

San Joaquin Kit Fox (*Vulpes macrotis mutica*)



B. "Moose" Peterson/WRP

September 2002

Kit Fox Characteristics



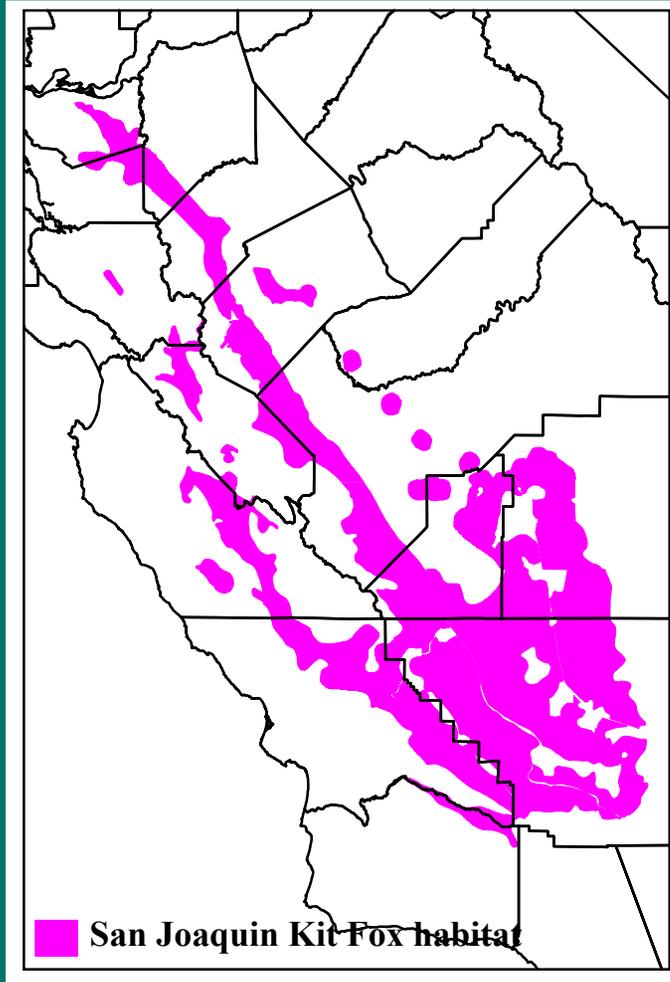
B. "Moose" Peterson/WRP

- Small (20 in.) body.
- Slender (5 lbs.).
- Long (3.25 in.) ears.
- Long (12 in.), bushy, black-tipped tail.
- Long, slender legs.
- Small feet, with hair between the pads.
- Coat is tan (sum) or pale gray (win).

Kit Fox Behavior

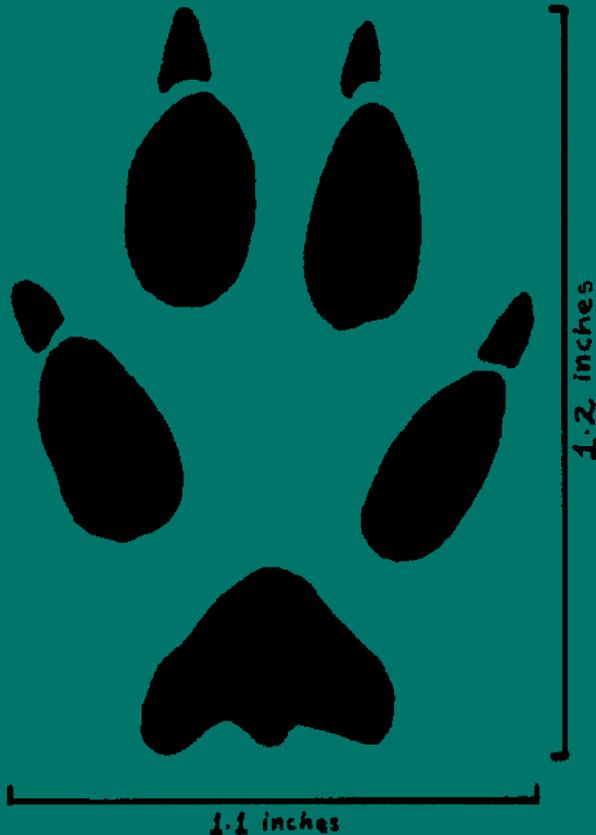
- Mostly nocturnal, but often active in daytime in cool weather.
- Extensive use of dens. This protects them from predators and the elements.
- A single kit fox may use over 30 dens per year.
- Not strongly territorial. Studies have found many overlapping territories.

