Saving the lord of the Andean skies

James Lowen

A Wildlife Conservation Society-led initiative has set conservation priorities for the iconic Andean Condor across its entire South American range.

Whether soaring over arid canyons or lording it over skies pierced by ice-capped mountains, the Andean Condor *Vultur gryphus* is a veritable icon. Live, free-flying condors delight birders and enthral general tourists. The species is culturally revered by some communities – including being celebrated as the national bird of four countries – yet is also maltreated and hunted. And this avian marvel frustrates conservationists because the national boundaries scissoring its enormous latitudinal distribution – extending from the Andes of Venezuela to those of Tierra del Fuego – inherently fragment conservation action.

To address the challenge of creating a coherent conservation strategy at the continental level, the Wildlife Conservation Society – led by Bolivia-based Rob Wallace – convened a seminal priority-setting workshop in 2015, attended by over 100 participants including 30-plus condor experts. The results of the exercise were published last year in English (Wallace *et al.* 2020) and Spanish. This article summarises workshop participants' findings and their proposed way forward for Andean Condor conservation.

1 Adult male Andean Condor *Vultur gryphus* emerging from the mist, Parque Nacional y Área Natural de Manejo Integrado Madidi, La Paz, Bolivia, November 2017 (Robert Wallace).

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2 Subadult female Andean Condor *Vultur gryphus*, Bolivia, November 2017 (Robert Wallace). Lord of the Andean skies.

3 Subadult female Andean Condor *Vultur gryphus* on the ground, Parque Nacional y Área Natural de Manejo Integrado Madidi, La Paz, Bolivia, November 2017 (Robert Wallace).

4 Immature Andean Condor *Vultur gryphus* circling below Cerro Colchiquí, Córdoba, Argentina, April 2009 (James Lowen: jameslowen.com). Tourists typically access the hilltop – from which condors are seen daily – on horseback from the nearby village of Ongamira.

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Condor context

When Wallace *et al.* (2020) was published , BirdLife International (2020) classified Andean Condor as globally Near Threatened (on the basis of a "moderately small global population which is suspected to be declining moderately rapidly owing to persecution by man") and suggested a population of 6,700 adults. Pressures such as this are unfortunate, not solely for the fate of the condor as a species, but for its ecological contribution. The Andean Condor's role as a scavenger – eating carrion to accelerate decomposition and thereby decreasing the risks of disease-transmission to humans – renders it an "essential part of the ecosystem" (Wallace *et al.* 2020).

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5 Subadult female Andean Condor *Vultur gryphus* feeding on Alpaca *Vicugna pacos* carcass, Parque Nacional y Área Natural de Manejo Integrado Madidi, La Paz, Bolivia, November 2017 (Robert Wallace). Levels of condor mortality from poisoned carcasses increasingly concern conservationists.

However, there is also potentially opportunity in our attitudes to the condor, for its significance in human culture pre-dates even the Incas – with early pictorial representations from 2500BC – while traditional Andean communities still view the bird as a divine messenger. Indeed, Andean mythology places the condor as the ruler of the sky, or Kai Paccha (upper world), and associates it with the sun deity (Wallace *et al.* 2020). If there is any bird species where tables could be turned from persecution to preservation, it is perhaps Andean Condor.

Such considerations provided the context for the Wildlife Conservation Society's five-day workshop held in Lima, Peru, in May 2015. At the event, national experts articulated the state of knowledge of the distribution (past and present) and conservation of Andean Condor in each range state: Venezuela, Colombia, Ecuador, Peru, Bolivia, Chile and Argentina. Experiences were shared on topics as diverse as rehabilitation and reintroduction projects, feeding stations and research. Priorities for further study were identified, a standardised census methodology developed, and thoughts fed into a regional action plan for condor conservation that also consolidated information dispersed across numerous sources. Unless otherwise stated, the following material is derived from Wallace *et al.* (2020), which pulls the numerous strands together and articulates a way forward.

Range and status: past vs present

Workshop participants redefined the historical range of the Andean Condor, determining it to cover 3.23 million km^2, a major increase (36.7%) from the previous baseline distribution contained in Fjeldså & Krabbe (1990). Currently, 13.5% of this area has protected status. Unfortunately, the species is thought to now be absent from 7% of the historical range (with vacated regions mostly in Argentine Patagonia plus pockets in west Bolivia, northwest Peru, Ecuador and central-west Colombia). Moreover, the vacated proportion could be much higher: workshop participants felt unable to judge whether the species remains present in one-third of its historic range.

Around the time of the 2015 workshop or subsequently, estimates emerged of current populations in some range states. Perhaps 50 adults were thought present in Venezuela (Sharpe *et al.* 2015) and 94–102 individuals in Ecuador (Naveda-Rodríguez *et al.* 2016), a total later increased to 197 (Vargas *et al.* 2018). A population of 1,388 birds in Bolivia was suggested on the basis of mark–recapture of 456 individuals (Méndez *et al.* 2019). Following reintroductions, 130 individuals inhabited Colombia (Renjifo *et al.* 2016). The estimate of 155–249 individuals in Peru (Piana & Angulo 2015) was an order of magnitude less than suggested by the National Action Plan (SERFOR 2015). There were no equivalent recent estimates for Chile or Argentina, forcing Wallace *et al.* (2020) to cite start-of-the-century estimates of 2,000 in each country while cautioning that "there are no field studies to support these estimates" and of likely overlapping figures.

