

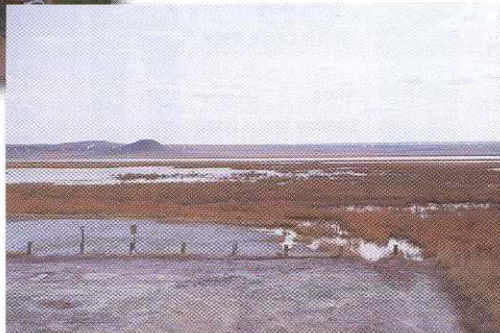
Pintails *On* the Move



Female pintails outfitted with satellite transmitters provide critical data to biologists studying spring migration.

Photos courtesy of the authors

Pintails use a large array of wetland areas during spring migration, including the Freezeout Lake area in western Montana. ▶



Tracking Spring Migration of Pintails Yields Important Discoveries

by Michael Miller, Joe Fleskes, Dennis Orthmeyer, John Takekawa, Mike Casazza, and Bill Perry

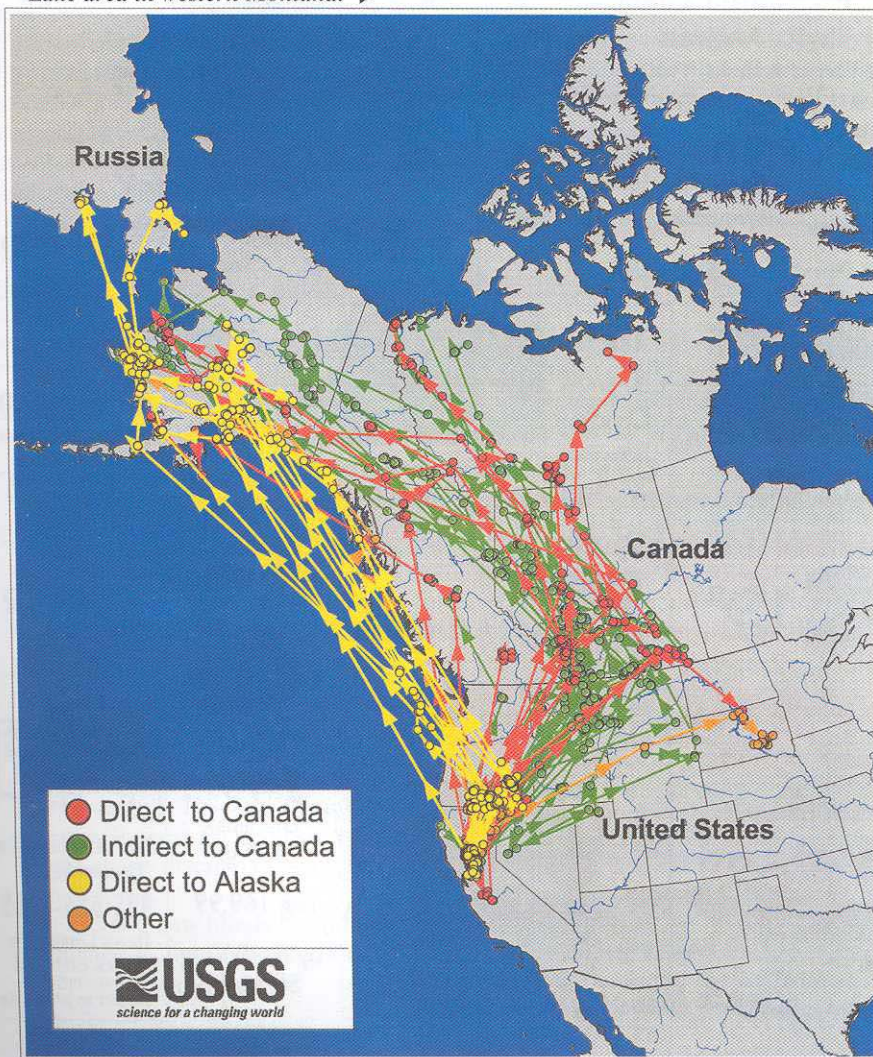
The Importance of Satellite Tracking

Waterfowl biologists long ago began describing the autumn migration routes of pintails using standard leg-bands, which hunters recover and report. In spring, however, no hunters are afield to bag and report banded birds, and, consequently, specific northward migration routes have not been well-documented. In fact, for most wild duck species, the spring migration remains one of the least studied aspects of the life cycle.

