

LIVESTOCK GUARDIAN DOGS

TOMPKINS CONSERVATION

WILDLIFE BULLETIN

NUMBER 2, MARCH 2017



Livestock vs. Predators

Introduction to an historical conflict and its mitigation through the use of livestock guardian dogs

Since humans began domesticating animals, it has been necessary to protect livestock from wild predators. To this day, predation of livestock is one of the most prominent global human-wildlife conflicts. Interestingly, one of our most ancient domestic companions, the dog, was once a predator.

The competition between man and wildlife for natural spaces and resources is often considered the main source of conflict between domestic live-

stock and wild predators. Historically, humans have attempted to resolve this conflict through a series of predator population control measures including the use of traps, hunting, and indiscriminate and nonselective poisoning—methods which are often cruel and inefficient.

One of the greatest challenges lies in successfully implementing effective measures that mitigate the negative impacts of this conflict. It is imperative to ensure the protection of

TABLE OF CONTENTS

PAGE 01

Livestock vs. Predators:
Introduction to an historical conflict
and its mitigation through the use
of livestock guardian dogs

PAGE 04

Livestock Guardian Dogs,
an Ancient Tool in
Modern Times

PAGE 06

What Is the Job of a
Livestock Guardian Dog?

PAGE 07

Breeds of Livestock
Guardian Dogs

PAGE 08

The Presence of Livestock
Guardian Dogs in Chile

man and his resources, including livestock, without compromising the conservation of the native biodiversity. Every species plays a key role in the regulation of the ecosystems that they (and we) inhabit and, as such, their survival must be protected. Additionally, it is important to note that the majority of native species, such as foxes and puma, are under legal protection by the state of Chile.

The economic losses caused by predators are frequently one of the main reasons sheep and goat producers abandon their livestock-rearing efforts or keep them at a subsistent level. It is estimated that in the United States at least 250,000 sheep and 150,000 goats die annually as a result of predation (Vorwald, 2007). In Chile, the varia-

tion in predators is lower than that of the United States, where the losses are due to a variety of predator species (Figure 1). It is also necessary to acknowledge that many farmers do not report their losses. Some U.S. states compensate for predator deaths, but only with on-site verification of a predator attack.

In addition, one recurring example of the human-wildlife conflict in Chile is the predation of domesticated livestock. Among the species commonly involved are native wild carnivores such as the culpeo fox (*Lycalopex culpaeus*), chilla fox (*Lycalopex griseus*), puma (*Puma concolor*), and even introduced species such as the domesticated dog (*Canis lupus familiaris*) and American mink (*Neovison vison*). This conflict generates significant econom-

| Predator | Amount | Percentage |
|--------------|----------------|------------|
| Coyotes | 135,600 | 60.5 |
| Dogs | 29,800 | 13.3 |
| Pumas | 12,700 | 5.7 |
| Lynxes | 11,100 | 4.9 |
| Bears | 8,500 | 3.8 |
| Eagles | 6,300 | 2.8 |
| Foxes | 4,200 | 1.9 |
| Others | 16,000 | 7.1 |
| Total | 224.200 | 100 |

Figure 1. Ovine and caprine animal losses in the United States, organized by specific predator.

PAGE 10

Livestock in the Chacabuco Valley and the Transition Toward the Future Patagonia National Park

PAGE 11

Livestock Guardian Dogs: A Fix to the Challenges of Modern Conservation

PAGE 13

The Measured Effect of Livestock Guardian Dogs on Sheep Survival Rates

PAGE 15

Impact and Results of the Program

PAGE 17

Challenges in the Implementation of the Livestock Guardian Dog Program

PAGE 19

The People Behind the Care and Management of the Dogs:
 • José Calderón Montecinos
 • Eduardo Castro Ibáñez
 • Víctor Hernán Chacón

PAGE 21

Technical Notes: Livestock Guardian Dogs



ic losses for small, medium, and large-scale farmers alike. Additionally, livestock predation can jeopardize the conservation of these wild carnivores, largely through illegal hunting.

There is little data available at the national level with regards to predator-livestock dynamics. At the regional level, a survey of the impact of predators on sheep carried out in the Aysén region in 2007 (Iriarte, 2007) found that more than 50% of losses were associated with foxes, followed by 23% of losses attributable to feral dogs, 15% to mink, and 9% to puma (Figure 2).

More recently, through the analysis of livestock losses reported to the Agricultural and Livestock Service, dogs, foxes, and pumas have been shown to be the main

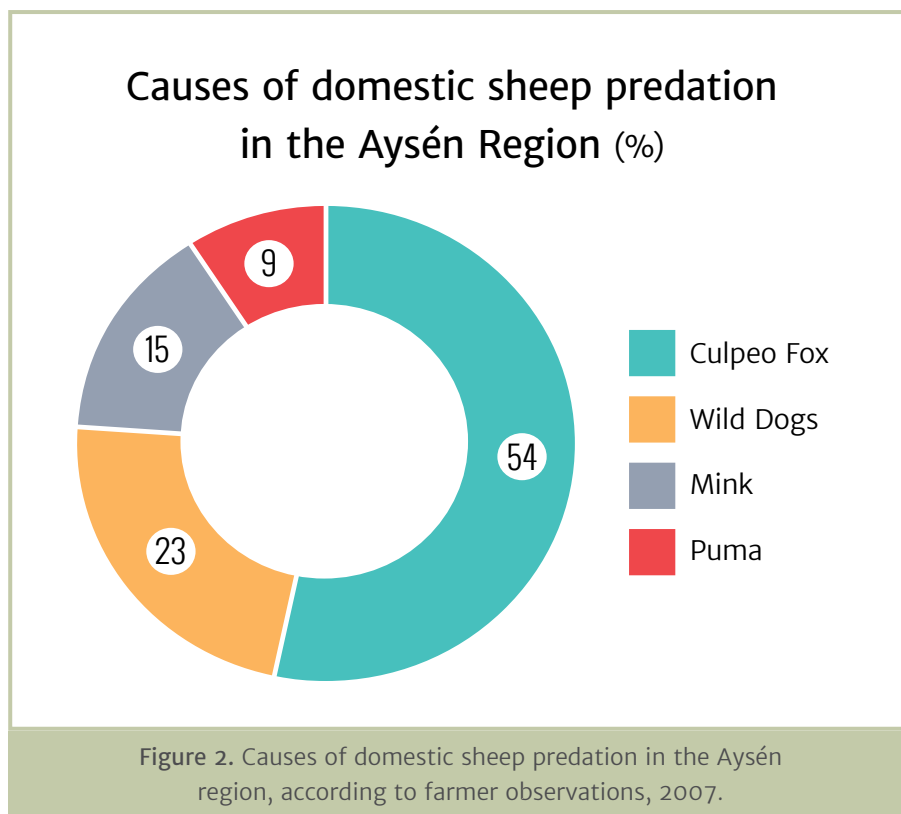


Figure 2. Causes of domestic sheep predation in the Aysén region, according to farmer observations, 2007.

causes of livestock mortality, with percentages varying according to

region (Figure 3) (Acosta-Jamett, 2014). For the Aysén region, more losses are attributed to native predators, such as puma and foxes.

