





LGD4U?

A Primer on Livestock Guardians – Dogs, Donkeys and Llamas



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- Lifelong commando gardener but new to permaculture
- 20+ years experience with wolf-hybrids and large and giant breed dogs and LGDs
- Retired veteran creating a permaculture homestead farm in Socal on 20ish acres (dilemma of the survivo-permaculturalist)
 - Started with beekeeping as PTSD therapy
 - ~2 acres of food forest – avocado, citrus, bamboo, stone fruit, grapes, tropical fruit
 - Swales and water cachement
 - Pastured goats and chickens and registered Maremma LGDs
 - Organic gardens/herbs
 - Solar, well, generator, multiple layers of redundancy
 - Bee apiary with bamboo “walls” and honey house
 - Several composting systems (vermiculture, chickens, traditional)
 - Plans for hugelkulture beds, hydroponic/aquaponic system, greenhousing, raw milk dairy, root cellar/mush-room, medicinal garden



Outline

- Definition of Livestock Guardians
- Canines (Dogs)
 - History
 - Pros/Cons
 - Characteristics
 - Breeds
 - Costs
- Camelids (Llamas/Alpacas)
 - History, Pros/Cons, Characteristics, Costs
- Equines (Donkeys)
 - History, Pros/Cons, Characteristics, Costs
- Felines (Cats – just kidding)



Caveats

- There are no hard truths or guarantees in working with animals. Most mistakes could have been prevented and most problems can be solved. Don't go blaming the animal or breeder.
- Most LG owners are very preferential to their own type/breed; you should choose based on your needs and limitations (topography, flock size and type, range or pasture?, vegetation, predator pressure, cost, etc.)
- Dogs: you should be a “dog-person,” comfortable with large dogs; mixed-breed vs “pure” breed; no guarantees to guardian skill or temperament – trust a good breeder; no puppy mills; good dog handler/training skill = high success
- Llamas/Donkeys: you should have some background with equines/camelids or find good breeder/trainer; large animals are dangerous if not properly socialized/trained; no guarantees of guardian temperament or skill

Define a Livestock Guardian

- Your partner in permaculture
- Protective instinct
- Bonding instinct
- Aggression toward intruders
- Territorial
- Permanent member of flock or herd
- Low prey drive (dogs)





Dogs



- Definitions:
 - Transhumance: The action or practice of moving livestock from one grazing ground to another in a seasonal cycle, typically to lowlands in winter and highlands in summer
 - Landrace: A domesticated, regional ecotype; locally adapted, traditional variety of a domesticated species of animal or plant that has developed over time through adaptation to its natural and cultural environment of agriculture and pastoralism, and due to isolation from other populations of the species
- What is a Livestock Guardian Dog (LGD; sometimes called Livestock Protection Dog)?
 - First known domesticated use of dogs
 - Confusing terms: “Shepherd” or “Sheepdog” originally meant flock guardian
 - Stayed with flock as full-time member, either in place or on the move
 - Human shepherd was historically nearby to manage operation
- LGDs, shepherds, sheepdogs, protection dogs, herding dogs
 - “Herding dogs”: Take commands, move flock (ex. Australian shepherd, Border Collie); high obedience; usually live with humans; high prey drive; harass/chase/injure flock
 - “Protection dogs”: Take commands to attack, protect, fight (ex. German Shepherd, Pit Bulls, mastiffs); high obedience; usually live with humans; high prey drive; harass/chase/kill flock

Prey Drive and Bonding – How LGDs were selected

- Prey drive differences between breeds is based on selective modification (reduction/ amplification) of traits during breeding
 - Orient/Search: Good LGD's prey drive TOWARD BONDED FLOCK is halted at this point, however LGDs will complete prey cycle if protecting flock or if hunting for food
 - Eye
 - Stalk
 - Chase
 - Good herding dogs stalk and chase to move flock
 - Hunting dogs (pointer, hound, beagle) will flush and halt, sometimes retrieve
 - Grab-bite
 - Herding dogs might nip, sighthounds will chase and grab-bite
 - Kill-bite: Attack dogs, protection dogs, fighting dogs, terriers
 - Dissect
 - Consume