Although considered Near Threatened at a global level at the time of Wallace *et al.* (2020), national classifications suggested greater concern. It is Critically Endangered in Colombia (Renjifo *et al.* 2016); Endangered in Ecuador (Freile *et al.* 2019), Venezuela (Rodríguez *et al.* 2015; although alternatively considered Vulnerable by Naveda-Rodríguez 2015), Peru (Decreto Supremo 004-2014-MINAGRI) and Argentina (MAyDS 2017); and Vulnerable in Bolivia (Balderrama *et al.* 2009) and, albeit based on old data, in Chile (CONAF 1993). In the light of such classifications, it was unsurprising to see Andean Condor uplisted to Vulnerable in the 2020 Red List update.

6 Condor tourism signs near Junín de los Andes, Neuquén, Argentina, October 2009 (James Lowen: jameslowen.com).

Current threats

Workshop participants identified key threats to Andean Condor throughout its distribution. Although not all could be documented properly, seven pressures were judged the most significant.

Habitat conversion – particularly deforestation and burning in the high-altitude cloud forests and páramos of the eastern Andes – impacts condors through the degradation

7 A wing-tagged female Andean Condor *Vultur gryphus*, Palka, La Paz, Bolivia, March 2019 (Rob Wallace). Wing-tagging enables the movements (and thus range) of individual birds to be tracked and populations to estimated

8 Captive male Andean Condor *Vultur gryphus*, Temaiken, Buenos Aires, Argentina, July 2007 (James Lowen: jameslowen.com). Captive-bred condors have been released in the north of the species's range as part of reintroduction programmes.

of nesting and roosting sites, and through the reduction in food. **Hunting** is a threat, with some communities on the east Andean slopes perceiving that condors contribute to livestock mortality through direct predation. Although long refuted by experts, anecdotal evidence suggests that condors have indeed killed calves in Bolivia and Ecuador.

In Argentina, condors are known to die from **lead poisoning** after feeding on carcasses of pigeons and Guanaco *Lama guanicoe* that have been shot with lead ammunition. Similarly unintended deaths derive from the **poisoning of carcasses** intended to control populations of predators routinely associated with livestock losses, such as Culpeo *Lycolopex culpaeus* and Puma *Puma concolor*. Evidence of this threat has strengthened since the workshop: because Andean Condors are "social animals, a single poisoned carcass can kill dozens of individuals, and therefore have a significant impact on local populations". In Argentina, 66 condors were found dead in just 13 months (Alarcón & Lambertucci 2018). One can only wonder at the true scale of mortality.

Free-ranging dogs (feral ones being a widespread Andean phenomenon) present an emerging threat in Bolivia and Ecuador at least, as the canines are dominant over condors at carcasses. That's when carcasses are available at all, as the **depletion of food** has become particularly apparent in the southern part of the condor's range. In Ecuador, a government policy to remove cattle from the highlands will likely impact condors considerably, as the latter "are completely dependent on cattle… since their introduction 500 years ago" and have not been recorded feeding on native mammals.

The final of the seven threats is the condor's **use in folkloric rituals and crafts**. Three folkloric rituals in Peru imperil the species, of which the Yawar Fiesta (held in Apurimac, Cuzco and Ayacucho; Figs. 9–10) is the best known. The key moment of the modern embodiment of the Yawar Fiesta involves tying a wild-caught condor to a bull's back, before people fight the bull for a few minutes, after which the condor (if still alive) is set free (although survivors may die later). Reviewing 31 videos on Youtube, taken from 2000–2015, Piana (2019) calculated that 40 different condors were used across 27 Yawar Fiestas. Of these, four were either killed or seriously injured, and three received minor injuries after hitting the bullring walls while strapped to the bull. In addition to use in these festivals, there are records of condors being killed to serve as adornments for traditional clothing in Bolivia and Peru, with feathers etc traded in Peru for use in spiritual ceremonies (Williams *et al.* 2011).

The relative importance of these threats varied across the condor's range. In the north, hunting and persecution, competition with dogs, and habitat conversion are the main pressures. With the addition of ritualised use, the same is true in Peru. Further south, hunting/persecution is exacerbated by lead poisoning. Throughout the continent, it is carcass poisoning that is "the most dramatic, potentially devastating and urgent threat… requiring concerted action".

Priority Andean Condor Conservation Units

During the workshop, experts agreed a definition of Andean Condor Conservation Units (ACCUs) that covers key areas – "the best hope" – for conservation of the species. At the workshop, 31 ACCUs were proposed and delimited, collectively covering just over one-third of the adjusted historical range. Slightly more than half this area is in Argentina, with three countries (Bolivia, Peru and Chile) together providing 43%. The balance is made up by the three northern countries (Venezuela, Colombia, Ecuador).