Historically, the conflict between predators and ranchers, both worldwide and in Chile, has been managed through culling predator populations. Despite this the conflict has not been resolved, and in many cases has even been aggravated by such practices. Recently, the use of non-lethal, predator-friendly methods, such as livestock guardian dogs, have gained increased acceptance among ranchers. ♦

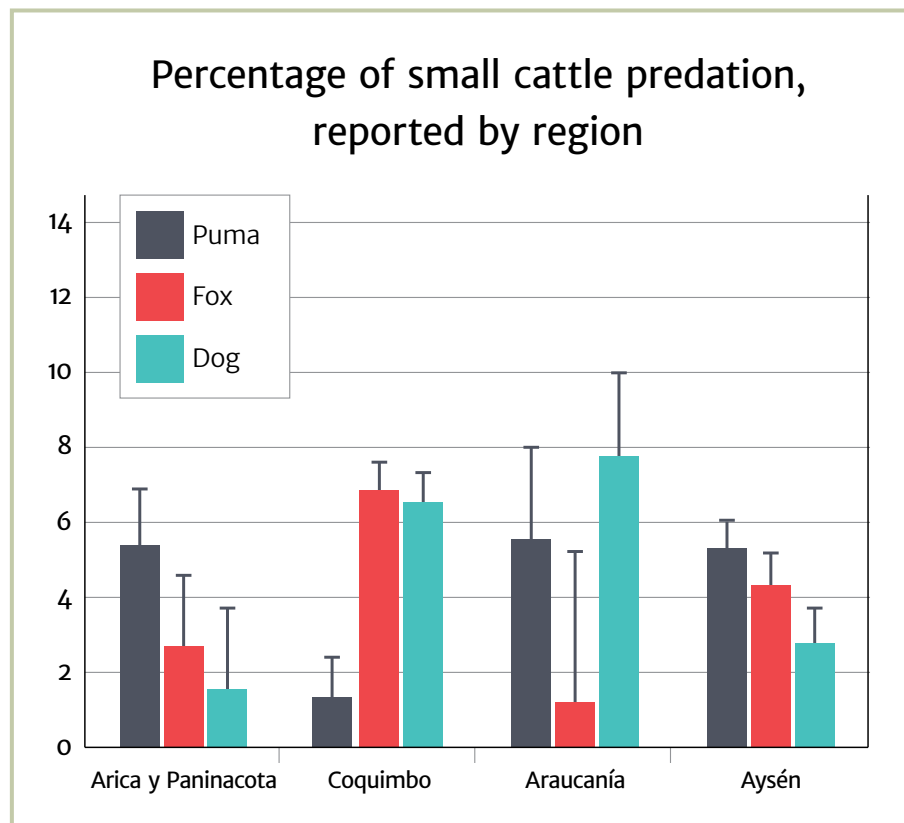


Figure 3. Percentage of small cattle predation, reported by region in Chile. Percentages are calculated using a baseline of the total number of animals reported to the Chilean Agricultural and Livestock Service (SAG) in each region in 2014.

Livestock Guardian Dogs, an Ancient Tool in Modern Times

Livestock guardian dogs are medium to large-sized dogs that protect livestock herds from predator attacks. They live permanently with the flock and regard the flock as their companions or family, protecting them against all threats.

Livestock guardian dogs originated thousands of years ago in Central Europe and Asia to help herders protect their sheep and goats from predators such as bears, gray wolves, and lynx. The earliest references to the domestication of sheep and goats date back to 8000 BC. There are records from 3585 BC of shepherd dogs among the flocks of nomadic Sumerians.

Livestock guardian dogs have primarily been used to protect flocks of sheep and goats, though it is also common to find them protecting other animals, such as cattle, horses, deer, llamas, alpacas, poultry, and ostriches. Historically, dogs were important castle guardians and were even used for the protection of fruit trees, equipment, and human families.

As a result of the extermination and decline of many of Europe's predators, along with the migration of people to the cities and the collectivization of agriculture in communist regimes, use of livestock guardian dogs began to disappear. In addition, product of the World War II, these protective races met severely diminished.

Due to the gradual recovery of large predator species in Europe,



livestock guardian dogs have risen in popularity. It is estimated that there are currently more than one thousand livestock guardian dogs working in the Alps (Gehring, 2010), with more worldwide due to the global reintroduction of predators and the increase in wild dogs.

Livestock guardian dogs were introduced to North America in the 1970s, after the government banned the use of poisons for the control and extermination of predators. The dogs' incorporation was successful, demonstrating a reduction in sheep depredation by at least 11% to as much as 100% (Gehring, 2010). In this context and as a result of their effectiveness, livestock guard-

ian dog use has spread widely to Canada, South America, Africa, and Australia.

Guardian dogs have demonstrated their value and effectiveness, protecting domestic herds against wolves, bears, wolverines, pumas, foxes, dingoes, coyotes, feral dogs, birds of prey, and even cheetahs and leopards.

Livestock guardian dogs have been bred to be harmless to the herd, to exhibit friendly behavior and appearance (ex. drooping ears) and to move calmly and slowly around the herd. They have a low metabolism and therefore do not eat much, which is a considerable economic advantage. They have

superior senses of sight, smell, and hearing. The dogs interact with the shepherd, but are capable of making their own decisions and functioning independently, as they are raised to live and work with the flock without close human supervision.

It is important to understand that the training of a livestock guardian dog is based on providing an environment where the dog is able to develop and express its inherent protective talents. The dogs are not trained to protect livestock;

instead, they imprint with the domesticated species that are in need of protection.

Livestock guardian dogs are not to be confused with shepherd/herding dogs. The latter are also working dogs, but perform a different function: moving herds from one place to another. The appearance and behavior of shepherd dogs is very different. Typically, they have their ears raised and are focused on the behavior of the herd. Shepherd breeds are selected to be highly

trainable and obedient. They cannot be trusted to manage herds without human supervision. Among the most popular of such breeds in Chile are the Border Collie, the Brie Shepherd, the Australian Kelpie, and the Magellan Sheepdog. These dogs complement the work of livestock guardian dogs in the management of the herd. ♦



What Is the Job of a Livestock Guardian Dog?

Livestock guardian dogs protect their herd from predators through three main techniques: territorial exclusion, disruption, and confrontation.