Kit Fox Range (Counties)



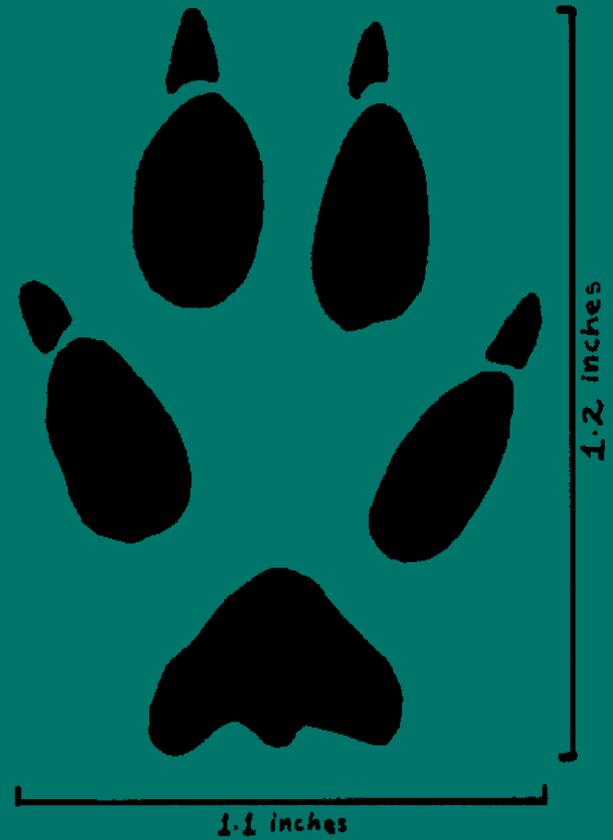
- Northern: Alameda, Contra Costa, San Joaquin, Santa Clara.
- Central: Fresno, Kings, Madera, Merced, San Benito, Stanislaus, Tulare.
- Southern: Monterey, Kern, San Luis Obispo, Santa Barbara.

Kit Fox Tracks



- The pads of the Kit Fox are small in relation to other canids.
- Between the pads there is much hair, making the tracks very distinctive from other canid species.

