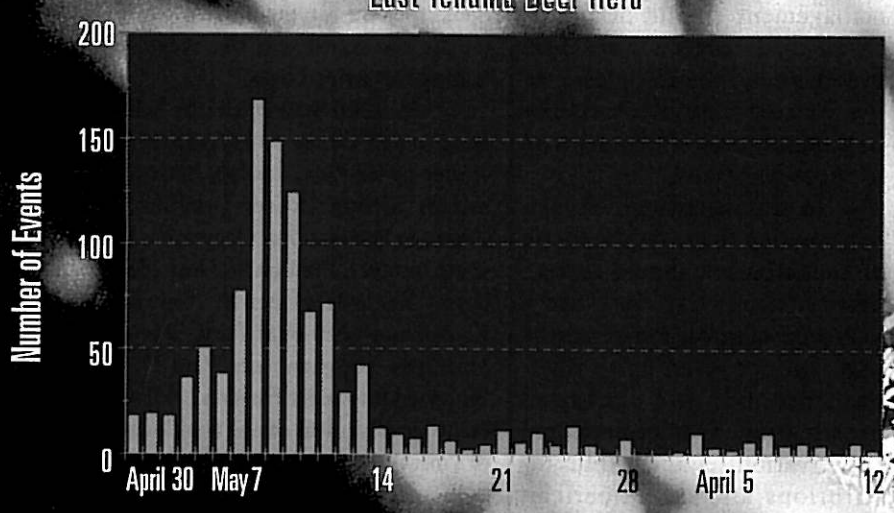
COLUMB
BLACKTA

Tracking their travels

By David O. Smith
Associate Wildlife Biologist
CALIFORNIA DEPARTMENT
OF FISH AND GAME



IAN AILS:

Photograph by Dick Hancock

Those of you who have hunted Columbian blacktails probably will agree that they are more wary than Rocky Mountain mule deer. But before we tell you about some of the things we are learning about the cagey habits of these "little mule deer," lets talk about what they are and where they live. Biologists are often asked " where's the line between mule deer and blacktails?" The answer is, there is no line, because technically, blacktailed deer are mule deer. So before addressing the "where" question, lets deal with the "what." In North America there are two species of deer in the genus Odocoileus, mule deer and whitetails. The mule deer group, O. hemionus, includes several subspecies, two of which are the Rocky mountain mule deer, O. hemionus hemionus and the Columbian blacktail, O. hemionus columbianus. To further confuse the issue, blacktails include the Columbian and Sitka subspecies. This article features the Columbian blacktail deer.

Where do they live? The "little" mule deer live throughout the coast ranges of California from Santa Barbara county north through western Oregon, Washington and British Columbia. It's range in California also includes the mountains surrounding the northern rim of the Sacramento Valley and the western slope of the Sierras south to Mariposa county. East of this lies the Rocky mountain mule deer range. These larger relatives readily interbreed with their smaller cousins to form hybrid populations that have characteristics of both subspecies. Obviously, then there is no good answer to the original question about "where's the line." When genetic material is shared between plants and animals having differing characteristics, that material becomes mixed throughout a zone that is usually indescribable, at least in terms of drawing precise lines on maps. Biologists specializing in the classification of plants and animals, a branch of biology known as taxonomy, refer to this

These snapshots were taken during the fall 1996 migration of the deer herd in Shasta County, California. The bottom two bucks were photographed on October 19, 1996, just two hours and nineteen minutes apart.

area of mixing as a "cline." It is usually a broad graphical band of habitat where genetic material is shared between species or subspecies. The closer to the center of the cline, the greater the interchange. The mixing diminishes with increasing distance from the heart of the cline. Think of it as a zone shifting slowly with time as species mix and adapt to new environments by changing; the process of evolution.

How do they come and go? The seasonal availability of food determines whether deer migrate annually. Where mild winters produce little snow, most deer usually stay put in a fairly small home range, perhaps moving from a ridge top to a canyon bottom between feeding, bedding and watering areas. It's a matter of energetics and survival. If deer can meet their forage needs by staying in a small area then it is of no benefit to migrate. The energy they spend in migration must be more than compensated for in improved forage on the seasonal ranges. Migration exposes deer to increased losses to predators and accidents such as highway mortality.

