

Formal Paper about Axis Deer
Compiled By Comanche Spring Ranch, Eden Texas

HISTORY AND DESCRIPTION

Introduction



The Axis Deer can be traced to the foothills of the Indian Himalayas and island of Sri Lanka (Ceylon). Their original habitat was open country at lower elevations in forested regions. Schaller (1967) stated that Axis deer inhabit secondary forests or open forests with glades and an understory of grasses and forbs. Fresh drinking water is always considered essential. Axis deer have been found on ranges varying from dry scrub to moist, deciduous forests. The Axis Deer and Bengal Tiger are historically

linked as prey and predator and are displayed in mid-air assault in the United States National Museum of Natural History. The Bengal Tiger can be said to have good taste: the Exotic Wildlife Association judged the meat of the Axis Deer best tasting wild game meat.

Identity

Order Artiodactyla: Family Cervidae: Genus Axis.

The common Axis deer is Genus: Axis, subgenus: Axis, Species: Axis, also known as Chital, Axis, or Spotted Deer. There are two subspecies of Axis: Indian Axis deer (*A. a. axis*), native to India, and Ceylonese Axis deer, (*A. a. ceylonensis*), native to Sri Lanka (Ceylon). [The other subgenus: *Hyelaphus* has three species: Hog Deer (*Axis procinus*), Kuhl's deer or Bawean Deer (*A. kuhli*) and Calamian deer (*A. calamianensis*). Two subspecies of Hog Deer (*Axis procinus*) are Common Hog Deer (*A. p. procinus*) found in northern India, Burma, Sri Lanka, Thailand and Indochina.

Physical Description

The Axis Deer is often considered the most beautiful cervid. Both male and female have striking reddish-brown coats marked by white spots arranged in undisciplined rows along their sides. They have a black dorsal stripe and white bib on their neck, white inner legs, stomach, and under-tail. Male heights range from 29 to 39.5 inches. Mature weight is from 145 pounds to 250 pounds. Males have antlers which they shed annually. Males have darker facial markings with a more pronounced "scowling" expression the older they get. Bucks are larger bodied than does with thicker necks and broader chests. Female Axis stand 26 to 33 inches and weigh from 90 to 150 pounds.

Axis bucks can be in hard horn any time of the year. They grow and shed antlers on their own clock so in one herd there may be a newly shed buck, a hard horn buck and a buck in the velvet. Usual antlers are 22 to 27 inches. Trophies range from 30 to 36

inches. Axis have a typical antler structure of three points on each side consisting of a main beam, one secondary point halfway up the beam, and a brow tine. Four points on a side are not uncommon.

Geographic Distribution

Axis Deer have a shrinking habitat in India and Sri Lanka but can be found in wildlife sanctuaries in that country and many others. They have been introduced onto other continents and are a favorite of zoological gardens around the world. Free ranging populations exist in the continental United States, Hawaii, and Australia. The species can be found in Texas, Hawaii, Florida, Louisiana, Mississippi, Missouri, Illinois, New York, Oklahoma, New Jersey, Michigan, and California and in zoos in most states. In the United States, Texas, by far, has the largest population. Florida or Hawaii is probably second. Axis are said to be the most numerous and widespread of introduced deer and antelope.

Texas

The Axis was introduced to Texas in 1932. In 1988, Texas Parks and Wildlife found free-ranging herds of Axis Deer in 27 counties of central and southern Texas. The species could be found confined on ranches in 67 other Texas counties. The 1988 survey estimated a population of just over 39,000 Axis deer in Texas. In 1984, Concho County, Texas, was the first place Axis Deer were ranched for commercial venison production although excess animals had been taken off Texas hunting ranches for several years previous. The general consensus in Texas is that Axis are not a farmed species but thrive as a ranched species. Dr. Ronald Randal, University of Texas, is contact.

Hawaii

Two stories exist for Axis being introduced to Hawaii. According to Graf (1950), the first Axis Deer were imported in 1868 to Moloka'i from India, a gift to King Kamehameha from the government of Hong Kong. According to Ables (1974) the Axis was first introduced to Maui in 1989. Populations have multiplied and spread and, today, there is the general feeling in Hawaii that the Axis is a pest and should be eradicated.

Australia

The Axis was introduced to northern Queensland in 1866 to land and climate similar to their native range. This introduction, according to story, was a single female given as a gift to William Hann while he was in Ceylon. Since then, it is estimated that several thousand Axis are now in residence in Australia. Australia is pioneering farming Axis deer: Small paddocks, intensive handling. A. W. English, University of Sydney, is the contact there.

