

# Out of the blue, a cyanistic parrotlet, *Forpus xanthopterygius* (Psittaciformes: Psittacidae) in the Mantiqueira Mountains

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In birds, green plumage is often a result of the combination of two mechanisms: yellow pigmentation and blue structural colouration (the physical nanostructure arrangement of keratin and air vacuoles that leads to coherent scattering, reflecting blue wavelengths)<sup>1</sup>. There are a few exceptions, like some members of the orders Musophagidae and Galliformes that have a green pigment called turacoverdin<sup>2</sup>.

In most avian taxa, diet-derived carotenoids are responsible for the yellow pigmentation, but Psittaciformes are a special case. They produce a unique, diet independent class of plumage pigments called psittacofulvins<sup>3,4,5</sup>. Cyanism is the total absence of yellow pigment in Psittaciformes that results in a blue structural coloration<sup>6</sup>. The inability to synthesize yellow pigment is caused by a mutated gene with an autosomal recessive inheritance pattern and has been detected in a wide number of Psittaciformes, including parrotlets like the Pacific Parrotlet (*Forpus coelestis*)<sup>6</sup>. The blue-mutated type is commonly bred in commercial aviaries<sup>7</sup> and is very popular as a pet.

Here we report the first photographic record of cyanism in the wild for another parrotlet species, the Blue-winged Parrotlet, *F. xanthopterygius*.

The photograph was taken on June 28, 2018, in an area (22°53'44"S, 45°56'29"W, 739 m a.s.l.) owned by Projeto Dacnis, a non-governmental organization (NGO) dedicated to biodiversity conservation through scientific research and environmental education. The property is in São Francisco Xavier, a subdistrict of São José dos Campos, in the state of São Paulo, in southeast Brazil. The subdistrict is located in the Mantiqueira mountains, which range from 630 to 2023 m elevation a.s.l.<sup>8</sup> It is composed of fragmented montane Atlantic Forest with primary and secondary forest areas (E.M, pers. obs.) permeated by farming areas.

The cyanistic individual (Figure 1) flew in with a flock of around 30 typically colored *F. xanthopterygius*. They fed on



Figure 1. Wild cyanistic Blue-winged Parrotlet (*Forpus xanthopterygius*). São Francisco Xavier-SP. Photo: Beto Cecchi.

Mexican sunflower seeds (*Tithonia rotundifolia*), an exotic plant species that is an important food source for several bird species in winter (Figure 2). The blue bird was not isolated from the flock and interacted normally with other individuals. The flock fed on the seeds for over ten minutes and then slowly began dispersing. In other reports about birds with aberrant plumages, normal relations with their companions were observed, in some cases even nesting and reproductive success<sup>9-12</sup>.

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Figure 2. Cyanistic and typically colored Blue-winged Parrotlets (*Forpus xanthopterygius*) feeding on Mexican sunflower seeds (*Tithonia rotundifolia*). São Francisco Xavier-SP. Photo: Elsie Laura Rotenberg.