DSG Newsletter Nº29
ISSN 2312-4644

June, 2017.

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Editorial

Dear DSG members,

We are beginning a new quadrienium, with the new Chairman of the Species Survival Commission **Dr. Jon Paul Rodriquez** elected during the last **World Conservation Congress.** We are confident Jon Paul will continue important guidelines initiated during **Dr. Simon Stuart**'s period. We are happy to announce that Jon Paul has reappointed us as DSG Co-chairs for another 4-year term. It is thus our responsibility to reorganize the DSG membership and activities for the next period. We are grateful for his trust and we will be working from this DSG to integrate deer biology knowledge to be more effective in conservation and management guidelines.

We would like to make some minor changes in membership in order to keep the organization vibrant, and to allow new people from other geographic regions to become part of the IUCN. We consulted our past membership to know if they are willing to continue and contribute with their expertise to the DSG and we also invited new members. If you have any ideas or suggestions for new members who can assist in our efforts to conserve the world's deer, please let us know.

In addition we announce and welcome a new Red List Authority for the New World species, **Dr. Mariano Gimenez-Dixon** (mgimenezdixon@gmail.com). We thank **Dr. Eveline Zanetti** who worked closely with us during the last period. We also thank **Ms. Sarah Brook** (sarahmbrook@gmail.com), who will continue her commitment to the Red List for the Old World species.

We wish to acknowledge our supporting agencies: Conservation Force (www.conservationforce.org) for providing funding to Bill for Eld's deer ecology and conservation projects in Southeast Asia, and to Susana González *Comisión Sectorial de Investigación Cientifica* (CSIC-UdelaR), and the Women in Science Award of the *L'Oreal Foundation-UNESCO-MEC* in Uruguay for her research and contribution to the advancement of scientific knowledge on Neotropical deer species.

We want to acknowledge to all who contribute in this edition, also we extent our thanks to all of you for being part of the DSG and we invite all to submit articles to the next issue to Dr. Patricia Black (black.patricia@gmail.com).

Our best wishes,

Susana and Bill

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The populations status and distribution of Caspian red deer (maral) *Cervus elaphus maral* in Iran

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Abstract

The maral red deer *Cervus elaphus maral*, once widespread throughout the whole Hyrcanian and Caucasus forests in southwest Asia, has undergone a dramatic decline due to heavy poaching and habitat transformation. Maral is now extinct in the wild in western and northwestern Iran, but still persists in the Caspian montane forests of northern Iran, also known as the Hyrcanian forest. We conducted sign surveys in 15 areas distributed over the entire forest range to obtain an index of relative abundance of deer (signs/km). In one reference area, we calibrated this index with independently obtained deer density estimates and then used it to estimate absolute deer abundance in all other areas. Moreover, we compiled data from recent surveys by local rangers in eight other areas to get additional information on distribution. Red deer is still present in twelve survey sites at highly variable densities and reported from seven other sites surveyed by the rangers. However, in one site we found no evidence of the species. We compared our estimates to historical data, which showed the population may have undergone a dramatic decline since 1977. We recommend urgent conservation actions to address poaching and habitat fragmentation.

El maral o ciervo rojo del Caúcaso *Cervus elaphus maral*, cuya distribución pasada se extendía a través de todos los bosques Hircanos y Caucásicos del suroeste de Asia, ha sufrido una dramática disminución de sus poblaciones debido a la caza furtiva y la transformación de su hábitat. El maral está ahora extinto en estado silvestre en el oeste y noroeste de Irán, pero aún persisten en los bosques montañosos del Caspio en el norte de Irán también conocidos como "bosques Hircanos". Realizamos muestreos indirectos de signos en 15 áreas distribuidas por toda la extensión forestal para obtener un índice de abundancia relativa de ciervos (signos / km). En un área de referencia, calibramos este índice con estimaciones de densidad de ciervos obtenidas independientemente y luego la usamos para estimar la abundancia absoluta de ciervos en todas las otras áreas. Además, recopilamos datos de encuestas recientes realizadas por guardabosques locales en otras ocho áreas para obtener más información sobre la distribución de la especie. El venado rojo sigue presente en doce sitios muestreados y su presencia fue reportada en otros siete sitios muestreados por los guardaparques. Sin embargo, en un sitio no encontramos evidencia de la presencia de la especie. Comparamos nuestras estimaciones con datos históricos que mostraron que las poblaciones de esta especie pudieron haber experimentado una dramática disminución desde 1977. Recomendamos medidas urgentes de conservación para abordar la caza furtiva y la fragmentación del hábitat.

Keywords: protected area, faecal standing crop, population status, relative abundance index, distribution, Hyrcanian forests

I**ntroduction**

For wildlife inhabiting barely accessible areas and/or having low population densities, reliable data on distribution and population status are often missing (Singh & Milner-Gulland 2011). Based on the current distribution map of the IUCN Red List of Threatened Species, red deer *Cervus elaphus* is restricted to Europe, despite the occurrence of various subspecies in Asia. The maral *Cervus elaphus maral*, for example (Fig. 1), still occurs in Iran and the Caucasus. Indeed, it has been extirpated in western and northwestern Iran (Kiabi et al. 2004), but is still present in various reserves in the Hyrcanian forest (Kiabi et al. 2004).

