The Southwest Arizona

Track and Scat Glovebox Guide

A Field Guide to Identify Signs of Wild and Domestic Animal Intrusion

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Introduction

While it is not always possible to see the wildlife that enter agricultural fields, it is possible to identify these animals through the signs that they leave behind. The Track and Scat Glovebox Guide is a small, compact user guide that contains information about 31 wild and domestic animal species that have been recognized as possible trespassers in fresh produce fields in Southwest Arizona. A photo of each animal is provided, along with a representative image of the animal's tracks and scat. Track and scat descriptions are also provided to assist with field identification. Each photo includes a one inch horizontal bar to provide a reference for size of the tracks and scat for each entry.

Special features of the *Track and Scat Glovebox Guide* include:

Comprehensive track and scat identification techniques;
A one inch ruler on the last page to measure tracks or scat found in the field;
Waterproof pages ideal for use in all types of weather; and
Spiral binding for ease of use

The *Track and Scat Glovebox Guide* was developed as the result of an animal intrusion study conducted by University of Arizona scientists. In the study, animal scats were collected and analyzed to determine pathogen load in each animal's feces. Scat samples were also analyzed for the potential risk associated with pathogen transfer from feces to crops. Results from this study have been compiled to create a risk index. The risk level associated with each animal's scat is included on the animal information pages within this guidebook.

Track and Scat Basics

Tracks

In general, animal track identification can be conducted by looking for the number of digits (toes) on the front versus the hind tracks; presence of claw marks; the width and length of the track; and the pattern of the track path (symmetrical, asymmetrical, single file, or grouped). Clearly defined tracks with identifiable digits are the easiest to

DIGITS	CLAW MARKS	POSSIBLE ANIMAL
2-toed	No	Deer
3-toed	Varies	Birds
4-toed	No	Rabbits, felids (mountain lions, bobcats, domestic cats)
4-toed	Yes	Canids (foxes, coyotes, domestic dogs)
5-toed	Yes	Skunks, beavers
5 hind, 4 front	Varies	Mice, squirrels

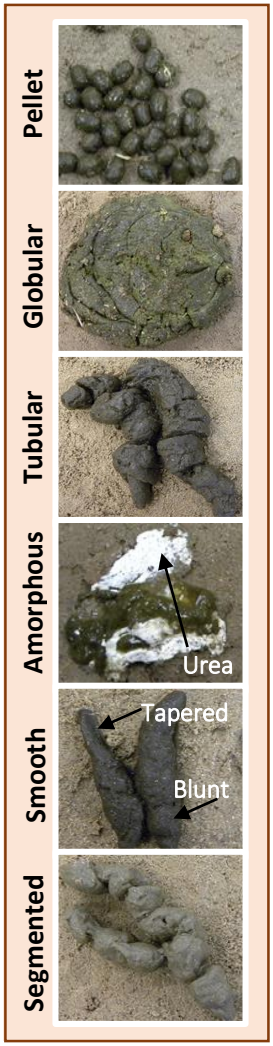
identify. The table pictured above shows digits, claw marks and animals that may leave these characteristic track prints behind.

Scat

Identifying scat can be quite challenging due to significant variations, even within a species. The dimensions of scat can vary in length, width, and form; and can be round like a pellet, globular, or tubular in shape. The ends of scat can be blunt or tapered on both ends, or can be asymmetrical or amorphous. Scat can be smooth from one end to the other, or segmented like a natural fibered rope or constricted cords. In addition, scat can be found as a single dropping or can be composed of multiple droppings. Sometimes hair or undigested food particles such as berries, seeds, and insect wings might be contained within scat, further altering the consistency. Birds, reptiles and amphibians usually have a white urea-containing liquid in their droppings. These prominent and most recognizable features are quite useful in identifying animals from their scat.

However, while some of these qualities are standard in a given species, simple changes in an animal's diet can dramatically change the color, shape and contents of fecal material, making it difficult to determine the identity of the animal. As a result of these factors, clearly visible scat features such as color and consistency are rarely used as identifiers.

SCAT CHARACTERISTICS



Domestic and Wild Animal Intrusion

There are two types of animal intruders that may be encountered in an agricultural field—domestic animals and wild animals. Domestic animals may escape from a nearby home or farm and find their way to your field. Much like the African Sulcata Tortoise or Peacock, escaped domestic animals may not be native to Southwest Arizona or even to the United States. Wild animals, on the other hand, may enter your field looking for food or shelter. Regardless of the type of animal, they both can leave behind unpleasant items that may compromise the health and sanitation of your field and crops. According to recent studies conducted by University of Arizona food safety scientists, feces from domestic animals have been found to have a higher bacterial presence than those of wild animals. Therefore, domestic animal intrusion may present a greater overall risk to agricultural products. This guidebook includes track and scat information for 12 domestic animals and 19 wild animals. You can easily determine which animals are wild or domestic by using the color coded key in the index of this guidebook.

Bacterial Transfer from Animal to Crop

Imagine walking into an agricultural field and seeing a small pile of feces between two rows of growing crops—it's not quite touching anything, but it's still there. Why should you have to remove

it *and* destroy any crop within a 5 foot radius? Well, many studies conducted across the US have found that although feces may not directly touch a crop, that crop is still at risk for bacterial contamination. When an animal sheds feces, it is also shedding bacteria into the environment, some of which may be pathogenic. The animal may have touched or run through surrounding crops after defecating, hence potentially contaminating anything in the immediate area. Another way pathogens may spread is via irrigation or rain. Fecal splash may occur, which simply means that any rain or water that comes into contact with the surface of the scat may bounce in any direction, spreading fecal particles and associated bacteria onto surrounding produce surfaces. These are just a few of the ways that bacterial transfer may occur, but it should provide some idea of why preventing animal intrusion in agricultural fields is a major concern for growers and industry. There are many bacteria that affect food safety, including the following four pathogens that are found in the feces of both wild and domestic animals in Southwest Arizona.

