



Prototype of a conservation drone used in test missions in Indonesia. Source: Lian Pin Koh and Serge A. Wich, *Tropical Conservation Science* 5:121 (2012).

Speaking of [visualizing environmental problems](#), they are hidden for different reasons and therefore can be revealed by a variety of different mechanisms. Drones are one tool with a great deal of potential.

Aerial drones have gotten a lot of attention as weapons of war or counterterrorism in the U.S. arsenal. Whatever you think about the use of heavily armed unmanned military craft to "[wag\[e\] war on individuals](#)," though, it's worth noting that drones can take many different forms and be used for many different functions. Cheap remote-controlled flyers are widely available (including, [as Slate recently pointed out](#), on Amazon). Equipping them with inexpensive cameras opens up a range of possibilities, and perhaps an equal range of fears.

Ecologist Lian Pin Koh and primate biologist Serge A. Wich believe drones equipped with high-resolution cameras offer great promise for low-cost mapping, species surveying, and monitoring in tropical forests. They've [published a description](#) of a first-generation prototype in the open-access journal *Tropical Conservation Science*, and founded a non-profit, [ConservationDrones.org](#), to

- build capacity in the developing tropics to use unmanned aerial vehicles for conservation
- raise public awareness of conservation challenges in those regions
- inspire others to adapt emerging technologies for conservation.

For me, the development of cheap conservation drones brings two contrasting reactions.

The first is excitement at the concept and its possibilities. The conservation drone idea combines the penchant for toys of model airplane enthusiasts with the falling costs of hardware and software to produce a potentially game-changing alternative to expensive satellite data. Koh and Wich say their prototype cost less than \$2000. At conservationdrones.org they offer detailed information on the various airframes and software they are experimenting with, inviting developers all over the world into the conversation. The potential for drone use in the service of conservation is almost unlimited, as a quick look at the “[Drone Applications](#)” section of the conservationdrones.org shows. Indeed, with a few more clicks of the mouse I learned that drones are already being used to search for [illegal driftnet fishing](#) and [monitor hunting practices in England](#).

Thinking about the possibilities of conservation drone deployment in the U.S., however, quickly brought a second reaction — mild terror at the potential political fallout. Information is power. Conservation information holds power to achieve conservation goals. You would think that would be a good thing, especially where those goals have been publicly set by the political process. But not everyone in the US, indeed not everyone in the US Congress, agrees. I remember in 1996 when the Congress voted to prohibit the government from spending any money to use satellite data to enforce the Endangered Species Act (even though no such enforcement had been attempted or even proposed). The fact that conservation drones, unlike satellites, can be deployed by any individual with a few thousand dollars to spare, cuts both ways. They wouldn't be vulnerable to that kind of appropriations restriction, nor would they be subject to limitations on government surveillance or fears of Big Brother. But private drone use would still raise privacy protection concerns, depending on how the data are distributed. Remember the outcry over [Google Maps street view function](#), especially in Europe? And the ultimately unsuccessful lawsuit [Barbra Streisand brought against the California Coastal Records Project](#) for posting aerial photographs of the California coastline that allegedly included her house?

I don't mean to suggest that conservation advocates should back off developing drones and dreaming up applications for them. I hope that process will continue apace. But I also hope it will be combined with some serious thinking about the extent to which drone regulation is

desireable and the forms that regulation might take, considering both the many legitimate uses to which drones might be put and the legitimate interests with which they might conflict.