The Hyrcanian forest is located in northern Iran and extends to Azerbaijan, within the three provinces Gilan, Mazandaran and Golestan, holding a total population of 7 million people or ca. 10% of the country's people (Statistical Center of Iran 2015). It expands from the southern coastline of the Caspian

Sea to the northern slopes of the Alborz Mountains. Due to an exceptional diversity of species and landscapes converged between Asia and Europe, the forest is part of the Caucasus Biodiversity Hotspot and the Caucasus Ecoregion (Olson & Dinerstein 2002, Khalilzadeh et al. 2016). The Hyrcanian forests are among the most severely threatened ecosystems in Iran due to fertile soils, mild climate, water availability, timber productivity and attractiveness for new settlements (Akhani et al. 2010). In combination with rapid urbanization and industrialization, road and dam construction, overgrazing, poaching and deforestation, the ecosystem is currently being severely degraded (Akhani et al. 2010). The entire wild population of maral may act as an important source for recovery in the lesser Caucasus region.

The maral suffers from high levels of poaching and ineffective law enforcement in much of its current range (Kiabi et al. 2004, Soofi et al.2017) and is listed as endangered by the Iranian Department of Environment (DoE). DoE has initiated several captive breeding initiatives within its former range, yet without successful reintroduction. In Golestan National Park (GNP), Iran's oldest, located in northeastern Iran, the maral has experienced a population decline of 89% since 1977 (Ghoddousi et al. et al.2017). Apart from one study in the same area (Kiabi et al. 2004), no reliable information on the status of the species at the national level is currently available.

In this study, we assessed the population status and distribution of maral across the Hyrcanian landscape. We conducted standardized sign and direct sighting surveys on foot to estimate relative abundance in 15 sites and compiled data from ranger surveys to get additional information on maral distribution. We used one site to calibrate the index of relative abundance with animal density, which we then used to extrapolate abundance to all survey sites. Due to the high fragmentation of the maral population in Iran and its restriction to particular reserves, we assume that this number provide a representative approximation of the entire Iranian red deer population.

Figure 1.The maral *Cervus elaphus maral* in Dodangeh Wildlife Refuge, Iran. Photo: M. Abbaszadeh.

Study area

All study sites lie within the deciduous Hyrcanian forests that form a green arc along the southern slopes of the Caspian Sea (Fig. 2). The forests stretch from the Talysh Mountains in Azerbaijan through the northern slopes of the Alborz Mountains to the GNP in eastern Iran (Akhani et al. 2010, Sagheb-Talebi et al. 2014). The landscape covers 18,500 km^2 - ca. 15% of Iran's forests and ca. 1.1% of the Iranian land area. Nearly 10,873.9 km^2 of this landscape are protected (Darvishsefat 2006). The mean annual precipitation ranges between 530 and 1,350 mm. The mean air temperature of the warmest and coldest months var ies from 28-35°C to 1.5-4°C, respectively (Sagheb-Talebi et al. 2014). The elevation ranges from -28 to 3,454 m above sea level. The Hyrcanian lowland forests are dominated mainly by relic species: *Zelcova carpinifolia*, *Parrotia persica*, *Gleditchia caspica* and *Pterocaria fraxinifolia*, followed by *Quercus castaneifolia* and *Carpinus betulus* at higher altitudes. Oriental beech *Fagus orientalis* occurs at 400-1,500 m and *Quercus macranthera* and *Carpinus orientalis* communities dominate at 1,500-2,800 m. The transitional scrub-line is covered mainly by *Rhamnus cathartica* and *Malus orientalis* (Akhani et al. 2010). Despite extensive human disturbances, the area contains a

diverse community of large mammals, including the Persian leopard *Panthera pardus saxicolor*, brown bear *Ursus arctos*, gray wolf *Canis lupus*, bezoar goat *Capra aegagrus*, maral red deer, roe deer *Capreolus capreolus* and wild boar *Sus scrofa*.

Material and Methods

We selected eleven protected areas (PA) and four non-protected areas covering 3,179.13km^2 (ca. 17%) of the Hyrcanian forests (Fig. 2). However, we excluded two areas (Jahan-Nama PA, Sheshroudbar PA) for analysis, because of insufficient sample size. We randomly (i.e. with random starting point) placed a regular grid of 16-km^2 cells (4×4 km) over the entire Hyrcanian forest. Inside each study site, we randomly selected ca. 45% of the grid cells covering the respective site (we rounded the number of survey cells up if 45% yielded a decimal) using the Hawth's tools in ArcGIS v.10.2 (ESRI 2013). Overall, we surveyed 93 cells during three replicate surveys in 2015-2016 by a team of 2-3 experienced surveyors who were able to unambiguously identify maral signs (mainly experienced rangers, local guides and trained students). The surveyors were equipped with GPS Garmin 64S to measure survey effort. The corners of each grid cell were loaded in the GPS device to ensure that observers only surveyed inside the target area. Inside each cell, surveyors walked randomly along wildlife trails and recorded fresh signs (scats, tracks, scratches, resting places, feeding places, rubbing posts and wallows) and direct observations (sightings and voices), and recorded their location using GPS devices. To calculate the index of relative abundance (RAI), we pooled all signs observed in each survey site over the three replicate surveys and divided it by the respective survey effort. To convert RAI to absolute numbers in our study sites, we calibrated the index inside GNP, where we recently estimated population density based on the Faecal Standing Crop method. We used the following equation to convert dung numbers to animal density in GNP (Laing et al. 2003):

$$D_{FSC} = \frac{N_{dung}}{T_{decay} \times P} \times A$$

where D_{FSC} is the estimated deer density (individuals/km^2), N_{dung} is the observed dung density (dung numbers/km^2), T_{decay} is the estimated mean time to decay (days), P is the estimated defecation rate (dung/individual and day) and A is the study area size (km^2). Both mean time to decay and defecation rate were estimated locally. The full methodological descriptions are provided by Soofi et al. (2017).