Campylobacter jejuni

Campylobacter jejuni is a very sensitive bacterium with poor survival when exposed to environmental stressors. This bacterium is typically found in the gastrointestinal tracts of healthy animals (cattle, chickens and other birds), non-chlorinated waters, and raw milk. More often than not, animals infected with *Campylobacter* show no signs of illness. For humans, however, *Campylobacter* is always pathogenic and exposure to small numbers of these bacteria can cause mild to extreme illness. More than 2 million illnesses occur each year from *Campylobacter*; symptoms range from muscle pain and abdominal cramps, to diarrhea and nausea.

Escherichia coli

Widely known as *E. coli*, this bacterium is typically harmless and found in the intestines of all warm-blooded animals, reptiles, and many bird species. *E. coli* is a common contaminant of fresh vegetables, beef products, and water. The most dangerous and pathogenic strain of *E.coli* is O157:H7, which produces Shiga toxins (Stx), cellular proteins that cause severe dysentery in humans. The two Shiga toxins presented in this guidebook are Stx1 and Stx2. Of all the animals tested in our study, Stx1 was found to be present in animal feces in greater numbers; however, Stx2 is more infectious, but is found in lower numbers. When *E. coli* expressing Shiga toxin genes are ingested, symptoms can range from relatively mild (diarrhea, abdominal cramps, vomiting, and low fever) to severe (kidney failure, intestinal bleeding, and sometimes death).

Listeria monocytogenes

Listeria monocytogenes is an invasive pathogen that has the ability to move from the intestines into other parts of the body. Although it is most widely known as a contaminant in food processing facilities, it is also found in soil, water, meat, and raw dairy. One reason this bacterium tends to be more dangerous than others is that it is more hardy and can survive and multiply in high stress environments (including refrigerators and soils). Transmission to humans may occur through contaminated fruits and vegetables. Resulting symptoms of illness include gastroenteritis, fever, muscle aches, and diarrhea.

Salmonella enteritidis
Salmonella is one of the most commonly reported sources of gastrointestinal illness in humans. It primarily infects chicken flocks and is oftentimes found in foods including eggs, chicken, milk, and beef. When *Salmonella* exists in water (including irrigation water), it can contaminate anything that water contacts, including irrigated vegetables, food processing facilities, and food packing materials. Symptoms of illness include nausea, vomiting, fever, headache, and in severe cases, death.

Understanding Risk, Pathogen Load, and Infectious Dose

What is a pathogen load?
Pathogen load is a number that indicates how many pathogens are present within a single source.

What is infectious dose?
Infectious dose is the number of bacteria required to elicit signs of infection. Some pathogens only require that a few bacteria be ingested before symptoms of illness begin to show, while other pathogens may require the ingestion of thousands of bacterial cells to cause symptoms. For example, ingesting one pathogenic *E.coli* cell may not cause an illness to fully emerge. However, ingesting 1000 cells of this same pathogen at one time may cause illness almost immediately.

What is a risk assessment?

There are risks associated with any action or activity. Every time you drive a car, you risk getting into an accident. Even just sitting in a chair in an office has associated risks—the chair can break, the roof can cave in, the possibilities (though maybe unlikely) are endless. A risk assessment is a process through which potential hazards are identified and analyzed for risks that they pose. Once the risks and their potential severity have been identified, the assessor may identify ways to eliminate or control any or all associated risks.

Potential Food Safety Risks Associated with Animals in *Track and Scat Glovebox Guide*

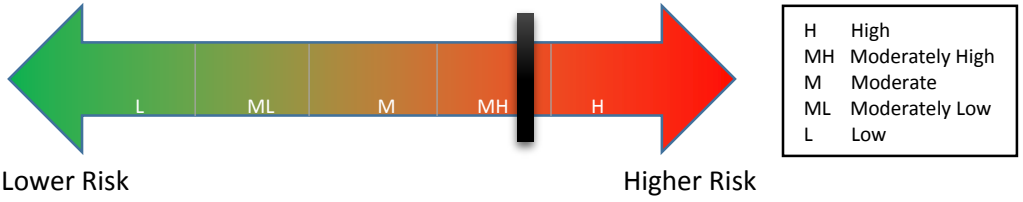
For the purposes of the *Track and Scat Glovebox Guide*, the potential risk associated with pathogen transfer from feces to crop was analyzed. Included in the analysis were four bacteria and three criteria related to pathogen loading, infectious dose, and percentage of samples that tested positive for any of the four pathogens. Each animal assessed in this guidebook was assigned one of five risk rankings which can be seen in the table below, along with the four pathogens considered and the criteria used to determine risk.

Pathogens Considered
***E.coli* - Stx1 gene**
***E.coli* - Stx2 gene**
Salmonella
Listeria

Risk Factors
Infectious dose
Pathogen load
Percentage of positive animal fecal samples

Five Risk Levels	
L	Low Risk
ML	Moderately Low Risk
M	Moderate Risk
MH	Moderately High Risk
H	High Risk

The potential risk of pathogen transfer from feces to crops is listed on each animal's fact page. This information has been organized onto a risk arrow for ease of use. You may refer back to this page for a definition of abbreviations on the risk arrow.



In addition, a risk table showing each animal in order of risk can be referenced below. This table can be used to determine one animal's risk compared to other animals.

Risk Value	Animal	Risk Category
33	Cattle	HIGH
26	Desert Bighorn Sheep, Wild Mouse*	MODERATELY HIGH
25	African Sulcata Tortoise	MODERATELY HIGH
24	Goat , Sheep (Domestic), Wild Rabbit	MODERATE
23	Pig	MODERATE
22	Burro, Chicken/Rooster, Coyote, Goose, Javelina	MODERATE
21	Red-Winged Blackbird	MODERATE
20	Dog (Domestic), Horse	MODERATELY LOW
18	Deer, Duck	MODERATELY LOW
13	Peacock	LOW

***** Rodent scat ranges in risk from low to moderately high. Fresh scat presents a lower risk, while older scat presents a higher risk.

