

Dead or alive? Comparing costs and benefits of lethal and non-lethal human–wildlife conflict mitigation on livestock farms

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TABLE S1 Data for 11 commercial livestock farms in the Eastern Cape Province of South Africa, with the non-lethal control method used, the farm size, the number of livestock, the running costs of non-lethal control, the depredation costs, and the implementation costs in the first year of non-lethal control. All costs are per head of stock.

Farm	Non-lethal control method*	Lethal-control year					Non-lethal control year 1					% total savings relative to lethal year	Non-lethal control year 2					
		Farm size (ha)	No. stock	Running cost (USD)	Depredation cost (USD)	Total cost (USD)	No. stock	Implement cost (USD)	Running cost (USD)	Depredation cost (USD)	Total cost (USD)		No. stock	Running cost (USD)	Depredation cost (USD)	Total cost (USD)	% total savings relative to lethal year	% total savings relative to non-lethal year 1
1	LGD (n = 1)	2,000	709	7.94	6.86	14.79	759	0.73	0.57	0.19	1.49	89.9	805	0.54	0.18	0.72	95.1	51.7
2	LGD (n = 5)	10,000	4,500	0.95	7.02	7.97	4,500	0.61	0.48	1.15	2.24	71.9	4,500	0.48	0.91	1.39	82.6	37.9
3	LGD (n = 1)	6,500	3,100	1.74	13.03	14.77	3,010	0.18	0.14	6.86	7.18	51.4	3,288	0.13	3.91	4.04	72.6	43.7
<i>Mean for LGDs</i>		<i>6,167</i>	<i>2,770</i>	<i>3.54</i>	<i>8.97</i>	<i>12.51</i>	<i>2,756</i>	<i>0.51</i>	<i>0.40</i>	<i>2.73</i>	<i>3.64</i>	<i>71.1</i>	<i>2,864</i>	<i>0.38</i>	<i>1.67</i>	<i>2.05</i>	<i>83.4</i>	<i>44.5</i>
4	Alpacas (n = 7)	3,000	1,000	2.95	66.34	69.29	1,000	6.02	0.69	22.11	28.82	58.4	1,000	0.69	20.93	21.62	68.8	25.0
5	Collars (1 per head of stock)	2,000	715	5.31	23.09	28.40	680	3.50	0.00	3.26	6.76	76.2	700	0.44	2.31	2.75	90.3	59.3
6	Collars (1 per head of stock)	2,500	1,120	3.50	45.80	49.31	990	3.50	0.00	17.87	21.37	56.7	1,050	0.53	12.63	13.16	73.3	38.4
7	Collars (1 per head of stock)	4,000	1,040	3.77	13.89	17.66	940	3.50	0.00	2.20	5.70	67.7	915	0.36	0.97	1.33	92.5	76.7
8	Collars (1 per head of stock)	1,500	732	4.58	16.11	20.69	921	3.50	0.00	5.60	9.10	56.0	948	0.44	6.22	6.66	67.8	26.8
9	Collars (1 per head of stock)	6,500	2,650	1.53	8.90	10.43	2,060	3.50	0.00	2.29	5.79	44.5	1,760	0.41	3.85	4.26	59.2	26.4
10	Collars (1 per head of stock)	5,000	572	0.28	5.93	6.21	550	3.50	0.00	3.21	6.71	-8.1	483	0.40	2.45	2.85	54.1	57.5
11	Collars (1 per head of stock)	4,200	992	3.71	14.27	17.98	1,100	3.50	0.00	6.97	10.47	41.8	1,075	0.36	6.03	6.39	64.5	39.0
<i>Mean for collars</i>		<i>3,671</i>	<i>1,117</i>	<i>3.24</i>	<i>18.28</i>	<i>21.52</i>	<i>1,034</i>	<i>3.50</i>	<i>0.00</i>	<i>5.91</i>	<i>9.41</i>	<i>47.8</i>	<i>990</i>	<i>0.42</i>	<i>4.92</i>	<i>5.34</i>	<i>71.7</i>	<i>46.3</i>
<i>Mean for all non-lethal methods</i>		<i>4,291</i>	<i>1,557</i>	<i>3.30</i>	<i>20.11</i>	<i>23.41</i>	<i>1,501</i>	<i>2.91</i>	<i>0.17</i>	<i>6.52</i>	<i>9.60</i>	<i>55.1</i>	<i>1,502</i>	<i>0.43</i>	<i>5.49</i>	<i>5.92</i>	<i>74.6</i>	<i>43.9</i>

*LGD, Livestock guardian dog

TABLE S2 Data for 11 commercial livestock farms in the Eastern Cape Province of South Africa, with the non-lethal control method used, predators present, the percentage of livestock lost to depredation during the lethal-control year and the 2 years of non-lethal control, and the percentage reduction in depredation compared to previous years. All farms used leg-hold traps and hunting during lethal control years except where noted.

