

## Updated distribution of Stygian Owl *Asio stygius* in Peru, and first reports of breeding

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Desde que el Búho Estigio *Asio stygius* fue descubierto por primera vez en el norte de Perú en 1998, su área de distribución conocida se ha expandido hacia el sur. La información más reciente publicada sobre la especie en Perú no contenía evidencias de reproducción. En este trabajo, actualizamos la distribución conocida de la especie en Perú utilizando datos de eBird y brindamos la primera documentación de reproducción: un nido con huevos encontrado en el departamento de Amazonas en julio de 2017 y dos polluelos encontrados en el departamento de San Martín en julio de 2022. El gran vacío, de casi 800 km, en el rango conocido –entre Amazonas y San Martín, en el norte, y Cusco, en el sur– sugiere que queda más por aprender sobre la distribución de la especie en Perú.

Stygian Owl *Asio stygius* is a widespread but poorly studied Neotropical raptor that occurs patchily across a variety of habitats and elevations, from north-west Mexico, Cuba and Hispaniola south through Central America and northern South America to northern Argentina, Paraguay and southern Brazil<sup>1,6</sup>. Its status in Peru has been unclear, although without question its known range has expanded<sup>12</sup>. The first record for Peru was a specimen taken at 2,800 m in dpto. Cajamarca on 4 July 1998 during a Louisiana State University Museum of Natural Science (LSUMNS), Baton Rouge, expedition<sup>12</sup>. This specimen was the basis of the statement by Schulenberg *et al.*<sup>13</sup> that Stygian Owl was a rare or local resident at 2,200–2,900 m north and west of the Marañón River at the border of dptos. Piura and Cajamarca, in north-west Peru.

Schmitt *et al.*<sup>12</sup> updated the known Peruvian range of Stygian Owl on the basis of records published in two earlier papers<sup>14,15</sup> and a specimen they obtained on 21 June 2010 in dpto. Cusco, 1,100 km south-east of where the LSUMNS specimen was taken. Despite these publications, the species' range in Peru as depicted in the most recent general references<sup>1,2</sup> remains outdated. Here, we update its distribution in Peru since Schmitt *et al.*<sup>12</sup> and provide the first documented breeding records on the basis of a nest with two eggs found near Pomacochas, dpto. Amazonas, by SM in July 2017, and two recently fledged young seen near Moyobamba, dpto. San Martín, by JSM, BVG & RY in July 2022.

### Updated distribution

Schmitt *et al.*<sup>12</sup> identified five localities where the species was known to occur in Peru, two in dpto. Cajamarca and one each in dptos. Piura, San Martín and Cusco (Table 1). We searched for additional records in Peru in eBird (<https://ebird.org/explore>) and iNaturalist ([\[inaturalist.org\]\(https://www.inaturalist.org\)\) and summarise them in Table 1. All reports in iNaturalist were captured via eBird reports, so we include only the latter in Table 1 and Fig 1.](https://www.</a></p>
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Stygian Owl was first reported in dpto. Amazonas in 2011 at Abra Patricia (Table 1). After being detected within the city of Moyobamba, dpto. San Martín, in 2009<sup>14</sup>, Stygian Owl was commonly reported there in eBird from 2013 and in the forest near Waqanki Lodge just south of Moyobamba the same year. Stygian Owl was first found at Morro de Calzada, 8 km west of Moyobamba, in 2015 and has been reported there via eBird every year since. It was first detected within the city of Tarapoto, dpto. San Martín, in 2017 and was also seen near Huembo Lodge, dpto. Amazonas, 26 km south-west of Abra Patricia in 2017, where the first nest was discovered (see below). Since 2018, the species has been reported in eBird at several localities in dpto. Cusco outside the area mentioned by Schmitt *et al.*<sup>12</sup>. In each occasion noted above, no more than two adults were detected.

### Habitat

Most records of Stygian Owl in Peru have been in montane evergreen forest between 1,000 m and 3,100 m (Table 1). Stygian Owl is not restricted to forest habitats in Peru. Multiple records over several years have occurred in urban landscapes, in Moyobamba (human population<sup>5</sup> c.50,000), Tarapoto (c.76,000) and Quillabamba (c.24,000), where the species occurs in wooded parks and gardens, but also in distinctly urban settings. Indeed, in Moyobamba Stygian Owl has often been seen perched on radio towers at night<sup>14</sup>, surrounded by buildings, from which it appears to be foraging for bats according to eBird reports. Schmitt *et al.*<sup>12</sup> found the remains of a fruiteater *Pipreola* sp. in the stomach of the bird they collected near Cusco. We found no other information on prey in Peru,