Animal Intrusion Best Management Practices

Signs of Animal Intrusion

- Follow these steps if feces are found in a field that is actively growing crops for human consumption:

1. Use the *Track and Scat Glovebox Guide* to determine which animal may have left the excreta and to determine the potential risk of crop contamination.
2. Remove feces from the area.
3. Mark a 5 foot radius around the area where the feces were found. Do not harvest any crops for consumption within this area (AZ LGMA)[1].
4. Do not irrigate the area until feces have been removed. It is also advisable to wait 24 hours to ensure any bacteria left from feces dies off before irrigation. The occurrence of rain on feces in a field can cause bacteria to splash onto produce. In this case, it may take days to weeks for bacterial die-off to occur. It is advisable to follow an LGMA recommended plan to treat potentially contaminated crops.

- If animal tracks are located within a growing field, examine the area closely for the presence of feces. If feces are found, follow the steps listed above.
- All fecal material should be handled as highly pathogenic. Never touch animal feces with your bare hands; always wear gloves and/or use a tool to remove feces from a production area. Equipment used to remove feces or to destroy contaminated crops must be cleaned and sanitized upon exiting the field (AZ LGMA). Sanitize equipment with a chlorine solution at 50ppm (about 1 tsp of bleach per gallon of water) and a 10 minute contact-time.

1. AZ LGMA – Arizona Leafy Green Marketing Agreement: Established in 2007, this food safety committee works to uphold the integrity of leafy green vegetables grown and shipped from the state of Arizona. The AZ LGMA webpage is located at http://www.arizonaleafygreens.org/

- When compared with other animals, cattle feces have been identified as particularly problematic because they can harbor greater amounts of harmful bacteria. Cattle feces should be treated with special caution.
- All harvest employees working within agricultural fields must be trained to recognize and report evidence of animal intrusion. Signs of intrusion include: animal sightings, feces, urine, track prints, downed fences, and damaged or eaten plants (AZ LGMA).

Field Assessment and Investigation

- To reduce the risk of harvesting fecally contaminated crops, conduct pre-harvest assessments beginning one week prior to harvest and on each day of harvest (AZ LGMA).
- If animal intrusion is identified as a regular occurrence, investigate the potential cause for intrusion and develop preventative measures as necessary. Consider consulting an animal or wildlife expert for difficult cases.
- If feces or other signs of animal intrusion are discovered during harvest:
    1. Stop harvest operations.
    2. Discard contaminated products.
    3. Clean and sanitize all equipment that may have come into contact with contaminated product (including tools, knives, hands/gloves, bins/crates, harvest rigs, etc).

4. Resume harvest operations only after the area has been determined to be contaminant free (AZ LGMA).

Prevention and Documentation

- DO NOT harvest areas of fields where unusually heavy activity by animals has occurred. If animal intrusion is frequent, take particular effort to reduce animal access to fields. Fencing and other barriers (berms, diversion ditches, vegetated strips, noisemakers) may be used to reduce intrusion events (AZ LGMA).
- Animals tend to gravitate toward bodies of water. Try to avoid unnecessary pools of water in or near growing fields.
- AZ LGMA advises that grazing lands and confined domestic animals be 30 feet from the edge of crops. Improper adjacent land use closer than at least 30 feet may present a food safety risk and should be documented.
- Archive animal intrusion documents (assessments, photos, maps, sketches) for a period of two years following an intrusion event (AZ LGMA).

How to Use This Guidebook

Whether you spot an animal track or a small intestinal gift in your field, you will be able to identify which desert southwest animal left its mark by using one of the diagrams on pages 20 and 21. **Search by Track Type or Scat Shape** to determine the risk associated with your field invader's feces, and to determine the level of potential risk that may affect the safety of your fresh produce. If you would rather **search by Animal Name**, the index on page 52 lists each animal in alphabetical order and differentiates domestic versus wild animals.

To assist with measuring tracks or scat during field observations, use the ruler provided on the back cover. Remember to be careful when taking measurements and avoid touching scat unless you are wearing gloves and/or have a tool to assist you.

Important Notes Before You Begin

The appearance of tracks and scat may vary depending on environmental settings, soil conditions, animal nutrition and actual size of the animal. All track and scat representations outlined in this guidebook are intended to be used as broad references to assist with the identification of a trespassing animal.

Feces identification can be dangerous. Be safe and avoid handling droppings without proper protection. Also, be cautious when in close proximity to scat; you do not want to inhale any bacteria as some diseases may be spread through airborne particles. Observe feces carefully, without touching it unless it is to remove the feces from the field. When you do touch it, use a tool and/or properly gloved hands.

REMEMBER, ALL FECES SHOULD BE TREATED AS HIGH RISK.
EXERCISE CAUTION WHEN HANDLING FECAL MATERIAL.

Scat IDENTIFICATION

Scat Shape

Pellet

Larger than or equal to
1 inch long
0.5 inch wide

- Beaver, 29
- Burro, 23
- Pig, 27
- African Sulcata Tortoise, 33

Smaller than
1 inch long
0.5 inch wide

- Bighorn Sheep, 22
- Cactus Mouse, 30
- Desert Cottontail Rabbit, 34
- Desert Pocket Mouse, 31
- Elk, 24
- Goat, 25
- Round Tailed Ground Squirrel, 32
- Jackrabbit, 35
- Mule Deer, 26
- Sheep (Domestic), 28

Globular

- Cattle, 36
- Horse, 37
- Mountain Lion, 38
- Raccoon, 39

Tubular

Larger than or equal to
2 inches long
0.5 inch wide

- Bobcat, 41
- Coyote, 43
- Dog (Domestic), 44
- Goose, 45
- Skunk, 47

Smaller than
2 inches long
0.5 inch wide

- Cat (Domestic), 42
- Gray Fox, 46
- Javelina, 40

Amorphous

- Chicken/Rooster, 48
- Duck, 49
- Peacock, 50
- Red-Winged Blackbird, 51

Track IDENTIFICATION

Track Type

Hooved

1 Hoof

- Burro, 23
- Horse, 37

2 Hooves

- Bighorn Sheep, 22
- Cattle, 36
- Elk, 24
- Goat, 25
- Javelina, 40
- Mule Deer, 26
- Sheep (Domestic), 28

Toed/Clawed

3 Toes

- Duck, 49
- Chicken/Rooster, 48
- Goose, 45
- Peacock, 50
- Red-Winged blackbird, 51

