

WIRED BIRDER

Sneaking a Peek at Birds

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If you're wired, you've seen them on the web. Even if you don't have a computer, you've probably heard of them. But what is a web cam? How do they work? Is there a web cam in your future? In this issue the Wired Birder grapples with bird web cams, from cam to web.

Basically, a web cam is a camera connected to the World Wide Web (not really the same as the internet, but close enough for our purposes). Typically, the camera's image is displayed on a web page. Every so often, the image is updated. The frequency of updates can range from whimsical (whenever the originator feels like it) to continuous (streaming video).

The world's first web cam was a small black and white video camera focused on a coffee maker in the hallway outside of the computer lab (the Trojan Room Coffee Machine) at Cambridge University. The service was first set up in 1991 on a local network so that those in distant parts of the building could check the coffee status before heading off for a cup. The service went online on the brand-new World Wide Web in 1993 when a web server became available, and it was an instant hit throughout the world. When it finally went offline in 2001, it had had well over two million virtual visitors. The German magazine *Der Spiegel* bought the broken coffee maker on E-bay, had it repaired, and it lives on.

Clearly, a web cam may be focused on anything from the ridiculous to the sublime. And of course, bird web cams are the most sublime. Many focus on nest sites and are only active during the nesting period. A local example is the nest cam for the Bald Eagle nest at Turners Falls, MA (two young eagles this year!). The Owl Cam, located in Eastern Massachusetts, has been following the antics of Ward and June, a pair of Barred Owls, since 1997. Other well-known nest cams include those of the Cornell Laboratory of Ornithology in New York and several Peregrine Falcon and Osprey nests. Other bird cams focus on feeders or birdbaths. Wild Birds Unlimited claims to have set up the first feeder cam. The listings at the end of this article include these sites and links to lists of many more.

Setting up your own web cam

Setting up a web cam can be as simple as plugging a camera into a computer and installing some software – maybe fifteen minutes or so. Of course, more functional installations will take a bit more time and thought. Fundamentally though, all that is required is a suitable camera and a means of connecting the camera to the web (Figure 1).

First, you will need a camera that has electronic controls (no, your old 35mm will not work). The camera can be a digital still or analog or digital video. Most advertised

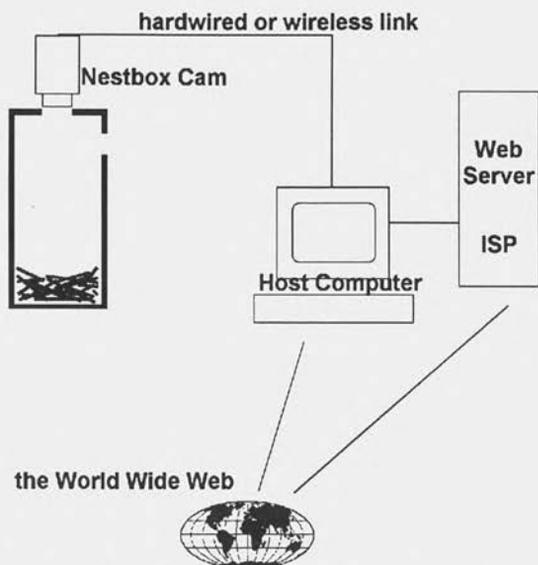


Figure 1: Bird web cams transmit images via cables or radio frequencies to a host computer. The images are available over the web through a web server — either the host computer or the server of an internet service provider.

web cameras are merely low-resolution digital cameras and can cost from thirty to hundreds of dollars. Generally, you get what you pay for: cheap cameras are fixed focus, fixed aperture, low resolution, and may have plastic rather than glass lenses. More expensive cameras will have quality, auto-focusing lenses with aperture adjustment, higher resolution sensors, and adjustable gain. When you get into the thousands-of-dollars range, the cameras have remote control of all of these functions, as well as of tilt, pan, and zoom.

The use of video versus still cameras is a matter of choice, although

video is far more prevalent. While digital still cameras have far higher pixel resolutions than video, this may be largely irrelevant since bandwidth constraints usually limit image resolution to at or below that of standard video (640 x 480 pixels). Although the images sent to the web have to be digital, the original image can be taken through an analog camera and then converted to digital format. Several adapters are available for connecting (for example) an analog video camera to a computer (video capture cards that plug into an expansion slot in your camera, or external video camera adapters like the Snappy Video Snapshot or Buz multimedia producer).

If you are contemplating an outdoors web cam, you will have to consider weather. Ordinary consumer web cams, and digital cameras in general, are anything but weatherproof. Specially weatherproofed cameras exist (and are used widely in security systems — see the NuSpectra web site for a very nice setup), but they are pricey. A less expensive option for feeder cams might be to use an indoor camera with a zoom lens to image the feeder (Figure 2). If you are setting up a nest-box cam, try an attic over the nest box to contain the camera (and low intensity lights, if desired) while protecting it from the elements.