Subsequently, several ACCUs were combined (e.g. due to their proximity), producing a revised total of 21 units (Fig. 11). These cover just over one-third of the condor's estimated actual range. Two-thirds of the units (all in the north) are under 20,000 km^2: several are too small to house permanent, viable populations of condors yet remain important for roosting, nesting and feeding sites. The largest trio of ACCUs – each an order of magnitude larger than the smaller majority – are transboundary areas connecting Argentina with Bolivia (one) and Chile (two). Their cross-border reach illustrates the importance of an internationally integrated approach to condor conservation. The differences in size are mirrored by known data regarding Andean Condor populations: numbers are small in northern South America compared to Peru, Bolivia, Chile and Argentina.

In total, just under one-sixth of the combined area of ACCUs is protected. Reserves help safeguard nesting and roosting sites, but broader conservation measures are needed for such a wide-ranging species. Many condors forage in unprotected areas where persecution and poisoning is greater. The challenge is thus to secure sustainable, effective management for both protected areas and the wider ACCUs.

9–10 Andean Condors Vultur gryphus used in Yawar Fiestas (both Rob Williams: **9** Peru, August 2012; **10** Peru, July 2013). In this traditional festival, a wild-caught condor is tied to a bull's back, then people fight the bull for a few minutes, after which the condor (if still alive) is set free.

Next steps

Workshop participants agreed a suite of recommendations to address each of the seven main threats identified. Here are some highlights. Environmental education is key to prevent habitat conversion. Better regulation of hunting is important, so too research into levels and impacts of the practice and those of lead poisoning. To counteract carcass poisoning, improved regulation again features, complemented by better livestock management. Promoting responsible dog ownership and management should help reduce competition with free-ranging dogs. Further work is necessary to better understand the impact of reduced carcass availability and the potential for supplementary feeding; the reintroduction of native camelids is also suggested. Engagement with local communities is a theme throughout, but particularly permeates recommendations seeking to reduce the impact of folkloric rituals.

Over and above proposals to mitigate specific threats, the workshop offered generic counsel. The most eye-catching proposals include: formally uplisting of Andean Condor under IUCN criteria, from Near Threatened to Vulnerable (a proposal subsequently accepted); identifying priority sites for developing population estimates; developing conservation plans for ACCUs; rectifying knowledge gaps in the species's distribution; recognising the role of local communities and private landowners in conservation strategies; and encouraging greater international collaboration and interaction on the basis that "Andean Condors do not recognise borders".

Of all the ideas put forward in this remarkable document, it is the latter that – personally speaking – resonates most strongly. Of South America's resident avifauna, perhaps no species more obviously has individual territories that potentially encompass more than one nation. As an Andean Condor circles high in the sky, scanning the ground far below, it cares not whether the carcass it eventually espies is decomposing in Bolivia or Peru or Chile. For the Southern Hemisphere's sole condor to survive, it needs a cross-border meeting of minds that grants it safe passage and secure sites in which to roost and nest. To that end, the workshop convened by Rob Wallace is an outstanding achievement that should serve very well this most sacred of Neotropical birds.

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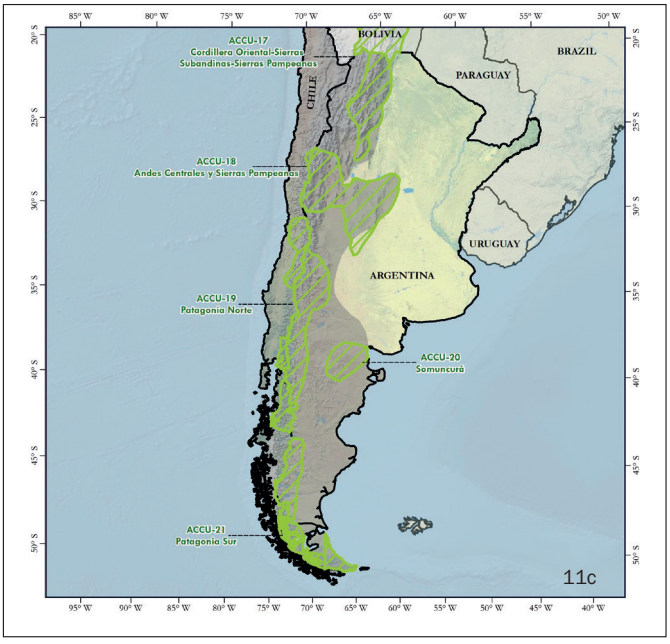
11a–c Location of Priority Andean Condor Conservation Units in South America (SERFOR/Wildlife Conservation Society/The Peregrine Fund). The historical range of the Andean Condor is shaded grey, and the individually numbered and named Priority Andean Condor Conservation Units (ACCUs) are indicated with superimposed green hatching.



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