4 Toes

- Bobcat, 41
- Cat (Domestic), 42
- Coyote, 43
- Dog (Domestic), 44
- Gray Fox, 46
- Mountain Lion, 38

5 Toes

- Skunk, 47
- Raccoon, 39
- Beaver, 29

Other
(5 toes on hind foot, 4 on front foot)

- Round Tailed Ground Squirrel, 32
- Cactus Mouse, 30
- Desert Pocket Mouse, 31

Undefined
(toe prints do not register clearly in print)

- Desert Cottontail Rabbit, 34
- Jackrabbit, 35
- African Sulcata Tortoise, 33

Bighorn Sheep

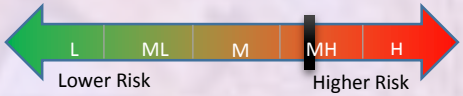
Movement Track Pattern

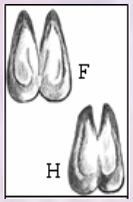
Track: Hooves are cloven. Toes are straight along the sides with rounded tips. More linear than deer or javelina. Front: 3 x 2 inches, hind: 3 x 2 inches.

Scat: When in contact with the ground, pellets dry and separate. Pellets are oval in shape with a slight point at one end. Size (pellets): 0.5 inches.

Fact: Plant species consumed vary with habitat, quality, and locality. Usually seen in mountains and hills immediately surrounding agricultural areas.

Potential Risk:

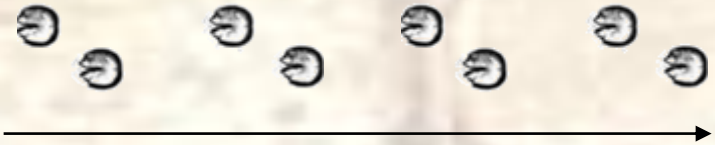




Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Burro



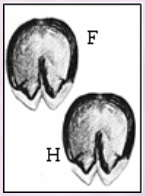
Movement Track Pattern

Track: Round/oval hoof with a V mark in the middle at one end. Hoof is longer than wide. Front: 4 x 3.5 inches, hind: 4 x 3.5 inches.

Scat: Multiple half-dollar pellets. Fresh scat is green in color and moist. Older scat is light green and tends to crumble. Size (pellets): 2 x 1.5 inches.

Fact: Burros have a high tolerance for hot, dry environments. They can tolerate a water loss up to 30% their body weight, and replenish it in only 5 minutes of drinking.

Potential Risk:

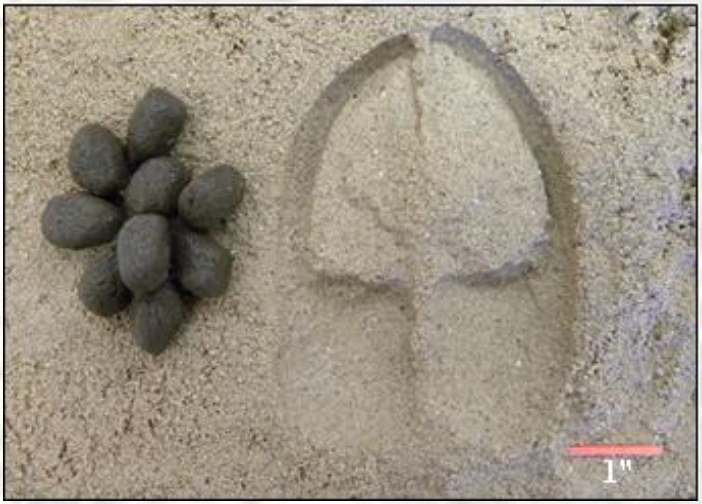


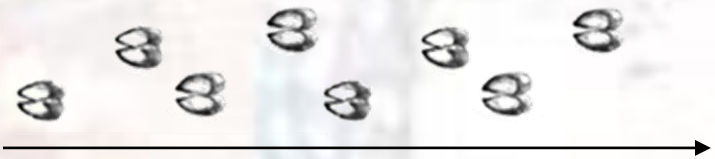
Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Pellet | Hoof

Elk





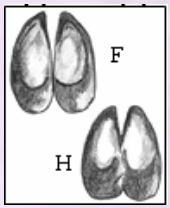
Movement Track Pattern

Track: Hooves are cloven. Toes are straight along the sides with rounded tips. More linear than deer or javelina. Front: 3 x 2 inches, hind: 3 x 2 inches.

Scat: When in contact with the ground, pellets dry and separate. Pellets are oval in shape with a slight point at one end. Size (pellets): 0.5 inches.

Fact: Plant species consumed vary with habitat, quality, and locality. Usually seen in mountains and hills immediately surrounding agricultural areas.

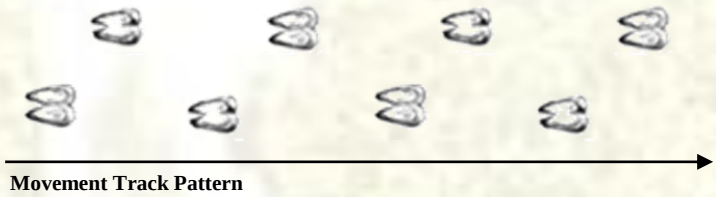
Potential Risk: RISK NOT DETERMINED



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Goat



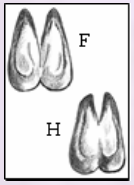
Movement Track Pattern

Track: Hooves are cloven, consisting of two toes. Dew claws are present on each foot, but do not register in print. Front: 3 x 2 inches, hind: 3 x 2 inches.

Scat: Deposited in oval shaped pellets, dark green in color. As scat ages, color varies from light to dark brown. Size (pellet): 0.5 inches.

Fact: Goats draw most of the moisture they need from the food they eat. This causes the feces to develop into pellets within the digestive tract of the animal.