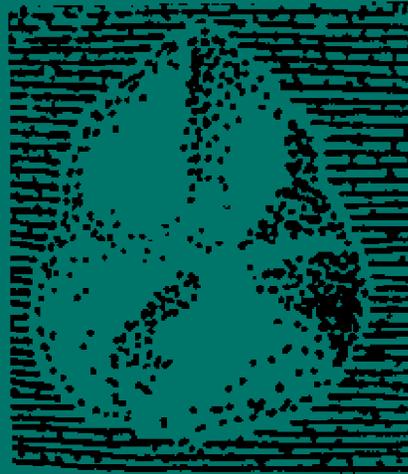
San Joaquin Kit Fox Tracks



Kit Fox Tracks



DUST



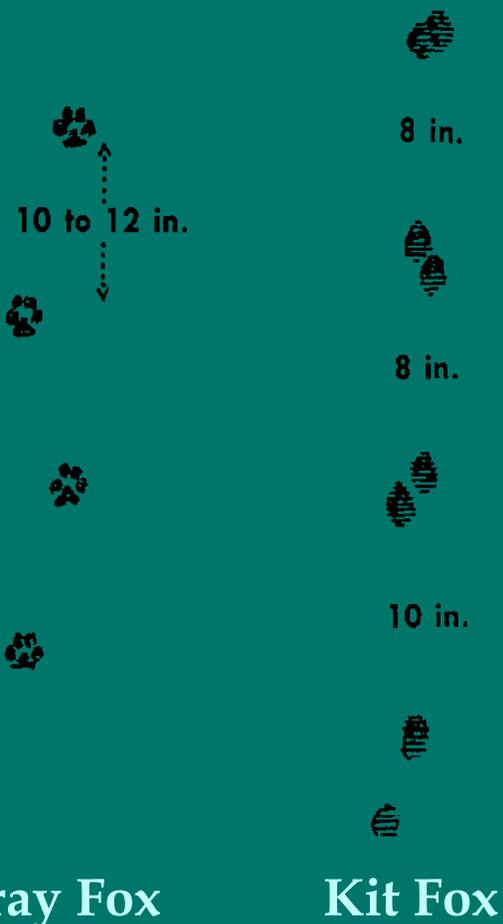
SAND



SNOW

- Tracks may vary in size and clarity on different surfaces.
- Look at the footprint as a whole and the track pattern (gait) in general.

Track Pattern Comparisons



- Kit Fox:
- Shorter gait (8 - 10 in.)
- Narrower track pattern
- Gray Fox:
- Longer gait (10 - 12 in.)
- Wider track pattern

Kit Fox Den Characteristics



Ron Kimball Studios

- Multi-chambered.
- Several entrances.
- Large, keyhole shaped main entrance.
- Pupping dens are larger
- Active pupping dens may be littered with prey remains, scat, mat-ted vegetation, and fresh pawprints.
- Nonnatal dens not as conspicuous.

San Joaquin Kit Fox Den Characteristics



- Kit foxes prefer to dig their dens in friable soils. In hard clay soils they create dens by enlarging holes started by ground squirrels or badgers.
- The majority of their dens lie in relatively flat terrain or gently sloping hills, in washes, drainages, and roadside berms.
- The foxes often reuse old dens or use man-made structures, such as culverts and pipes, that are small enough in diameter to exclude coyotes.

Rosalie Faubion (USBR)

San Joaquin Kit Fox Dens



Photos: Rosalie Faubion (USBR)

San Joaquin Kit Fox Signs of Den Occupation



Rosalie Faubion (USBR)

Burrows Occupied by Burrowing Owls



Photo: Arnold Small



Photo: Rosalie Faubion

Burrowing owls sometimes use abandoned ground squirrel burrows for roosting and nesting cover. Active burrowing owl burrows (nests) can be identified by the presence of whitewash (excrement) and prey pellets at their entrance.

How do we know it is an active Ground Squirrel burrow?

- Often active ground squirrel burrows have large deposits of dirt accumulated around their entrance. However, not all burrows show such deposits at the entrance and have to be monitored more closely.

