

## Distribution, behaviour and conservation of Masked Antpitta *Hylopezus auricularis*

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El Tororoi Enmascarado *Hylopezus auricularis* es endémico de un área pequeña a lo largo de los ríos Beni y Madre de Dios, en los departamentos de Beni y Pando, Bolivia. Aunque su estado taxonómico, plumaje y vocalizaciones han sido bien documentados, se conoce muy poco sobre su distribución, hábitat y comportamiento reproductivo. En este estudio, se presenta información actualizada sobre la distribución, uso de hábitat y conservación de *H. auricularis*. Se presenta además la primera descripción del nido y huevos de esta especie. Se encontraron evidencias que sugieren que el estado de conservación de *H. auricularis* debería ser recategorizado a En Peligro.

Masked Antpitta *Hylopezus auricularis* is one of ten species of *Hylopezus*<sup>30</sup> and is endemic to a small area along the Beni and Madre de Dios rivers in dptos. Pando and Beni, Bolivia<sup>6,22</sup>. It was long considered a subspecies of Spotted Antpitta *H. macularius*<sup>15</sup>, until Maijer<sup>21</sup> provided evidence (largely vocal) that *H. auricularis* merits species rank. Recent molecular studies suggest that Masked Antpitta is more closely related to Speckle-breasted Antpitta *H. nattereri*<sup>3</sup>. Like most antpittas<sup>19</sup>, the general biology and conservation requirements of Masked Antpitta are poorly known<sup>6</sup>. Here we present new data concerning the species' distribution, habitat use, behaviour and conservation, including the first description of nest and eggs.

### Materials and Methods

**Behaviour and nesting biology.**—We gathered data on adult behaviour opportunistically, recording details of perch substrate (ground, vine, tree), perch height and foraging techniques for as long as we could follow an individual<sup>1</sup>. For all adults encountered, we also recorded habitat type, time, date and weather, using these data to evaluate preferred habitat. Incubating adults were monitored both with tripod-mounted video recordings lasting 1.5 hours, and by direct observation through binoculars for 1.5 hour-periods. We found seven nests, but only one was observed directly, from a hide sited 20 m away.

**Surveys.**—To better understand the current range of Masked Antpitta, OMZ conducted intensive searches on 5–11 January 2006 and 2 November 2006–10 January 2007. MAA augmented this with field work on 30 September–8 December 2011. Between them, they searched 15 locations (with a search radius of 0.5–3.0 km; Table 1). We used visual and aural methods of detection, including playback. We chose sites either based on historic records of the species, or because the site had potentially suitable habitat. All localities were along the Beni and Madre de Dios rivers in dptos.

Beni and Pando, with a focus on the Hamburgo and San Vicente areas, near the city of Riberalta. In all, the searches covered 145 km of trails over 127 observer-days. Playback was particularly effective during breeding periods (see below) when adults were singing, making them easier to detect by their responsiveness. To estimate population size, MAA made counts along 24 individual, 200-m-linear transects (0.24 km<sup>2</sup>). We assumed a detection distance of 25–50 m each side of the trail. Total search effort and coordinates for each study site are presented in Table 1. To augment our survey results and gain a more complete view of Masked Antpitta's total distribution, we searched Asociación Armonía's database containing >100,000 entries of 1,422 species in Bolivia and adjacent areas of Peru, at >1,400 georeferenced sites.

**Site descriptions.**—Vegetation in the Hamburgo area is included within the 'Fluvial várzea supersystem of the Madre de Dios, Orthon, Tahuamanu, Beni and Madeira rivers' or inundated alluvial forests of south-western white-water Amazonian rivers by Navarro<sup>26</sup>. Vegetation at Puerto Remanso included stunted várzea forest, shrublands, and mature, stagnant backwater forests dominated by *Hura crepitans* (Euphorbiaceae) and *Attalea butyraceae* palms (Arecaceae).