Potential Risk:



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Pellet | Hoof

Mule Deer

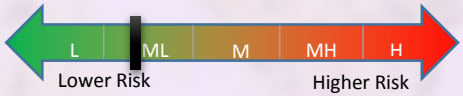
Movement Track Pattern

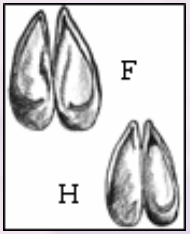
Track: Heart shaped with convex wall. Tips come to a narrow rounded point. Front: 3 x 2.5 inches, hind: 3 x 2.5 inches.

Scat: Commonly encountered when dry. Pellets are oval in shape. Size (pellets): 0.5 inches.

Fact: Feeding is typically done at dawn and dusk, although human activity may cause increased feeding at night.

Potential Risk:

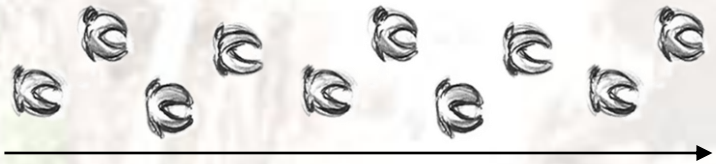




Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Pig



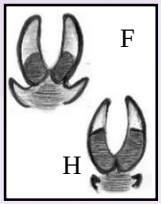
Movement Track Pattern

Track: Each foot has two hooves and dewclaws at the rear. Hooves form a deep U shape. Dew claws may or may not be visible in track. Front: 3 x 2 inches, hind: 2 x 1.5 inches.

Scat: Large pellets, sometimes massed together. Undigested plant fibers, insect legs, seeds, and small bones may be apparent in scat. Size (pellets): 2 x 6 inches.

Fact: Pigs walk in their own tracks. Hind hooves land directly on top of tracks left by front hooves.

Potential Risk:

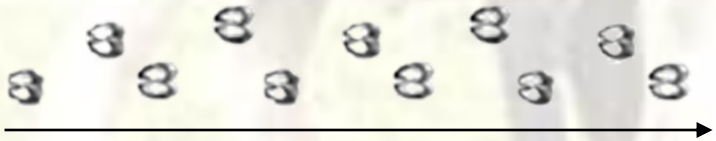


Front (F) & Hind (H) Feet

Photo Courtesy of Dametreea Carr – Maricopa Agricultural Center

Pellet | Hoof

Sheep (Domestic)



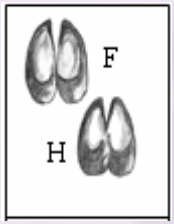
Movement Track Pattern

Track: Hooves are cloven, consisting of two toes. Toes are blunt with round tips, more so than that of a deer print. Front: 3 x 2 inches, hind: 3 x 2 inches.

Scat: Deposited in oval shaped pellets. Fresh scat is green in color and becomes darker as it ages. Size (pellet): 0.5 inches.

Fact: Daily fecal waste can weigh up to two pounds.

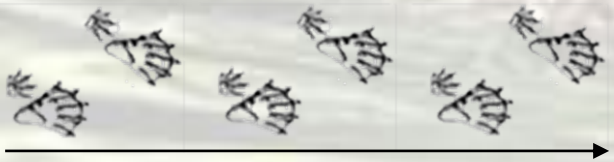
Potential Risk:



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Beaver



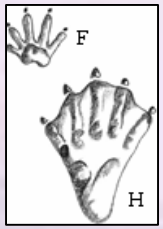
Movement Track Pattern

Track: Five toes on front and hind feet. Hind feet are webbed. Prints may be disturbed by dragging tail. Front: 3 x 2.5 inches, hind: 5 x 5.5 inches.

Scat: Rigid and oval shaped. Contains wood chips. Rare to find on land as most scat is deposited in the water. Size (pellets): 1 x 0.5 inches.

Fact: Beavers can be found in the Colorado and Gila Rivers.

Potential Risk: RISK NOT DETERMINED



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Pellet | Toed

Cactus Mouse

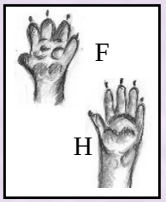
Movement Track Pattern

Track: Hind feet have 5 toes and front feet have 4 toes. The smaller fifth toe on the hind foot may or may not show in track print. Front: 0.5 x 0.5 inches, hind: 0.75 x 0.5 inches.

Scat: Small, seed-like pellets with tapered ends. Dark in color, usually brown or black. Size (pellets): 1/8 inch long.

Fact: Typically live in deserts on rocky soil with low vegetation. May become dormant during the hottest parts of the summer.

*__Potential Risk:__



Front (F) & Hind (H) Feet

Photo Courtesy of Paula Rivadeneira – Yuma Agricultural Center

* Rodent scat ranges in risk from low to moderately high. Fresh scat presents a lower risk, while older scat presents a higher risk.

Desert Pocket Mouse

Movement Track Pattern

Track: Hind feet have 5 toes and front feet have 4 toes. The smaller fifth toe on the hind foot may or may not show in track print. Front: 0.75 x 0.5 inches, hind: 1 x 0.5 inches.

Scat: Small pellets with tapered ends. About the size of a grain of rice. Dark in color, usually brown or black. Size (pellets): up to 0.25 inches long.

Fact: Sometimes climb small trees in search of food. Remain in burrows during the winter, eating stored seeds.

***Potential Risk:**

Front (F) & Hind (H) Feet

Photo Courtesy of Paula Rivadeneira – Yuma Agricultural Center

* Rodent scat ranges in risk from low to moderately high. Fresh scat presents a lower risk, while older scat presents a higher risk.

Pellet | Toed

Round-Tailed Ground Squirrel

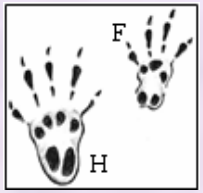
Movement Track Pattern

Track: Five slim toes on front and hind feet. Only four toes register on front print. Front: 1 x 1 inches, hind: 1.5 x 1 inches.

Scat: Pellets are small spheres with rounded tips. Droppings are cylindrical or rounded, generally deposited at random but can accumulate at favored feeding sites. Color lightens with time. Size (pellets): 0.1 to 0.25 inches.

Fact: Round-Tailed Ground Squirrels are diurnal unlike many rodents that usually are nocturnal.

