



# Note on the distribution and migration of the Black-capped Vireo (*Vireo atricapilla*).

**Ian MacGregor-Fors<sup>1\*</sup>, Adolfo G. Navarro-Sigüenza<sup>2</sup>, Lorena Morales-Pérez<sup>3</sup> y Jorge E. Schondube<sup>3</sup>.**

<sup>1</sup>Red de Ambiente y Sustentabilidad, Instituto de Ecología, AC. Antigua carretera a Coatepec 351, El Haya, Xalapa, Veracruz, 91070, México. E-mail: [\\*ian.macgregor@inecol.edu.mx](mailto:ian.macgregor@inecol.edu.mx).

<sup>2</sup>Museo de Zoología, Facultad de Ciencias, Universidad Nacional Autónoma de México. Apartado Postal 70-399, México, DF, 04510, México.

<sup>3</sup>Laboratorio de Ecología Funcional, Centro de Investigaciones en Ecosistemas, Universidad Nacional Autónoma de México, Campus Morelia. Apartado Postal 27-3, Morelia, Michoacán, 58190, México.

## Abstract

Little is known about the migration of the Black-capped Vireo (*Vireo atricapilla*). In this short communication we report a sight-record of an adult male Black-capped Vireo in northeastern Michoacán and several distribution records outside the proposed distribution for this species. Altogether, these records suggest that the species uses the Sierra Madre Oriental and the Transvolcanic Mexican Belt for migration.

**Keywords:** migration route, conservation, Vireonidae.

## Nota sobre la distribución y migración del vireo gorra negra (*Vireo atricapilla*).

### Resumen

Existe poca información sobre la migración del vireo gorra negra (*Vireo atricapilla*). En esta nota reportamos un registro de la especie en el noreste de Michoacán y diversos registros fuera de la distribución propuesta para la especie. En conjunto, los registros recopilados sugieren que la especie utiliza la Sierra Madre Oriental y el Eje Neovolcánico Transversal como ruta migratoria.

**Palabras clave:** ruta migratoria, conservación, Vireonidae.

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## Introduction

The Black-capped Vireo (*Vireo atricapilla*) is a Neotropical migrant considered highly endangered in Mexico and the USA, countries that comprise its entire distributional range (Ratzlaff 1987, IUCN 2006, SEMARNAT 2010). The historical breeding distribution for this species extended from Kansas, in the USA, to Coahuila, Nuevo León, and Tamaulipas, in northeastern Mexico (USFWS 1991, Grzybowski 1995, Howell and Webb 1995). Although the non-breeding distribution of this species is less well documented, it has been reported to winter along the Pacific Coast of Mexico, from Sonora (mostly occurring in Sinaloa and Nayarit; Wilkins *et al.* 2006) to Oaxaca (southernmost range of the species; Binford 1989), and from sea level to 1600 m in altitude (Ratzlaff 1987, Howell and Webb 1995). In a recent publication, Vega Rivera *et al.* (2011) propose three wintering distribution models that show potential habitat for the species somehow different to the one proposed by Wilkins *et al.* (2006). Breeding habitats include brushy areas with scattered trees (Ratzlaff 1987, Grzybowski *et*

*al.* 1994, Noa *et al.* 2007), whereas non-breeding habitats comprise dense thickets, pine-oak forests, thorn forest, riparian forest, deciduous forest, and shade coffee plantations (Howell and Webb 1995, Wilkins *et al.* 2006).

Although high quality ecological and management information is available for this species throughout its breeding range within the USA (Wilkins *et al.* 2006 and references therein), information on its migration and wintering range is limited and has received little attention. Because its entire population winters in Mexico (late August-September to mid March-April; Howell and Webb 1995, Wilkins *et al.* 2006), research and conservation strategies need to be developed for the species' wintering range (Parysow and Tazik 2002, Wilkins *et al.* 2006). The known wintering range encompasses areas where land-use change is increasing and habitats are being degraded, as reported for other bird species (Peterson *et al.* 2006). In this short communication we report previously unknown museum peripheral distribution records, reconsider some locations

previously reported by Gruber (1957, 1961), and add one sight-record that broaden the known distribution of the Black-capped Vireo. These records suggest the use of a possible migration route.

## Methods

We carried out fieldwork in northeastern Michoacán as part of an ornithological monitoring study of the Cuitzeo lake Watershed (Schondube *et al.* 2010). This survey consisted of >500 m unlimited radius point counts (following Ralph *et al.* 1993) during fall 2006 and winter 2006-2007, from 07:00 to 11:00 hours. For field identification of the Black-capped Vireo, we used three field marks that make the male of this small sized vireo unique: black cap, reddish eyes, and continuous white lores and eye-ring (Gruber 1957, Howell and Webb 1995).