To rectify this shortfall in our knowledge of pintails, we began the first year of a four-year study ("Pinsat") in spring 2000 to track spring migration from California's Central Valley to nesting regions using satellite telemetry. We have outfitted 30 to 55 adult female pintails annually with backpack satellite transmitters (called Platform Transmitter Terminals) after trapping them at several locations in the Sacramento Valley and Delta during midwinter. We subsequently obtained location data on each satellite transmitter-outfitted hen every three days at least through August (or until the transmitters failed or birds died). Service Argos of Landover, Maryland, provides data to us daily via e-mail, which the company downloads from receivers installed on National Oceanic and Atmospheric Administration polar-orbiting weather satellites.

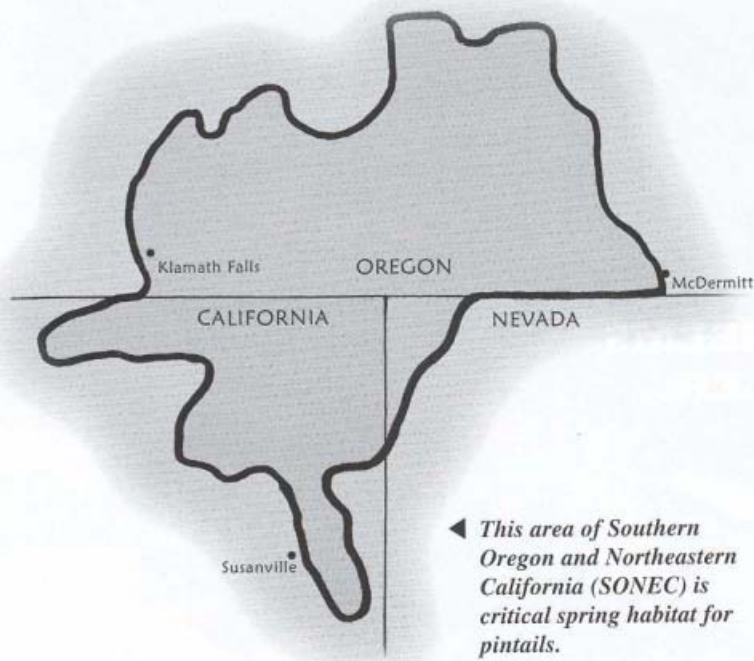
Where do They Go First?

Waterfowl biologists and hunters know that the Klamath Basin provides a critical staging area for the tens of thousands of pintails that congregate there in autumn prior to continuing south into the Central Valley. Pintails are abundant in the basin during spring as well; however, the



Migration routes of satellite transmitter-tagged adult female pintails during spring 2001.

(continued on page 10)



◀ *This area of Southern Oregon and Northeastern California (SONEC) is critical spring habitat for pintails.*

Satellite Costs and Benefits

You are probably familiar with standard radio telemetry tracking of waterfowl. Ground crews in trucks locate birds fitted with small VHF transmitters by using receiving antennas to triangulate on the continuous signals. The range of these transmitters is one to two miles on the ground and 10-20 miles from the air. The cost of each transmitter ranges from \$150 to \$250 for ducks. The major expense is usually field labor to obtain locations.

Satellite telemetry is different. These transmitters cost up to \$2,900 each, with an additional \$1,000 per unit for the satellite data and \$400 for data processing and Geographic Information System analysis. Satellite transmitters are much more powerful than standard transmitters, however, since the signal has to reach satellites. Once the birds are caught and released, field labor costs are essentially unnecessary except to gather supporting information.

exact origin of these birds, the timing of their arrivals, the length of time they spend there, where they head next, and the ultimate nesting areas have not been known.

Our satellite data demonstrate that the Klamath Basin and other key areas in the southern Oregon and northeastern California region (SONEC) are even more impor-

tant to pintails in spring than originally thought. Why? Because more than 75 percent (87 percent in 2002!) of pintails migrating out of the Central Valley stop there first.