Ancient History

- Dogs domesticated 140k? 15k? yrs ago
- Evidence in writing and artwork of dogs
- Guarded domesticated sheep and goats in earliest human settlements in Turkey, Syria, Iran, Iraq
- Romans developed 5 types of dogs:
 - Mastiffs – size, power
 - Greyhound/sighthound – speed, grace
 - Spitz – protection, intelligence
 - Pointer – obedience, intelligence
 - Sheepdog – mix of Mastiff, Sighthound and Spitz, bred to protect livestock
- Evidence of LGD sheepdog breeds in ancient Middle East, Central Asia, Eastern and Southern Europe, primarily where transhumance and domesticated flocks were prevalent in areas with large predators
- Coloration theories: Dogs matched flock; flock acceptance of dog; dogs stood out from predators; predator detection of dog; water availability



Recent History

- Use declined in Europe/Asia over past few centuries as large predators eliminated; use in US never took off during early colonizing
- Late 1970's, resurgence in US due to environmental movement/research on apex predators:
 - Federal restrictions on predator kills, either by chemical, trapping or shooting
 - Desire to use non-lethal methods to reduce predation
- Studies in 1970s- 1990s (Hampshire College, USDA at US Sheep Experiment Station, Idaho, and Colorado State University)
- Re-introduction to Europe in 1980s
- Now guarding penguins in Australia, companions to cheetahs in San Diego, worldwide use increasing as predators return and non-lethal predator control measures are embraced
- Over 40 separate landrace breeds acknowledged worldwide



Victoria zoos train Maremma bodyguards in bid to save bandicoots

Maremma dogs have protected a colony of little penguins and conservationists hope their next mission will be as successful

► Maremma dogs trained as bandicoot bodyguards - in pictures



© 2014 The Farmers get protection to animals with a dog. Photo credit: Shutterstock.com

Characteristics

- Typically large, often mimic the color of the animals they were bred to guard
- Intelligent
- Alert
- Confident
- Capable of independent action
- Capable of instinctive protective reaction;
- Able to match confrontation with predator action
- Curious
- Loyal/bonded to flock and family
- “Aloof” toward people ? My opinion...
- Low metabolism: relaxed during the day, but quick to react to intruders and often busy at night
- Attentive and gentle/submissive to flock
- Physically sound, good conformation, free from genetic defects
- Slow to mature (12-30 months)
- 10-12 year lifespan
- Predisposition to independent behavior (can lead to stubbornness, resistance to commands)
- Not interested in chasing sticks or balls
- Purposeful barking



Myths

- Human contact bad or unnecessary
- Can't be trained
- Unapproachable or aggressive is okay
- Natural guardians - don't need training
- Puppies can be left unattended with stock
- Can only be LGD if raised with stock
- Can easily guard anything (poultry/rodents)
- Mistakes are forever (stock injury, kill, escape)
- Fencing not necessary due to stock bond
- Breed or cross immaterial
- No differences between breeds
- Crossbreeding can resolve health or temperament or trait issues

BREEDS



Great Pyrenees – up to 120 lb and 29 in – France



Komondor – up to 132 lbs and 31 in - Hungary



Anatolian Shepard Dog – up to 150 lbs and 29 in – Eastern Turkey



Kangal – up to 145 lbs and 32 in – Eastern Turkey



Akbash – up to 140 lb and 34 in – Western Turkey



Maremma – up to 110 lbs and 29 in (breed std 110 lbs) - Italy



Kuvasz – up to 115 lbs and 30 in - Hungary



Tibetan Mastiff – up to 160 lbs and 33 in - Tibet

- Bernese Mountain Dog and Greater Swiss Mountain Dog:
 - “Provisional” - relatively low prey drive and will guard flocks
 - Not suited to living with flock (range or pasture isolation)
 - Not suited for poultry/rodents
 - Very human oriented
 - More easily obtained in US
 - Good “farm guardian dogs”