Territorial exclusion occurs when a predator recognizes the area used by the livestock guardian dog as the territory of another predator through a series of signs (olfactory and acoustic), and avoids entering it, staying clear of the herd animals within that territory. Territorial exclusion works very well with other canids, such as wolves, foxes, dingoes, and feral dogs, as they respond strongly to olfactory signals that indicate the area is occupied and instinctively tell them to stay away.

Disruption occurs when the livestock guardian dog interrupts the predator's hunting behavior and "discourages" him from continuing his hunt. Guardian dogs become active barkers when an unknown animal or person advances. Most breeds are large dogs with a deep bark, so they are easily noticeable when a predator approaches. This is even more pronounced when several guardian dogs work together to protect a herd. The presence of guardian dogs alone interrupts the predator's hunt, causing it to retreat and seek prey elsewhere. Most predators will eventually accept a well-guarded livestock operation as "out of bounds" and will seek easier sources of prey.

Confrontation occurs when the dog stands guard against a predator that is attacking, chasing, or approaching the herd. The dog may approach the predator and use intimidation to cause the animal to retreat. If a predator approaches, the dog will place itself between the source of the threat and the herd, barking in warning but not attacking the predator right away. If necessary, the dog will attack, fight, or even kill the predator to remove it from its territory. However, these interactions between predator and guardian dog are quite rare. Most frequently, guardian dogs act through disruption and territorial exclusion.

Species such as birds of prey and scavengers are more likely to face direct confrontation when they approach the herd, since they do not understand the signs or "codes of territory" demarcation that the dogs give off. These species eventually learn to stay away from the area.

The guardian dog is largely effective as a deterrent. The dog will routinely mark its territory with urine and feces, circle the herd, and inspect the limits of its territory in order to alert other animals that those areas are visited regularly. This is a very effective and powerful tool for communication between carnivores. ♦



Dog protecting its herd.

Breeds of Livestock Guardian Dogs

Currently, there are at least forty breeds of livestock guardian dogs, all of which are quite ancient. Almost all European (Figure 4) and

Asian (Figure 5) countries have developed a specific breed, some larger than others, and more or less aggressive depending on the predator

that they control (bears, foxes, pumas, leopards, and cheetahs, among others). ♦



Figure 4. Map of Livestock Guardian Dogs breeds on the European continent. (Breed names in Spanish)

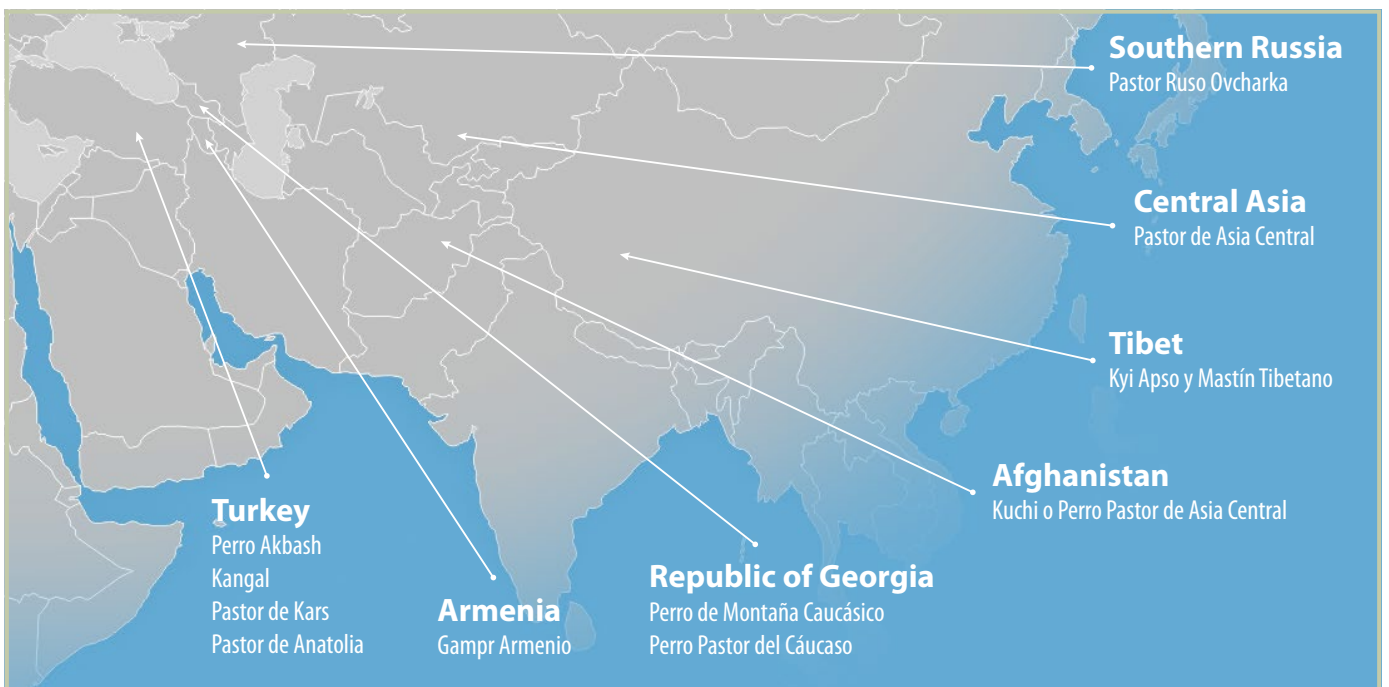


Figure 5. Map of Livestock Guardian Dogs breeds on the Asian continent. (Breed names in Spanish)

The Presence of Livestock Guardian Dogs in Chile

The most common breeds of livestock guardian dogs in Chile are the Great Pyrenees, the Maremma Sheepdog, the Pyrenean Mastiff, and the Polish Tatra Sheepdog.

Pyrenees Shepherd, Great Pyrenees, or Pyrenees Mountain Dog



Pyrenees Shepherd

Originating from the Pyrenees Mountains between France and Spain, this is one of the oldest documented breeds (thousands of years old) to be used by shepherds to fend off wolf and bear attacks. A breed favored by French nobles, Louis XIV declared it the national dog of France in 1675.

The Pyrenees is a very impressive and beautiful breed. They are large dogs, with males ranging from 69 to 81 cm tall and weighing over 45 kg, and females measuring 63 to 74 cm tall and weighing 40 kg. They have a double coat (a water repellent topcoat and an

insulating undercoat), which is resistant to severe climatic conditions such as cold, rain, wind, and drought. Generally white in color, they can have patches of gray or shades of red, particularly noticeable as puppies and fading when they reach adulthood. They have striking outlined, almond-shaped eyes and small to medium-sized ears. They have low-hanging tails that, when alerted, will raise and roll onto their backs. It is standard for Pyrenees to have dew claws or double supernumerary digits on their hind legs.

