

# Human Attitudes Toward Wild Felids in a Human-dominated Landscape of Southern Chile

Eduardo A. Silva-Rodríguez<sup>1,2</sup>, Gabriel R. Ortega-Solis<sup>1</sup> and Jaime E. Jiménez<sup>3</sup>

**W**e evaluated human attitudes toward the guigna *Leopardus guigna* and the cougar *Puma concolor* in a rural landscape of southern Chile. Most people had negative attitudes toward both species, arguing livestock and poultry losses. However, it appears that losses are infrequent, and thus, negative attitudes could be justified by popular knowledge and beliefs rather than by actual losses. Highlighting the services provided by cats will be key for educational programs and for the long-term conservation of these species.

Human attitudes are among the most important issues if cat conservation is the intended goal. The spatial extent of protected areas alone is not enough for the long-term viability of many cat species, which in general are declining in numbers because of human-related impacts (Woodroffe & Ginsberg 1998). Given this, the conservation of cats outside protected areas hinges in how rural people perceive and know them.

Cats, as carnivore and wide ranging species, are especially prone to come into conflict with human populations (Treves & Karanth 2003). Thus, human attitudes and willingness to conserve them is conditioned by knowledge, perception, and past experiences toward those species (Kellert *et al.* 1995). In spite of the importance of human attitudes for wildlife and especially for carnivore conservation, human dimensions of cat conservation still remains almost not addressed in South America, and especially in Chile.

Here, we examine human attitudes towards the guigna *Leopardus guigna*, (Fig. 1), a small-sized and endangered species that has one of the world's most restricted distribution of all cats, and towards the cougar *Puma concolor*, the only large cat that inhabits Chile (Nowell & Jackson 1996).

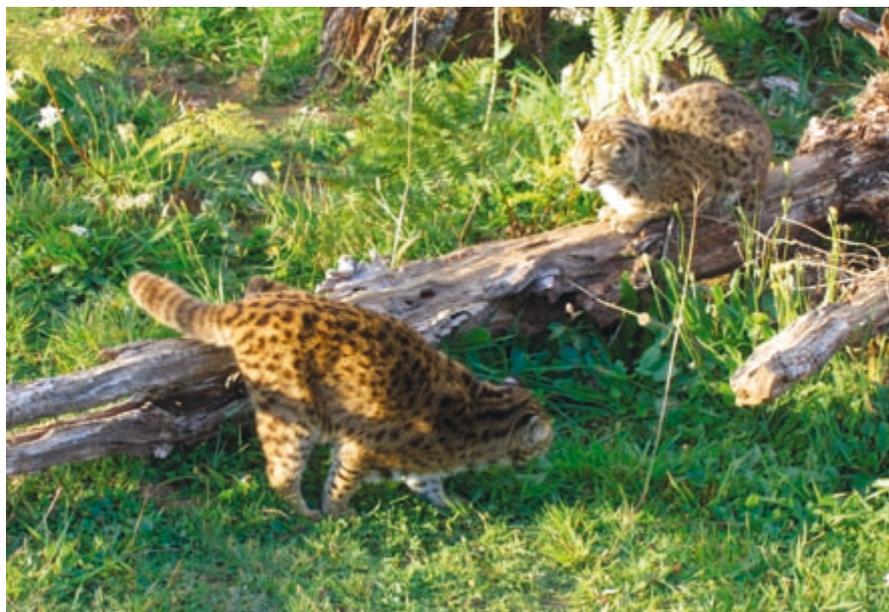


Fig. 1. Two male guignas (Photo E. Silva-Rodríguez).

## Methods

To assess attitudes, knowledge and beliefs of small farmers, during April 2006 we applied a questionnaire designed to assess human attitudes toward the guigna and the cougar. Our target population was all the householders that lived in Centinela and Chaquián (40°14'S; 73°04'W), an agricultural landscape located in southern Chile, close to the city of La Unión (Silva 2006). Out of a total of 47 families that live in the area, 43 answered our questionnaire.