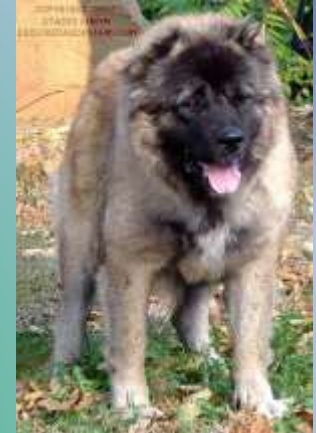


Greater Swiss and 2 Southern Russian Ovcharkas

- Old English Sheepdogs
 - More herding-like
 - No reliable history of flock guarding
 - Primarily home and show dogs
- Some differences in breeds – 1999 evaluation found Anatolians more likely to injure or kill flock, Great Pyrenees more likely to be killed by cars, Komondors more likely to bite, but no guaranteed behavioral characteristics
- 1986 survey found no differences in gender when guarding. Neutered animals easier to control and less likely to wander
- Determining the characteristics of a mixed-breed LGD is difficult up front

Breeds - Rare, Europe and Asia

- Rare in US – some have a club but few breeding pairs; quite expensive:
- Caucasian Mountain Dog/Caucasian Ovcharka (orig Caucasus Mountains: Turkey Georgia, Armenia, Azerbaijan, Iran) (Caucasian Shepherd, Kavkazskaia Ovcharka)
- Central Asian Shepherd Dog (orig Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) (Central Asian Ovcharka, Sredneasiatskaia Ovtcharka)
- Estrela Mountain Dog - *es-TRA-la* (orig Portugal)(Cão da Serra da Estrela)
- Kangal Dog – *KAHN-gahl* (orig Turkey) (Kangal Kopegi)
- KyiApso (orig Tibet/Nepal)
- Polish Tatra - *TAT-rah* (orig Poland) (Polski Owczarek Podhalanski)
- Pyrenean Mastiff – *PEER-uh-nee-un* (orig France/Spain) (El Mastin del Pirineo)
- Rafeiro de Alentejo - *ra-FAY-dew dew ah-len-TAY-joo* (orig Portugal)(Portuguese Watchdog)
- Slovak Cuvac – *CHEW-votch* (orig Slovenia) (Slovensky Cuvac)



Caucasian Mountain Dog
– up to 200 lbs and 30 in



Rafeiro do Alentejo –
up to 105 lbs and 29 in



Polish Tatra – up to 130
lbs and 28 in



Estrela Mountain Dog – up
to 28 in and 110 pounds



Slovensky Cuvac – up to
100 lbs and 28 in

- Other Landrace Breeds
- Aidi (origin Morocco/Tunisia/Libya)
- Aksaray Malaklisi (origin Turkey)
- Bakharwal Dog (origin Kashmiri Himalayas)
- Bukovina – *boo-ka-VEE-na* (origin Romania) (Ciob nesc Românesc de Bucovina)
- Can De Palleiro (Galacian Spain)
- Cão de Castro Laboreiro – *COW duh KAS-trew lab-var-AY-dew* (origin Portugal) (Portuguese Cattle Dog)
- Cão de Gado Transmontano *COW duh GA-dew trans-mon-TA-new* (origin Portugal)
- Carpathian Shepherd – *car-PAA-thi-an* (origin Romania) (Ciob nesc Carpatin)
- Gampr – *GAHM-peer* (origin Armenia) (Armenian Shepherd)
- Greek Sheepdog (origin Greece) (Hellenikos Poimenikos)
- Himalayan Sheepdog (origin Tibet)
- Hovawart (origin Germany)
- Karakachan Dog – *CAR-uh-kuh-chan* (origin Bulgaria) (Bulgarian Shepherd Dog)
- Kars Dog (origin Turkey)
- Karst Shepard (origin Slovenia) (Kraski Ovcar, Krasevec, Istrian Sheepdog)
- Kyiapso – *kee-OP-so* (origin Tibet)
- Leonburger (origin Germany)