Farm	Non-lethal control method ¹	Predators present	Lethal-control year	Non-lethal control year 1	Non-lethal control year 2			
			Depredation (%)	Depredation (%)	% depredation reduction compared to lethal-control year	Depredation (%)	% depredation reduction compared to lethal-control year	% depredation reduction compared to non-lethal control year 1
1 ²	LGD (n = 1)	Caracal <i>Caracal caracal</i> , black-backed jackal <i>Canis mesomelas</i>	4.7	0.1	97.2	0.1	97.4	5.3
2	LGD (n = 5)		4.8	0.8	83.6	0.6	87.0	20.9
3	LGD (n = 1)		8.8	4.7	47.4	2.7	70.0	43.0
<i>Mean for LGDs</i>			<i>6.1</i>	<i>1.9</i>	<i>76.1</i>	<i>1.1</i>	<i>84.8</i>	<i>23.1</i>
4 ²	Alpacas (n = 7)	Caracal, black-backed jackal	45.0	15.0	66.7	14.2	68.4	5.3
5	Collars (1 per head of stock)	Caracal, black-backed jackal, leopard <i>Panthera pardus</i>	15.7	2.2	85.9	1.6	90.0	29.1
6	Collars (1 per head of stock)		31.1	12.1	61.0	8.6	72.4	29.3
7	Collars (1 per head of stock)		9.4	1.5	84.2	0.7	93.0	55.9
8 ³	Collars (1 per head of stock)		10.9	3.8	65.2	4.2	61.4	-11.1
9 ³	Collars (1 per head of stock)		6.0	1.6	74.3	2.6	56.7	-68.1
10 ²	Collars (1 per head of stock)		4.0	2.2	45.9	1.7	58.8	23.7
11	Collars (1 per head of stock)		9.7	4.7	51.2	4.1	57.7	13.5
<i>Mean for collars</i>			<i>12.4</i>	<i>4.0</i>	<i>66.8</i>	<i>3.4</i>	<i>70.0</i>	<i>10.3</i>
<i>Mean for all non-lethal methods</i>			<i>13.6</i>	<i>4.4</i>	<i>69.3</i>	<i>3.7</i>	<i>73.9</i>	<i>13.3</i>

¹ LGD, livestock guardian dog

²Lethal controls used by Farm 1 included gun-traps in addition to leg hold traps and hunting, Farm 4 used only leg hold traps and Farm 10 used only hunting.

³Farms had increased losses in the second non-lethal year compared to the first.

TABLE S3 Savings and costs per head of stock, relative to those expected during 1 year of lethal control, for each of the 3 years of non-lethal control on 11 commercial livestock farms in the Eastern Cape Province of South Africa.

Farm	Non-lethal control method *	Non-lethal control year 1					Non-lethal control year 2					Non-lethal control year 3				
		Savings in running costs (USD)	Savings in avoided depredation (USD)	Total savings (USD)	Total cost (USD)	Profit-loss ratio	Savings in running costs (USD)	Savings in avoided depredation (USD)	Total savings (USD)	Total cost (USD)	Profit-loss ratio	Savings in running costs (USD)	Savings in avoided depredation (USD)	Total savings (USD)	Total cost (USD)	Profit-loss ratio
1	LGD (n = 1)	6.64	6.60	13.24	1.49	8.89	6.45	6.59	13.04	0.72	18.11	0.77	0.00	0.77	0.72	1.07
2	LGD (n = 5)	-0.14	5.86	5.72	2.24	2.55	0.47	6.09	6.56	1.40	4.69	0.84	0.23	1.07	1.40	0.76
3	LGD (n = 1)	1.41	6.17	7.58	7.18	1.06	1.51	9.15	10.66	4.03	2.64	3.15	2.38	5.53	4.03	1.37
<i>Mean for LGDs</i>		<i>2.64</i>	<i>6.21</i>	<i>8.85</i>	<i>3.64</i>	<i>4.17</i>	<i>2.81</i>	<i>7.28</i>	<i>10.09</i>	<i>2.05</i>	<i>8.48</i>	<i>1.59</i>	<i>0.87</i>	<i>2.46</i>	<i>2.05</i>	<i>1.07</i>
4	Alpacas (n = 7)	-3.76	44.23	40.47	28.82	1.40	2.26	45.41	47.67	21.62	2.20	7.20	1.18	8.38	21.62	0.39
5	Collars (1 per head of stock)	1.81	19.73	21.54	6.75	3.19	4.98	20.85	25.83	2.76	9.36	3.99	0.84	4.83	2.76	1.75
6	Collars (1 per head of stock)	0	27.99	27.99	21.37	1.31	3.21	33.13	36.34	13.17	2.76	8.20	4.21	12.41	13.17	0.94
7	Collars (1 per head of stock)	0.27	11.76	12.03	5.70	2.11	3.92	12.89	16.81	1.33	12.64	4.37	1.29	5.66	1.33	4.26
8	Collars (1 per head of stock)	1.08	10.56	11.64	9.10	1.28	3.10	9.95	13.05	6.66	1.96	2.44	-0.78	1.66	6.66	0.25
9	Collars (1 per head of stock)	-1.97	6.58	4.61	5.79	0.80	1.89	5.03	6.92	4.26	1.62	1.53	-1.17	0.36	4.26	0.08
10	Collars (1 per head of stock)	-3.22	2.68	-0.54	6.72	-0.08	-0.07	3.36	3.29	2.84	1.16	3.88	1.22	5.10	2.84	1.80
11	Collars (1 per head of stock)	0.21	7.24	7.45	10.47	0.71	3.06	8.23	11.29	6.39	1.77	4.08	1.10	5.18	6.39	0.81
<i>Mean for collars</i>		<i>-0.26</i>	<i>12.36</i>	<i>12.10</i>	<i>9.41</i>	<i>1.33</i>	<i>2.87</i>	<i>13.35</i>	<i>16.22</i>	<i>5.34</i>	<i>4.47</i>	<i>4.07</i>	<i>0.96</i>	<i>5.03</i>	<i>5.34</i>	<i>1.41</i>
<i>Mean for all non-lethal methods</i>		<i>0.21</i>	<i>13.58</i>	<i>13.79</i>	<i>9.60</i>	<i>2.11</i>	<i>2.80</i>	<i>14.61</i>	<i>17.41</i>	<i>5.93</i>	<i>5.36</i>	<i>3.68</i>	<i>0.95</i>	<i>4.63</i>	<i>5.93</i>	<i>1.23</i>

*LGD, Livestock guardian dog