We also retrieved species occurrence information for this species from two databases: (1) the Atlas of Mexican Bird Distributions database, a compendium of bird specimens from Mexico drawn from data associated with specimens from 57 natural history museum collections worldwide (although not available for public consultation because of data use agreements with institutions, the dataset is nevertheless a comprehensive view of bird distributions in the country; Navarro-Sigüenza *et al.* 2003), and (2) the North American collection databases in ORNIS, a web-based system that holds collections and observational databases ([www.ornisnet.org](http://www.ornisnet.org)). Three additional localities not considered in the recent literature were obtained from Gruber (1957, 1961): (1) Nevado de Toluca (specimen collected at 2900 m asl by E.W. Nelson in November 1893), (2) southeastern San Luis Potosí (sight-record by I.R. Davis in Easter 1947), and Morelos (collected at Cerro Cuautepec by D.W. Warner in Summer 1954).

## Results

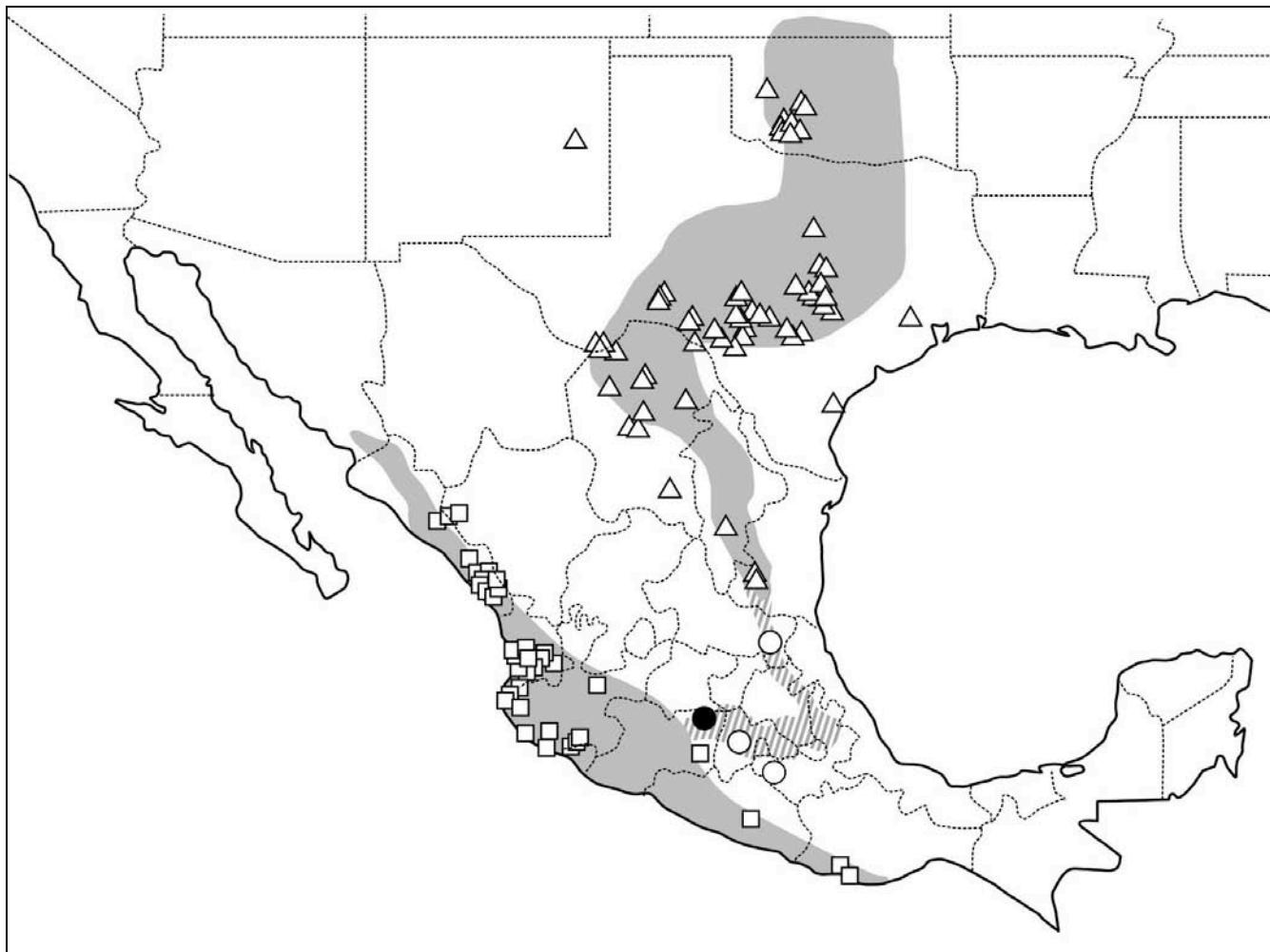
We sight-recorded one adult male Black-capped Vireo in a bushy clearing of a managed pine-oak forest edge on 24 October 2006 (19°53'37"N, 100°44'02"W; 2366 m asl). Habitat structure measured in a 50 m diameter plot was comprised of 3-12 m high scattered trees (tree cover ~50%), 1.5-3.0 m tall bushes (shrub cover ~30%), and 0.05-1.5 m tall herbaceous plants (herb cover ~80%). This site is located within the Transvolcanic Mexican Belt, about 50 km away from the wintering range polygon proposed by Wilkins *et al.* (2006) and Vega Rivera *et al.* (2011), and approximately 90 km north of the closest specimen record (10 miles N Tiquicheo, Michoacán; 54911 Moore Laboratory of Zoology).