DEER SPECIFICS

General

It is thought that Axis Deer are not cold tolerant. In Texas, since 1932, they have

adapted from their Indian year 'round average temperatures of 70 degrees F. to the varied temperatures of the Texas Hill Country, 105 degrees in summer to winter temperatures bouncing from the 70's to zero degrees for several days. During stress times, good animal condition and heavy situational feeding have made the difference between high death loss and virtually none.

Axis Deer have a very low susceptibility to disease, worms, ticks, and fleas. Strong, ranched herds exist in Texas with no worming treatment or inoculations.

Axis Deer have a high fertility rate and can breed year 'round. A primary harvester of excess animals in the Texas Hill Country reports that they have never harvested an Axis female that was not pregnant, lactating or both.

Axis Deer are wild animals and easily stressed with improper or prolonged handling. Once trailered, they travel well and adjust quickly to new environments.

Axis Deer are excellent converters. On green wheat, their venison carcass weights can be increased 16% or more. On marginal country, they can still provide good venison and acceptable weights.

Nutrition/Water/Health

Grazing. The primary diet of Axis Deer is grass. They will graze on new weeds and forbs. When grass is not in sufficient quantity, they may browse. Axis Deer appear incapable of putting on intramuscular fat so are very efficient grazers. They produce the leanest meat of any deer species, 0.2% fat or less, legally "fat free." Axis graze successfully on native Texas grasses such as curlymesquite, buffalograss, indiagrass, sideoats grama, switchgrass, big and little bluestem. They do well on improved grasses such as Klein. Seasonally, they do well on winter wheat. Browse species include live oak and hackberry. Mast includes acorns and mushrooms.

Water. The Axis deer uses far less water than typical domestic livestock. The water needs to be fresh and available. They will drink from troughs and tanks. Strategically placed water sources can be used to trap the animals.

Mineral supplements are important to all deer. Soil samples should be tested to provide the proper supplements in the form of block or powdered minerals. Powdered is preferred to block. Minerals should be mixed with 10%-15% salt to entice animals to the licks. Serve minerals in containers placed in strategic locations around the ranch so no locale is too far from service.

Protein is an important part of the deer diet and should be supplemented when forage is low in protein. In stress times, if low protein grass is available for roughage, feed up to a 32% protein supplement in reduced amounts. If grass is not available, reduce protein to 6%-20% and feed more of it. In a normal year on the Texas Edwards Plateau, a rancher might put out supplemental feed for 120 days (August, December, January, and February) at quantities of 1/2 pound to 1 1/2 pounds per head. Protein

pellets may be mixed with corn for quick energy and feeding during cold periods. Axis will eat good quality alfalfa hay in drought conditions.

Timing. Although the animals may have plenty of natural feed available going into winter, it is a good plan to begin supplemental feeding on a seasonal schedule. Even if one simply puts out a bit of corn, the animals need to become trained to the feed annually. Winter storms can occur and can cover all available grass and then it is too late to educate the animals. During winter storms, it is advised to feed two to three times a day, adding more corn. Corn gives quick energy and the feeding gets the animals up and moving around. These measures help survival during bad times.

Feed Delivery. Different Axis breeders have different thoughts on delivery of feed. Some offer free choice from feeders placed around the ranch. Others feed from a truck into troughs daily. Others serve the feed on the ground, moving the drop location slightly daily to keep the feed area clean. This latter method is very effective if one uses feed to trap animals. If delivered, feeding should be daily at the same time. A signal, such as a whistle, can be used to effectively alert the deer that the same truck is being used for feed now and a different purpose later.

Stocking Rate. Seven or eight Axis Deer equal one Cow Unit. If you don't know, check with your local Farm Services people to determine how many Cow Units your operation can run.

Disease. In a ranched situation, Axis Deer are disease resistant and do not require inoculations or worming. Texas fleas and ticks appear to be species-specific and do not bother Axis. Axis can get Tb but the disease has been extremely rare and, in the only documented case found, was present in an Hawaiian dairy cattle herd where the Axis fed. Once the cattle were removed, the Axis herd cleared up. It is extremely important to know the health status and history of any deer before purchase. The same for diamonds and deer: it pays to know your vendor and your vendor's reputation. Be sure the deer you purchase are of good quality, free of disease, and not stressed in capture or confinement.

Reproduction and Longevity. Axis Deer can breed year 'round. Gestation is approximately 7.5 months (210-238 days). In Texas, fawning has peaks in January-April and October-November. Researchers report that males in velvet antler can breed. Eight to twelve month old females can breed but the first fawning is usually at 23 months or later. It is generally believed that Axis does are capable of producing four fawns in three years and are productive to at least age 15. Multiple births are extremely rare but have been reported in zoo and wild populations. In a well managed, low predation, ranched situation, one can assume 90% reproduction, one fawn per year beginning at 24 months, and a 95% fawn survival rate.