Calm in temperament, guardian dogs usually sleep during the day and are very active at night, barking frequently. Generally, they protect the herd at a distance in order to remain observant of possible threats. These dogs work very well in semi-isolation and are very independent. This breed is one that better accepts unknown humans and is more social than other livestock guardian breeds. The dogs are also known for climbing fences and digging holes.

Maremma Sheepdog

Originally from the Abruzzo region in the Apennine Mountains and the plains of Maremma in Tuscany, this breed has been used for centuries for Italian nomadic grazing, defending herds against wolf attacks.

This breed measures between 61 and 74 cm tall and weighs between 30 and 45 kg. Although gen-

erally sporting white fur, the dogs can also be seen with hues of ivory, cream, lemon, or pale orange. Their skin is white with dark spots. The coat is wavy and can be rough to the touch. The breed's lips, nose, and eyelids are generally black and they have dark eyes. They have low-hanging tails that, when alerted, will raise and roll onto their backs, and they have dew claws on all four legs which cannot be removed.

The Maremma are excellent shepherds under many conditions and their breeding leads them to develop strong ties with the herd. As puppies, they tend to chew things, dig holes, and bark excessively. They can act as mature guardian dogs at two years old. These dogs are not recommended as a companion breed.



Maremma Sheepdog

Pyrenean Mastiff



Pyrenean Mastiff

From the southern Aragonese and Navarrese Pyrenees, the Pyrenean Mastiffs historically protected herds of sheep from wolf and bear attacks. The breed was also used to guard castles and houses in the ancient kingdom of Aragon.

The breed has influence from the Great Pyrenees and the Spanish Mastiff. Larger in size, it has a large head and developed jowls, giving the impression of greater size and power. Its fur is less abundant than the Great Pyrenees but longer than the Spanish Mastiff. As noted, it is a large dog, with males mea-

suring 81 cm and females measuring from 74 to 76 cm, with weights that oscillate between 52 and over 68 kg. It is a rectangular dog with saggy, floppy skin around its neck. The tail is always dangling, unlike other similar breeds. Its base color is white with well-defined patches of different colors. Usually, the puppies are born without a mask, which appears over time.

The Pyrenean Mastiff is a more active dog than the Spanish Mastiff, but with a calm temperament, more suitable for the family and very capable of reacting to a threat. These mastiffs have a deep bark, but bark less than other shepherd breeds. They also have a large appetite and eat more than other shepherds.

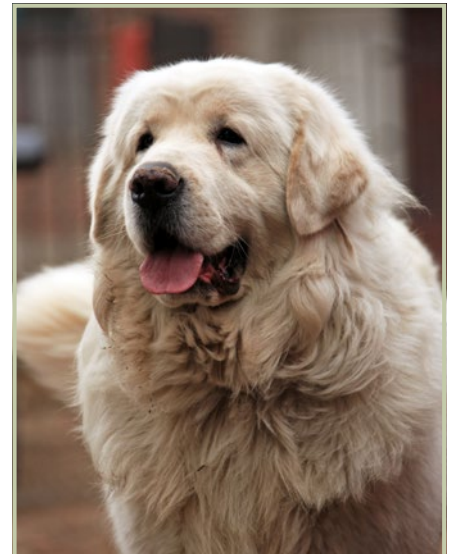
Polish Tatra Sheepdog

This breed works as a guardian dog in the Carpathian Mountains. The Polish Tatra Sheepdog is also used in Poland by the police and military and as a guide dog, providing personal as well as livestock protection.

This breed is completely white, with a black-pigmented nose, lips, and eyelids and dark eyes. Males can be between 65 to 70 cm tall and

females are 60 to 65 cm tall, with variations of up to 2 to 3 cm.

The Polish Tatra Sheepdog is an extremely intelligent and intuitive dog. It works best as a guardian dog under the guidance of a shepherd and is less inclined to spend as much time alone with the herd than other breeds. These dogs are friendly toward humans and not aggressive toward other dogs. While caring for herds, the Polish Tatra Sheepdog is more active against predators than other breeds, often circling the pastures where the herd is and barking to gather the flock in case of danger. ♦



Polish Tatra Sheepdog



Livestock in the Chacabuco Valley and the Transition Toward the Future Patagonia National Park

For nearly a century, the economy of the Chacabuco Valley region was characterized by extensive sheep grazing for the production of wool and meat. Over the years, due to overgrazing, productivity decreased significantly. This, in addition to the existing unfavorable conditions of the sheep market, due in large part to the low international price of wool, caused the owners of the Estancia Valle Chacabuco to put their land up for sale in 2004.

This made it possible for Conservacion Patagonica, in the same year, to acquire the Estancia Valle Chacabuco (80,000 ha), in the Capitán Prat province of the Aysén region, in order to begin the transition of the land from a cattle and sheep ranch to a national park.

This transition meant developing a plan that considered the gradual reduction and sale of livestock, the removal of hundreds of miles of fences (fences and posts), and the eradication of any practice that caused the death of native predators.

It was through the implementation of this plan that, between 2004 and 2009, the number of livestock was reduced from 25,000 to 1,000 sheep (4%) and from 3,000 to 200 cattle (7%). The team decided to maintain a stock of meat animals for internal consumption (in order to feed the workers, ranchers, and



The Chacabuco Valley when it was still a cattle ranch.

park rangers), as was traditionally done for ranch workers. Two sectors of the park, Puesto Baño and Cuadro de las Vacas, maintained a low animal load (number of animals in a surface area), occupying only 1.4% of the total area of the park (1,150 ha) and taking advantage of the natural conditions and existing pastures, corrals, and sheds.

As it is illegal to hunt any puma or fox in Chile, our ranchers had to assume 30 to 50 sheep losses and mortalities per month due to predation. With a total of only 1,000 sheep, this decrease made sheep production economically unviable.

The question became how to maintain livestock without resorting to hunting predators. Different alternatives were investigated and evaluated. Among these alternatives was the use of livestock guardian dogs, a technique that, though used in Europe and Asia for centuries, was not well-known in Patagonia. After consulting the available literature and understanding the theory of this technique, Conservacion Patagonica began searching for select dogs, bred for this purpose, in Chile. ♦

Livestock Guardian Dogs: A Fix to the Challenges of Modern Conservation

It was not easy to find a breed of livestock guardian dog in Chile, as historically they are very uncommon in the region. Luckily, halfway through 2009, a litter of Great Pyrenees companion dogs was found in the city of Osorno in southern Chile. Two 2.5 month old littermates were acquired with the goal of immediately “imprinting” them with the sheep. The female was named Brisa and the male Puelche (named after winds, because of the heavy winds in the sheep-grazing area).