Figure 1 summarizes the distribution of the Black-capped Vireo based on the various data sources mentioned above. Three of the records retrieved from databases (eBird, [ebird.org](http://ebird.org)) broaden the USA summer range on its eastern (Houston and Corpus Christi, Texas), and northwestern sections (New Mexico, Melrose Trap), which may represent extralimital vagrants. Most records within the Mexican breeding and wintering area fall within, or nearby, the proposed distributional area of the species (Wilkins *et al.* 2006), except for five of them. One is a specimen from Presa el Tulillo, Coahuila (Museo de las Aves de México, AZ323; female, collected 17 April by Aldegundo Garza), record that expands the known breeding range to southeastern Coahuila (Garza de León 2003), our sighting from northeastern Michoacán, and the ones reported by Gruber (1957, 1961) from the Nevado de Toluca, San Luis Potosí, and Morelos.

## Discussion

Although the lack of information on the migratory pathways followed by the Black-capped Vireo does not allow the establishment of its migration routes (USFWS 2007), two migration hypotheses have been proposed. The first one suggests that this vireo crosses the Mexican tableland through Chihuahua and Durango, south to the Pacific coast (Moore 1938); however, no records exist for the area and there is no evidence of suitable habitat for the species along this route (Gruber 1961, Marshall *et al.* 1985, Farquhar and González 2005). The second migration hypothesis proposes that Black-capped Vireos migrate along the Sierra Madre Oriental (Marshall *et al.* 1985) and the Transvolcanic Mexican Belt (Farquhar and González 2005).

Based on previous knowledge, we assume that our sighting in northeastern Michoacán is of a late-migrant or wintering individual, as adult males leave last in fall migration (Gruber 1961, Grzybowski 1995), which have been recorded north in Texas and Coahuila up to early October (Marshall *et al.* 1985, Grzybowski 1995). This sight-record, along with Gruber's (1957, 1961) data, support the migration hypothesis that considers the route through the Sierra Madre Oriental and the Transvolcanic Mexican Belt. We have no information or evidence to suggest about the other hypothesis regarding migration through the Mexican Plateau. Although, this hypothesis has commonly been discarded due to the lack of suitable habitat for this species across the Mexican Plateau, some of the westernmost breeding records for this species are from xeric habitats, which are common across the Mexican Plateau, making this hypothesis somehow feasible.



**Figure 1.** Distribution of the Black-capped Vireo. The breeding and wintering distribution proposed by Wilkins *et al.* (2006) are represented in gray areas. We used the map of Wilkins *et al.* (2006) as it represents a complete summary that includes areas of other reported maps for the species (Grzybowski 1995, Howell and Webb 1995, Van Perlo 2006, InfoNatura 2007, USFWS 2007). Localities are depicted as triangles (breeding records), squares (wintering records), and noteworthy transient records as circles (solid for the northeastern Michoacán record, and hollow for the ones cited by Gruber [1957, 1961] from the Nevado de Toluca, San Luis Potosí, and Morelos). The dashed area represents the migration route supported by our sighting along with Gruber's (1957, 1961) data.

The conservation of the Black-capped Vireo has received significant attention in last decades (*e. g.*, Smith *et al.* 2004, Farquhar and González 2005, Wilkins *et al.* 2006, Noa *et al.* 2007, USFWS 2007). However, lack of information on the year-round distribution of this endangered bird hampers conservation efforts in Mexico. Records gathered in this study broaden our knowledge of the breeding distribution for this species and offer data that suggest one of its migration routes, allowing the identification of priority areas to concentrate future survey efforts. Future studies on the migration of this species are imperative in order to continue generating valuable knowledge to strengthen future conservation plans.

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