To assess the ability of farmers in recognizing the cat species we showed them pictures of both felids and of three mustelids that inhabit the area (i.e., the Molina's hog-nosed skunk *Conepatus chinga*, the lesser grison *Galictis cuja* and the exotic mink *Mustela vison*) and evaluated whether rural people could recognize them correctly. The human attitudes toward these species were evaluated using a Likert-scale questions (5 categories, where 1 is the most negative). Scores obtained were added. People that obtained scores of 6 or less

where considered to hold negative attitudes and people whose scores were 12 or higher were considered to have positive attitudes. We also recorded information regarding livestock losses, and culling of felids.

## Results

The results show that only 53.5% of the interviewed farmers were able to positively recognize a guigna in a picture, which was heavily and negatively biased toward women (31.6% vs. 70.8% in men). Only one respondent misidentified a guigna with a cat, 16.3% answered it was a cougar kitten and the remaining 27.9% did not recognize the image shown. In contrast, 97.7% of them recognized the cougar (95.8% for men and 100% for women). Mustelids were not mistaken with cats, however positive recognition was poor. Only the hog-nosed skunk was widely recognized (86.1%), whereas nobody recognized the lesser grison (most people did not recognize the picture, 7.0% thought it was a coypu *Myocastor coipus* and

4.7% thought that it was a mink) and only 20.9% recognized the mink (7.0% thought it was a rodent), and the remaining did not recognize the picture.

Even though locals considered that both species were scarce and had stable populations over time, they wanted to see a decrease in the numbers of both felids (Table 1). The majority of the people showed negative attitudes toward cougar and guigna (76.7% and 72.1%, respectively) and the remaining people had indifferent attitudes toward both species (Table 1). Hence, none showed positive attitudes.

When asked about livestock and poultry losses, most rural people (51.2%) mentioned predation events that occurred more than 10 years ago. When asked about losses occurred in the last 12 months, only one person reported losses due to a guigna (12 hens killed) and another reported the loss of 2 sheep by a cougar attack. Most people (69.8 %) considered that the cougar represented a threat for them. Anecdotally, some farmers told us that the cougar preferred to attack women and children, but no one could report cougar attacks on people.

Respondents informed that 2 guignas were killed during 2005. One of them was shot inside a henhouse after killing more than 12 hens. People kept the guigna fur as a trophy (Fig. 2). The other guigna was killed by a dog close to a house. The most common method reported for killing a guigna was to chase it with a dog and tree it, where it could be easily killed. No person reported to have killed a cougar during the last 5 years. A household reported to have sold 2 cougar skins to a police officer, who paid about US\$ 9.0 for each pelt. Another household reported to have caught a cougar kitten 6 years ago. Personnel from the Agriculture and Livestock Bureau of Chile (SAG), kept the animal, whose fate was unknown.

## Discussion

As reported by Zorondo (2005), in our study most rural people held negative attitudes toward the guigna. In contrast, Díaz (2005) found mostly (70.5%) positive attitudes by small farmers toward this species in Chiloé island. This may be explained by the fact that most interviewed people had never had experiences with this felid. However, in Chi-

**Table 1.** Responses to the questionnaire applied.

	Cougar (%)	Guigna (%)
I would like that the ____ population...		
Disappear	46.5	41.9
Decrease	30.2	37.2
be kept as they are	16.3	18.6
Increase	6.7	2.3
In regard to the _____...		
I do not like it at all	51.2	41.9
I do not like it	27.9	30.2
I do not care	2.3	14.0
I like it	18.6	14.0
What do you think about the ____ ...		
It is very damaging	32.6	27.9
It is damaging	53.5	53.5
It is neither damaging nor beneficial	11.6	16.3
It is beneficial	2.3	2.3
This species is ...		
absent in the area	25.6	16.3
scarce in the area	65.1	79.1
common in the area	9.3	4.7
In the last 10 years...		
its population has decreased	16.3	32.6
its population has remained stable	44.2	48.8
its population has increased	23.3	0.0
I do not know	16.3	18.6

loé some guignas occasionally do prey upon poultry (Sanderson *et al.* 2002). For the cougar our data on attitudes are the first report for the species in Chile and confirmed what has been reported by Kellert *et al.* (1995) in North America, and by anecdotal observations provided by other authors in Chile (e.g., Iriarte *et al.* 1991), that people perceive cougars as a threat for them and their livestock and, consequently, they have negative attitudes toward the species.