In the milder coastal areas of their range, blacktails are usually "resident" staying in a relatively small home range all year. Shrubs are eaten all year when available although they become less important in the spring and early summer when feeding may shift to forbs and grasses. In coastal areas, tough times usually occur in mid to late summer when annual plants (grasses and forbs) are dry and the nutrients in shrubs are at low levels. Fall rains result in germination of these annuals and deer eagerly respond to the "green up" by shifting to the young sprouts.

In the interior portions of their range, along the Cascades and Sierras, most deer are traditional migrants. Annual treks from low elevation winter ranges to higher summer areas take place as deer seek cooler temperatures and better forage later into the summer months. The downward fall migration is usually triggered by storms. In some areas of Northern California we have tracked radio-collared deer movements up to 80 miles!

Studying migration patterns: The advances in modern technology have greatly increased understanding of the seasonal migratory behavior of blacktails. Radio transmitter equipment allows biologists to locate summer and winter range areas and in some cases, the equipment can help locate migration trails. Much is being learned about the times of year when deer move and the relationships of migration patterns to weather and forage availability. But tracking moving deer along trails with conventional transmitting equipment has always been difficult because deer often travel many miles per day and it is difficult to keep track of individual animals.

Space age satellite global positioning equipment (GPS) is being adapted to study movements of wildlife. Global positioning units are being placed on collars and attached to animals. Unlike radio transmitters that send a signal from the animal to a receiver held by a biologist on the ground or in the air, the animal wears the receiver and "locates itself" at selected time intervals. As the animal moves about, the coordinates of each location are stored with the collar that is designed to drop off after a desired time span. When the collar falls off, a conventional transmitter signal allows the unit to be retrieved. Stored location information in the collar is downloaded into a desktop computer and imported into a geographic information system that easily pro-

duces a precise map of the animals movements. Under ideal conditions, these locations are accurate within 10 yards! The equipment is still very expensive and the units work better on larger animals such as moose and elk. The cost and size should come down in a relatively short time and biologists will soon be able to watch wildlife move around on a computer screen over a habitat map developed from satellite imagery. Fortunately, we will still have to get out of the office and into the field to attach the equipment.

One of the things that modern technology has helped us learn is that deer tend to use the same migration trails year after year and they usually "home" to the same range every spring and fall. Blacktailed does have a strong fidelity to a summer fawning area, often returning to the same few acres to give birth and raise fawns. This habitual behavior may turn out to be the biggest advantage biologists have in monitoring deer population trends. We may be able to rely on their predictability to count them.

Counting deer on migration trails: In the fall of 1996, I began an experiment with infrared light trail counters to see if the equipment could be used to count deer as they move past a point between seasonal ranges. Most hunters are familiar with the trail monitors advertised in sporting magazines. Each time the invisible beam is broken, the date and time of the event is recorded. The unit contains a sensitivity setting to prevent "false events" such as falling leaves or birds. The equipment was set up on a well used trail in eastern Shasta County, California. A 35 millimeter camera was installed to be triggered when the light beam was broken. Although there are still some "bugs" in the system, it became obvious that the technique has great promise as an index to measure deer population changes. By recording the number of deer passing points along selected trails year after year, we can track the changes in deer numbers and use

Photograph by Chuck and Grace Bartlett

the information to set hunting seasons and tag quotas.

During the fall migration to the winter ranges of eastern Shasta County, a pattern developed that supported the theory of a long time friend and hunting partner. Eldon "Dan" Smith, a retired California state wildlife biologist, has spent 40-years studying the migratory habits of blacktails in eastern Tehama County. While hiking the maze of trails, he learned that others knew the migration patterns of these deer almost as well as he did. Many of the trails had signs of both new and old blinds, places where hunters waited to intercept migrating deer.