Potential Risk: RISK NOT DETERMINED



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

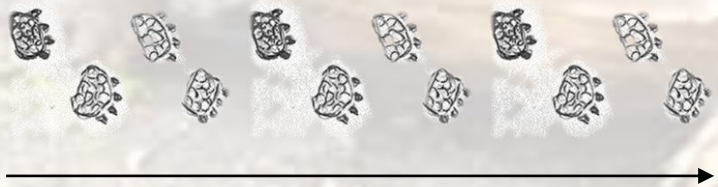
African Sulcata Tortoise

Track: Typically leaves a small dent in the ground with no defined patterns on track. 5 claw marks may or may not be visible. Size: 3 x 4.5 inches.

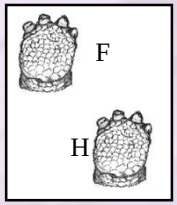
Scat: Oval shaped and tapered on one end. Obvious grasses or hay in feces. Moist and dark brown when deposited. Color lightens as feces dries. Size (pellets): 4 x 2.5 inches.

Fact: Sulcatas are non-native to the United States. They are herbivores with a diet consisting of grasses and plants with high fiber and low protein.

Potential Risk:



Movement Track Pattern



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Pellet | Undefined

Desert Cottontail Rabbit

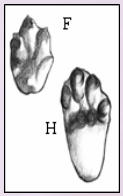
Movement Track Pattern

Track: Oval in shape and indistinct; completely haired. Five toes on each foot, but only four show. Size of hind foot is larger than front foot. Front: 1 x 1 inch, hind: 3 x 1 inches.

Scat: Dry scat is spherical in shape. Pellets are composed of plant material. Size (pellets): 0.25 inches.

Fact: Rabbits and hares do not ruminate, and their pellets consist of finely chewed fragments of grasses. Cottontails have been found in every Arizona county.

Potential Risk:



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Jackrabbit

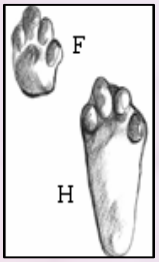
Movement Track Pattern

Track: Oval in shape and indistinct; completely haired. Five toes on each foot, but only four show. Hind foot larger than front. Front: 1.5 x 1 inch, hind: 4 x 1.5 inches.

Scat: Dry scat is black and spherical in shape. Pellets are composed of plant material. Size (pellets): 0.25 inches.

Fact: Ability to run at 40 miles an hour and leap more than 10 feet in distance. May run in a zig zag to evade predators.

Potential Risk:

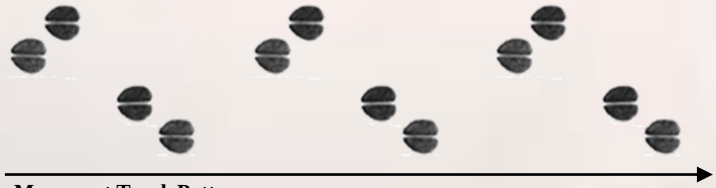


Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Pellet | Undefined

Cattle



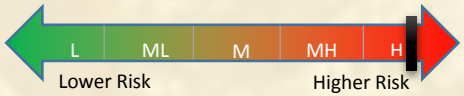
Movement Track Pattern

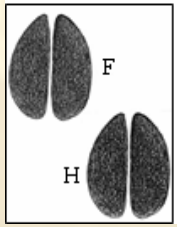
Track: Front hooves are wider than hind. Hooves are cloven, consisting of two digits. Blocky print with round tips. Front: 4.5 x 3.5 inches, hind: 4.5 x 3 inches.

Scat: Deposited in a manure pile. Fresh scat is green in color and becomes darker as it ages. Size (globular): 5 to 7 inches, diameter.

Fact: On a single day, cattle can produce around one hundred pounds of manure per animal.

Potential Risk:





Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Horse

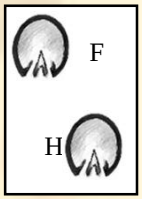
Movement Track Pattern

Track: Each foot has an uncloven, single digit hoof. Track pattern is U-shaped. Hoof sizes vary. Average size is Front: 5.5 x 5 inches, hind: 5.5 x 5 inches.

Scat: Deposited in uniform, hydrated balls. Fresh scat has a green tint and oftentimes includes noticeable stems. Size (globular): 5-7 inches, diameter.

Fact: A single horse can produce up to 50 pounds of feces in one day.

Potential Risk:



Front (F) & Hind (H) Feet

Photo Courtesy of Dametreea Carr – Maricopa Agricultural Center

Globular | Hoof

Mountain Lion

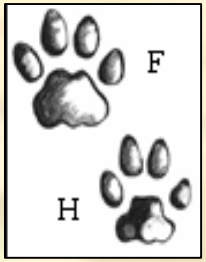
Movement Track Pattern

Track: Front and hind feet have four toes. The third toe is the leading toe. Front: 3.5 x 3.5 inches, hind: 3 x 3 inches.

Scat: Deposited on a scratch pile. Scat is segmented and often contains bones or hair. Size (globular): 4 x 1 inch.

Fact: Can live in a very diverse range of habitats: anywhere from sea level to 10,000 feet elevation and in desert or rainforest conditions.

Potential Risk: RISK NOT DETERMINED



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Raccoon

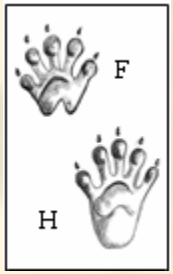
Movement Track Pattern

Track: Front and hind feet contain five toes with visible claws. Front: 2.5 x 2.5 inches, hind: 4 x 2.5 inches.

Scat: Typically grayish-black color with blunt ends, but highly variable. Size (globular): 3 x 1 inches.

Fact: Scat may carry a parasite fatal to humans. Do not smell scat. Wash hands thoroughly immediately following contact.