### Results and Discussion

In 2006–07 we collected 163.35 hours of adult antpitta behavioural observations at Hamburgo, during a total of 310 hours of searching. Some 1,977 behavioural events were recorded including foraging (1.3%), agonistic interactions (0.1%), preening (14.5%), vocalising (16.4%), distraction (1.3%) and breeding behaviours (72.9%). Excluding observations at nests, 290 encounters with *H. auricularis* were recorded of which 69.3% were aural, 14.8% visual and 15.1% of encounters both.

We found a total of eight nests (seven at Hamburgo, one at Puerto Remanso) at various

Table 1. Study locations, search effort and presence-absence of *H. auricularis*. Superscript letters refer as follows: (a) Gyldenstolpe<sup>14,15</sup>, (b) Majjer<sup>21</sup>, (c) BirdLife International<sup>2</sup>, (d) Maillard *et al.*<sup>23</sup>, (e) OMZ (this study), (f) MAA (this study) and (g) DJL (this study).

Department / study sites	Coordinates	Study dates	Presence /absence (1/0)	Effort (searcher-days)
<b>BENI</b>				
7 de Julio	10°55'34.1"S 65°55'39.5"W	7 Dec 2006 <sup>a</sup>	0	1
Hamburgo	11°01'05.4"S 66°05'50.2"W	Apr 1994 / Jun 1995 <sup>b</sup>	1	?
		5–11 Jan 2006 <sup>a</sup> ,	1	3
		2 Oct 2006–10	1	70
		Jan 2007 <sup>e</sup> ,	1	17
		4–20 Oct 2011 <sup>f</sup>	1	3
		19–21 Apr 2012 <sup>g</sup>	1	
Las Palmeras	10°59'48.4"S 65°59'39.7"W	9–20 Nov 2006 <sup>a</sup>	0	3
Río Ivon	11°07'21.4"S 66°06'3.5"W	28 Oct–1 Nov 2011 <sup>f</sup>	0	5
San Vicente	11°02'10.4"S 66°05'32.2"W	26–28 Nov 2006 <sup>a</sup> ;	1	2
		21–27 Oct 2011 <sup>f</sup>	1	7
Tumichucua	11°08'29.8"S 66°09'57.2"W	1976 <sup>b</sup> ;	1	?
		3–6 Nov 2011 <sup>f</sup>	0	4
<b>PANDO</b>				
Agua Dulce	11°00'43.3"S 66°12'27.1"W	21–23 Nov 2011 <sup>f</sup>	0	3
Buen Futuro	11°07'23.2"S 66°14'1.2"W	30 Nov–1 Dec 2011 <sup>f</sup>	0	3
Candelaria	11°02'51.5"S 66°17'4"W	5 Dec 2006 <sup>a</sup>	0	1
		2–4 Dec 2011 <sup>f</sup>	0	3
Frontera	11°07'19.9"S, 66°13'3.4"W	27–29 Nov 2011 <sup>f</sup>	0	3
Las Piedras	11°00'52.6"S, 66°06'47.3"W	30 Sep–1 Oct 2001 <sup>d</sup>	1	2
		Nov–Dec 2006 <sup>a</sup>	0	1
		7–9 Nov 2011 <sup>f</sup>	0	3
Libertad	11°06'16.1"S 66°12'49.8"W	24–26 Nov 2011 <sup>f</sup>	0	3
Puerto Gonzalo	11°04'37.3"S 66°10'44"W	7–8 Jan 2006 <sup>a</sup>	0	2
		13–20 Nov 2011 <sup>f</sup>	0	7
Puerto Remanso	10°56'11"S 66°17'29.6"W	1991 <sup>c</sup>	1	?
		6–8 Dec 2011 <sup>f</sup>	1	3
Victoria	10°59'21.1"S 66°08'15.4"W	Oct 1937 <sup>a</sup>	1	?
		10–12 Nov 2011 <sup>f</sup>	0	3

stages including one under construction, three during incubation, one post-failure (see below) and three inactive. We collected and deposited unoccupied nests at Museo Noel Kempff Mercado, Santa Cruz, Bolivia. We monitored three of the active nests during incubation, and one of these (under construction) was followed from deposition of the first egg.