Consequently, the first steps were taken to develop the Livestock Guardian Dog Program in Patagonia Park. The initiation of the program meant putting into practice all of our previous research from similar programs. One key aspect was ensuring that the puppies were exposed to the ewes, rams, sheep,



Puelche and Lolo.

and lambs, and their sounds and smells, as young as possible. Additionally, the puppies needed to suckle from the sheep strengthen their bond with the animals. Another quite difficult aspect of the pro-

gram’s initiation was ensuring that the sheep gauchos (ranchers) were able to care for the puppies, as the breeding, feeding, and obedience training of guardian dogs is quite different from that of the herding dogs the gauchos were accustomed to. Guardian dog puppies need to eat where the sheep are, ensuring the greatest possible contact between the animals. Additionally, gauchos must spare no effort in ensuring the puppies do not approach houses or “puestos.” During the first stage of the program, these recommendations were met with skepticism and resistance from the livestock staff and curiosity from others.

As the days and weeks passed and the gauchos were able to observe the behavior of the puppies around the sheep, they began to trust in the program and change their frame of mind. The staff ulti-



Puppy strengthening his bond with the herd.

mately agreed to take on the challenges of this program, which, though seemingly odd and untraditional, had the potential to work.

By the time the pups were six months old, there was a decrease in monthly sheep losses as a result of predators. With this positive feedback, before the first year's end we bought a third puppy, named Lolo, from a project run by the University of Chile and the Instituto Pirenaico of Spain, which was promoting the use of the breed.

While Brisa and Puelche initially dedicated themselves to the

care and protection of sheep, ewes, and lambs, Lolo was, from the onset, incorporated into the care of the rams. The latter are usually managed separately from the sheep and lambs and, due to their strong odor, they are more attractive to predators and a favored prey compared to the other types of sheep.

At the end of 2011, Brisa and Lolo had their first litter of puppies, leaving us with an additional work puppy, named Chica, and another, named Puelche Chico, in 2012. We divided these five working dogs into two main areas of the Chacabuco

Valley. Cuadro de las Vacas has two dogs protecting approximately 500 sheep, and Puesto Baño has three dogs protecting around 1,500 sheep. Cuadro de las Vacas requires more dogs per sheep, as it is a more divided grazing area with more shrub vegetation in which predators can hide. Each of the two groups of dogs is organized and working together as a family group. ♦



The Measured Effect of Livestock Guardian Dogs on Sheep Survival Rates

Soon after the incorporation of the guardian dogs into the herds, we began to monitor the effect of their presence. A range of indicators were evaluated, from the observed behavior of the dogs to the losses suffered during key seasonal times, such as the weeks after the lambs are born.

The objective indicators (number of deaths) that demonstrate the effectiveness of a livestock guardian dog are closely tied to the reduction in livestock mortality rates due to predators, feral dogs, and cattle theft. Guardian dogs that are actively working are able to reduce these losses significantly, and it is precisely in these cases of active work that their incorporation is warranted.

As seen in Figure 6, from 2009 to date, as a result of the incorpo-

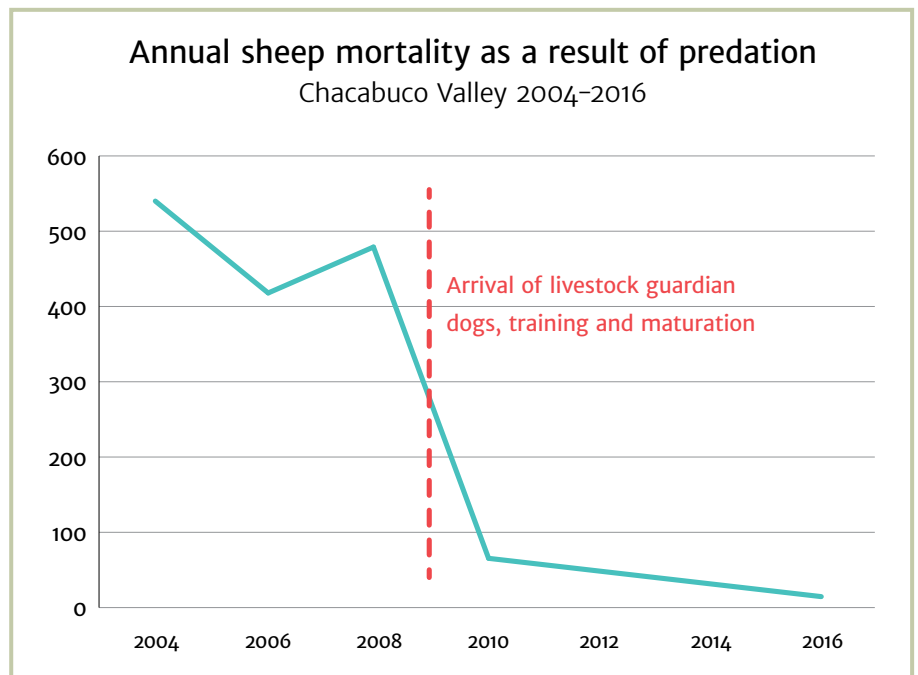


Figure 6. Sheep mortality in the Chacabuco Valley, demonstrating the effect of the incorporation of livestock guardian dogs'.

ration of the Conservacion Patagonica guardian dogs, the Chacabuco Valley sheep herd has achieved a significant decrease in mortality

caused by predators, demonstrating the practical effectiveness of this protection method.

| Tagging /Year | Sector | N° Sheep | N° Lambs | % Tagged | Annual Losses | Annual Losses to Predators |
|-------------------------|---------------------|----------|----------|----------|---------------|----------------------------|
| 2013 | Puesto Baño | 488 | 569 | 117% | 48 | 31 |
| | Cuadro de las Vacas | 203 | 211 | 104% | | |
| 2014 | Puesto Baño | 625 | 689 | 110% | 50 | 30 |
| | Cuadro de las Vacas | 218 | 270 | 124% | | |
| 2015 | Puesto Baño | 513 | 529 | 103% | 54 | 33 |
| | Cuadro de las Vacas | 133 | 158 | 119% | | |
| Average for the 3 years | | | | | 2% | 1,3% |

Figure 7. Percentages of sheep tagged per year, total annual losses and total losses due to predation, in the Chacabuco Valley between 2013 and 2015.

The use of the guardian dogs, combined with the adequate sanitary management of the sheep, has allowed for a significant increase in sheep retention numbers each year. Losses due to predation were reduced significantly over the past six years, averaging at 1.3% per year, which is within 2% of overall annual losses.