Potential Risk: RISK NOT DETERMINED

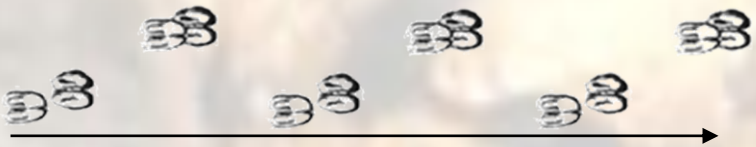


Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Globular | Toed

Javelina



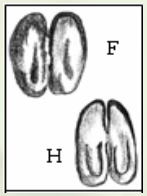
Movement Track Pattern

Track: Blunt round tips. Two dew claws on front foot. One dew claw on hind foot. Frequent rambling trails. Front: 2 x 1.5 inches, hind: 2 x 1.5 inches.

Scat: Can vary from dark brown to green in color. Dry flora and prickly pear seeds may be apparent in scat. Size (tubular): 1 x 1.5 inches.

Fact: Active throughout the day in cold conditions. On warm days, active in early morning and late evening.

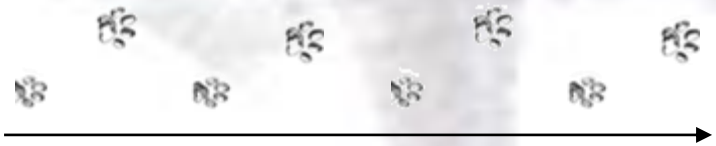
Potential Risk:



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Bobcat



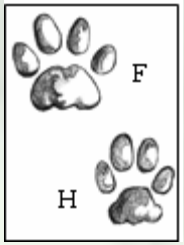
Movement Track Pattern

Track: Claw marks are absent. Four toes on front and hind feet. Third toe is referred to as the leading toe. Front: 2 x 2 inches, hind: 2 x 2 inches.

Scat: Constricted with blunt ends. Fresh scat will stay in a uniform cord. Dry scat will separate at constriction points. Size (tubular): 3 x 1 inches.

Fact: May chase prey animals into agricultural fields.

Potential Risk: RISK NOT DETERMINED



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Tubulular | Toed

Cat (Domestic)

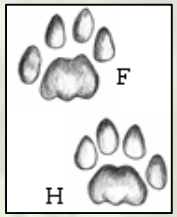
Movement Track Pattern

Track: Front and hind prints contain four toes. Claws are absent in track. Quarter-sized front and hind prints. Front: 1 x 1 inches, hind: 1 x 1 inches.

Scat: Longer than wide. Constricted with blunt ends. May form into segments when dry. Size (tubular): 1.5 x 0.5 inches.

Fact: Feral cat populations are known to enter agricultural fields.

Potential Risk: RISK NOT DETERMINED



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Coyote

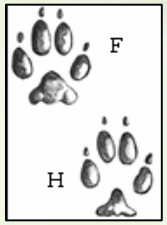
Movement Track Pattern

Track: Evident claw marks. Hind foot smaller than front, large outer toes on hind. Front: 2.5 x 2 inches; hind: 2 x 2 inches.

Scat: Consists of animal hair and bones. Color varies from black to dark brown with tapered tips. Size (tubular): 3 x 0.5 inches.

Fact: Marks territory with scat and urine.

Potential Risk:

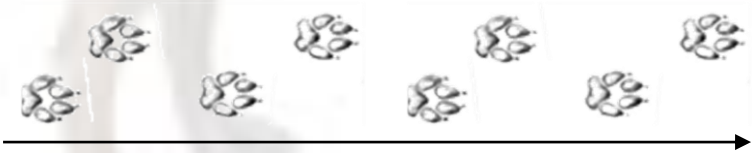


Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Tubulular | Toed

Dog (Domestic)



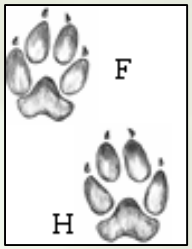
Movement Track Pattern

Track: Front and hind feet contain four toes. Claw marks can be seen in print. Front: 2.5 x 2.5 inches, hind: 2.5 x 2 inches.

Scat: Tubular cords with tapered ends. Length is greater than width. Size (tubular): 4 x 1 inches.

Fact: Male dogs can sense a female dog in heat up to 5 miles away and may pass through agricultural fields to directly follow the scent.

Potential Risk:



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

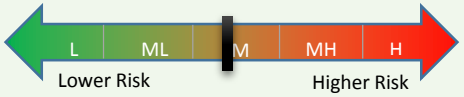
Goose

Track: Three webbed toes face forward. One unwebbed toe faces the rear. Rear-facing toe is rarely visible in track. Track: 3 x 3 inches.

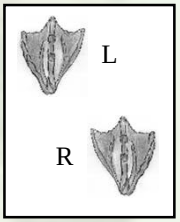
Scat: Green cords are deposited singly or in a small pile. Feces sometimes contains white pigments. Size (tubular): 2 - 3.5 inches long.

Fact: Geese build flat, wide nests on the ground near lakes and rivers.

Potential Risk:



Movement Track Pattern



Left (L) & Right (R) Feet

Photo Courtesy of Robert Laubenstein – U.S. Fish and Wildlife Service

Tubulular | Toed

Gray Fox

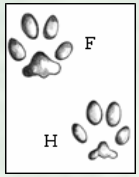
Movement Track Pattern

Track: Hind foot smaller than front. Four toes on both hind and front feet. Claws are sharp and can be present in the track. Front: 2 x 1.5 inches, hind: 1.5 x 1.5 inches.

Scat: Longer than wide. Segmented, tapered, and rope-like. Frequently twisted at one end, especially in rural areas where foxes eat more birds and mammals. Size (tubular): 2 x 0.5 inches.

Fact: Active during daylight. Most common fox seen throughout the state of Arizona.

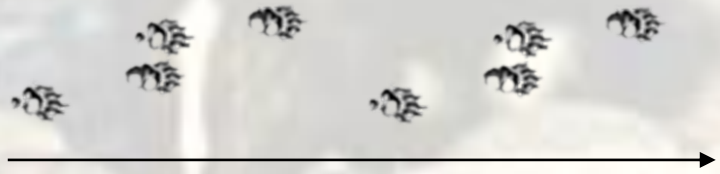
Potential Risk: RISK NOT DETERMINED



Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Skunk



Movement Track Pattern

Track: Five toes on hind and front feet. Long attached claws on front feet. Front: 3 x 2.5 inches, hind: 3 x 2.5 inches.