Some of the most important areas for pintails in southern Oregon are privately owned, including Chewaucan Marsh

(southeast of Summer Lake), South Warner Valley, and lands surrounding Goose Lake and Malheur National Wildlife Refuge (NWR). Lower Klamath NWR, Butte Valley and Honey Lake wildlife areas, Big and Fall River valleys, and the Modoc Plateau (U.S. Forest Service) have been the most

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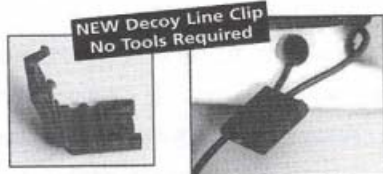


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important areas used in northeastern California, and much of the use was on public land.

Considering only the pintails that visited SONEC, 32 to 47 percent appeared first at northeastern California sites, whereas 38 to 45 percent showed up first at those in southern Oregon. When pintails leave these areas to go north, we have found that most have done so from sites in southern Oregon, with about 76 percent having migrated north from there and 24 percent from northeastern California.

Where to Next?

During 2000 and 2001, pintails took one of three different routes northward from SONEC. About 45 percent of the hens headed to one or more of the nearly 50 stopover areas we have identified along the way to prairie Canada (we call these "indirect to Canada" migrants) or other locations north of the border, arriving at various times. Another quarter flew straight to Canada, arriving about the first week of April on average. Another 25 percent migrated over the Pacific Ocean to Alaska, arriving, on average, about the first week of May. Some hens that bypassed SONEC took these routes too. The map on page 8 shows the four basic routes in detail for the 2001 migration. In 2002, however, the trans-oceanic route was little used. Instead, hens moved up the coast, stopping at embayments and river deltas in Oregon, Washington, and British Columbia.

Pintails using each of these migration "strategies" have spent varying times in the SONEC region before moving on. For instance, hens that have flown directly to

We began ... a four-year study in spring 2000 to track spring migration from California's Central Valley to nesting regions using satellite telemetry.

Alaska spent an average of two months in SONEC before leaving, whereas pintails flying directly to Canada spent only about one month. Hens that stopped at one or more sites in Idaho or Montana, for instance, spent less than two weeks in SONEC before leaving. Clearly, this region is critical to all pintails present in the area but especially to pintails that must maintain or build body fat and protein reserves before making the long flights over the ocean to Alaska or inland to Alberta.

Our results so far show that more than three-quarters of the Central Valley's wintering pintails depend upon the public and private wetlands and private agricultural land in SONEC for foraging and roosting habitat in the spring before moving farther north. This area is critically important for the long-term health of Pacific Flyway pintail populations.

Pintails selected different destinations ▶

SPRING HABITATS STUDIED

Satellite transmitters do a great job of identifying migration routes and large-scale movements of birds; however, they do not provide locations accurate or frequent enough to be certain about the specific types of habitats used on a local scale. Therefore, we expanded Pinsat to include a detailed spring ecology study in 2002. We tagged 120 female and 30 male pintails with standard VHF backpack radio transmitters (at the same time and locations as the birds we fitted with satellite transmitters) in late winter 2001.

We subsequently obtained day and night locations of each radio-tagged pintail during the time it was in southern Oregon-northeastern California. At the end of May 2002, we had determined specific habitat use for more than 80 percent of the pintails we radio-tagged in the Sacramento Valley. The study will continue in spring 2003.

Project Support

The Tuscany Research Institute of Las Vegas is fully funding Pinsat by providing substantial grants to Ducks Unlimited, Inc., Memphis (DU) and the California Waterfowl Association (CWA). Funding to support inclusion of Texas pintails in 2002-3 is being provided by Texas Wildlife and Parks (Austin), the Playa Lakes Joint Venture, and the U.S. Fish and Wildlife Service (Region 2, Albuquerque).

The U.S. Fish and Wildlife Service and California Department of Fish and Game have granted us access to Sacramento Valley refuges and wildlife areas to trap pintails, and CCRC Farms assisted with trapping on Mandeville Island.

Biologists at the Dixon and San Francisco Bay Field Stations of the Western Ecological Research Center (U.S. Geological Survey) conduct the research after cooperative planning with DU and CWA biologists.

Interested readers can access the website for the Pinsat project at www.werc.usgs.gov/pinsat or via the CWA or DU web sites (www.calwaterfowl.org or www.ducks.org).