Cao de Castro Laboreiro – up to 90 lbs and 24 in



Spanish Mastiff – up to 170 lbs and 30 in



Bucovina Shepherd Dog – up to 90 lbs and 31 in

Sarplaninac – up to 120 lbs and 32 in





Tornjak – up to 120 lbs



Cao de Castro Laboriero – up to 85 lbs



Armenian Gampr – up to 120 lbs

- Majorca (orig Catalina region, Spain)
- Mioritic – *MEE-oh-ree-tic* (orig Romania) (Ciob nesc Romanesc Mioritic)
- Mucuchies (Venezualan, derived from Spanish)
- Pakistani Vihan Dog (orig Pakistan)
- Pastore Fonnese (orig Sardinian region of Italy)
- Romanian Raven (orig Romania)
- Sage Koochee – *sah-gi KOO-chee* (orig Afghanistan) (Kuchi, Afghan Shepherd)
- Sarplaninac – *shar-pla-NEE-natz* (orig Macedonia) (Illyiran Sheepdog, Ovcarski Pas)
- South Russian Ovcharka – *of-SHAR-ka* (orig Ukraine/Crimea/Russia) (South Russian Shepherd Dog, Youzhak)
- Spanish Mastiff (org Spain) (Mastin Español)
- Tornjak – *TORN-yak* (orig Croatia and Bosnia Herzegovina)(Hrvatski Ovcar)



Afghan Sage Kuchi – up to 175 lbs



Sarplaninac – up to 120 lbs



Dogue de Bordeaux – up to 175 lbs



Romanian Mioritic – up to 145 lbs

Important considerations

- A “force multiplier,” “loss reducer,” companion and partner in one
- How many dogs? Topography, ranch size, vegetation, flock type, flock size and dog abilities are all factors
- Socialization of puppies – more current training techniques involve more human socialization
- Training and obedience (sit, stay, come, leash, car)
- Dog-flock interactions – grooming, feces eating and even mounting are common and normal
- Dog age to effectively guard
 - Guarding behavior starting at 4 months – growling, barking
 - Male leg-lift to scent mark
 - Dogs show increased bond with flock over handler as they mature
 - Patrolling activities noticed
- Dog safety: Most common problem is getting hit by a vehicle (23% of those studied); second is being shot
- Economics – 89% of livestock producers surveyed found LGDs to be an economic benefit, saving in time and money by reducing predation; 10% found break-even
- Purchase deposit and contract
- BARKING



Costs

- Purchase - \$400 - \$3000 depending on breed, age, training, pedigree
- Shipping – due to rarity of some breeds, shipping of puppies is common, issues with shipping large dogs
- Vaccines/vet/health checks – no rabies will cause you trouble in case of bite; vaccines like bordetella not necessary for ranch dogs; some areas of the country have heartworm, some do not; rattlesnake vaccine and aversion training in some areas; Lyme disease in others
- Food (kibble, canned, raw diet, natural) – watch out for overfeeding, especially puppies
- Damage caused by dog (chewing, digging)
- Fencing



Livestock Guardian Dogs Pros and Cons

Pros

- Guard a variety of animals (poultry, sheep, goats, cattle, rabbits, etc.)
- Protect stock against large and small predators
- Provides graduated response: barking, posturing/charging, attacking
- Long-term protection as predators do NOT habituate
- Self-thinking, can analyze threat
- Bonds to stock
- Alerts owner to threats/disturbances
- Works with other livestock guardians
- Reduces human labor
- Allows stock to be out at night to graze
- Allows use of pasture with predator pressure
- Bonds to humans
- Protects family and farm
- Non-lethal predator control
- Allows use of pasture with predator pressure
- "Peace of mind"
- Size allows easy movement in car/truck, no trailer required
- Shipping via air possible
- Relatively easy to train to basic commands
- A true partner in your permaculture operation

Cons

- Requires good fencing unless in open range environment
- May wander
- May harass or injure stock if not properly selected and trained
- May be aggressive to strange humans
- May be overprotective of stock
- May not tolerate herding or other farm dogs
- Purchase and care costs higher than other types of guardians
- Requires own food instead of forage or hay
- Needs time and training to mature into good guardian
- WILL BARK, especially at night
- May dig dens
- Cannot be used in conjunction with traps, snares or poison



Camelids – Llamas, Alpaca

- Ancestrally all from North America; Bactrian and dromedaries thought to have found their way to Asia/Middle East over Bering Strait, while llamas, alpacas, vicunas and wild guanaco drifted to South America
- Llamas and alpacas domesticated in Peruvian Andes 6-7000 yrs ago as pack animals, meat, fat, leather and fiber
- Not used as guardians in South America
- Imported to US zoos in late 1800s; William Randolph Hearst brought llamas to San Simeon estate in 1900s
- First used as guardians in 1980s in North America when sheep producers noticed lower predator losses in sheep pastured with llamas
- Territorial and social
- Australian and New Zealand began using llamas for dingo protection
- 1990s study of llama guardians at Iowa State University
- \$500-\$1500 for neutered male, female is more
- Costs include nail trimming, worming, vaccinations, shearing
- Definitions:
 - Cria – baby
 - Dam – female with cria;
 - Maiden – unbred female;
 - Matron – bred female
 - Gelding – castrated male
 - Sire/Stud – intact male