It appears that guigna and cougar depredation on poultry and sheep are extremely rare events in our study site. However, these isolated cases could have profound social implications: when felids depredate on domestic animals, neighbours rapidly spread the voice, contributing to ingrain the belief in the popular knowledge that most animals depredate livestock. In both species, negative attitudes seemed unjustified as poultry and livestock losses due to these species during the last year were minimal in the study area.

However, it is well reported that cougars occasionally do prey upon live-

stock, especially on sheep, and also that cougars usually kill many animals in short periods, that has important consequences on farmers' economies (Franklin *et al.* 1999), which results in a heavy and generalized persecution of cougars by farmers. Also guignas can ride henhouses and are therefore killed by locals because of this behavior (Housse 1953, Sanderson *et al.* 2002). The small amount of livestock losses in our study site could reflect the scarcity of both felids in the area. Small livestock management in the area was ineffective to prevent other carnivore-induced losses (Silva 2006), thus if felids were abundant in the area, losses would have been probably higher. Thus, human attitudes likely reflect cultural believes and perhaps past experiences (Kellert *et al.* 1995), when these cats might have been common.

Mortality of felids because of conflicts appeared as low, but data must be analyzed with caution because of potential biases. Killing cougars and guignas is illegal in Chile, and thus, the interviewed people could be hid-

ing information regarding the death of animals. However, the possession of skins of a protected species and the fact that a police officer encouraged poaching of another protected species by purchasing skins of cougars rather than enforcing the law reflects corruption that still occur. Additionally, real dog-induced mortality of guignas was probably higher than reported, because people do not necessarily know what their free ranging dogs do. In any case, the poaching of 2 guignas in one year could be important from a conservation point of view, contributing to limit the viability of fragmented populations. Considering that the study area was composed of small native forest patches (guignas' main habitat) interspersed in a matrix of exotic plantations and abundant prairies (Silva 2006), guigna survival will depend on the ability of moving among patches. Due to human-cat conflicts the matrix could become a sink for cats, limiting the viability of an eventual metapopulation (see Hanski & Simberloff 1996), especially when the landscape is dominated by subsistence agriculture, as was the case in our study site.

Long-term conservation of the guigna and cougar outside protected areas will depend on the ability of wildlife professionals to develop effective education strategies and increase the awareness of locals to improve human attitudes toward these species. The effectiveness of education strategies will depend in the implementation of education programmes strategies by multidisciplinary groups. It is also crucial to develop strategies to reduce problems between cats and people (Sillero-Zubiri & Laurenson 2001), otherwise attitudes changes would be an almost impossible goal. A better appreciation by farmers of the role of these cats as controllers of mice and European hares (*Lepus europaeus*, Rau & Jiménez 2002) should be emphasized in educational programmes. Acceptance of carnivores depends on animal characteristics, but also on people's demographic and personal variables (Kleiven *et al.* 2004), which implies that anthropologists, teachers, and other professionals working in rural development should be involved in future conservation actions.

#### Acknowledgements

We thank Juan C. Skewes, Mauricio R. Soto-Gamboa, Roberto P. Schlatter, and an anonymous reviewer for comments that enriched this work. We appreciate the help of people from Centinela and Chaquián that kindly provided us with valuable information.