THE "LITTLE" MULE DEER LIVES THROUGHOUT THE COASTAL RANGES OF CALIFORNIA NORTH THROUGH WESTERN OREGON, WASHINGTON AND BRITISH COLUMBIA. THIS PHOTO WAS TAKEN ON THE OLYMPIC PENINSULA IN WASHINGTON.
Photograph by Chuck and Grace Bartlett

Often they were remnant boards nailed to trees for steps, or rocks stacked in strategic places to hide a patient hunter. Sometimes they were elaborate platforms with roofs and swivel chairs. Dan once told me that because of the way hunters appeared to be covering the migration trails, he thought that most of the bucks were probably moving at night. More on the theory later.

I shared my enthusiasm about deer trail monitoring with my co-workers and good friend and associate Dave Walker, a biologist in the neighboring wildlife unit to the south in Tehama County. Dave is responsible for monitoring the East Tehama deer herd. We submitted a request to purchase 20 trail counter sets and several cameras. The request was approved and we began plans to set up the equipment on selected spring migration areas.

Our first step was to call Dan and ask his help picking sites for the trail monitors. In late April, 1997, Dan called and said "the first deer are going to show up soon, you guys better get up here, or you'll miss the whole thing." Two weeks later, we knew, as usual, he was right. Dave and Dan met and set up monitoring units on four trails all within about a quarter mile wide area. The trails had a few fresh tracks, indicating the migration had just started.

What have we learned so far?

During the fourteen days after Dan's call, an estimated 918 deer moved through this relatively narrow corridor (See the graph on page 18). The migration was patterned in an almost perfect bell shaped curve, peaking on the 7th of May and dropping off on May 14th. A few events occurred from day to day after the "pulse" went through and we are working to determine what makes these "non migratory" events. So far it looks like an occasional resident deer summering in the area and periodic visits from bears and coyotes. Eight other units were set up in other migration corridors and the results were similar. It was obvious that this technique could be used to measure the long term trends in blacktailed deer numbers.

The first Wednesday of every month, resource managers from various state and federal agencies working in the east Tehama County area meet for breakfast to exchange information about what each agency is doing and coordinate our activities. Dave and I enthusiastically told our deer trail stories. Biologists from the U. S. Forest Service offered their help by providing the use of a motion sensing video camera that they use for other wildlife studies. We began making plans to monitor the trails during the return fall migration. Later that summer, the video camera was installed on one of the trails. Thanks to their efforts monitoring and maintaining the equipment, we were treated to weekly viewing of the more "secret" patterns of blacktailed deer migration. During the 1997 fall migration 301 deer were video taped migrating on a single trail. Dan's prediction withstood the test. Twenty-eight of the deer were bucks and most of them moved at night. This fit with the fall 1996 data from Shasta County where 186 deer were photographed. Twenty were bucks and only four moved during daylight.

Not only are we learning when and how they migrate, we are able to record the proportion of bucks, does and fawns in the population. Normally, this information is gathered in the winter after the hunting season. The trail monitoring technique now gives us a way to look at herd sex and age composition before the hunting season at times of the year when other methods don't work well. We can now compare this pre-hunting season data with post-season composition surveys. The results will provide valuable information on buck harvest rates.

Trail counters appear to offer an excellent method for measuring changes in annual populations of deer as they migrate past fixed points. We are preparing to set up the counters in exactly the same positions in March, 1998, to obtain a count to compare with 1997 data. Personnel from the Lassen National Forest have offered to provide additional cameras for use on other trails. Although many things can be learned using this equipment, our primary objective will be to monitor changes in numbers over time so we can develop data on long range population changes. These techniques may not tell us how many deer are in the herd, but they will give information on population "trend" designed to monitor changes in numbers. As deer herds increase and decline in natural cycles, biologists can make informed, data driven decisions depending on the direction of the trend. With the rapid advances in technology, it is indeed an exciting time to be a wildlife biologist. I predict our "sneaky little" deer are going to give up some more of their "secrets." ▲▲▲