One Axis buck can service ten to forty females, maybe more. As the excess and older breeder bucks provide good trophy income, there is no reason to skimp on buck availability.

Axis fawns may begin grazing at about 5 1/2 weeks but are not usually weaned for 4-6 months. Permanent dentition is acquired at 2 1/2 - 3 years of age and adult size is reached at 6 years for females and 4-5 years for males. Life span is generally 8 - 15 years, although zoo animals have been known to reach 18-22 years of age.

Predation. Predation is mainly on the fawn population. Coyotes, foxes, badgers, raccoons and fire ants have been blamed for fawn predation. Certain vultures have been seen to prey on very young fawns in an open pasture situation. As bad as predation by coyotes might be in south-central Texas, Axis herds are increasing.

Habits. Axis females may fight to establish rank. Doe fights involve biting and boxing by standing on the hind legs. Axis males push, shove, and battle with antlers to establish rank. The loser will break off the fight and walk off the field of battle. The victor will often walk behind the loser to "escort" him off the field. Axis males can bugle like elk. Both sexes sound alarm calls that sound like sharp, high pitched, breathy barks. All Axis signal each other with barks and body movements like switching the tail. Axis are herd animals, appearing to prefer groups of 40 to 80 animals. Both sexes and various ages and antler development run together.

Cross Breeding. Research reports Axis will cross with Barasingha but in 20 years this has not happened in a monitored wild herd situation in Texas. Research reports that Axis will cross with Red Deer, although it is exceptional.

RANCHING SPECIFICS

Fencing and Containment. Although reluctant to jump cross a standard sheep and goat net fence, Axis require game proof fencing. High tensile fencing designed for deer and game is advised as Axis are more prone to go through a fence in a panic than over it. Rancher should pay close attention to the bottom of the fence because large squares or rectangles and gaps and high places are perfect invitations for an Axis to crawl under the fence or for a fawn to get out. Males will fight through a fence if they can't otherwise get together. The fence will lose. Twenty-four to thirty-six inch high electric fencing placed a foot or so away from a high fence can deter cross-fencing battles.

Game proof fencing can range from double net wire, tightlock taken to 7 1/2 feet tall at roughly \$12,500 or more per mile, all the way to 4 1/2 foot high net wire with electric supplements for about half that. Both have proved effective in containing Axis Deer. Comanche Spring Ranch in Eden, Texas, has various specs for less expensive fencing that works. Water cannot be used as containment. Axis are great swimmers.

Fencing in tight places like runs into trapping facilities should be covered with commercial shade cloth or laths so the deer can't see through. If they can see through, they will try to go through when they are crowded.

Handling. Axis Deer do not like to be contained in small traps or pens for any length of time. They can be calmed by putting them in a dark, quiet area and by misting them occasionally. When in the light, they will run toward a dark place to hide. When in the dark, they will run toward a light. This habit can be used very effectively in trapping and working the animals with little stress. One should work animals from behind swinging or sliding doors. Rarely, if ever, get in the pen with an Axis Deer, and if necessary, use a full body shield. The animals are not intentionally aggressive. They simply go "ballistic" at the thought of being forced to do something or stay somewhere. They are very hypertensive and subject to white muscle disease. White muscle disease is not really a disease but a situation where the animal's tension squeezes all the blood from the muscles and cripples and kills the animal very quickly. High stress on the animals ruins the meat for venison.

Water and feed are effective means to lure Axis into traps and pens. Work at the pace of the animals. Move slowly, quietly and gently. Have only necessary people around. One person can effectively work hundreds of animals if the traps, pens and barns are designed correctly and the person works thoughtfully and patiently with the animals.

Visit an experienced Axis breeder and learn from those pens and handlers. It is really not complicated. There is simply a wrong way and a right way to handle Axis Deer for everyone's safety. Any person experienced in animal husbandry knows the right way and wrong way to handle livestock. Anyone ever injured by a dairy cow, a beef bull, a sheep, a goat, a cat, or a dog will readily tell you what they did wrong -- what the person did wrong, not the animal.

Axis can be tranquilized for capture or drop netted but death loss is a higher risk than using smart handlers and capture pens. This would be true of any deer and antelope species.