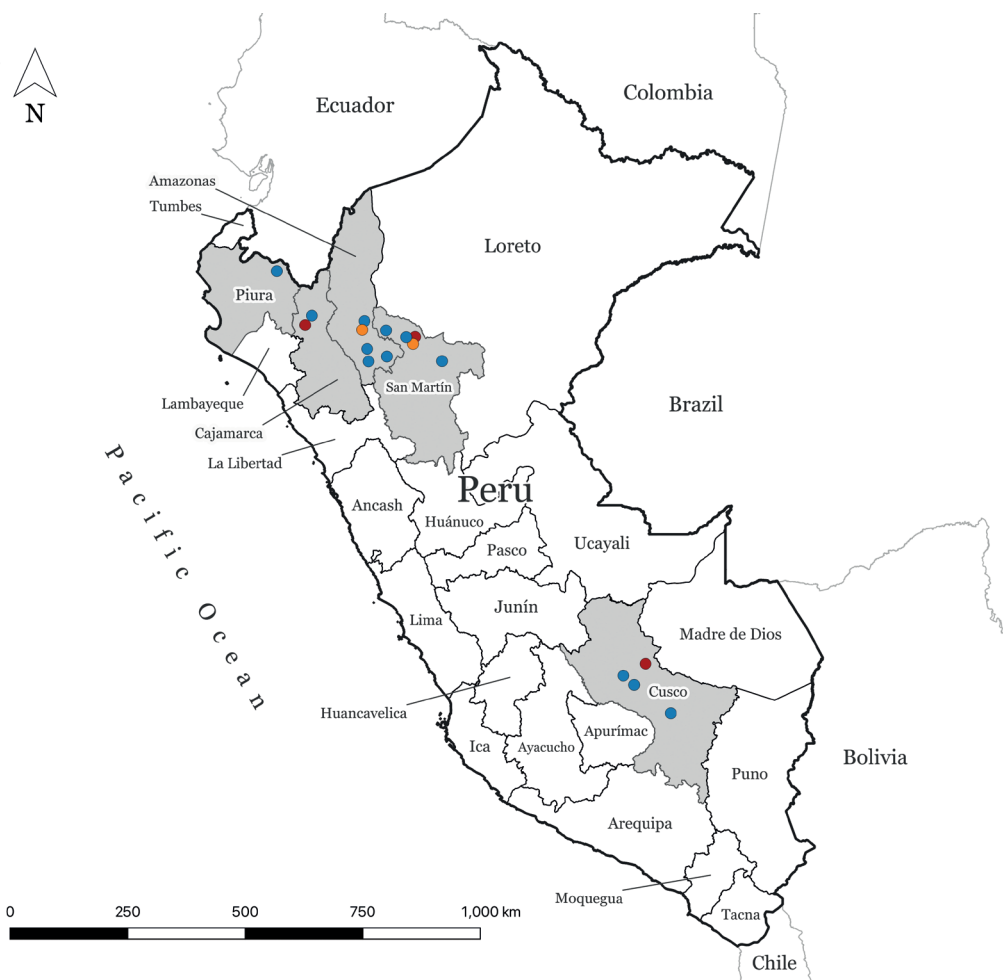


Figure 1. Known range of Stygian Owl *Asio stygius* in Peru on the basis of sightings and / or vocal recordings (blue dots) and specimens (red dots). The two known breeding records are depicted by orange dots. Multiple records in the same general localities are not shown.

but birds and bats are commonly reported in the diet elsewhere in the species' range<sup>4,7,10,11</sup>.

### Breeding records

On an unspecified date in July 2017, SM inadvertently flushed a female Stygian Owl from a nest with two eggs on the ground atop a rock outcrop in a forest opening at about 2,220 m near Huembo Lodge, dpto. Amazonas (Fig. 2a). Fearing that the female might abandon the nest, SM departed swiftly and took no photographs. He returned to the nest only once more (date not recorded), when he observed two nestlings. Subsequently, he saw two fledglings in the nest area although, again, he did not record the date. Ground nests such as this seem to be the rule for Stygian Owl elsewhere in its range<sup>3,4,7,11</sup>.

On 11 July 2022, JSM, BVG & RY found two fledglings perched in trees in open evergreen forest at 970 m near the visitor centre at Morro de Calzada (Fig 2b). JSM remained at the site after sunset and obtained recordings of the fledglings' food-begging vocalisations on his iPhone (Fig. 3). The vocalisations sounded very similar to those made by fledgling Long-eared Owls *Asio otus*<sup>9</sup>. The young had a fair amount of natal down visible (Fig. 2b) and made sustained flights of more than 50 m. On the basis of his extensive experience with Long-eared Owl fledglings<sup>9</sup>, JSM estimated that they were at least six weeks old (assuming development in the two species is similar), which suggests that the eggs were laid in late April and hatched in late May. Eggs at the nest found near Huembo Lodge in 2017 would have been laid in June or July. On this basis, Stygian Owl initiated