**Nest form and placement.**—In form, nests were broad, shallow, open cups similar to described nests of other *Hylopezus*<sup>17,32,36</sup>. Nests were somewhat irregularly shaped, fairly loose platforms of sticks ( $\leq 40$  cm long,  $\leq 1$  cm diameter) supported by (but not attached to) horizontally crossing vines, branches or palm fronds (Fig. 1). The eggs were supported by a relatively well-defined cup of fine, flexible fibres, rootlets and tendrils (c.0.5–1.5 mm diameter) near the centre of the platform. To account for the irregular external

shape of the nests, we measured external diameter at the broadest point and perpendicular to this measurement. Max. external nest diameter was 11–20 cm (mean =  $16.8 \pm 3.4$  cm,  $n = 7$ ) with the occasional projection of one or two sticks up to an additional 20 cm. External nest diameter perpendicular to the widest axis was 10.5–14.0 cm (mean  $12.2 \pm 1.1$  cm,  $n = 7$ ). Total external height (thickness) of nests was 4–8 cm (mean  $6.0 \pm 1.5$  cm,  $n = 7$ ). Internally, egg cups measured 7–9 cm in diameter and 1.8–4.0 cm deep (mean  $2.6 \pm 0.9$ ,  $n = 7$ ). All nests were in semi-open forest, with a dense, tangled understorey. At Hamburgo, all nests were near forest edge (range = 1.6–36.0 m). Mean height above ground for seven nests was  $1.4 \pm 0.4$  m (range 0.9–2.1 m). Our data provide further evidence that *Hylopezus* build loosely constructed, predominantly stick nests, with a shallow, sparsely lined cup<sup>13,17,28,32,36</sup>.

**Eggs.**—Four nests, including one with a destroyed clutch, contained two eggs. Eggs ( $n = 8$  including the remains found in one nest) were short subelliptical, as in other genera of antpittas<sup>5</sup>. All eggs were pale brown or beige in ground colour, with variably-sized black, grey and brown spots and blotches irregularly distributed but tending to be abundant at the larger end (Fig. 1). Mean dimensions of six eggs were  $18.8 \pm 1.71 \times 23.3 \pm 4.1$  mm (range =  $19.7\text{--}24.6 \times 21.3\text{--}34.7$  mm), similar to those of similar-sized congeners: *H. macularius*  $19.5 \times 25.4$  mm,  $n = 2^{36}$ ; Spectacled Antpitta *H. perspicillatus*  $20.73 \times 26.06$  mm,  $n = 6^{32}$ .

**Adult nest construction behaviour.**—At the nest found under construction, our observations began after the external portion was largely finished, and the cup lining was being added. We observed both adults gathering thin, flexible fibres from the ground and weaving them into the nest. On several occasions, after adding a fibre to the cup, adults shaped the nest with their bodies, by pressing their breast and body into the cup and shuffling rapidly. Frequently, the adult then stood, turned slightly and repeated the manoeuvre. This is very similar to shaping behaviours described for other open-cup-nesting passerines<sup>6</sup>. Adults continued to add material to the nest after the eggs were laid, as described for many other species of antpittas<sup>11,12</sup>. Once we observed copulation at the nest following the arrival of the second adult with nesting material.

