

## **Project Information:**

**Project Title:** Improving and expanding the use of livestock guardian dogs for small ruminant predation.

**Recipient Organization Name:** Texas A&M AgriLife Center – San Angelo

### **Recipient's Project Contact:**

Name: Reid Redden

Phone: 325-653-4576

Email: *reid.redden@ag.tamu.edu*

## **Project Report**

**Annual Report Type:** Final Report

**Reporting Period**            Start Date: Jan 2022    End Date: July 2023

### **Performance Narrative:**

The purpose of the project funded by the NSIC grant is to compare adult livestock guardian dogs bonded as puppies at the AgriLife Center to dogs bonded on cooperator ranches. In January of 2022, we purchased 16 eight-week-old, weaned livestock guardian dog puppies from three different breeders in Texas. The puppies consisted of four Akbash x Great Pyrenees puppies, four Anatolian X Akbash X Great Pyrenees puppies and eight purebred Akbash puppies.

Five producers were located that were willing to cooperate with us for the project timeline that had limited experience bonding dogs to livestock. Three of the producers have over 500 head of sheep and two producers have over 200 head of sheep. Depending on the size of the producer's sheep operation they received one or two puppies to bond to their livestock. All producers have Dorper influenced hair sheep on their operations. The producers are in the following Texas counties: Kimble, Sutton, Maverick, and Pecos. The producers received their puppies in late January and early February. Producers will be visited in person every four to six weeks to address questions and any problems that may have arisen with the puppies. Producers regularly check in via text, phone, or email with us between visits. Puppies are checked for proper health and care at each in person visit.

The remaining 8 puppies were placed in bonding pens at the AgriLife Center in San Angelo for bonding and training procedures we have developed based on repeatable outcomes. The puppies at the Center were observed, socialized, and trained three times a week until they were six months of age. At that time the puppies were released from their bonding pens with the sheep they were bonded with into small pastures for additional training and observation.

At nine months of age the puppies at the AgriLife Center were spayed or neutered. After recuperating they were placed on the cooperating producer's ranches with the dogs the ranchers have bonded. All

dogs will be scored for socialization, roaming and overall guarding abilities at 8, 12 and 18 months of age. All dogs will wear a GPS tracking collar to monitor their behavior and location on a regular basis. Data from each scoring will be tabulated and reviewed with the producers.

Producers decided to either immediately release their dogs or give them 5 to 7 days to acclimate with ranch livestock before releasing the dogs to large pastures. Four out of the five producers acclimated the dogs with their own sheep for a short period. All dogs have been staying at their pasture locations as of this date and they are getting along well with each other. Four out of the five producers have their dogs together while the producer in Maverick County has separated his dogs into pairs at different ranch locations. Three out of the five producers are running their dogs with only sheep. Due to the drought two of the producers have had to run the dogs with mixed herds of sheep and goats.

LoRa GPS tracking systems were installed on two of the ranches with limited cellular service while the other three producers received cellular GPS trackers to monitor the dogs. All producers were set up with accounts at Lone Star Tracking to be able to monitor the dog's locations via desktop computers or with cellular phone apps. Dogs are being monitored via their GPS trackers several times a week by AgriLife personnel and/or producers. Producers are notified if it appears that dogs have left the pasture boundaries.

All but one of the producers are very happy with their dogs and looking forward to increased lamb crops. One producer is already asking to acquire more dogs from the AgriLife program to place them at a second ranch. Other than four of the dogs roaming, no other issues such as rough play or chasing have been noticed by the ranchers. The dogs bonded and working as pairs tend to stay as a pair on the ranch locations. The producers that received single dogs have not had any issues with their dogs getting along and they also travel together most of the time.

Four out of the five producers in the project were successful in the use of LGDs to control predation and increase their lambing percentages. Producers saw an increase of 40% to 100% increase in their lamb crops in just 8 months of using LGDs on their properties. All ranchers are planning on expanding the use of LGDs to control predation on their ranches in the future. All the ranchers have seen a value in the GPS tracking of their dogs and plan to continue the service with the current provider.

One producer was found to be neglecting their four LGDs and the dogs were removed from the ranch in May during a ranch visit. The producer had been warned on two previous occasions that the dogs were not being properly cared for but failed to make improvements in the care and handling of the dogs. The dogs were all examined by our veterinarian and found to be in poor health from lack of feed resources and overall care. The dogs were given feed and medication while being cared for at the AgriLife Center for over 2 months. Two of the dogs have been placed with a sheep producer in Dripping Springs, TX and the other two dogs will be sent to a sheep producer in Cuero, TX August of 2023 after receiving resocialization practices.

