

Birdwatching goes hi-def with Axis.

The Cornell Lab of Ornithology uses Axis network cameras to bring the secret life of birds to audiences worldwide.



Organization:
Cornell Lab of Ornithology

Location:
Ithaca, NY, USA

Industry segment:
Education

Application:
Remote viewing

Mission

When the Cornell Lab of Ornithology relaunched its Bird Cams project in 2012, the team wanted to deploy camera technology that would provide a completely immersive experience for the viewer. To achieve that goal, the cameras needed to be network-based, deliver both high-definition resolution and high-quality audio and stream at high frame rates. Once installed in a nesting site, they would remain untouched for the season. Therefore, the cameras needed to be remotely controlled and extremely reliable under all sorts of weather conditions.

Solution

The Cornell Lab chose several models of Axis HDTV-quality network cameras with remote zoom capabilities. Depending on the available bandwidth at individual sites, the cameras stream in 720p or 1080p resolution and 30-60 frames per second to a workstation where

the video is recorded and simultaneously encoded for streaming live to a third party streaming site like YouTube or Livestream. Anyone in the world with access to the Internet can log on to the Cornell Lab's Bird Cams website to view any of the multiple nesting locations live or click on archived highlights of the past weeks, months and years.

Result

Online viewership has reached audiences far beyond the traditional professional and amateur ornithology community. The Cornell Lab has received positive feedback from diverse viewers such as teachers incorporating the videos into classroom curriculum to housebound individuals and people living in places without access to nature. Since the relaunch, the site has logged well over a billion minutes of viewing. Further, donations from appreciative viewers are helping to offset the cost of the program.



Creating an intimate bond with birds

The Cornell Lab of Ornithology on the campus of Cornell University in Ithaca, New York, is one of the world's leading organizations dedicated to the study and conservation of birds. Founded in 1915, the Cornell Lab employs hundreds of scientists, students and staff. Renowned for its innovative educational programs, the Cornell Lab launched its Nest Cams project in 1998, placing still cameras inside synthetic nesting boxes and shifting to low-resolution IP cameras as new technology became available. Fourteen years later, the Cornell Lab sought out higher definition audio and video equipment that could provide a better experience for people engaging around the world in the intimate lives of birds over the Internet.

With a mix of fixed dome and pan/tilt/zoom (PTZ) network cameras from Axis, the Cornell Lab provides professional and amateur birdwatchers with "a really immersive experience," described Charles Eldermire, Bird Cams Project Leader for the Cornell Lab of Ornithology. "Not everyone has access to [the birds'] world. Our cams offer an intimate perspective into the everyday lives of birds, providing something at once both ordinary and extraordinary."

The new Bird Cams project provides birdwatchers with live streaming video of owls, hawks, ospreys, herons, hummingbirds and other species around the United States. Because the cameras operate 24/7 in places that often cannot be disturbed once installed, they needed to be highly durable and reliable. Since bright lights would discourage birds from remaining at the nesting site, the cameras needed to be capable of streaming high-definition images by optimizing available light or rely on infrared sensors.

Following the recommendations of the field engineers with Axis, Eldermire selected several models of ruggedized Axis network video cameras to provide viewers with a window into the secret lives of birds.

A bird in the cam reveals life on the limb

With nesting sites stretching from Ithaca, N.Y. to Kauai, Hawaii, the Bird Cams team carefully chooses each camera for its ability to highlight the species on camera and decrease the likelihood of having a negative impact. The results have been amazing.

For example, placing an AXIS P3364-LVE Fixed Dome Network Camera with infrared sensors in a great blue heron nest enabled the project to capture previously unseen nighttime courtship ritual and breeding behavior. In another case, an AXIS Q6044-E PTZ Network Camera at an albatross nest recorded a nestling coughing up a bolus (a mass similar to an owl pellet), which a volunteer dissected live on camera to show it contained over 30 pieces of plastics. Since the chick was too young to have ever left the nest, it was evident that its parents had been ingesting pieces of plastic while feeding in the ocean and regurgitated this food into their nestling.

The Bird Cams team also placed two Axis network cameras at a red-tail hawk nesting site: an AXIS P3364-LVE Fixed Dome Network Camera that looks down at the nest and an AXIS Q6035-E PTZ Network Camera that volunteers manipulate to track the hawk chicks as they grow and walk along the platform. This has allowed viewers to observe the entire lifecycle of the nesting season, from the laying and hatching of eggs to the domestic side of raising chicks to fledging and then watching the youngsters leave the nest.





In addition to nesting sites, the Cornell Lab collaborates with other universities and private citizens to stream video from diverse sites such as barn owl nest boxes, osprey nest platforms and hummingbird nectar feeders. In the case of the west Texas hummingbird feeders, the site is monitored using an AXIS F1005-E Sensor Unit paired with an AXIS F41 Main Unit. The smaller-sized technology captures activity in high-definition resolution and high-quality audio and streams the live footage at 30 frames per second.

The AXIS F1005-E Sensor Unit has a fairly wide-angle view without a lot of distortion," said Eldermire. "So we can set it up pretty close to the feeder and capture a fairly broad area of activity."

Pushing the boundaries of science and conservation

"The amazing thing is that the public is riding the crest of discovery right there with us," Eldermire explained. "The relevancy of those observations, both to science and to individuals' own experiences is a very empowering and engaging way to connect people with birds and the natural world."

Since the Cornell Lab's Bird Cams launched in 2012, the live streams have experienced more than one billion viewer minutes. In the first five days of going live, the hummingbird cameras alone logged 1.5 million minutes of viewing.

"This is the first time in history thousands or tens of thousands or even hundreds of thousands of people have been able to simultaneously watch every moment of what happens at a nesting site," noted Eldermire. "Even professional researchers have never had these kinds of 24/7 views before because you just can't sit up in a tree that long watching what's happening in a nest."

Eldermire plans to reach out to more scientists to determine what kinds of data they would want to collect in real time. He also wants to mobilize the viewing audience to record data that could have researchers turn the corner on discovery.

"By increasing our sample size of nesting behaviors we can create a very detailed, very rich biography of the natural history of individual species," said Eldermire. "But even more important, the experience of watching birds online may lead people to a better understanding of birds and move them to care about protecting them and conserving their habitats for future generations to appreciate and enjoy."



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Axis has more than 2,100 dedicated employees in more than 50 countries around the world, supported by a global network of over 80,000 partners. Founded in 1984, Axis is a Sweden-based company listed on NASDAQ Stockholm under the ticker AXIS.

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