Facilities. If you plan to sell Axis breeding stock, you will need capture facilities. If you only plan to raise Axis for venison and harvest them in the field, you may not need facilities. Capture facilities range from very expensive, fine looking and operating barns to converted sheep and goat pens and sheds. Comanche Spring Ranch (915-869-8231) and Venison World, Inc. (915-869-5220) in Eden, Texas, or The Exotic Wildlife Association (830-895-4997) and Broken Arrow Ranch (830-367-5875) in Ingram, Texas, are probably the best sources to find Axis breeders who will show you their facilities. Bill Daugherty of SolidLock USA in New Braunfels, TX has fence and pen plans on computer (830-606-6909).

Shelter. Few Axis ranches in the Texas Hill Country offer shelter for Axis Deer. Trees and brush provide natural protection from sun, wind, and cold. When shelter is available, Axis will use it.

Transport. When hauling Axis, they should have a good bed of hay or straw to minimize jolts. The trailer or truck should be enclosed with minimal spaces between panels for light but good airflow. For longer trips, water should be available. Bucks

should be transported after they have dropped their antlers or while in the velvet. Older bucks can be given a sedative. Usually, if the Buyer transports the animals, the Seller guarantees healthy animals onto the truck. If the Seller transports the animals, the Seller usually guarantees good arrival of livestock. Put your understandings in writing before scheduling pick-up, delivery, and payment. Axis Deer might arrive with a couple of bloody lips. That's OK. Unload the animals near a water source with a minimum of people around, and certainly out of view. Normally, the deer will jump out of the trailer and run so give them space.

Regulations and Public Relations. Check with your state and local game and livestock regulators and health authorities for laws and regulations that might affect your operation. What and how can you legally own, transport, propagate and sell your Axis? Talk about your plans to neighbors and friends. Their knowledge of your operation will allay any fears or prejudices that can arise from the unknown. Poaching has not been a problem with the deer industry and one reason is probably because the industry has made a big point of alerting locals to penalties under law for killing livestock. Axis deer are livestock under the law, not wildlife. An Axis rancher calls the sheriff, not the game warden when there is an infraction. But make friends with the game warden too. He needs to know when you are harvesting or shooting. His interest in your operation is a big help and plus.

Financing Sources. The State of Texas has programs for encouraging diversified agriculture and value added processing in the state. Axis deer qualify for diversification in Texas. Check with your own state's ag departments. Programs might exist for grants, low interest loans, guaranteed loans, etc.

Ranch/Farm Layout and Planning. Start with an appropriately sized game fenced area for the number of head you are going to purchase. Balance your investment in improvements and your investment in animals. If you have more country, plan to grow. Don't spend all your money fencing and then only partially stock. Have the final plan in mind if expanding in increments. That way you'll have your water, working pens, and traps in the most useful places.

Health Care Programs. One of the greatest differences between farmed deer and ranched deer is the veterinarian visits. When animals are intensely confined and handled, their health needs are also intensified. They must be monitored so any ailment is not quickly shared. There is opportunity for inoculations and advanced breeding techniques like artificial insemination. Fawning problems, if any, can be monitored.

With ranched animals, nature is the doctor. And nature has done a pretty good job with the Axis for hundreds of thousands of years. The Axis breeder can monitor herd health in two dynamic ways: Post mortem examinations in the case of miscellaneous death and post mortem health examinations when harvested.

In Texas, most Axis breeders participate with the Texas Animal Health Commission in monitoring their herds with post mortem health examinations and reporting. A "Monitored Herd" status and certificate indicate that a certain percentage of the herd is examined every year.

Excess Axis deer have been harvested in the Texas Hill Country since around 1980 with a state health inspector present and examining every carcass. No Axis carcasses have ever been rejected for health reasons out of thousands of animals.

REVENUES

1. Venison

Axis Deer meat was judged best tasting wild game meat by the Exotic Wildlife Association. It is a mild, naturally tender red meat. It contains less than 1% fat and can be marketed as fat free. (Red Deer and Fallow have 5% - 7% fat.) Axis Deer venison customers tend to be repeat customers. The most popular styles in which Axis Deer is marketed are: Restaurants: Whole Saddles, Chop Ready Rack/French Rack, /Boneless Loin/Whole Backstrap, Bone-in and Boneless Leg, Leg filets, Tenderloins, and ground meat. Individual Consumers: Backstrap, French Rack, Double T-Bone Steak, Round Steak, ground meat, jerkies, sausages, and snack sticks.

Venison Vendors. The Exotic Wildlife Association and the North American Deer Farmers Association can recommend venison vendors in your local area. If you plan to market venison, you need to have your plans finalized before you purchase your first livestock. Some vendors who jump to mind are: Venison World, Inc, Broken Arrow Ranch, Southern Wild Game, and Diamond K.