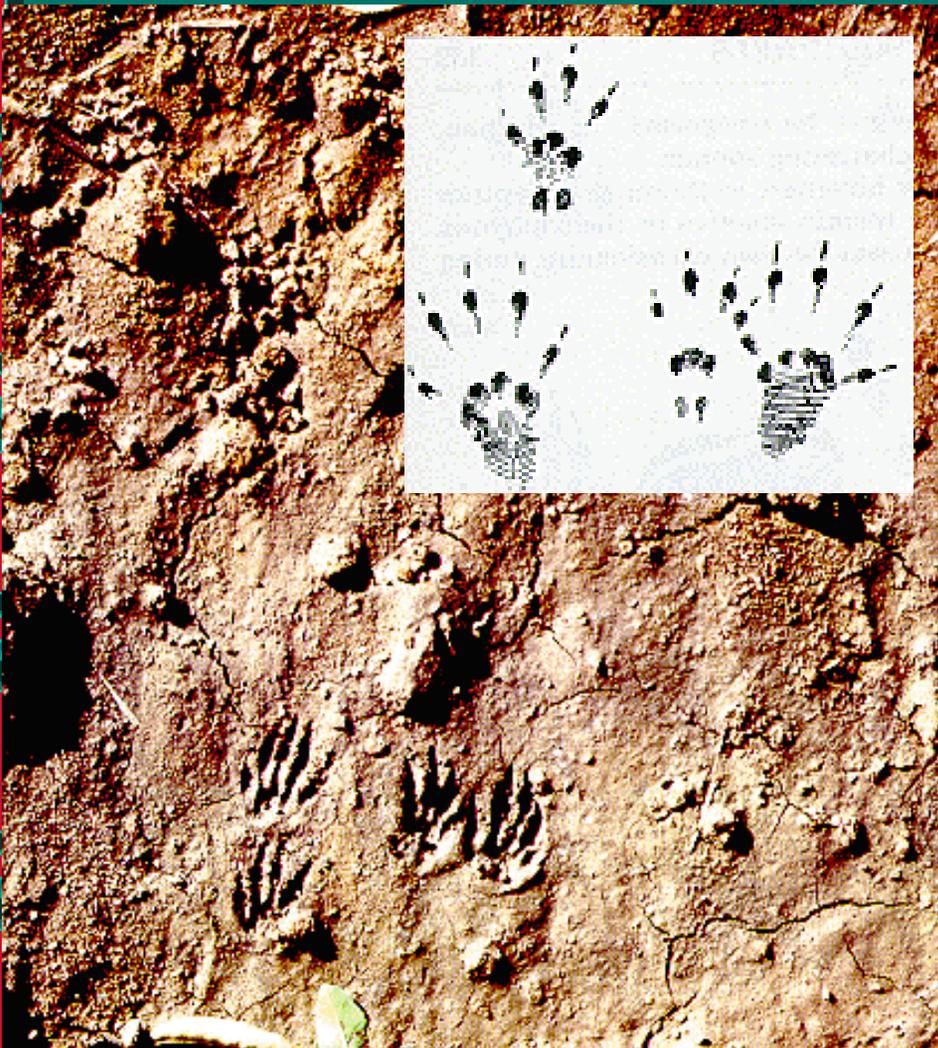


- Look also for debris such as nutshells, fruit rinds, and scat dispersed near the entrance.

- Inactive burrows typically have cobwebs at the entrance.

Photos: Paul Gorenzel, UC Davis

How do we know it is an active Ground Squirrel burrow? TRACKS



Look for tracks (see pictures).

If the substrate is hard, try softening up the area around the entrance by wetting it down, thus forming a “mud plate”.

Track plates made by smoking aluminum or tin sheets can also be used.

Chalk can also be spread around the entrance, this creates a “more durable” soft surface where tracks can be observed.

San Joaquin Kit Fox Reproduction

- Capable of breeding at age one, but may not breed their first year.
- Reproductive females clean and enlarge natal or pupping dens in September and October.
- Copulation occurs in late December or early January.
- Litters of three to five are born in late February or early March.
- During nursing the female is rarely seen hunting, it is thought that the male does most of the hunting.
- Pups emerge above ground at one month of age, and may already be weaned.

San Joaquin Kit Fox

Food and Water



- Kit foxes prey on kangaroo rats, mice, black-tailed hares, desert cottontails, ground squirrels, insects, carrion, reptiles, and ground-nesting birds.
- Kit foxes appear to survive without drinking water, an adaptation to desert conditions, obtaining all their water in the form of preformed and metabolic water gleaned from prey.

Natural Mortality Factors

- Predation by Coyotes
- Starvation
- Flood
- Disease
- Suffocation during den cave-ins

Rodent Control and Protection of Burrowing Non-target Species

- When possible, try baiting first.
- If baiting doesn't work, then try burrow fumigation.
- Before fumigating burrows, make sure you are targeting active Ground Squirrel burrows.

San Joaquin Kit Fox

Burrow Fumigant Use Limitations

(per Interim Measures County Bulletins)

- Use Limitation Code 5: “Use shall be supervised by a person (wildlife biologist, county agricultural commissioner, university extension advisor, state or federal official or others) who is trained to distinguish dens and burrows of target species from those of non-target species. Use shall occur only in the active burrows of target species. The person responsible for supervision shall be aware of the conditions at the site of application and be available to direct and control the manner in which applications are made (per Section 6406 of Title 3, California Code of Regulations). Contact your county agricultural commissioner for information on training.”