Camelids (Llamas, Alpaca) – Pros and Cons

- Pros
- Similar maintenance and feeding to most flock (sheep, goats, etc) (but may need extra minerals)
- Relatively easy to fence
- Generally calm temperament
- Little threat to neighbors
- Does no roam, dig, bark or chew
- Less prone to death by accident than dogs (rarely hit by cars)
- Long working life (20-25 years)
- Able to guard sheep, goats, cattle, poultry, deer
- More easily accepted by dog-wary livestock
- Produces fiber
- Bonds quickly to livestock
- Fits predator-friendly guidelines



- Cons
- Vulnerable to many predators – wolves, bears, mountain lions, bobcats, packs of coyotes or feral dogs
- No protection against small predators, raccoons, possums, raptors
- Not ideal in open range or high vegetation situations
- May not adjust to living without other llamas
- May not accept herding dogs or livestock guardians working with flock
- May injure or harass livestock
- May interfere with birthing process
- If not well-trained and socialized, adult males can be dangerous to humans
- Size makes them difficult to move (horse trailer required)
- Cannot loudly alert
- Not a good farm or family guardian
- Shelter size

Equines - Donkeys

- North African origins, thought to have been domesticated by Egyptians 5-6000 years ago
- Territorial and social, will bond with flock
- Horses not territorial, so not good guardians
- Costs include vaccinations, hoof care, worming
- Definitions
 - Burro: small wild donkey
 - Ass: Traditional word for donkey
 - Jack: Male donkey
 - Jenny/Jennet: Female donkey
 - Mule: Offspring of mare and jack
 - Hinny: Offspring of stallion and jennet