Methods for Venison Harvest. The most prevalent method for harvesting Axis venison is to harvest the animals on the ranch. A mobile slaughter unit is used with a mobile meat inspector, a sharp shooter, and a skinner. The rancher is paid by the pounds per hour harvested. Time begins when the slaughter unit leaves its home base so proximity to the harvester is important as well as the ability to get the harvestable animals in an accessible area. The mobile unit can haul 38 animals so that is the goal of each harvest. The rancher should plan on being able to supply the skinner with about 4-5 animals an hour. Sometimes, nearby ranches schedule mutual harvests with each supplying a portion of the 38 animals.

A second method of harvest is to capture the animals and trailer them to a slaughter facility.

Harvest Weights and Prices. In typical times, an Axis venison ranch will only harvest excess young males, age 14 to 18 months of age, with "nubbin" antlers. These average 63-75 pounds dressed, pay weight: eviscerated, skinned, beheaded and dehoofed. (Males age 24-36 months average 90-105 pounds.) Based on pounds per hour harvested, the average pay is \$2 per pound, up to a potential of \$2.25. In bad times such as prolonged drought, Axis females may be taken and their weights will probably

fall in the low 50-pound range. Historically, there has been no price differentiation between males and females for venison.

2. Trophy Animals

An Axis breeder can offer trophy hunts on the ranch for excess and older breeding males. The Axis breeder can also live-sale younger males to hunting ranches. Because of the brisk venison market which takes a large percent of young excess males, the trophy market for Axis bucks has remained excellent. An Axis buck can make a trophy by age 5. Trophy antlers range from 30 to 36 inches. The all-time record occurred in India at 41 inches. The average range of Texas Axis trophies in year 2000 was \$1,000 - \$2,500 each. The higher number might include more complementary services on the hunting ranch.

3. Breeding Stock

The sale of quality Axis breeding stock is the agricultural foundation of the Axis deer industry. More and more people are diversifying their ranches in order to survive the ups and downs of traditional domestic livestock prices and to utilize their land more effectively. More producers are needed to fill the proven demand for Axis venison. Axis deer are easy on the land and water resources. They are not fragile and can rustle well in hard times. The price of venison has remained steady.

Auctions. Auctions provide a resource for selling excess breeding animals. Names like YO Ranch Auction, Kifaru, Lolly Brothers, Huntsville, and Raz offer frequent exotic sales. The Exotic Wildlife Association is a resource to find an auction in your area.

Private Treaty. This is the recommended method for selling quality breeding stock. This term means the breeder makes the sale privately to another person. One usually starts by marketing to interested friends and neighbors. One gives talks to the Lions Club and training seminars. One builds brand/name recognition for the ranch. One advertises selectively. One bands together with others as a marketing coop. For example, Venison World, Inc. is a group of Axis ranchers who came together to market their venison and thus market their breeding stock. If one purchases animals from a Venison World producer, one gains the right to have Venison World purchase and market their meat.

Sale Units. A rule of thumb is to sell 10 Axis females to 1 breeder male. Buyers typically purchase extra males if they are available. (This is probably because they look good on the ranch, plus the buyer is getting a jump-start on trophy hunting income.)

Prices. Agriculture's rule of thumb: If the market for breeding stock is level and the industry is not in an expansion mode, a breeding female should bring approximately twice what her offspring would bring at meat harvest price. If the industry is expanding and there is a brisk market for breeding stock, the female can bring three to four times the value of her offspring. For years, Axis females brought \$300-\$400

private treaty. During the prolonged drought at the end of the century, prices fell to \$225 private treaty and \$75-\$100 at auction.

4. Velvet

There has been little or no velvet marketing of Axis antlers. To harvest velvet, one needs pens, crush chutes, vets and paraphernalia. Velvet harvest is more a farming activity. It is not an activity that Axis would tolerate well.

5. By-Products

The harvester takes the sellable by-products unless other arrangements and adjustments are made. By-products include the hide, antlers, bones, and various viscera.

Summary

If every Axis female lived for 15 years, produced four fawns every three years, and started having fawns before her second birthday, it would be decades before Axis meat production could equal 1% of current beef consumption. Axis meat will remain a premium specialty item for years to come. It can compete on the world venison market because it is the best tasting and only fat free venison. Texas ranchers have watched the Axis Deer on their ranges since the early 1930's. They have seen them thrive with little or no management and care. They have reaped profits from trophy hunting. Now they are reaping profits from venison production. The Axis Deer has proven to be a steady, low maintenance breeder, a high quality, popular meat producer, and a beautiful and highly marketable animal.