To calculate the conversion factor including its variance, we divided mean density, the upper and lower 95 % confidence intervals of the FSC approach by the RAI inside GNP. The conversion factor was then multiplied by the RAI of each study site to obtain the local density, which we multiplied with the area of suitable habitats to calculate abundance. Area size of suitable habitat conformed to the reserve size for most study areas. Only for GNP we excluded areas where the red deer was historically absent or where the habitat was clearly non-suitable based on local experience. Beside signs of red deer, we also collected data on human disturbance (poaching, logging and livestock grazing).

Moreover, we collected data from ranger counts throughout the Caspian range (outside the study sites), which were based on direct counts of maral around certain ranger stations or around locations with temporary patrolling camps during the red deer rutting season. Because the field methods of the ranger counts differed from our standardized surveys, we used this data only to illustrate the deer distribution.

Results

Overall, 1,127.44 km effort on foot over three seasons led to the detection of 481 signs of red deer (Table 1). The signs were present in twelve of the 13 intensively studied and included survey sites. However, in two of the survey sites (Zav PA and Lafoor No-Hunting Area), deer abundance was very low and in Lisar PA, red deer seems to be extinct. Densities varied among survey sites from 0.01 (95 % CI = 0-0.01) to 0.98 (95% CI = 0.56-1.43) individuals/ km^2 (Table 1). Average density across 13 surveyed areas was 0.26 (95% CI = 0.14-0.38) yielding an estimated total population of 784 (95% CI = 426-1141) individuals. Moreover, the data collected from DoE showed that in seven out of the eight additional areas red deer are present (Fig. 2). Human disturbance was pronounced throughout the study areas and consisted of poaching (31% of the cells), livestock grazing (45%) and logging (36%).

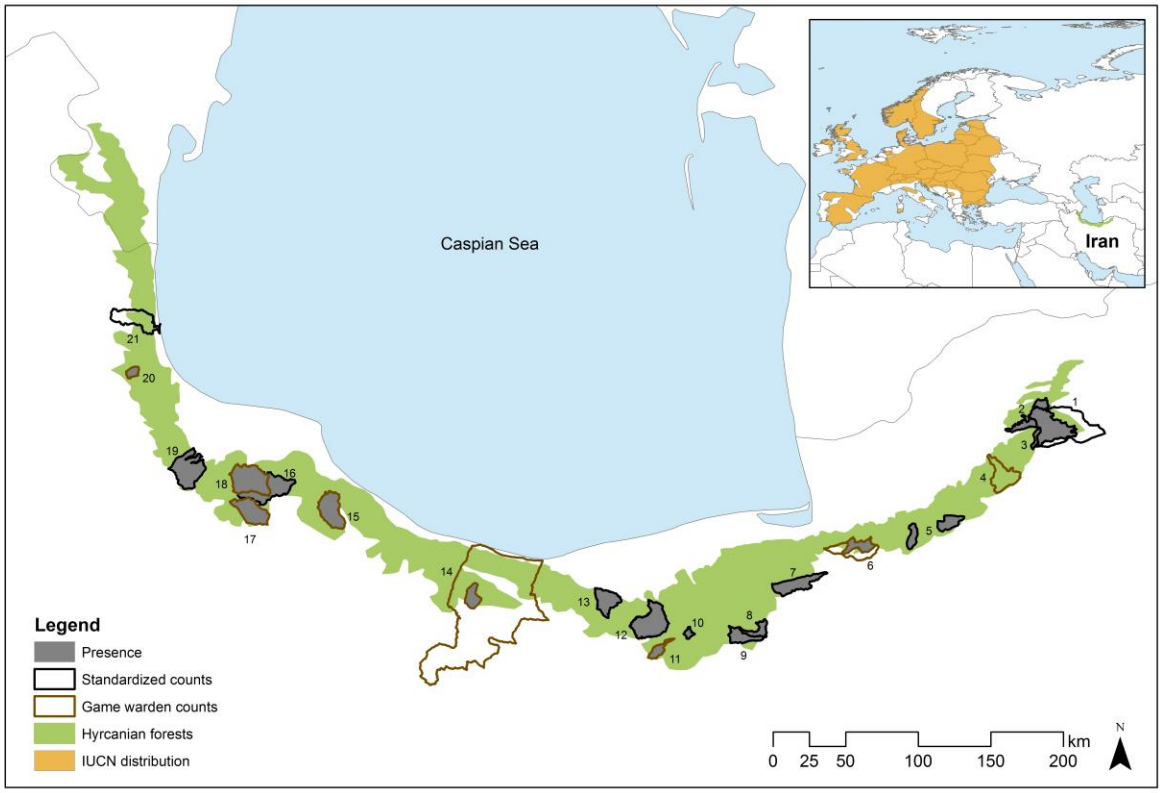

Figure 2: Location of the study sites across the Hyrcanian forests and indication of red deer presence (grey). Forest extent was derived from global consensus land cover data (1-km resolution, Tuanmu & Jetz 2014) and adapted with a map of the Hyrcanian forests (Sagheb-Talebi et al. 2014). The inset map shows the distribution of *Cervus elaphus* according to the IUCN red list (orange, IUCN 2016). Area names: 1. Golestan National Park, 2. Zav Protected Area, 3. Loveh Protected Area, 4. Nishak (Chehelchay) No-Hunting Area, 5. Aliabad, 6. Jahan-Nama Protected Area, 7. Paband National Park, 8. Kiasar National Park, 9. Dodangeh Wildlife Refuge, 10. Asas Protected Areas, 11. Sheshroudbar Protected Area, 12. Lafoor No-Hunting Area, 13. Baliran, 14. Alborz Markazi Protected Area including Golestanak Core Zone, 15. Eshkevarat Protected Area, 16. Deilaman-e-Dorfak No-Hunting Area, 17. Siahroudbar-e-Roudbar Protected Area, 18. Sarvelat Javaherdasht Protected Area, 19. Gashte Roudkhan Siahmazgi Protected Area, 20. Nav-e-Asalem No-Hunting Area, 21. Lisar Protected Area.