Scat: Cylindrical with blunt and tapered ends. Usually black in color and typically contains insect parts. Size (tubular): Up to 5 x 0.5 inches.

Fact: Skunks are active year-round and establish ground burrows in areas where their food supply is present.

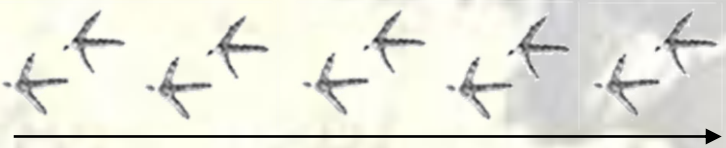
Potential Risk: RISK NOT DETERMINED

Front (F) & Hind (H) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Tubulular | Toed

Chicken/Rooster



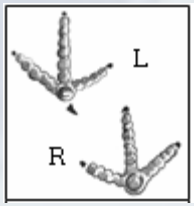
Movement Track Pattern

Track: Three slender front toes with attached claws. Rear toe slightly registers in print. Size: 1.5 x 1.5 inches.

Scat: Greenish– brown in color with white, urea deposits. Shapes can vary from small cords to semiliquid piles. Size (amorphous): 1 x 0.5 inches.

Fact: Chickens are social animals that live together in flocks. They will give a low warning call when a predator is approaching.

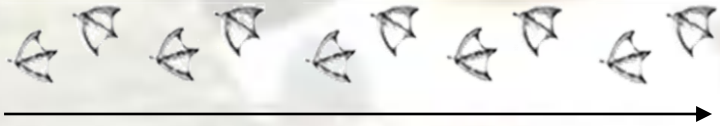
Potential Risk:



Left (L) & Right (R) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Duck



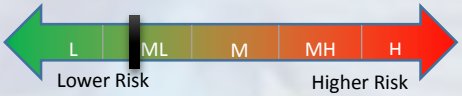
Movement Track Pattern

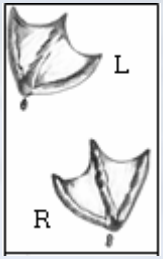
Track: Webbed feet contain four toes with apparent claws. Three toes face forward and one toe faces the rear. Track: 2 x 2 inches.

Scat: Small cords or watery, semi-liquid deposits. Color is an inconsistent greenish shade, often containing white urea deposits. Size (Amorphous): 1.5 to 2 inches in diameter.

Fact: Commonly seen in Arizona. Found near wetlands, rivers, and canals.

Potential Risk:





Left (L) & Right (R) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Amorphous | Toed

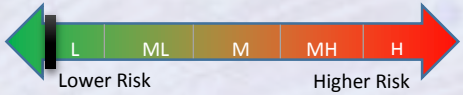
Peacock

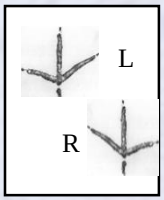
Track: Three toes face forward, one toe faces the rear. Rear toe may or may not be visible in track print. Size: 5 x 4 inches.

Scat: Dark brown in color, usually with a white urea deposit. Average size (amorphous): 2 x 1.5 inches

Fact: Peacocks are non-native to the United States, however they are commonly kept as pets in rural communities in Arizona.

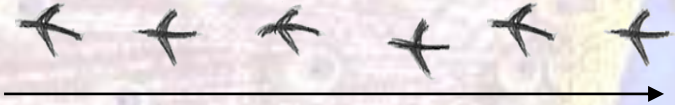
Potential Risk:





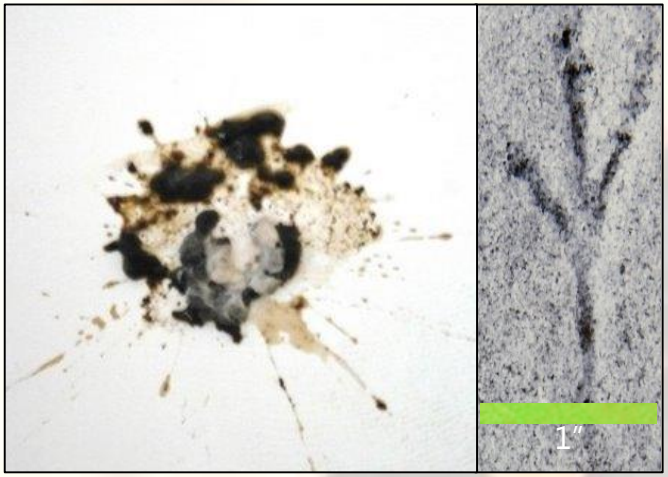
Left (L) & Right (R) Feet

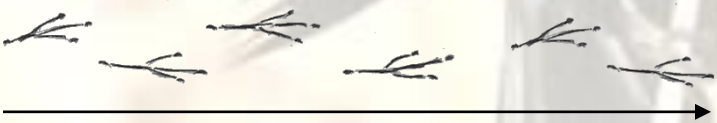
Photo Courtesy of George Andrejko – Arizona Game and Fish Department



Movement Track Pattern

Red-Winged Blackbird





Movement Track Pattern

Track: Three slim toes face forward, one slim toe faces the rear. The two outer toes on each foot are closer together. Size: up to 2 x 0.75 inches.

Scat: Small splatter, dark in color with a white urea deposit. Size (amorphous): Varies.

Fact: Baby red-wings produce their feces in fecal sacs which the parent disposes of by carrying it away in their beak. These are the most abundant birds found in agricultural fields in Arizona.

Potential Risk:

Left (L) & Right (R) Feet

Photo Courtesy of George Andrejko – Arizona Game and Fish Department

Amorphous | Toed

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The Southwest Arizona Track and Scat Glovebox Guide

FEATURES:

Real tracks and scat for more than 30 animals commonly found in Southwest Arizona

Risk rankings for each featured animal

Comprehensive track and scat identification techniques

A ruler to measure tracks or scat found in the field

Waterproof pages ideal for use in all types of weather

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