Second, you will need a computer. While cameras with direct cable connections to the web are available (and very pricey), most cameras in the consumer market require the intervention of a local host computer. This computer could be your regular computer (assuming it is a fairly recent PC or Mac) and, depending on the

connections, the web cam functions of grabbing, processing, and uploading images could run unnoticed in the background.

Third, you will need an appropriate connection between the camera and computer. If you want to update your web image frequently, you will need a fast connection. Current cameras and computers mostly communicate via speedy USB (Windows98 or later required) or Firewire cables, rather than the older, slower, serial or parallel cables. Another option (particularly if the camera is distant from the computer) is a wireless connection. Several wireless cameras are on the market (e.g. the ubiquitously advertised X10), making it possible to free your web cam from its tether. With a wireless web cam, and lots of battery power, you could take your web cam out in the field, or at least the back yard.

Similarly, the connection between the host computer and the web server needs consideration. If you want a rapid refresh rate on images and continuous updates, you will need a cable modem, DSL line, or a dedicated telephone line, since you have to be connected all of the time. Of course, if the link goes down, or the power goes, your viewers will see just the last uploaded image. If you do not want or need to do frequent updates, then manually upload images whenever appropriate or convenient.

Finally, the software that grabs the image from the camera and uploads it to your web server has to be able to work well with all components. Probably the most widely used software is Webcam32. Another, simpler but widely-used package is ISpy. If you do not want to configure your host computer as a server, you will want to make sure that you get software that grabs an image from the camera, processes it to the desired degree, sends it by ftp (file transfer protocol) to an ISP's server, and then repeats the procedure at a specified interval.

If the foregoing seems daunting, one strategy for assembling the package might be to buy a camera that will work with your computer (e.g. one that is Video for Windows compatible if you are in a Windows environment) and then get the software recommended by the camera manufacturer. If you have a digital video camera,

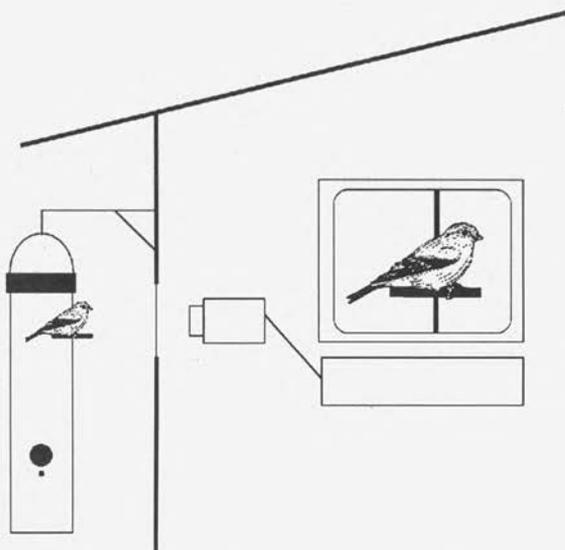


Figure 2: This feeder cam images the feeder through a window, obviating the need for an expensive weatherproof camera. Bird images courtesy of William E. Davis, Jr.

another approach would be to get the software (e.g. Webcam32) and necessary cabling and play around with a simple setup until you are ready to try something more elaborate.

While you are trying out options, note that many of the software or hardware suppliers provide server space for displaying your images on the web. They do not do this out of the goodness of their hearts, and so pop-up ads and other annoyances are to be expected. Of course, you can present the images on your own web site, either by hosting it yourself (turning your computer into a web server) or by renting space on a web server (either through your internet service provider or on another commercial service). The Wired Birder uses a paid service for his web sites.

While web-site design is beyond the scope of this article, it should be noted that it is relatively easy to set up a simple web page, with an included image, using any of the commercial, freeware, or shareware web-design programs. Your computer may even come with a simple program, perhaps included with your internet browser or with a software bundle. For a discussion of simple web design and issues of refresh rate and modalities see either of the books noted at the end of this article, or the extensive support pages on the Webcam32 site. As you gain experience, you can add archives of interesting shots or of the most recent images, explanatory materials, or whatever you wish.

On the high end

Once you break into the wonderful world of web cams, you can experiment with upgrades at the higher end. One simple upgrade is to use a camera and software combination that allows for motion detection (e.g. Homewatcher software). Using this strategy, your web page will be updated only when something changes. It is possible to add audio so that your viewers can hear as well as see what the cam is focused on.

With a sufficiently fast connection, you can set up your web cam for streaming video. Check out the Belmar Beach web cam to watch folks stroll the beach and see the gulls fly by. Finally, some of the high-end web sites now allow viewers to control the camera. This feature requires a motorized camera mount with pan, tilt, and scan controls (see the Surveyor Corp. or NuSpectra Corp. web sites). An example of a really neat web cam with this feature is the TundraCam at 11,600' on Niwot Ridge in Colorado.