Table 1: Relative abundance index (RAI), density and abundance estimates for all survey sites. For game ranger counts only presence/absence is indicated. NP = National Park, PA = Protected Area, NHA = Non-Hunting Area.

No.	Name	Effort (km)	RAI (signs/km)	Area of suitable habitat (km^2)	Density (ind./km^2)	Abundance
1	Golestan NP	257.5	0.59	422	0.46 (0.25-0.67)	194 (106-283)
2	Zav PA	133.76	0.01	143.23	0.01 (0-0.01)	1 (0-1)
3	Loveh PA	70.5	0.55	33.49	0.43 (0.24-0.63)	15 (8-21)
4	Nishak (Chehelchay) NHA	NA	NA	NA	NA	absence
5	Aliabad	78.38	0.22	255.95	0.17 (0.09-0.25)	44 (24-63)
6	Jahan-Nama PA	NA	NA	NA	NA	presence
7	Paband NP	26.4	0.34	181.45	0.27 (0.15-0.39)	49 (26-71)
8	Kiasar NP	30.4	1.25	92.65	0.98 (0.53-1.43)	91 (49-132)
9	Dodangeh WR	125.4	1.16	155.31	0.91 (0.5-1.33)	142 (77-207)
10	Asas PA	15.6	0.38	29.97	0.3 (0.16-0.44)	9 (5-13)
11	Sheshroudbar PA	NA	NA	NA	NA	presence
12	Lafoor NHA	40	0.08	363	0.06 (0.03-0.09)	21 (12-31)
13	Baliran	147.6	0.18	206	0.14 (0.08-0.2)	28 (15-41)
14	Albourz Markazi PA	NA	NA	NA	NA	presence
15	Eshkevarat PA	NA	NA	NA	NA	presence
16	Deilaman-e- Dorfak NHA	87	0.48	378.99	0.38 (0.21-0.55)	144 (78-209)
17	Siahroud-e-Roudbar	NA	NA	NA	NA	presence
18	Sarvelat Javaherdasht PA	NA	NA	NA	NA	presence
19	Gashte Rudkhan PA	19.8	0.15	395.14	0.12 (0.06-0.17)	47 (26-68)
20	Nav-e-Asalem NHA	NA	NA	NA	NA	presence
21	Lisar PA	95.1	0	311.42	0 (0-0)	0 (0-0)
Total		1127.44		2968.60	0.26 (0.14-0.38)	784 (426-1141)

Discussion

Our results show that the maral is still present in many study sites across the Iranian Caspian forest range, except the north-western parts. In addition, we show that there are other potential strongholds of the maral population aside from Golestan National Park (Kiabi et al. 2004): these are in particular Kiasar National Park and Dodangeh Wildlife Refuge in Mazandaran Province and Deilaman-e-Dorfak No Hunting Area in Gilan Province.

Compared to the previous estimates (Kiabi et al. 2004), which were based on non-standardized total counts, our estimates show a higher number for Deilamn-e-Dorfak. In contrast, our results suggest a sharp population decline of ca. 89% in Golestan NP compared to historical estimates from 1977 (Kiabi et al. 2004, Ghoddousi et al. *in press*). In our calculations, we omitted a few protected areas including Sheshroudbar in Mazandaran Province and Jahan-Nama in Golestan province, because our survey effort was inadequate for population estimation. The latter area potentially still holds a considerable number of deer from ranger counts (89 mature individuals were counted in 2016), but the other area only hold a small population according to DoE data. Despite several areas probably containing viable population, the overall status of the species in Iran may be very fragile as the total population size may now be only around one fifth compared to 1977 estimates (784 vs. 4350 individuals, Kiabi et al. 2004). However, direct comparison of these estimates is difficult, due to differences in methodology (non-standardized total counts vs. our approach) and selection of the study sites. Nevertheless, we sampled a considerable portion of the population; thus the large difference between the estimates suggests an alarming population decline.

Our intensive survey also indicates that the Hyrcanian forests suffer from severe human disturbances. The confirmed dramatic decline of large ungulates in Golestan National Park is mainly caused by heavy poaching and livestock grazing (Kiabi et al. 2004, Ghoddousi et al.2017 ,, Soofi et al. 2017). Our study confirms that maral mainly occur in less disturbed core zones of protected areas, where human threats are less frequent, rather than along the forest edges. Despite anti-poaching patrols during the rutting season of red deer (September-October), poaching intensity is especially high during this time, because stags are attracted by the imitation of roaring by poachers.