Slight differences in socialization between producer bonded dogs and AgriLife bonded dogs were seen throughout the project. LGDs bonded in hot wire at the AgriLife Center roamed less overall than AgriLife and producer bonded dog without hot wire in the bonding pens. A large difference in bonding practices

was not seen between cooperating producers or between the producers and AgriLife. We believe this is due to the increased amount of outreach by the program through field days, workshops, webinar and social media since 2019 when the AgriLife LGD Program was started.

**Estimate the Total Percentage (%) of work Completed on the Project..... 100%**

#	Accomplishment/Activity	Relevance to Objective
1	Purchased 16 weaned puppies. Delivered 8 pups to 5 cooperating producers to bond and kept 8 for AgriLife personnel to bond. AgriLife dogs were pair bonded. Four bonded in hot wire pens and four bonded in non-hot wire pens.	Allowed for bonding of LGD puppies to start at the AgriLife Center and with the cooperating producers.
2	Delivered 8 puppies at 9 months of age to 5 cooperating producers bonded by AgriLife personnel.	To allow the comparison of bonding methods between producer/breeder techniques and AgriLife methods to bond dogs to livestock.
3	Set up GPS tracking systems and worked with producers to use GPS trackers on all 16 dogs.	Gave producers the ability to monitor the dog's locations and receive alerts if the dogs left the ranch or pasture boundaries.
4	Dogs are monitored twice weekly for roaming and producers are notified of any issues.	Dogs that are not allowed to roam off property have a lower risk of being shot, poisoned, snared or hit by vehicles.

**Challenges and Developments**

#	Challenge or Development	Corrective Action or Project Change
1	Inability to purchase 8 bonded puppies from LGD breeders.	Purchased 16 weaned puppies. Half of the puppies were bonded for at the AgriLife center in San Angelo.
2	Poor Cellular Service	Installed GPS LoRa tracking system at 2 ranches that relays tracker data from dogs to a tower that communicates with cellular tower.
3	Dogs may have killed livestock on 1 ranch.	Dogs were removed from ranch and observed at the AgriLife Center. Dogs to be returned to producer after 30 days.
4	Unable to find 4 large producers (500+ ewes) to cooperate with the project timelines and goals.	Identified 3 large producers (500+ ewes) and 2 smaller producers (250+ ewes) that were willing to cooperate with the project goals and timeline.
5	One producer felt that his four dogs were killing adult livestock.	Dogs were removed and monitored at the AgriLife Center. No killing or rough play was observed for over 4 weeks. The dogs were

		moved to a new cooperating producers ranch. No killing was observed by the new producer, and they achieved a 120% lamb crop for the first time in many years. In 2022, before the dogs were placed, they had a 16% lamb crop.
6	No cellular service for GPS trackers at new cooperating producer.	The new cooperating producer had no cellular service at his ranch. Satellite based ear tag trackers were placed on the dogs to monitor their locations.
7	Solar GPS ear tag tracker abilities.	Solar GPS ear tag trackers were not able to keep up with the movements of the dogs which drained the batteries. Trackers had to have reporting time increased eventually up to 4 hours before the batteries were able to be maintained. Also, the dogs broke or damaged the solar panel from scratching on them with their feet. All four trackers were replaced at least twice until the project was completed.
8	Producer was found to be neglecting dogs after warnings to improve health and care.	Four dogs were removed in May of 2023. They received veterinary care and recuperated at the AgriLife Center until they were healthy. Two dogs were placed with a producer after the project ended in July of 2023. The other two dogs will be placed in August of 2023 with a different producer.

### Outcome and Indicator Results to Date

#	Outcome/Indicator	Quantifiable Results
1	Bonding and delivery of 16 puppies to cooperating producers.	All puppies were bonded to sheep using either current producer/breeder methods or AgriLife methods. Dogs bonded by AgriLife methods are all easily caught in the field.
2	Use of GPS Trackers to monitor dogs.	All 5 producers have access both online and via cellular phone apps to software that monitors the dog's locations. All producers have reported that they intend to continue using the trackers to monitor their dogs' locations.
3	Dogs bonded in hot wire pens are roaming less than dogs bonded without hot wire in the pens	GPS data is analyzed monthly to see if dogs have left the ranch locations. Dogs bonded in hot wire left pastures less often than non-hot wire bonded dogs. Four of

		the non-hot wire bonded dogs regularly leave their ranch boundaries but return without producer assistance. Two weeks after the project was completed one non hot wire bonded dog left its pasture and was killed by a snare. Another non hot wire producer bonded dog was returned for leaving its
4	Change in lamb crop of cooperating producers	Four of the five producers recorded 40% to 100% increases in lamb crops. The fifth producer saw increases in live lambs but due to the dogs being removed, we were unable to completely verify the results.
5	Change in lamb crop across all producers involved in the project	In total, producers raised an additional 1470 lambs in 2022/2023 valued at approximately \$177,062 compared to the previous year when LGDs were not used.

### Upcoming Activities

#	Activities	Anticipated Completion
1		
2		