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after migrating from SONEC depending upon whether they left from Oregon or California staging sites. For example, satellite transmitter-tagged hens migrating from southern Oregon showed up next in Alaska (about 25 percent of the birds), Canada (about 25 percent), and intermountain western states (about 40 percent) or went back to northeastern California (about 10 percent).

Hens departing from northeastern California tended to show up first in Alaska (about five percent), Canada (about 15 percent), and the intermountain states (about 20 percent) but at lower rates than those leaving from southern Oregon; in fact, the predominant first stop of pintails leaving northeastern California was southern Oregon (about 60 percent)!

Some hens migrate from the Central Valley and bypass SONEC. About five percent of these showed up first in Alaska; 15 percent arrived first in Canada; and 80 percent first in other western states, including Nevada, Idaho, eastern Montana, and the Dakotas.

Potential Nesting Areas

Satellite transmitter-outfitted pintail hens have been recorded in several nesting regions during the first two years of the project, although we have no idea whether or not these birds attempted to nest. Because of dry conditions each year, fewer than 20 percent of the



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hens remained in the critical Prairie Pothole Region (zero in 2002!), which includes the southern prairie provinces of Canada and the Dakotas and northeastern Montana. The Prairie Pothole Region, especially southern Alberta and southwestern Saskatchewan, provides the bulk of pintails to the Pacific Flyway when wetland conditions there are good (i.e., when ponds are abundant). We had hoped that within the four years allotted to Pinsat, at least one wet year would occur. However, 2002 is looking very dry, too, so we may have to wait longer.

A significant percentage of birds have spent the summer in the Northwest Territories each year, but most have carried on to Alaska, and four continued across the Bering Strait to eastern Russia (but none in 2002), arriving there in late May or the first week of June. Each of these hens flew directly to Alaska via the Pacific Ocean first; no pintails using inland routes to Alaska reached Russia. The group of Pacific Flyway pintails that migrates directly to Alaska each year seems to be isolated from the drought-prone Prairie Pothole Region. Nesting success and production of ducklings by this group may be different than for the Prairie Pothole Region birds displaced northward by prairie droughts. These Alaskan birds constitute a critical component of the continental pintail population in general and for the Pacific Flyway in particular.

Other Observations

Not all of our work has been limited to dialing up bird locations on the computer every day. During the 2000 and 2001 migrations, the project leader (Miller) directed California Waterfowl Association (CWA) field technicians to northern stopover areas used by marked hens. They characterized habitats and documented behavior of pintails at those sites, though they did not observe the satellite transmitter-marked hens.

At virtually all spring stopover locations, the CWA technicians verified that pintails in the vicinity of satellite transmitters tended to use private lands. Even if national wildlife refuges and state wildlife areas were present, most birds used surrounding lands, not the public areas themselves. In fact, 50 to 80 percent of the areas used have been unprotected private lands, most often grazing lands and other agricultural land such as small grain farms flooded by snow melt and rising creeks and rivers. In general, pintail flocks in the vicinity of satellite transmitter-outfitted hens used a variety of habitat types ranging from stock ponds, flooded pasture, harvested grain fields, seasonal marshes, and prairie potholes to expansive northern lakes, river deltas, and tundra.



More than half of the habitat used by pintails during spring migration was on private lands.

photo by Jerry Baldwin

CWA technicians reported that pintails in the vicinity of satellite transmitter locations fed almost 50 percent of the day and rested another 25 percent. This is typical of birds building or replenishing body fat and protein reserves prior to nesting.

Expanding the Study

Pinsat attracted the attention of biologists in the Central Flyway. As a result, independent funding allowed us to add Texas and New Mexico pintails for the 2002 and 2003 migrations. The movements of these hens will broaden our perspective of the spring migration ecology of all pintails.

We hope that the information we are gathering on the pintail life cycle will assist conservation efforts by Ducks Unlimited Inc., Ducks Unlimited Canada, CWA, joint ventures, public agencies, and private land owners to assist population recovery.

Michael Miller, Joe Fleskes, Dennis Orthmeyer, Mike Casazza, and Bill Perry work at the Dixon Field Station of the Western Ecological Research Center (U.S. Geological Survey), and John Takekawa is stationed at that Center's San Francisco Bay Estuary Field Station in Vallejo.

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