#### References

- Díaz V.A. 2005. Evaluación de la dimensión humana, a través del estudio de las actitudes y conocimientos de la gente de la Isla Grande de Chiloé, X Región, para futuros planes de conservación de fauna silvestre y su hábitat. Thesis, Facultad de Recursos Naturales, Universidad Católica de Temuco, Temuco, Chile. 228 pp.
- Franklin W.L., Johnson W.E., Sarno R.J. and Iriarte J.A. Ecology of the Patagonia puma *Felis concolor patagonica* in southern Chile. *Biological Conservation* 90, 33-40.
- Hanski I. and Simberloff D. 1997. The metapopulation approach, its history, conceptual domain and application to conservation. In *Metapopulation Biology: Ecology, Genetics & Evolution*. Hanski, I. and Gilpin, M.E. (Eds). Academic Press, London, United Kingdom, pp. 5-26.
- Housse R. 1953. Animales salvajes de Chile en su clasificación moderna: su vida y sus costumbres. Ediciones de la Universidad de Chile, Santiago, Chile. 189 pp.
- Iriarte J.A., Johnson W.E. and Franklin W.L. 1991. Feeding ecology of the Patagonia puma in southernmost Chile. *Revista Chilena de Historia Natural* 64, 145-156.
- Kellert S.R., Black M., Rush C.R. and Bath A.J. 1995. Human culture and large carnivore conservation in North America. *Conservation Biology* 31, 167-189.
- Kleiven J.O., Bjerke T. and Kaltenborn B.P. 2004. Factors influencing the social acceptability of large carnivore behaviours. *Biodiversity and Conservation* 13, 1647-1658.
- Nowell K. and Jackson P. 1996. Wild cats: status survey and conservation action plan. International Union for Conservation of Nature and Natural Resources. Gland, Switzerland. 382 pp.
- Rau J.R. and Jiménez J.E. 2002. Diet of puma (*Puma concolor*, Carnivora: Felidae) in coastal and Andean ranges of southern Chile. *Studies on Neotropical Fauna and Environment* 37, 201-205.
- Sanderson J., Sunquist M.E. and Iriarte J.A. 2002. Natural history and landscape-use of guignas (*Oncifelis guigna*) on Isla Grande de Chiloé, Chile. *Journal of Mammalogy* 83, 608-613.
- Sillero-Zubiri C. and Laurenson M.K. 2001. Interactions between carnivores and local communities: conflict or co-existence? In *Carnivore Conservation*. Gittleman J.L., Funk S.M., Macdonald D. and Wayne R.K. (Eds). Cambridge University Press, Cambridge, United Kingdom, pp. 282-312.
- Silva E.A. 2006. Evaluación de conflictos entre zorros chilla (*Pseudalopex griseus*) y agricultura de subsistencia en una localidad rural del sur de Chile: ¿mito o realidad? Thesis. Facultad de Ciencias Veterinarias, Universidad Austral de Chile, Valdivia, Chile. 83 pp.
- Treves A. and Karanth K.U. 2003. Human-carnivore conflict and perspectives on carnivore management worldwide. *Conservation Biology* 17, 1491-1499.
- Woodroffe R. and Ginsberg J.R. 1998. Edge effects and the extinction of wildlife inside protected areas. *Science* 280, 2126-2128.
- Zorondo F. 2005. Conservación de carnívoros en Chile central: el factor social. Thesis, Facultad de Ciencias, Universidad de Chile, Santiago, Chile. 41 pp.



**Fig. 2.** Skins of poached guigna such as this one can be seen often in rural houses kept as ornaments or trophies (Photo E. Silva-Rodríguez).

<sup>1</sup> Simbiosis, Escuela de Medicina Veterinaria, Universidad Austral de Chile, Casilla 567, Valdivia, Chile, <eduardosilvar@gmail.com>

<sup>2</sup> Centro de Estudios Ambientales, Universidad Austral de Chile,

<sup>3</sup> Laboratorio de Ecología, Universidad de Los Lagos, Osorno, Chile.