The guardian dogs have allowed for an increase in the number of lambs born per year, with a 115% increase in the number of lambs surviving past two months of age, at which point docking, castration, and tagging take place. These high numbers are also achieved due to the fact that some of the sheep can birth multiple lambs at once.

Docking, Castration, and Tagging

The docking, castration, and tagging of lambs is a routine process carried out annually on sheep farms after the breeding season. The process involves three simultaneous operations: tagging (the marking of the ears to indicate the sheep's owner, usually involving a metal tag, tattoo, or branding), the castration of the males, and the docking or removal of the tail. In this way, the lambs are counted and the ranchers are able to determine the number of lambs docked, castrated, and tagged as a percentage of the total sheep present. ♦



Annual docking, castration, and tagging in the Chacabuco Valley.

Impact and Results of the Program

Thanks to the livestock guardian dogs, we have managed to not only produce the meat necessary to feed the workers, but also to profit from the sale of sheep and wool produced. Over the past seven years, the dogs have become ambassadors to Patagonia Park, demonstrating an alternative method of livestock production that exists in harmony with nature and wild predators.

Over the years, Patagonia Park's livestock guardian dog program has become a model, demonstrating that livestock can be developed inside and in the immediate vicinity of a protected area, cohabitating with natural predators without the need for hunting or poison. Additionally, the program delivers added value to our products through the WFEN (Wildlife Friendly Enterprise Network) international certification seal and promotes changes



in traditional breeding practices, as well as in the management of livestock and native predators.

In 2011, Conservacion Patagonica produced our first litter of puppies. As of February 2017, with two mother dogs, we have produced four litters and delivered 30 puppies to ranchers in order to spread the use of this technique for the care and protection of herds. Today, the dogs can be found working in Chile from Villarrica in the north to Villa O'Higgins in the south, and in

Argentina from Río Negro to Calafate. We are always working to promote the responsible management of livestock guardian dogs.

The puppies were delivered to ranchers along with a technical professional, who was able to advise on the process for imprinting the animals to the sheep. In order to obtain the best possible results, the professionals advised ranchers to adapt their recommendations depending on the conditions of the ranch where the dogs would be working.



We delivered many of these puppies sterilized (at the owner's request), as it allowed the dogs to work with fewer distractions. Sterilization also ensures that the dogs do not need to be taken out of the herd and into a kennel for three weeks as they go through heat, an absence which predators can exploit.

Parallel to the dissemination of the puppies, we participated in the development of a documentary film about experiences with Livestock Guardian Dogs in Aysén: The Beginning of a History. The story is told through interviews with Aysén ranchers, detailing their experiences with the management of these dogs and the results that they have observed.

In summary, the program's achievements to date have been:

- A 90% reduction in losses from



Documentary film cover.

predation, allowing for a growth in sheep production of up to 125% (115% on average). This has made it possible to meet the annual consumption needs of 500 sheep per

year and to sell products such as wool, meat, and livestock.

- The validation of an old livestock production tool (not well known in Patagonia) for which Patagonia Park has become a local and national reference.
- The implementation of the livestock guardian dog model at the regional level by the State. Today, there are nearly one hundred guardian dogs working on ranches in the Aysén region.
- The use of livestock guardian dogs has allowed us to maintain the natural predator populations, thereby conserving the local wildlife's ecological equilibrium. These predators consume the weakest, sickest, or least adapted individuals, thereby improving the condition of populations of guanaco, huemul, and other wild fauna. ◇



Challenges in the Implementation of the Livestock Guardian Dog Program

What are the primary challenges of having a livestock guardian dog?

First of all, the person chosen to be in charge of the dog is very important. A bond must be formed between the handler and the guardian dog.

The handler is responsible for the dog's food, which must be placed in the field where the sheep are grazing. The food can be placed, using a trough, inside the dog's house or on the far side of the pasture where the sheep will not get at it. Troughs with food dispensers work very well and can cover the dogs' needs for three to four days at a time.

The food that the guardian dogs consume must be of a high quality (high-quality protein, a good source of carbohydrates, vitamins, and minerals, and low in fat) so that their nutritional requirements are met (whether they are a puppy or an adult, a large breed or work breed). Good nutrition is necessary from the onset in order to prevent nutritional diseases, as these are fast-growing breeds. Guardian dogs have slow metabolisms and therefore do not eat much, but it is key that the food they do eat is high-quality. Consideration also must be given to the fact that the dogs are outside, on the ground, for the majority of their time, walking the pastures in a range of climatic conditions.

Special attention should be given to ensuring that the dogs are

always with the sheep, especially during their first year of life, so that the sheep consider them part of the herd. If dogs and puppies follow shepherds home, they must be returned immediately to the pasture with the herd. This action may need to be repeated several times a day, so shepherds must be firm and have patience with the dogs; it will pay off in the long run.

It is important to note that the key age for the most effective bonding of the livestock guardian puppies to the herd is around 16 weeks old.

It is also very important to maintain the dogs' health, which means taking them to the veterinarian, both as puppies and as adults, in order to keep them up-to-date on their vaccinations and anti-

parasitics. Antiparasitics should be administered every one and a half to three months when attempting to control echinococcal disease (a concern in the Aysén region).

It is advisable to consider working with neutered dogs in order to reduce distractions experienced by female dogs in heat. Otherwise, female dogs must be removed from the herd for about a month and placed in specialized kennels while they go through heat.

Some people, in their search for a multipurpose dog, have attempted to cross guardian dog breeds with shepherd/herding dog breeds in order to have a single dog that does the work of both. These attempts have not been successful and can result in a dog that cannot be used to herd cattle or protect sheep.





A livestock guardian dog stands guard during a sheering.

Another important job of the sheep farmer is to “rally” the sheep before the end of the day, in case any have wandered farther away and bred. The goal is for the shepherd to make the herd as compact as possible for the guardian dog before the end of each day, so that the dog is able to efficiently protect and care for the herd at night and into the early morning, when the herd is most vulnerable to predator attack.

Livestock guardian dogs are less effective when the animals they are meant to protect are more dispersed and less herded together, as in cases where livestock are left unattended or poorly managed by ranchers. In the United States, it has also been reported that livestock guardian dogs are more effective at reducing sheep losses from pu-

ma and black bear attacks in open pastures, compared to situations in which sheep are grazing inside fenced areas.

It is important to socialize guardian dogs so that they recognize the herding dogs with which they routinely work, as well as the other people that work with the livestock. Otherwise, these other actors may be seen as potential threats to the herd. This being said, guardian dogs should not interact frequently with herding dogs. The former must know the latter, in order to let the herding dog work with the sheep when necessary, but it is not advisable to let them play together.

How many dogs should you work with? How many sheep can one dog guard?