**Adult incubation behaviour.**—We observed two nests in some detail during incubation and, although we can confirm that both adults participated, we cannot comment on the relative roles of the sexes in this monomorphic species. Based on 6546.6 minutes of direct or video observations at these nests, mean coverage of the eggs during daylight hours was 85%. Incubation bouts averaged  $140.4 \pm 88.2$  minutes ( $n = 44$ ; range = 6–438 minutes). This is similar to reported means for Great Antpitta *Grallaria excelsa*<sup>18</sup> (90 minutes), Plain-backed Antpitta *G. haplonota*<sup>10</sup> (132 minutes), Scaled Antpitta *G. guatemalensis*<sup>4</sup> (114 minutes), White-bellied Antpitta *G. hypoleuca*<sup>29</sup> (78 minutes) and Moustached Antpitta *G. alleni*<sup>20</sup> (54–102 minutes); somewhat longer than Tawny Antpitta *G. quitensis*<sup>7,8</sup> (54 minutes), Peruvian Antpitta *Grallariola peruviana*<sup>7</sup> (30 minutes), Slate-crowned Antpitta *G. nana*<sup>9</sup> (54 minutes), but considerably less than the only other *Hylopezus* with comparable data, *H. perspicillatus*<sup>34</sup> (294 minutes). Our observation of an uninterrupted incubation bout of 438 minutes appears to be somewhat unusual. At a nest of *H. perspicillatus*, however, Skutch<sup>33</sup> observed a 6.5-hour incubation bout. The only other records of long incubation bouts in the Grallariidae are four hours by *G. alleni*<sup>20</sup> and three hours by *G. peruviana*<sup>5</sup>. Sample sizes are far

too small for all species to be certain, but these data suggest that *Hylopezus* are more prone to long bouts than other genera. Bi-parental incubation is typical among antpittas and incubation period remains largely unknown for *Hylopezus*<sup>9</sup>.

**Other adult behaviours while incubating.**—Masked Antpittas preened their feathers using the bill, stretching them from the base. At nests, individuals preened on average 24.4 times per day, with intervals between bouts of preening varying between <6.0 and 202.2 minutes. Of the time the species was observed preening, 43% was spent preening the wings (especially the underwing), 27% breast feathers, 11% back feathers, 11% belly feathers and the remaining 8% other tracts. On seven occasions, birds were observed scratching their face with their claws and, rarely, birds were observed bathing in puddles of water.

**Breeding seasonality and success.**—We observed the first active nest in January 2006, over a total of 30 minutes. We found a second nest containing a single egg and monitored it on 4–21 December 2006. We recorded a total of 109.11 hours of diurnal behaviours (06h00–18h00) before this nest was predated by a squirrel *Sciurus* sp. A third nest, found in December 2006 with two eggs, was predated by a Bolivian Squirrel Monkey *Saimiri boliviensis* on 21 December 2006. One of the abandoned nests contained fairly fresh egg shell fragments on 25 December 2006. We discovered the final active nest with two eggs, near Puerto Remanso, on 7 December 2011. On 17 November 2006 we observed a fledgling closely associating with a vocalising adult. The fledgling had probably left the nest only a few days previously and was following the adult with short hops on the forest floor.

Previously, adults with enlarged gonads were collected at Hamburgo in November 1998 and an adult was observed carrying nest material at Las Piedras in September 1998<sup>24</sup>. Along with our records, these data suggest that breeding activity extends from at least September to January (perhaps into February), corresponding with the onset of the rainy season and closely aligned with the peak nesting period for other species in south-west Amazonia<sup>35</sup>.

**Adult foraging behaviour.**—Masked Antpitta was most frequently observed in the understorey or on the ground at Hamburgo, especially in vine tangles. Approximately 90% of observed perches off the ground were on vines varying between 2.5 mm and 47.5 mm in diameter (mean  $16.03 \pm 13.17$  mm) at heights off the ground of 0.1–3.2 m (mean  $2.19 \pm 0.97$  m). The other c.10% of perches were branches of bushes and, rarely, angled trunks, all <3 m above ground. They were found in dense vegetation bordering open areas (e.g., trails, lakes). Once, MAA also observed *H. auricularis* c.8 m up a



Figure 1. Nest and eggs of Masked Antpitta *Hylpezus auricularis*, Hamburgo, dpto. Beni, Bolivia, 12 December 2006 (Oswaldo Maillard)

Figure 2. Masked Antpitta *Hylpezus auricularis* perched c.6–8 m up in a vine tangle responding to playback near Hamburgo, dpto. Beni, Bolivia, 21 April 2012 (Daniel J. Lebbin)

Figure 3. Masked Antpitta *Hylpezus auricularis* perched on a vine, Hamburgo, dpto. Beni, Bolivia, 12 December 2006 (Oswaldo Maillard)





