanding human impacts on the ocean, coastal regions, and Great Lakes.

4) Coordinate and Support
The coordinate and support objective indicates the importance of communication in managing resources. It encourages increased international presence, and coordination between the federal government and local governance in instituting ocean legislation. "Through increased communication, we can streamline processes...and enhance synergy."

5) Resiliency and Adaptation to Climate Change
This section affirms that the ocean is critical in shaping global climate and exacerbating climate variability. Acidification, onset by anthropogenic climate change, poses a serious threat to ecosystems and coastal communities, and is associated with numerous disadvantageous externalities. Therefore, according to National Ocean Policy, it is necessary to address climate change by increasing resilience, improving adaptation, and mitigating the effects of climate change.

6) Regional Ecosystem Protection and Restoration
Ocean challenges must be met across by focusing upon threatened regions. Since the coast faces significant threats, National Ocean Policy states that it is critical to allocate resources to coastal restoration projects.

7) Water Quality and Sustainability
This aspect of the ocean conservation plan outlined by the president addresses the effect of actions on land on ocean resources. Non-point source pollution, runoff, and the degradation of watersheds must be reduced through land-based pollution reduction programs.

8) Changing Conditions in the Arctic
Climate change affects the poles more than elsewhere, causing Arctic permafrost to thaw, releasing unprecedented amounts of methane, exacerbating environmental challenges. Through the employment of the best available science, the fragile Arctic must be protected.

9) Ocean, Coastal, and Great Lakes Observations, Mapping, and Infrastructure
The final point addresses the importance of bolstering data collection and observation techniques. To understand climate and the ocean, we must have access to data.

This summary of National Ocean Policy is not comprehensive, but it outlines some of the most important points in the Policy. As a relevant issue in ocean management, Teens4Oceans aims to help people understand what is entailed by the Policy. An in-depth analysis of National Ocean Policy is being developed and will be available through the www.teens4oceans.org in July, 2011.