



Charleston Harbor's Pelicam Uses Vicon's Cruiser Camera with 20X Zoom to Bring Wildlife Up Close

Background

Charleston, South Carolina, is home to Wray Lemke, Founder and Vice President of the electronic and security service company Mount Pleasant Radio. Wray loves his city. "It's a coastal city with marshes around it, and if you get out there in a small boat, it's an amazing, magical place to be. The wildlife is just remarkable," he says. That's why when he was approached by the local non-profit Coastal Conservation League and the South Carolina Department of Natural Resources (DNR) to help fix a camera that was mounted in the harbor to observe a nesting population of pelicans and other shore birds, fulfilling the request quickly became a passion.

Mount Pleasant Radio typically serves a very different clientele. The company specializes in designing and installing electronic systems that monitor and control data within water, waste and power plants, provide point-to-point wireless communications and enhance security. "We do a lot of industrial video for both security and process monitoring, and we partner with Vicon because we want a single solution platform. Vicon has been supportive of us and gives us a lot of options," says Wray.

The Coastal Conservation League contacted Mount Pleasant Radio through a referral by the Charleston Pilot Office for Harbor Pilots. The camera they had in place to observe the pelicans wasn't working, and folks at the Pilot Office said they were pleased with the security cameras Wray had installed at their facility. "When I got the call asking if we could fix the camera, I said 'of course we can.'"

The Original Pelicam

The original Pelicam was installed on a sand bank created from dredged soil in Charleston Crab Creek. Inaccessible to raccoons and coyotes, the bank was a popular spot for pelicans to build nests, lay eggs, hatch and raise their young free from the threat of natural predators. The camera was installed to allow biologists to unobtrusively observe and study the birds' natural behaviors - behaviors that might be inhibited by humans watching from nearby.



Organization

Coastal Conservation League

Challenges

- Provide close up viewing of coastal wildlife for studies
- Generate public awareness and support for Charleston's Coastal Conservation League
- Capture and transmit high-resolution video from an isolated sandbar with no power or internet
- Maintain performance in all weather conditions
- Provide maximum viewing coverage with minimal camera hardware

Solution

The Charleston Harbor Pelicam employs a Vicon SN673V-B Cruiser PTZ Camera with 20X optical zoom and 1080p video. It is fully powered by solar panels and back-up battery. Video is transmitted via point-to-point wireless and uploaded to YouTube for live streaming. Video is recorded to a local SD card on the camera.

Results

The Pelicam is a useful tool for DNR researchers and is the Conservation League's most effective community engagement vehicle. Regular coverage in Charleston's local media drives web traffic to build awareness of the League's mission.

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~ Andy Hollis, Data and GIS Analyst, Charleston Coastal Conservation League

Upon joining the project in early 2016, Wray replaced an inoperable PTZ camera mounted on a pole on the site with two fixed cameras facing in opposite directions. Powered by a solar panel during the day and by battery at night, video from the cameras was transmitted via a 5 Gigabyte microwave link to the Pilot Office.

Andy Hollis, Data and GIS Analyst for the Coastal Conservation League, posted live video from the cameras on YouTube, linking to the video stream from within the Coastal Conservation League’s website. Gradually, the Pelicam transformed from research tool to community attraction.

“We’ve been in the local paper and Charleston Magazine,” says Andy. “Every time The Post and Courier runs a story, we see an uptick in views to our website.” The Pelicam generated 37,000 page views in 18 months, far more than any other page on the Coastal Conservation League’s website.

Pelicans weren’t the only draw. So were natural disasters. When hurricanes Matthew in 2016 and Irma in 2017 occurred, coastal Charleston was evacuated. During those events, the site had about 2000 visitors at any given time looking at the cameras to see what was happening in the harbor. Sadly, the Pelicam, along with the Crab Creek sand bank, did not survive Irma. Much of the sand was



washed away and a derelict boat crashed into the camera pole, knocking over and disabling the Pelicam.

Since then, Wray has volunteered countless hours to work with the Coastal Conservation League and the DNR to install a replacement solution.





Pelicam "II"

The new Pelicam went on line in early August 2018. Andy explains, "It took us a while because we needed to identify a new location for the Pelicam, at a spot called Shutes Folly, get permission from the land's owners, and then coordinate with the DNR to put up the pole, camera and solar panels."

The new Pelicam features a Vicon Cruiser PTZ camera, model SN673V-B, with 20X optical zoom and high definition 1080P resolution. "The quality of the new camera is great," says Andy. "The motion is really responsive and the quality of the focus and zoom is excellent. We had tried a PTZ camera on the original Pelicam, before we started working with Wray, and it was so frustrating. It wouldn't respond to our commands. But the Vicon camera pans and zooms exactly as it should and its high magnification gets us in really close."

Andy has the camera set up with six presets, and he changes the direction of the camera regularly to focus on the area of Shutes Folly where the most interesting wildlife is on display. The camera also supports auto tours, a capability he plans to take advantage of very soon. "It will be convenient to have the camera automatically rotate and provide changing scenes for our viewers."

The Vicon camera is also energy efficient – a benefit that aligns with the values of the Conservation League. Wray says "I was surprised by how little current it pulls, even when panning, tilting and zooming. I could even put another couple of fixed cameras out there to run off

"I was surprised by how little current the Vicon Cruiser camera pulls, even when panning, tilting and zooming. I've tried running other PTZs off solar power, and they are fine during the day but eat up all the battery at night and stop working. The Vicon camera is really power efficient."
~ Wray Lemke, *Founder and Vice President, Mount Pleasant Radio*



the same solar cell and battery. In the past, when I've tried running a PTZ with solar power, it would be fine during the day, but the PTZ would eat up all the battery at night and the camera would stop working. The Vicon camera is really power efficient."

Because of the high speed wireless link Wray has installed on the mounting pole at Shutes Folly, there is no latency transmitting



the camera's 1080P video back to the Pilot's Office at a full 30 fps frame rate. This video is streamed live over YouTube. The camera also has a local SD card that records the video at 10 fps. That video is available to biologist studying the pelican's behavior.

Next Steps

Unfortunately, the new Pelicam was not up in time to capture the 2018 nesting season, but the Coastal Conservation League is looking forward to peak viewership next spring. There are also plans to get a camera back up at Crab Bank, but that may not happen until 2020, when renourishment of the site is complete. Few look forward to that happening more than Wray Lemke. "Without Wray, this

project wouldn't have happened," says Andy. "He's so passionate about birds and wildlife, and we're so appreciative of the work he's put into reestablishing the Pelicam with the new Vicon camera. He's been with us at every step of the way."

"When the last Pelicam was up, we had a level of community engagement unlike anything else we've ever done. It's the reason why management at the Conservation League was willing to have us spend a bunch of time and resources to get a new camera back up," says Andy. "As an advocacy organization working with local and state level governments to enact programs and laws to support conservation, the Pelicam is one of the most highly effective tools we have for building public awareness and enthusiasm for our mission."



*Learn more about the Coastal Conservation League
and visit the Pelicam live at <https://coastalconservationleague.org/pelicam/>.*



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