Figure 4. Characteristic habitat of Masked Antpitta *Hylpezus auricularis* at Hamburgo, dpto. Beni, Bolivia, 25 November 2006 (Oswaldo Maillard)

Figure 5. Narrow strips of riparian forest, Masked Antpitta *Hylpezus auricularis* habitat, in the Hamburgo–San Vicente area south of Riberalta, dpto. Beni, Bolivia, April 2012 (Daniel J. Lebbin)

vine tangle, and DJL photographed an individual 6–8 m up in a vine tangle responding to playback on 21 April 2012 (Fig. 2). *H. auricularis* perch heights were similar to those of other *Hylopezus*, e.g. 0.9–1.8 m for *H. perspicillatus*<sup>32</sup> and 1–2 m for White-browed Antpitta *H. ochroleucus* and *H. nattereri*<sup>37</sup>.

Most observed foraging attempts were on the ground in leaf litter, with rare records of insects

captured from perches off the ground or on bare ground. Typically, birds foraged on the ground, hopping 5–20 cm interspersed with brief pauses to lift leaves and other organic material from the moist soil with their bill to search for invertebrate prey. Most prey could not be identified, but slugs appeared to be potentially important. Twice, an antpitta beat the prey against the ground and once a c.5 cm green worm was shaken violently against a dead trunk and dropped without being ingested. Terrestrial foraging among leaf litter is similar to methods described for *H. ochroleucus*, *H. nattereri* and *H. perspicillatus*<sup>32,37</sup>.

**Additional adult behaviours.**—We observed agonistic behaviour among *H. auricularis* aggressively defending territories near nests. In January 2006, an individual approached following playback of the species' vocalisations, entering the territory of a second individual incubating at a nest. When the visitor answered the playback by singing from an elevated branch, the nesting bird rapidly approached and attacked it. Similar behaviour was observed in November–December 2006 in the understory.

Masked Antpittas performed a distraction display in the presence of human observers during nesting, most frequently prior to the incubation period. Distraction behaviour consisted of twice-repeated cyclical slow movements of the chest and posterior underparts, as well as rotating the head while the legs and feet were still. This behaviour was performed on the ground and perches on

branches and vines (Fig. 3). It may serve to distract potential predators from nests. Whitney *et al.*<sup>37</sup> indicated that both *H. ochroleucus* and *H. nattereri* respond to playback by singing and by swinging the body from side to side without moving the head and legs. In October 2008, J. del Hoyo video-recorded a *H. ochroleucus* in Brazil (<http://www.hbw.com/ibc/video/white-browed-antpitta-hylopezus-ochroleucus/bird-bush-singing>) singing and making these movements. Genus *Grallaricula* appears to show similar behaviour<sup>37</sup>. *G. flavirostris* performs a distraction display near nests, with breast movements repeated thrice compared to similar movements repeated twice by *H. auricularis*<sup>23</sup>.

**Vocalisations.**—Masked Antpittas were observed giving both songs and calls. Singing birds could sometimes be heard over a distance of c.100 m. Birds sang 1–38 songs per series with time intervals between songs of 2–20 seconds. Vocalisations were heard at all times of day. During incubation, antpittas sang from the nest to mates that had departed the nest before and after incubation shift changes. These songs started almost imperceptibly quiet, getting louder each series until they were quite strong at the end of bouts. Both individuals of a pair gave 2–50 songs per series, with each song lasting 2–5 seconds. The number of singing periods ranged from two to 15 per day with a mean 7.4 ( $n = 72$ ). Intervals between series were 2–50 seconds and each singing period lasted <6–84 minutes. *Grallaria* antpittas are well known to vocalise from the nest<sup>6,9,13</sup>, but this appears to be the first record of frequent singing from the nest in genus *Hylopezus*. Outside the breeding season, in April 2012, ABH & DJL found *H. auricularis* to be fairly quiet except in response to playback.