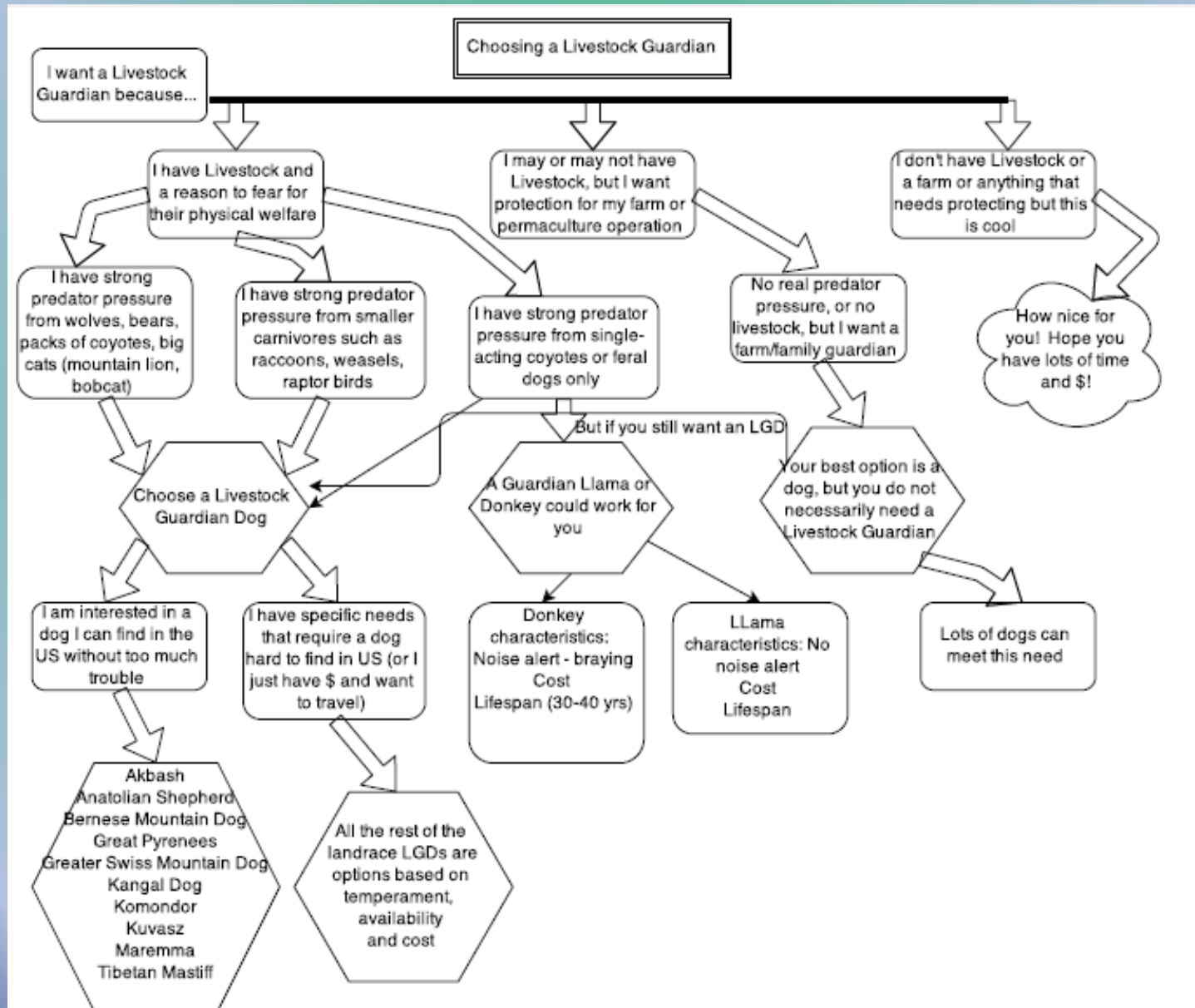
Guardian Donkeys – Pros and Cons

- Pros
- Extremely long-lived (30-40 yrs)
- Can guard sheep, goats, calves against single canines and possibly a bobcat
- Similar maintenance and feeding to flock
- Relatively easy to fence
- Generally calm temperament
- Little threat to neighbors
- Does not roam, dig or bark
- Less prone to accidental death than dogs
- Bonds to stock within a few weeks
- Compatible with other means of predator control (poison/snares)
- Fits predator-friendly guidelines
- Can bray to alert owners of predators

- Cons
- Can be expensive, especially if trained
- May not exhibit guardian behavior
- Vulnerable to packs of dogs or coyotes, wolves, bears and mountain lions
- Ineffective against feral hogs
- Does not provide protection against small predators or large birds/raptors
- May not guard poultry or rodents well
- May not accept herding or livestock guardian dogs working with the flock
- May injure or harass livestock
- May interfere with birthing or breeding process
- Size makes them difficult to move – horse trailer required
- Braying
- Shelter size



Choosing Your Guardian



Species/ Issue	Poultry/ Birds	Rodents/ Other	Family Friendly	Aggression to predators	Aggression to stock/ humans	Fencing pressure	Ability to train/ obedience	Cost
Akbash	Fair-good	OK	Very Good	Excellent	Low but possible	Moderate	Good	\$\$
Anatolian	Fair - good	OK	Very good	Excellent	Low but possible	High	Good	\$\$
Bernese Mountain Dog	Low ability	Low ability	Excellent	Good	Very low	Low	Very good	\$\$\$
Great Pyrenees	Good-very good	Good	Very good	Excellent	Low but possible	High	Good	\$\$
Greater Swiss Mountain Dog	Low ability	Low ability	Excellent	Good	Very low	Low	Very good	\$\$\$
Kangal Dog	Fair - good	Eh	Very good	Excellent	Low but possible	High	Good	\$\$
Komondor	Fair - good	OK	Very good	Excellent	Occasional	Moderate	Good	\$\$\$
Kuvasz	Good-Very Good	OK	Very good	Excellent	Low but possible	Moderate	Good	\$\$
Maremma	Good – Very Good	Good	Very good	Excellent	Low but possible	Moderate	Good	\$\$
Tibetan Mastiff	Fair - good	Eh	Very good	Excellent	Occasional	Moderate	Good	\$\$\$\$
Donkeys	OK - fair	Nope	OK	Excellent toward lone canine	Low but possible	Low	Good	\$\$
Llamas	OK - fair	Nope	OK	Excellent toward lone canine	Low but possible	Low	OK	\$

Sources/Resources

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QUESTIONS?