Both the findings of our own study and those from the ranger counts indicate that maral has been extirpated in Lisar Protected Area, probably due to a combination of threats such as poaching, intensive livestock grazing and logging. Lisar is located in the western corner of the Hyrcanian forests, and is one of the potential corridors for large mammals to the Caucasus ecoregion. Thus, establishing trans-boundary protected areas among Iran, Azerbaijan and Armenia and actively supporting recovery from the areas located further east and the possible start of reintroduction programs would be crucial to secure population viability of this species.

In line with previous studies (Kiabi et al. 2004, Ghoddousi et al. 2016, Ghoddousi et al. *in press*, Soofi et al.2017), we underline the necessity to increase the protection of areas adjacent to reserve borders, where deer are most exposed to various human threats (Kiffner et al. 2013). We are aware of budget limitations, but patrolling in the greater landscape will be essential to secure the long-term survival of the species. We therefore call for urgent, targeted and practical evidence-based conservation actions, requiring the revision and enforcement of environmental regulations and better monitoring in- and outside protected areas. We advise conducting socio-economically oriented studies to unveil the potential incentives for poaching, as obtaining more knowledge on poachers' incentives may help in reversing the population decline of red deer (Ghoddousi et al. *in press*, Soofi et al.2017). Accordingly, it is recommended that policy-makers better integrate the role of stakeholders in saving wildlife populations at the landscape scale.

We recommend incorporating our findings in the future IUCN Red List of Threatened Species assessments. It is striking that the deer population inside Iran and other countries is completely outside the range illustrated in the IUCN Red List of Threatened Species. The isolated populations of red deer described here need to be clearly acknowledged to emphasize the urgency of immediate conservation actions, which may otherwise go unheard due to the overall favorable status of *Cervus elaphus*.

Our absolute population estimates should be interpreted carefully. Ideally, additional reference areas for a more robust calibration need to be included, as is envisaged in future studies. Furthermore, we acknowledge that populations between sampling sessions were not closed, and our estimates cannot account for that. However, we attempted to avoid bias toward any particular season or habitat quality in our data collection by using a stratified random sampling approach (random selection of grids within a PA) and site visitations in contrasting seasons. Future research also needs to assess the threats and

how they affect distribution and population size of this species. Despite the methodological constraints, our results provide valuable information on the distribution, which needs to be considered in future Red List assessments.

Acknowledgements

Funding was provided by Erasmus Mundus SALAM2 (M.S), Humboldt-Universität zu Berlin (A.G) and Georg-August-Universität Göttingen (L.E and M.W). Field research was additionally funded by the Rufford Small Grant Program (17489-1). This project would not have been possible without the enthusiastic support of local rangers and experts from three provincial DoE offices: M. Abbaszadeh, A. Babaie, M. Mahdavi, A. Ebrahimi, S. Alipour, M. Marzban, K. Rabie, N. Karamzadeh, S. Faezi, S.J. Hosseini, A. Dordi, A. Rostaghi, P. Najjari, M. Madadi, M. Shakiba, V. Kheirabadi, and E. Soufi. We greatly appreciate assistance provided by H. Hosseini, B. Soufi, A. Jafari, M. Ahmadpour and local guides and volunteers. We extend our gratitude to B. Zehzad for help during the conduction of field surveys. We appreciate the deputy head of DoE F. Dabiri and the wildlife managers; H.G. Meigooni, M.Kh. Moghaddam and M. Mohammadi for the permit No. 94/25664. We thank J. Garcia Walther for review and translation to Spanish.

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New record for taruka (*Hippocamelus antisensis*) in the Chilean puna after 40 years. Are we looking for the deer in the right places?

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Abstract:

A new record for Taruka (*Hippocamelus antisensis*), in an area where it was recorded nearly 40 years ago, is presented for Chile. This is 60 km to the northeast and 400 meters higher than previous sightings for this country. The record is located in the puna ecoregion, an entirely new environment for this species in Chile, which generates new challenges for its protection and prompts further research.

Resumen:

En el presente trabajo se presenta un registro de Taruka (*Hippocamelus antisensis*) en una localidad en Chile donde fue previamente registrado 40 años atrás. Éste se realizó 60 km al noreste y a 400 metros más de altura que previos registros en este país. El registro se ubica en la ecoregión de la puna, un nuevo ambiente para la especie en Chile, generando nuevos desafíos para su protección e investigación.

Key words: camera trap, puna, altitudinal, north Andean huemul, range extension

Introduction

The development of new observational technologies has helped researchers to improve management and conservation programs. For example, camera traps have contributed to the study of rare or elusive species that are difficult to record through traditional methods (O'Connel *et al*. 2011). These traps are low cost, easy to deploy, operate autonomously and have high image quality. Camera traps have enabled sightings of species that were believed to be locally extinct (Valladares *et al*. 2012) and the detection of individuals beyond their known range (Valladares *et al*. 2012, Farías *et al.* 2014).

The taruka or north Andean huemul (*Hippocamelus antisensis*, D'Orbigny 1834) is a cervid whose distribution spans the central Andes of Argentina, Bolivia, Chile and Perú (Barrio 2013). The deer inhabits mountainous ecosystems of shrub steppe and ravines close to water courses, at elevations above 2,000 meters, and populations are scattered with little contact with each other (Barrio 2013). In Chile, taruka inhabit the western slope of the Andes in rocky areas with sparse vegetation, close to water sources. The Chilean distribution extends from Putre to Quebrada Blanca (18,2°S y 20,9°'S; Siefeld & Guzmán 2011), between 2,500–4,000 masl (Sielfeld *et al.* 1988). Due to its dependence on humid gullies where many human settlements are located, interactions with locals are common (Barrio 2013). This has caused the species to be persecuted by local farmers, elevating its status to endangered (D.S. N° 151/2007, MMA) with a population no higher than 500 individuals in Chile (Sielfeld & Guzmán 2011, Barrio 2013). Here we report a locality where the species was sighted 40 years ago in Chile, extending its current altitudinal and latitudinal range, and registering a new habitat for the species in this country.