**Distribution.**—Surveys covered both floodplain and upland (*terra firme*) forests in 15 areas (Table 1). We encountered *H. auricularis* in humid secondary forest of short to mid stature (Fig. 4). At Hamburgo, these grew on sandy soils in floodplains or slightly raised levees separated by natural, seasonally flooded, channels. The entire area is inundated temporarily during years when the Beni River overflows its banks. The habitat of *H. auricularis* at Hamburgo is bordered by seasonally flooded open grassland and marshes (Fig. 5), as well as taller forest with an understorey dominated by *Heliconia*, and successional forests of *Tessaria integrifolia*, *Gynerium sagittatum* and *Cecropia* along the Beni River. At Puerto Remanso, *H. auricularis* was found in a small area of short-stature forest between a lake and more mature forest where Amazonian Antpitta *H. berlepschi* was absent. Habitat at Puerto Remanso is inundated annually, whereas that at Hamburgo is not. Forest at Hamburgo possessed a herbaceous layer 0.3–1.0

m tall and covering 0–80% of the ground area, followed by a shrub layer c.5 m tall and covering 50–90%, and finally a discontinuous canopy layer of trees 10–18 m tall. Vine density was high in the understorey and canopy. ABH & DJL noted Great Antshrike *Taraba major* and Amazonian Antshrike *Thamophilus amazonicus* as common in similar vine tangles at Hamburgo, and that the latter superficially sounds like *H. auricularis*.

No new sites for *H. auricularis* were found. Of the six known areas where *H. auricularis* had previously been recorded, we encountered it in three (Hamburgo, San Vicente, Puerto Remanso) and failed to find it at Tumichucua, Victoria and Las Piedras. Maijer<sup>21</sup> mentioned an observation by J. V. Remsen of *H. auricularis* at Tumichucua in 1976, but a study in September–November 1972<sup>27</sup> did not detect the species. Neither was *H. auricularis* detected at the type locality in Victoria by us. Perhaps the habitat had changed or matured since previous observations at these two sites. *H. auricularis* was also found in October 2001 at ‘the ruins’ at Las Piedras<sup>24</sup>, but now appears to be absent there, perhaps due to deforestation and degradation. Surveys were conducted during the breeding season when *H. auricularis* should have been easily detected, but instead *H. berlepschi* was observed at this site. Our surveys did not specifically record all locations of *H. berlepschi*, but the latter was common throughout upland and more mature forests across the range of *H. auricularis*.

Based on historic information and our records, we estimated *H. auricularis* to possess an Area of Occurrence of 210 km<sup>2</sup> and an Area of Occupancy of 50 km<sup>2</sup>. Based on transects of 0.24 km<sup>2</sup> at Hamburgo, San Vicente and Puerto Remanso, we estimated 84 individuals at a density of 2.9 birds / km<sup>2</sup>, indicating a global population of 200–500 mature individuals.

**Conservation.**—Near Riberalta, conversion of forested areas to pastures, crops and human settlements is the main threat, although forests in the riparian floodplain are perhaps less vulnerable than upland forests that are less frequently inundated. Still, as Riberalta expands, floodplain areas may come under increasing pressure. The city is an important economic centre in the Bolivian Amazon, with Brazil nuts *Bertholletia excelsa* a major export product driving growth as well as road construction and further agricultural production. Extraction of palm leaves, timber and firewood, clay for brick manufacturing, and waste disposal may have additional negative effects on *H. auricularis* habitat. Expanding settlements close to habitats occupied by *H. auricularis* may increase the number of feral cats and dogs or other predators with unknown effects on *H. auricularis* breeding success and populations.