Figure 2. (a) Site of the first Stygian Owl *Asio stygius* nest found in Peru, near Huembo Lodge, dpto. Amazonas, Peru, July 2017 (Santos Montenegro). Two eggs were laid on the ground within sparse vegetation atop the rock. (b) One of two fledglings found at Morro de Calzada, dpto. San Martín, Peru, 11 July 2022 (Ramiro Yábar)

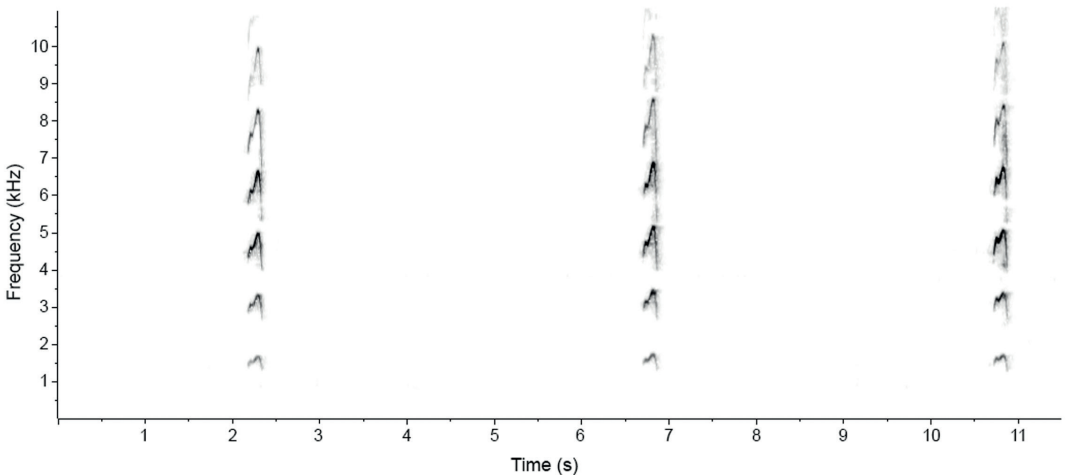


Figure 3. Sonogram of food-begging vocalisations of a fledgling Stygian Owl *Asio stygius* at Morro de Calzada, dpto. San Martín, Peru, 11 July 2022.

breeding during the dry season, which in montane Peru lasts from April to September (RY pers. obs.).

**Conclusions**

The known range of Stygian Owl in Peru has expanded since it was discovered in dpto. Cajamarca in 1998<sup>12</sup>. The large gap (c.800 km) in the known

Table 1. Chronology of Stygian Owl *Asio stygius* records in Peru. Multiple records at the same locality are not listed unless the later record is a specimen or breeding confirmation. Elevations (m) are approximate. Record types: S = specimen, O = sight observation, V = vocalisation (heard only), B = breeding confirmation. Source names with an asterisk denote eBird reports.

Year	Locality	Department	Elevation	Type	Source
1998	Near Sallique	Cajamarca	2,800	S	LSUMNS 170388
2000	Cuyas Forest	Piura	2,200–2,600	O	Vellinga et al. <sup>15</sup>
2009	Moyobamba	San Martín	875	O	Tello-Alvarado <sup>14</sup>
2010	Abra Bellavista	Cusco	2,850	S	Schmitt et al. <sup>12</sup>
2010	Moyobamba	San Martín	875	S	Tello-Alvarado <sup>14</sup>
2011	Abra Patricia	Amazonas	2,300	O	R. Hoyer*
2012	Near Agua Azul	Cajamarca	2,560	V	Schmitt et al. <sup>12</sup>
2013	Near Waqanki Lodge	San Martín	980–1,100	O	F. Schmitt*
2015	Morro de Calzada	San Martín	1,000	O	G. Rosenberg*
2016	Alto Mayo Forest	San Martín	2,040	O	K. Havard*
2017	Near Huembo Lodge	Amazonas	2,220	B	SM
2017	Tarapoto	San Martín	350	O	H. Gonzales Pinedo*
2018	Near Huayopata	Cusco	1,650	O	D. Vargas*
2018	Laguna de Huacarpay	Cusco	3,080	O	P. Avendaño*
2020	Quillabamba	Cusco	1,050	O	O. Candia Luna*
2022	Near Amazilia Lodge	Amazonas	2,050	O	S. Lorenz*
2022	Near Chachapoyas	Amazonas	2,200	O	A. García Bravo*
2022	Mendoza	Amazonas	1,600	O	J. C. Tello-Alvarado*
2022	Morro de Calzada	San Martín	970	B	JSM, BVG, RY

range—between Amazonas and San Martín in the north, and Cusco in the south—suggests that more remains to be learned about the species' distribution. Moreover, almost nothing is known about its status and biology in Peru, including conservation issues, reproductive success, foraging ecology, and how survivorship and productivity differ between birds in urban areas vs. those in more natural habitats.

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