Material and Methods

Between January and December 2015, 96 camera traps (Cossíos *et al*. 2007) were deployed in the high Andes of northern Chile with the objective of recording the presence of the Andean cat (*Leopardus jacobita*). Two cameras were used (Bushnell Trophy Cam and Bushnell Trophy Cam HD Agressor No Glow). Each camera was programed to operate continuously, taking 3 pictures per event and with 10 seconds delay between events. Cameras were deployed in the dry puna of northern Chile, specifically in the Andes of Arica y Parinacota and Tarapacá Districts, following Cossíos *et al*. (2007). We included

different habitats between 3,500 and 4,900 masl within a total area of 13,700 km^2. In front of each camera was a lure, consisting of bobcat urine. Cameras were installed in rocky outcrops, the preferred habitat for the felid. Each one of the 96 cameras remained active between 5 and 87 trap/nights; the one that recorded the taruka was active on 69 trap/nights (October 2nd - December 10th, 2015).

Results and Discussion

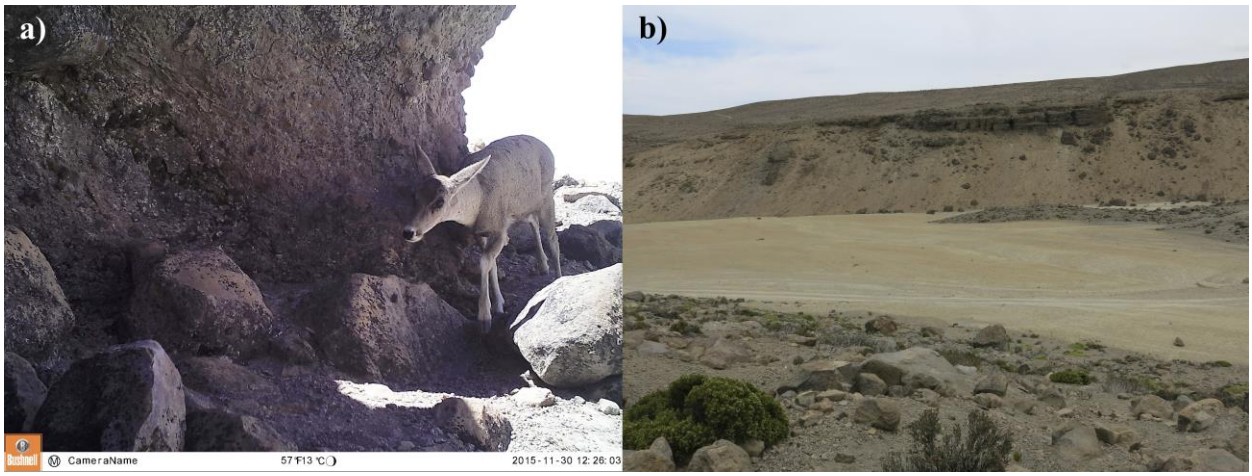

Figure 1. A) Camera trap record of female taruka from Tacora volcano. B) Landscape where the camera was deployed.

A female taruka (Fig. 1a) was recorded from a camera located in the foothills of Tacora volcano (17°42'31"S, 69°48'46"W; 4,671masl) the 30th of November 2015 at 12:26 PM. The sighting area was 12 km away from Aguas Calientes.

The northern sightings of taruka in Chile are typically concentrated near Putre town (18°12'S, 69°30'O; Sielfeld & Guzmán 2011, Siefeld *et al*, 2013); therefore this new sighting expands its distribution 60 km to the northeast. The sighting also extends its altitudinal distribution by more than 400 meters, since the deer had only been previously registered at up to 4,250 masl in this country (Sielfeld & Guzmán 2011). This suggests that tarukas in Chile could follow similar distribution patterns to individuals from Bolivia and Peru, where the species can reach 5,000 masl (Barrio 2013).

The sighting was also recorded in a completely different habitat for the species in this country. Previously, tarukas had only been found in the Andean foothills (Siefeld & Guzmán 2011), which are dominated by shrub steppe with perennial grasses (Villagrán *et al*. 1981, 1982). Our record is located in an upper vegetational floor called "subnival, puna ecoregion" (Cabrera 1968), which is new for the