There is not enough information available to give a clear and simple answer to this question. In addition to the number of animals to guard and their distribution on the terrain (affecting field subdivision and water availability), one must consider field conditions such as site topography and vegetation, as well as the density, diversity, and size of native predators and the possibility of feral dog attacks or raiding/rustling.

For flat areas with natural grasslands or fields delineated by perimeter fences, one dog can monitor between 300 to 500 sheep. For mountainous areas that are more broken up or have more scrubland and forest coverage where predators can hide, more than one dog is

needed to protect the same number of sheep. The same is true if there are many predators in the area or many feral dog packs that may attack the herd. In these cases, the livestock guardian dogs must act in groups of at least two to three in order to adequately protect the herd. When losses are most frequently incurred due to raiding/rustling, the recommendation is to raise less-social guardian dogs that trust and recognize only the minimum necessary number of people, namely the shepherd in charge and the veterinarian.

Considering the variability in the surfaces and features (topography, vegetation, etc.) of pastures, it is very common for livestock guardian dogs to travel vast distances in order to mark areas with urine and feces, warning predators of their presence. If the pasture is small or medium in size, or the herd is small, it is important to let the neighbors know that the dog(s) may pass through their land because they may view it as part of their territory. Neighbors must be made aware that the dogs will not hurt their sheep; rather, they will likely help to guard neighboring herds against local predators. ♦

THE PEOPLE BEHIND THE CARE AND MANAGEMENT OF THE DOGS

José Calderón Montecinos (Cochrane, 1959)

“If there were no dogs, there would be no sheep.”

Born in Cochrane in 1959, José spent his whole childhood with his mother and brothers in the family’s ranch on the other side of the Baker River. After completing his military service, he went to work in Argentina for nine years. He worked as a flock master in different ranching operations between San Julián and Gobernador Gregores, in the province of Santa Cruz.

At the park, he met the “blancos” (livestock guardian dogs),

which he had never worked with before. “The dogs give results,” he says. “The important things are care and feeding. I have heard people in Cochrane complain that the dogs don’t work, but they have pastures that are very broken up, with a lot of mountains, that makes it more difficult. Besides, they leave them in the field, they do not give them food, they don’t go to see them, how can they work well like this?” ♦



José Calderón Montecinos

Eduardo Castro Ibáñez (Cochrane, 1962)

“One recognizes the work of the ‘blancos’, they are very good, thanks to them we are shearing.”

Eduardo was born in 1962 in Cochrane. He grew up with his grandmother in the countryside, on the coast of San Lorenzo, and did not go to school. At age 14, he began to work, and at age 20 he went to Governor Gregores, Argentina. Then, when the De Smet family began the Estancia Valle Chacabuco (Chacabuco Valley Ranch), he worked for them as a shepherd and cowboy for nine years. For two years he was in charge of the Cuadro Grande ranching area, along with J.L. Raty and in the Playa Vidal area next to Lake Cochrane. Since May 2005, he has worked for Conservacion Patagonica in Patagonia Park.

During the winters, he worked at the Estancia Valle Chacabuco,

with herding and puma-hunting (leonero) dogs as a “leonero” (or handler). Once the sheep shearing had been completed, he would go up to his summer post to tend sheep and get rid of puma. “During the Estancia era, there were many sheep losses due to puma and foxes, 600 to 800 sheep killed by puma each year. I hunted between 8 and 16 puma each year.” Eduardo did this work for three years and managed to kill 40 animals.

“I didn’t know about guardian dogs. I remember that in 1975 there was a person with a collie dog that worked with 50 sheep, that was the closest thing I saw. I first met the ‘blancos’ (guardian dogs) when Puelche and Brisa arrived. One rec-



Eduardo Castro Ibáñez

ognizes the work of the ‘blancos,’ they are very good, thanks to them we are shearing.” ♦

THE PEOPLE BEHIND THE CARE AND MANAGEMENT OF THE DOGS

Víctor Hernán Chacón (Chonchi, 1941)

“They care for the hacienda at night, they are really good. Without them we wouldn’t have any sheep.”

Víctor was born in 1941 in Chonchi, Chiloé. He left the island of Chiloé at a young age to work at Estancia Ñirehuao. He continued to work on estancias in Argentina until he arrived at the Estancia Valle Chacabuco in 1958 at just 17 years old. He began work as a kitchen aid, and by the end of the year he was already working as a shepherd, a job he learned under the tutelage of Mr. Murdoch Buchanan, the manager

of the estancia at the time. By the time of the agricultural reform, Víctor had been settled in Paso Hondo for 14 years.

“All my life I was accustomed to the herding dogs, there were no dogs that protected the cattle. I met them when I returned to work after retirement. They care for the hacienda at night, they are really good. Without them we wouldn’t have any sheep.” ♦



Víctor Hernán Chacón



TECHNICAL NOTES

Livestock Guardian Dogs



1. The **main objective** of introducing guardian dogs into the herd is to **reduce the losses** caused throughout the year by predators (such as foxes and pumas) and rustling/raiding. To do this, a high level of effort must be put into the recommended techniques so as to **ensure the greatest amount of contact between the dogs and the sheep they are to protect.**

2. The **process of socialization** and integration between the puppy and the sheep can initially begin with a small group of ewe and ram lambs, allowing them to become accustomed to the puppy. Begin with a barrier (mesh or wooden planks) between the dog and the sheep, allowing them to get to know each other and smell each other, so that they may later interact freely.

3. Little by little, puppies and lambs should be moved into wider corrals and enclosures. **Do not place very small puppies (less than five**

months old) with rams or sheep, as it is likely the animals will attack the puppy and cause the dog to have a negative first experience or a serious accident, inciting fear and mistrust in the long term.

4. **The process of socializing the puppy and the sheep should begin gradually in a shed and corral.** The puppy should always have food, water, and a warm place to sleep. If the puppy is still nursing, it is ideal to have it nurse from a mother sheep and share with the lambs. This will strengthen the bond between the puppy and the sheep.

5. A bond must be created between the dog and its “master” in order to establish hierarchy and trust. Guardian dogs are naturally dominant and require authority. They should neither be companion dogs nor wild, aggressive, uncontrollable dogs.

6. The dog must recognize its name (ideally short), respond to being called, and respect basic commands. It is important to have patience, as these are not naturally obedient dogs and they are accustomed to making their own decisions.

7. Remember that the dog is a puppy until it reaches one year of age. During this first year of life, the puppy will form habits and should be encouraged when expressing guardian instincts and corrected when making mistakes in order to achieve the desired behavior in the mature, adult dog.

8. **Livestock guardian dogs should be rewarded for a job well done** with affection (administered at their place of work, with the sheep) or a large bone (large enough to ensure they don't accidentally swallow it).