Web cams can provide a fun adjunct to your birding passion, a potentially useful research tool, or an immense time sink (and maybe all three at once). Try a few of the sites listed below. If you decide to set up your own bird cam, send the address to Bird Observer. We would love to take a look. 

Sources and links to interesting sites

Parker, E. and J. Grimes. 1999. *The Little Web Cam Book*. Berkeley, CA; Peachpit Press.

Wang, W. 2001. *Web Cams for Dummies*. Foster City, CA; IDG Books Worldwide.

The Trojan Room Coffee Machine <<http://www.cl.cam.ac.uk/coffee/coffee.html>>

Der Spiegel's site <<http://www.spiegel.de/netzwelt/netzkultur/0,1518,189302,00.html>>

Lots of web cam sites:

Web Cam World	<http://www.webcamworld.com/>
Earth Cam	<http://www.earthcam.com/>
Cam Central	<http://www.camcentral.com/>
Africam	<http://www.africam.com/public/index.jsp>

More Bird Web Cams:

Turners Falls Eagle Cam	<http://www.nu.com/eagles/>
schematic of the system	<http://www.nu.com/eagles/eaglewebcam2.pdf>
The Owl Cam	<http://www.owlcam.com/>
Cornell Laboratory of Ornithology nest cams	<http://birds.cornell.edu/birdhouse/nestboxcam/>
Wild Birds Unlimited feeder cam	<http://www.wbu.com/feeder_cam_home.htm>
Cohasset Bird Houses	<http://cohassetbirdhouses.com/>
Mr Goodbeer (honest)	<http://mrgoodbeer.com/>
Florida Gold Rose	<http://www.floridagoldrose.com/>
Royal Society for the Protection of Birds	<http://www.rspb.org.uk/>
James Reserve	<http://www.jamesreserve.edu/>
EuroBirdwatching	<http://www.eurobirdwatching.com/>
Simon Knott	<http://www.eko.clara.net/birdvideo.html>
A backyard feeder cam	<http://www.cbird.com/cam.html>
Ivy's birdfeeder cam	<http://ivyjoy.com/webcam/>
Center for Conservation Biology FalconCam	<http://fsweb.wm.edu/ccb/vafalcons/falconcam/falconcam.htm>
Osprey cams	
Maryland	<http://www.friendsofblackwater.org/camhtm.html>
New Hampshire	<http://www.nhaudubon.org/research/ocam.htm>

Cool Nonbird Cams

Kennedy Space Center	<http://www.science.ksc.nasa.gov/shuttle/countdown/video/>
Butterfly Conservatory	<http://www.amnh.org/exhibitions/butterflies/cams.html>
TundraCam (remote control)	<http://tundracam.colorado.edu/>
Clearwater Beach, FL (remote control)	<http://www.wtsp.com/skycams/clearwater.htm>
Belmar Beach cam, NJ (streaming)	<http://www.belmarbeachcam.com/>
Cape Cod cams	<http://www.capecodlivecam.com/>

Cameras, software, and other useful stuff

X10 cameras	<http://www.x10.com/>
Snappy Video Snapshot (PC)	<http://www.play.com/>

Buz multimedia producer (Mac)	< http://iomega.com/buz/ >
Surveyor Corp. (Webcam32, ISpy, and camera mount)	< http://www.surveyorcorp.com/ >
NuSpectra Corp. (cameras, mounts, and systems)	< http://www.nuspectra.com/ >
Webcam 1-2-3	< http://www.webcam123.com/en/ezcast.html >
NetSnap software	< http://www.netsnap.com/ >
Homewatcher software	< http://www.homewatcher.com/ >

David Larson is the Production Editor of Bird Observer. He laments the apparent demise of one of his favorites, LobsterCam <<http://www.midcoast.com/~lobcam/>>. He can be reached by e-mail at redpoll@attbi.com. He would like to emphasize that mention of goods and services in this article does not imply endorsement by Bird Observer or the Wired Birder. Web addresses change unpredictably, so if any of the above do not work, try using key words on an internet search engine or find other interesting sites.

Update on Leach's Storm-Petrel Nesting (*Bird Observer* June 2002)

On June 11, 2002, I returned to Noman's Land Island with Stephanie Koch of the U.S. Fish and Wildlife Service for a two-night stay. During the first night we located ten nests along one section of wall. Nests were identified by the presence of a storm-petrel calling from under the rocks and by the characteristic storm-petrel odor. After considerable effort, we were able to view three actual nests, two containing a single white egg each, and one that was empty. We captured and banded three of the nesting adults from under the rocks, each of which had a bare and vascular brood patch. We also captured and banded two birds that were presumed to be subadults because they had nearly bare but completely nonvascular brood patches. One of these birds was captured by hand after it landed on the ground by the wall, and the other was captured in a mist net that was set for a short time



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by the wall with a tape. Considering the numerous other walls that occur across the island that we did not visit, it is very likely that the number of nesting Leach's Storm-Petrels on Noman's Land is much greater than the ten we were able to locate.

Tom French