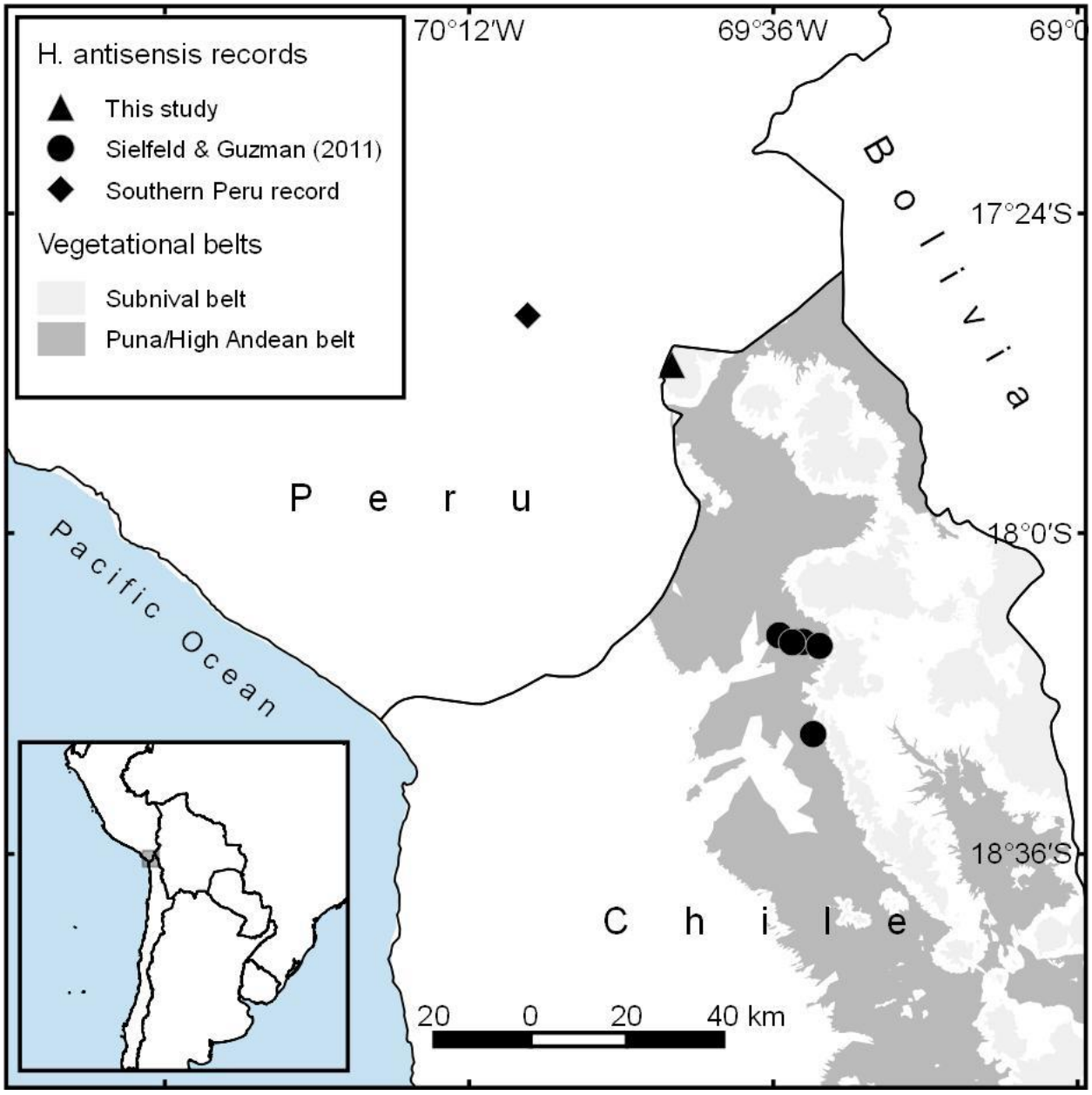

Figure 2. Records of tarukas in northern Chile (Siefeld & Guzmán, 2011) and the nearest record from Peru (J. Barrio, pers. comm).

species in Chile and Peru. Here the plant community corresponds to the low Andean tropical scrubland of *Azorella compacta* and *Pycnophyllum molle* (Luebert & Pliscoff 2006). The landscape consists of a semi-desert with sparse vegetation (Fig. 1b). The topography is similar to that described for the Chilean Andean foothills (Sielfeld & Guzmán 2011; Fuentes-Allende *et al.* 2016), but human settlements and fauna (Hernandez *et al.*, 2014) are more scarce.

This record corresponds to previous observations from the early 1980s, where the species was sighted only 1.5 km away from the present sighting area by rangers of the Chilean National Forestry Corporation (H. Torres, pers comm.), and it is 30 km away from observations made in Peru (J. Barrio, pers. comm., Fig. 2) in the Regional Conservation Area of Vilacota Maure, Department of Tacna (GRT 2012). This generates challenges from a conservation perspective, as these are not isolated observations and they were made in a biogeographical zone that is not considered in the conservation plans for taruka in Chile. Future efforts should focus on locating groups in this environment to confirm whether this habitat is also important for the deer's conservation. Those future efforts should be undertaken in cooperation with Peruvian authorities to monitor and manage the species.

Acknowledgements

We thank CONAF for their logistical support in the field and Pedro Castro, Jorge Valenzuela, José Gerstle, Diego Demangel, Jean Paul Mengin and Nicolás Rivera for their valuable support during field campaigns. We especially thank Hernán Torres (RIP), who shared this report and the photography of taruka, and Javier Barrio, who shared his records from Peru. We also thank Patricia Black, two anonymous reviewers and Meghan Blumstein for their advice and useful comments on the manuscript. The results of this article are part of the Thesis Project for the Magister en Áreas Silvestres y Conservación de la Naturaleza of Nicolás Lagos, a postgraduate course funded by the Comisión Nacional de Ciencia y Tecnología (CONICYT-PCHA/Magister Nacional/2013 - 22130588). This research is also part of the surveys that Tarukari NGO (www.tarukari.cl) carries out in the highland desert of northern Chile. Finally, we thank the Wildlife Conservation Network (WCN), Rufford Small Grants, Small Wild Cat Conservation Foundation (SWCCF) and Idea Wild for financial support.