9. **The puppy's food should always be delivered wherever the sheep**



TECHNICAL NOTES



Pup suckling a sheep to strengthen their bond.

are, at least twice a day (three times a day if the puppy is less than three months old). Food should be delivered by hand or through the use of dispensers or a small food trough. Never feed the dog in a human dwelling.

10. Special attention should be paid to **concentrated feed (kibble)**, ensuring it is clear what the **recommended minimum amount of feed per day** is (depending on the dog's weight) and that this amount is divided into two portions. If the dogs get bored with a certain type of feed, handlers are encouraged to mix in a different kind. Water must also always be freely available.

11. Due to the large and rapid growth of livestock guardian dogs, **it is important to use good-quality (and higher-cost) food in order to avoid any issues during bone and muscle development.** The use of formulas that are specifically trademarked for large or giant breed puppies is rec-

ommended. Puppies should be fed this formula until they are one year old, after which time they should be given adult dog kibble.

12. **Care must be taken not to over-feed guardian dogs.** Being overweight can have negative consequences on dogs' joints and bones. These breeds have slow metabolisms and they do not need "extra" food, as food brands sometimes recommend.

13. It is important for shepherds or handlers to always remove skins and dead animals, regardless of the cause of death, in order to prevent the dogs from developing bad habits.

14. Shepherds **must be very aware and cautious** of the risk of dogs **being poisoned, run over,** or even **shot** when seen among a flock of sheep. **Always inform neighbors of the presence of the guardian dogs** and consider putting up signs warning that dogs are working in the area, as not everyone is familiar with the size and behavior of these breeds.

15. **Bringing any other dog in or near the area a guardian dog is protecting is highly discouraged.**

Additionally, guardian dogs should not be allowed to approach a house or anywhere else that other dogs are located. If this happens, the handler must give a clear "no" command and send the guardian dog back to the worksite with the sheep. It is advisable, especially while the roles and spaces of the guardian dogs are still being defined, that other household dogs remain tied up elsewhere. The idea is that the household dogs get to know the livestock guardian dogs but that they do not become friends.

16. In the first months of training, **the puppy should be discouraged from making friends with shepherd or house dogs**, as they will tend to follow them and/or accompany them and likely learn behaviors inappropriate for a livestock guardian dog.

17. **Guardian dogs should not be regularly petted**, nor is it advisable to allow other people or children to visit them while they're working and treat them as pets.

18. Livestock guardian dogs like routine and have very good memories. Any change, strange animal or human could be considered a threat. This can be both a good and bad trait, depending on the situation.

19. When it is necessary to carry out maneuvers and movements of the sheep with shepherd/herding dogs, the ideal is for the guardian dogs to only accept the other dogs

TECHNICAL NOTES

in the presence of a shepherd. The guardian dogs are not to allow the shepherd dogs to approach the herd without a shepherd or handler present. **The guardian dogs should accept the other dogs** but not learn how to herd or maneuver sheep.

20. Any **bad or undesirable behavior** presented by the guardian dog (such as returning to a human dwelling, playing with other dogs, or chasing sheep) should be repressed immediately from the moment the misconduct is detected through a clear, simple, and energetic command of “no” (without hitting the dogs or being aggressive toward them). It is fundamental to establish a hierarchy between the master and the dog, but not to resort to violence, as submissiveness is a negative trait in a guardian dog and can pose a threat to the handler. Additionally, the dogs have a very good memory and such violence can cause irreparable damage to their bond with their handler. It is useless to reprimand a dog after they have done

something wrong. The reprimand must be given in the moment, and discipline is fundamental.

21. As they grow older, guardian dogs will perform better, to the extent that the above recommendations have been followed. It is always advisable to **have someone supervising the livestock guardian dogs as they go about their work**, especially during their first year of life, in order to avoid any accidents.

22. **It is very important to rally the sheep together at the end of the day** so that they are concentrated in one area of the pasture. This facilitates the work of the guardian dogs, especially in cases with extensive pastures where sheep become widely dispersed throughout the paddocks during the day.

23. During the summer, it is recommended that handlers shear guardian dogs, focusing on the chest and legs where seeds often get stuck and are impossible to remove, thereby tangling the dogs’ hair.

24. It is recommended that dew claws

on the back legs of guardian dogs are checked regularly, as they can grow curved and become buried into the dog’s paw. If the dew claws are too long, just the tips should be cut.

In terms of **veterinary health**, it is recommended that guardian dogs take broad-spectrum deworming tablets every two to three months. In areas where hydatidosis is a concern, antiparasitics should be administered every month and a half. By six months old, Chilean guardian dogs should have been administered four octuple vaccines and one rabies dose. After the dogs reach one year of age, dogs should have one octuple vaccine and one rabies shot annually and an antiparasitic vaccine every one and a half to three months. These recommendations may vary slightly, depending on veterinary recommendations for each specific case.

When buying vaccines, remember to transport the refrigerated medicine in a cooler or plastic bag with ice (do not freeze the vaccine!).



BIBLIOGRAPHY

Acosta – Jamett G. 2014. Estudio de percepción conflicto ganadería – predadores en las regiones de Arica y Parinacota, Coquimbo, Araucanía y Aysén. Universidad Austral de Chile. 51 pp.

Dawydiak O and Sims D. 2004. Livestock Protection Dogs, Selection, Care and Training. 244 pp.

Gehring T., VerCauteren K., Landry J. 2010. Livestock Protection Dogs in the 21st Century: Is an Ancient Tool Relevant to Modern Conservation Challenges? www.biosciencemag.org April 2010/ Vol. 60 No. 4. 299–308 pp.

Iriarte A. 2007. Informe Final “Análisis del Impacto de Predación del Zorro Colorado (*Lycalopex culpaeus*) en Ovinos. Fondo de Desarrollo Regional.

Van Bommel L. 2010. Guardian Dogs: Best Practice Manual for the use of Livestock Guardian Dogs. Invasive Animals Cooperative Research Center, Australian Government. 127 pp.

Vorwald Dohner J. 2007. Storey’s Working Animals Livestock Guardian. Using dogs, donkeys and llamas to protect your herd. 229 pp.



Text: Paula Herrera | Design: Andrés Stubelt

Cite as: Herrera, P.. 2017. Livestock Guardian Dogs.

Wildlife Bulletin N°2. Conservacion Patagonica.

March 2017. 24 pp.

Photography: Carolina Barros, Raul Espinosa, Eugenie Frerichs, José Manuel Gortazar, Paula Herrera,

Raul Espinosa, Francisco Morandé, Rick Ridgeway,

Cristián Saucedo, Jimmy Valdés, Rodrigo Villablanca, Beth Wald

Special thanks to Raúl Espinosa, Paulina Godoy, Ignacio Palma, Cristián Saucedo, Fernán Silva and Macarena Varela.