Most *Hylopezus* prefer disturbed or secondary habitats<sup>19</sup>, including *H. auricularis*. We found *H. auricularis* in secondary forest with no or little recent human degradation. At Hamburgo, the habitat of *H. auricularis* is a continuous narrow strip bordered by other vegetation types. The habitat of *H. auricularis* is probably naturally distributed as fragmented strips bordered by open marsh and other successional forest stages, as determined by river dynamics. As *H. auricularis* appears to occupy naturally dynamic and disturbed habitats, it may be somewhat tolerant of similar anthropogenic disturbances. Majer<sup>21</sup> found *H. auricularis* near Hamburgo in habitat disturbed by brick and tile works, and in young secondary forest near open pastures. Maillard *et al.*<sup>24</sup> observed *H. auricularis* in degraded forest bordering yucca and plantain crops at Las Piedras.

*H. auricularis* is probably absent from suitable habitat in more mature forests within the study area due to the presence of the widespread *H. berlepschi*. Interspecific territoriality, mediated by interspecific aggression, is a common spacing mechanism between congeneric species-pairs of Amazonian birds across riparian successional gradients, with larger species dominating in more mature forest, excluding smaller species except from earlier and narrower successional habitats<sup>31</sup>. *H. berlepschi* (male 46–54 g, female 36–48.9 g) is larger and heavier than *H. auricularis* (male 43 g, female 38 g)<sup>19</sup>. *H. berlepschi* approached when *H. auricularis* vocalisations were broadcast during surveys by MAA. Reciprocal playback experiments should be conducted to confirm and quantify asymmetric interspecific aggression by these *Hylopezus*. It is unclear if anthropogenic habitat disturbance or merely natural maturation favour *H. berlepschi* or lead to this species displacing *H. auricularis* from historic locations over time. The potential for competitive constraints on the distribution of *H. auricularis* is a new insight resulting from this study.

Our estimated Extent of Occurrence of 210 km<sup>2</sup> for *H. auricularis*, and Area of Occupancy of 50 km<sup>2</sup>, is less than the 380 km<sup>2</sup> previously estimated by BirdLife International<sup>2</sup>. Additional work by Herzog *et al.*<sup>16</sup> indicates the Area of Occurrence could be as large as 509 km<sup>2</sup>. Our population estimate for *H. auricularis* does not exceed 500 individuals, and is far smaller than the 2,500–9,999 estimated by BirdLife International<sup>2</sup>. Currently classified as Vulnerable<sup>2</sup>, we propose *H. auricularis* warrants uplisting to Endangered status for meeting the criteria of having a severely fragmented Area of Occurrence <5,000 km<sup>2</sup> (B1a), a severely fragmented Area of Occupancy of <500 km<sup>2</sup> (B2a), a population size of <2,500 mature individuals and an estimated ongoing decline of at least 20% within five years (C1).

Conservation action could benefit *H. auricularis*. Although a 49,474-ha Important Bird Area has been designated covering the entire range of *H. auricularis*<sup>25,34</sup>, the species is not protected within any public or private reserve. With the support of local communities and government authorities, reducing threats and formally protecting habitat where threats to *H. auricularis* are greatest should be a priority, starting with known locations. This will require education and outreach work to raise awareness of the species and the benefits of biodiversity. In support of this, the Riberalta local government declared *H. auricularis* a symbol of the municipality's natural patrimony in May 2015. Riberalta is serviced by airlines, and ecotourism in the area could be further developed around the antpitta (particularly if a feeding station could be developed), general rainforest 'experiences' and nearby patches of well-preserved *cerrado*.

The population of *H. auricularis* should be periodically monitored to detect trends and track threats. Future searches for the species should be conducted during the breeding season (September–February) in appropriate habitat (early successional floodplain forest) identified *a priori* from satellite imagery or vegetation maps, in previously unsurveyed areas along the Beni and Madre de Dios rivers, in order to locate new sites. If *H. auricularis* disappears from locations as habitat matures, newly formed areas of appropriate habitat will presumably be colonised, assuming such areas are available. Areas with populations discovered in the future should be targeted for protection too. Any potential reserves should aim to protect long and broad areas of dynamic floodplain habitats containing areas currently occupied by *H. auricularis* and areas that might become suitable in the future. Researchers looking for *H. auricularis* should pay special attention to the presence of other species, especially *H. berlepschi*, to better understand how interspecific interactions influence the range of *H. auricularis*.

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