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Great News!! Pampas deer still survive in the Province of La Pampa

John Jackson

Against all the odds and reports to the contrary, it seems that at least some of the endangered subspecies of the pampas deer *Ozotoceros bezoarticus celer* do still inhabit the grasslands of at least one estancia in La Pampa province in Argentina. I was shown a photograph taken there recently by a reliable source of a male and two females. That locality is some 100 km south of the known and now isolated population in the centre of the adjoining province of San Luis. So it seems probable that the La Pampa group may be a relict one that has always been there yet never been documented. Further work is planned to establish the true status of this latest group and to check if maybe there are still others unrecorded in the vicinity.

Why fleeing deer don't crash into one another

John Jackson

As many drivers know to their cost, accidents involving deer and vehicles are all too common. But have you ever wondered why a fleeing herd of deer don't all crash into each other as they run off? A study by Czech researchers suggests it is because these animals all seem to head off either north or south when frightened. Read the Scientific American article.
http://www.scientificamerican.com/article/why-don-t-deer-crash-into-each-other-when-startled/?platform=hootsuite.

Trees recognize roe deer by saliva

John Jackson

According to German researchers, beech and maples are able to distinguish whether one of their buds or shoots has just been randomly torn off by wind or mechanical damage or has actually been eaten by a roe deer (*Capreolus capreolus*). If it is roe deer browsing, then the trees react to the animals saliva which activate corresponding defence mechanisms, boosting production of unpalatable tannins and making the foliage less palatable to these ungulates.
https://www.sciencedaily.com/releases/2016/09/160912132733.htm?utm_source=dlvr.it&utm_medium=twitter.

Huemul death unresolved after a year

Patricia Black

The huemul or south Andean deer (*Hippocamellus bisulcus*) is classified as endangered by the IUCN, and a great deal of effort has been dedicated to its survival in Patagonia in both Argentina and Chile. Especially for that reason, the following incident has generated much concern. On 18 March 2016 a healthy male huemul, without any visible wounds, was captured and tied up by local residents in Nahuel Huapi National Park, near Bariloche, Rio Negro, Argentina. Although a park ranger wanted to realease the animal, the director of the park ordered that it be held until experts could arrive and analyze its condition. They arrived 14 hours later without any drugs, equipment or protocol. Finally they sedated the animal with drugs borrowed from a nearby ranch and it died 4 hours later. At that point they decided to leave the body where it was without taking any samples. After a report in "El Cordillerano", a local newspaper, the incident generated local and national outrage and turmoil within the park. The Administration of National Parks promised to investigate the incident and generate a report within 3 months. To that end, two lawyers arrived in the city and interviewed all of the personnel involved. However, a year later, no resolution of the case has occurred and no official communication of any advances has been made. There are unofficial rumors of days of suspension of the team that came to analyze the huemul's condition and of appeals, but there is no official word and no determination of the cause of death.

It is to be hoped that this incident can be clarified and that better training and procedures will be used to prevent this type of ineptitud in the future.

Meeting- Workshop Implementation of the National Plan for the Conservation of the Pampas deer in Argentina

María Cecilia Li Puma, Santiago D´alessio & Marco A. Quelas

Buenos Aires, May 4Th and 5Th, 2017

On May 4Th and 5 Th in the "Ministerio de Ambiente y Desarrollo Sustentable de la Nación" (Buenos Aires, Argentina) the "Meeting-Workshop on the Implementation of the National Plan for the Conservation of the Pampas deer (*Ozotoceros bezoarticus*) in Argentina was held.

More than 70 specialists from several Argentinian provinces and neighboring countries (Brazil and Uruguay) participated in the meeting. The intention was to evaluate the implementation of the National Plan for the conservation of the Pampas deer in those provinces which still have populations of this threatened deer (Santa Fe, Buenos Aires, Corrientes and San Luis). This Plan was approved and published in 2011.

Also the Specialists reported about the achievements and difficulties that each jurisdiction had when implementing the National Plan . Also participating were the following entities: National Parks Administration, La Pampa Province (with new records) and the NGOs *Fundación Vida Silvestre* Argentina and The Conservation Land Trust, which shared their experiences and achievements in relation to deer conservation.

The meeting was carried out in a Workshop modality of. Four discussion groups were established (one for each province) and each one established two high-priority activities for the conservation of the deer. Later, the strategies for carrying out these actions were specified, analyzed and discussed in plenary. Furthermore referents for each province were nominated in order to interact with the Management Committee and the Advisory Committee, both instruments established in the National Plan for the Conservation of the Pampas deer.

Opinions of different specialists were voiced at the meeting. They emphasized the need to control threats that condition the deer's existence (wild boar and dogs), the importance of inspection in the areas occupied by the deer and the necessity of summing rural producers that are willing to implement good livestock management practices, compatible with deer conservation.

Although there were many achievements for the conservation of the deer, various jurisdictions agreed that they were insufficient and decided to redouble their efforts to enable wild populations of deer to recover in natural protected areas and in areas which are under a private management regime.

SAVE THE DATE

9th International Deer Biology Congress

David Hewitt

The 9th International Deer Biology Congress is taking place August 5–10, 2018 in Estes Park, Colorado, USA. The International Deer Biology Congress (IDBC) is held every 4 years and provides a venue for researchers and managers to discuss deer ecology and management. The 9th IDBC will be held in the scenic town of Estes Park, nestled in the Rocky Mountains adjacent to Rocky Mountain National Park. Participants will be able to view elk, mule deer, and moose while learning about research and management of deer species from around the world. Please go to http://www.deerbiologycongress.org/ for more information. Organizers are accepting proposals for symposiums through August 1, 2017 and registration will open in early 2018.