Notes on the nest and hatching of eggs of Solitary Tinamou *Tinamus solitarius* in the wild

Solitary Tinamou *Tinamus solitarius* is endemic to the Atlantic Forest and ranges from eastern Brazil to south-eastern Paraguay and north-eastern Argentina, where it inhabits mature forests with a tall canopy and an open understorey[5]. Although the species originally occurred across the entire Atlantic Forest region[2], historical deforestation and fragmentation of this biome, combined with hunting pressure, greatly affected its populations[4,7]. Consequently, the species is now confined to few large mature forest remnants and categorised as Near Threatened globally[1]. Given its cryptic coloration and sedentary and secretive habits, ecological and behavioural studies of this species are scarce, and most reported data come from *ex-situ* observations[2]. Aiming to increase knowledge on *T. solitarius* breeding biology, here we describe a nest and the hatching of an egg, based on observations in the wild.

On 25 January 2012 we conducted a herpetological survey in a large mature forest on the Atlantic Plateau in Capão Bonito municipality, São Paulo, south-east Brazil. Subsequently, this site was designated part of the Parque Estadual Nascentes do Paranapanema[8]. At 15h40, while walking along a trail, we were startled by the rapid and loud flight of an adult Solitary Tinamou. Approaching the point from which the bird flew, we realised that it was a nest site. We photographed the nest (Fig. 1), avoiding excessive proximity to prevent interference in the breeding process.

The nest contained seven elongated turquoise eggs, which were deposited in a concave depression in the soil, surrounded by some dry leaves and twigs, and covered with fragments of pulviplumes. The nest was hidden by buttress roots of a large tree. Surprisingly, we noticed that some chicks were actively breaking some eggshells. We then moved away from the nest, and the brooding adult (presumably a male, given what is known about the species reproduction[2]) returned to incubation duties.

Two hours later, we walked back along the same trail. Despite our efforts to avoid disturbance, the incubating adult again flew from the nest. This second departure allowed us to take a further photograph of the nest, showing that the first hatchling had already emerged completely (Fig. 2). Comparing the two photographs, eggs and some nest material (leaves and twigs) had moved, probably caused by the male's sudden flight and the hatchling's effort to break its egg. The hatchling had some difficulties in standing up, which is apparently common for the species due to the weight of its large yolk reserve[2]. The hatchling had a uniform dark brown colour on the body and head. The feet were light brown and the base of the bill bright orange. Given the observation distance, and the angle and quality of the photo, it was not possible to determine whether the hatchling retained its egg tooth. After taking the second photograph, we moved away from the nest.

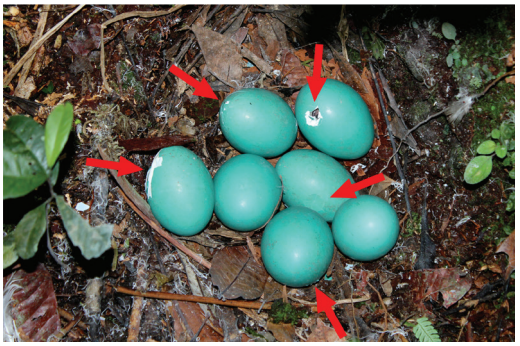

Figure 1. Nest of Solitary Tinamou *Tinamus solitarius*, Parque Estadual Nascentes do Paranapanema, São Paulo, Brazil, 25 January 2012. The nest contains seven eggs with arrows indicating five nestlings breaking their eggshells (Leandro Moraes).

Figure 2. The same nest, with a hatchling recorded shortly after emerging from its egg (Leandro Moraes).

This breeding event was recorded at the end of the species' breeding season, which typically occurs during the rainy period (August–January at this locality)[2,6]. Considering the known incubation period for the species (19–20 days)[2], we estimate that the eggs were laid in early January. Nesting habitat and microhabitat, as well as nest shape and materials, are consistent with what is known for the species[2,9,10].

However, the number of eggs does not correspond with existing knowledge. The nest contained seven eggs, while previous records of *T. solitarius* nests typically contained four eggs (maximum six)[2,10]. Seven eggs have been observed on a single occasion *ex situ*, but this was treated as unusual[5]. Our record suggests a greater plasticity in *T. solitarius* in terms of clutch size. However, the reproductive strategy of Tinamidae genera, including *Tinamus*, *Nothocercus*, *Crypturellus*, *Rhynchotus* and *Nothoprocta*[2], often involves communal nesting. Considering that communal nesting has been reported for Great Tinamou *T. major* (males can incubate clutches of up to eight eggs from multiple females)[3], our observation of a Solitary Tinamou incubating

a relatively large clutch might suggest a similar reproductive strategy. This hypothesis remains highly speculative, pending further observations.

It is also noteworthy that our record occurred during research ahead of the creation of the Parque Estadual Nascentes do Paranapanema. This protected area is part of the Paranapiacaba Ecological Continuum, a set of seven protected areas covering more than 250,000 ha, making it one of the largest preserved regions of the Atlantic Forest[8,12]. That such a Near Threatened species typical of mature forests is successfully breeding at the site reinforces the importance of establishing and effectively maintaining this new protected area[11], as well as the relevance of the Paranapiacaba Ecological Continuum for biodiversity conservation[8,12].

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