



A rechargeable Airborne Technologies GPS buoy.

Buoys drift high seas to find killer ghost nets

By Doug O'Harra
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Wasilla pilot and high-tech entrepreneur Tim Veenstra was eating lunch at a marine science conference in Anchorage a few weeks ago when a buoy rang his cell phone from the middle of the Pacific Ocean.

"I was the guy jumping up and yelling," Veenstra said recently. "My first buoy had talked to me."

The buoy, calling in its position, is part of the Ghost Net project. It's a sophisticated effort, coordinated by Veenstra, to track down killer drift nets on the high seas.

The buoy -- one of four designed at Veenstra's Tyvex-sided hangar in a remote corner of the Meadow Lakes district near Wasilla -- had e-mailed home via satellite. The devices have since continued to track where currents might concentrate marine

debris in a zone north of Hawaii.

With a \$1.2 million grant from NASA, Veenstra and co-investigators at eight federal, private and university groups have spent the past 18 months developing tools like this -- infrared cameras, laser-driven images, satellite glimpses of waves -- to find ghost nets.

The system could ultimately extend the reach of remote sensing in the study of marine life. Tracking schools of salmon as they mass offshore and move toward rivers might be one application.

"A lot of what we're doing is proving the technology," Veenstra said.

The project was inspired by the insidious problem of high-seas drift nets.

These "curtains of death" have been banned by international treaty since the early 1990s. They can stretch for more than 30 miles and can entangle whales, strangle seals, kill fish and snare birds. Lost at sea, the nets keep killing even after washing ashore or snagging on the bottom.

A federal cleanup program in the Hawaiian Islands last summer collected about 100 tons of nets, line and other junk from atolls and coral, according to a report from Hawaii Sea Grant. In a 500-mile survey flight last fall, Veenstra found net fragments and other debris scattered around Bristol Bay on beaches.

Veenstra came to Alaska about 20 years ago to become a pilot and worked as an aerial spotter for the herring fishery in Prince William Sound. Over the past five years, he and his partners have shifted from fish spotting and commercial flying to developing these remote sensing tools, partly with a grant from the Alaska Science and Technology Foundation.

Veenstra's Airborne Technologies Inc. is in the woods off the Parks Highway. Veenstra and his family live upstairs. Downstairs is a shop with a shiny-clean concrete floor beneath a helicopter and single-engine airplane.

During a recent workday, Veenstra and business manager Catherine Herring studied a screen showing real-time movements of satellites used to communicate with the buoys. On other consoles, Veenstra reviewed images of salmon schooling underwater off a Kodiak hatchery, taken during a test of airborne sensors last fall. Over the past few months, the Ghost Net project has been mapping places where ocean currents concentrate all sorts of free-floating junk. The satellites monitor temperatures, roughness and chlorophyll at the sea surface, Veenstra said.

At the same time, the team has begun advertising for eyewitness reports of nets and debris. A poster, complete with a cartoon ghost "menace" emerging from the sea, offers a ghost net ball cap as a reward to informants.

The effort will climax in late April or early May. Then a team led by Veenstra and partner Jim Churnside, a remote sensing specialist from the National Oceanic and Aeronautical Administration, will fly about 400 nautical miles north of Hawaii to an area some oceanographers have nicknamed "the garbage patch," where currents tend to concentrate debris.

Future flights might occur later in other "convergence zones" off Kodiak, in the Bering Sea and Gulf of Alaska.

Once on site, Veenstra and Churnside will scan the ocean with a laser device that can reach up to 100 feet beneath the sea surface. At the same time, infrared and broad-spectrum cameras will monitor the surface.

Another camera will also use the laser pulses to create images of objects beneath the water. Among them might be a fish-killing, bird-tangling, seal-choking ghost net.

"We know there are nets out there," Veenstra said. "We decided we would try to find these convergence zones in the North Pacific using satellite remote sensing. And then we could go out in the airplane and look for the nets. You can't have one without the other."

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