

Assessment of the status of Black Francolin *Francolinus francolinus* in Armenia

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The Black Francolin *Francolinus francolinus* is listed in the *Red Book of Animals of Armenia* (2010) as Data Deficient and so a re-assessment of its conservation status is required. A study of this species in the period 2003–2019 reports its occurrence in south-eastern Armenia at 375–600 m a.s.l., in riparian scrub, woodland and orchards with thickets, in an area of occupancy estimated at 12.2 km². In the period 2003–2009 its population trend was stable and in 2019 its population was estimated at 16–25 breeding pairs. No serious threats are evident, although some poaching occurs and stray dogs and cats are suspected to reduce its breeding success. Nevertheless, we recommend changing the status of this species in Armenia to Endangered (Criteria D). The following conservation measures are suggested: (1) officially designate the species' range as an Emerald Site, (2) develop a monitoring and management plan, (3) encourage more targeted birdwatching of the species, which in turn will have positive effects on the local economy, (4) increase the penalty for poaching, (5) promote public awareness of this species, and (6) study the influence of burning thickets and other threats to the growth and sustainability of its population.

Key words: Black Francolin, *Francolinus francolinus*, distribution, population, conservation, Armenia.

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Armenia is a small (29,743 km²) landlocked mountainous country in the southern Caucasus that lies between the Black and Caspian Seas. Altitudes range from 375–4090 m a.s.l. and varying climatic conditions give rise to different biomes including semi-desert, juniper woodland, deciduous forest, mountain steppe and sub-alpine habitats. Much of the terrain is rugged and characterized by rocky outcrops. The Black Francolin *Francolinus francolinus* in Armenia is found only in the south-eastern part of the country near the border with Iran where it occupies riparian woodland and scrub habitats dominated by poplar and walnut trees, as well as thickets of bushes and reeds (Adamian & Klem 1999, Aghababyan 2001, Aghababyan *et al.* 2015). Only the nominate subspecies (*F. f. francolinus*) occurs in Armenia

(McGowan & Kirwan 2020). It is classified as Least Concern on the IUCN Global Red List and as Data Deficient in the Red Book of Animals of Armenia (Aghasyan & Kalashyan 2010), and according to BirdLife International (2018) its population trend is stable. This paper documents current knowledge of the species in Armenia and advocates greater efforts to document its population size, conservation status, and its geographical distribution in view of the forthcoming 2020–2021 Armenian Red Book assessment.

Material and Methods

Systematic data collection began in 2003. Individuals were identified by sight and sound

within a 100 km² area following the standard European 10 x 10-km Monitoring Grid. The whole of Armenia was divided into 374 10 x 10-km blocks, and the species occurring in each block were recorded. Data were obtained from general observations and standardized 2-km transect counts. All records were used to create species-specific distribution maps, while the standardized counts were used to estimate population trends.

General observation data collected by experienced birders consisted of observation date, species, geographical coordinates of sighting or (if not known) the 10 x 10-km square, nearest landmark (human settlement, mountain, historical site), breeding status if detectable, and name of observers and their contact information. Standardized counts were conducted from March to June in the early morning when birds were most active, and consisted of slowly walking along a 2-km transect route for about two hours. When a calling male was heard, its location was recorded and compared with the location of other calling males. The topography of the terrain justified this type of count as birds were distributed along a 'line' of riparian habitat, thereby eliminating any possibility of double counts. Detailed information for each transect route included date, beginning and end time, geographical coordinates of beginning and end points, whether individuals were seen and/or heard, and the names of all observers. The standardized data by year were entered into a database and population trends were analysed using TRIM 3.0 software (van Strien et al. 2004). A Collated Index of Abundance was calculated and analyzed over time using log-linear Poisson regression, and charted as a linear function to describe the population trend for 2003–2019 (Figure 3). The TRIM output identifies six possible population trends: strong increase, moderate increase, stable, moderate decline, steep decline or uncertain (Pannekoek & van Strien 2005). ArcGIS 10.0 software was used to map species distributions in Armenia. The area of species occupancy was computed using IUCN guidelines (IUCN Standards and Petitions Committee 2019).

To assess threats to the species, interviews were conducted with local farmers and government employees in the Arevik National Park and the State Inspectorate for Nature Protection and Mineral Resources.

Results

Distribution and population in Armenia

In 2003–2019, the Black Francolin was only recorded in a small area in south-east Armenia at altitudes ranging from 375–600 m a.s.l. (Figure 1). Birds were detected in riparian woodland and scrub, and in orchards with abundant patches of blackberry (*Rubus* sp.) and Reed (*Phragmites* spp.) thickets (Figure 2). The species is estimated to occupy an area of 12.2 km² and in 2019 its population was estimated at 16–25 breeding pairs. Population trends were stable in 2003–2019 (Wald-Test = 30.99, df = 15, P = 0.0088; overall slope parameters: additive = 0.0080, standard error = 0.0077, multiplicative = 1.0080, standard error = 0.0078 (Figure 3).

Threats

Local farmers and government border guards report no hunting in this species' area of occupancy. They occasionally find remains of these francolins that they attribute to predation by Golden Jackals *Canis aureus* or Jungle Cats *Felis chaus*. Orchard farmers describe occasional poaching by young people with air-guns, as well as the presence of stray dogs and cats that may take birds. Some farmers clear and burn blackberry and reed thickets,

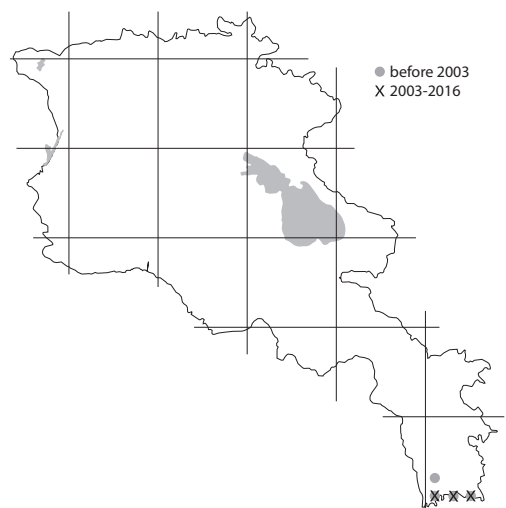


Figure 1. Distribution of the Black Francolin in Armenia.

Distribució del francolí pitnegre a Armènia.



Figure 2. Typical habitat of the Black Francolin in orchards in Meghri District in Armenia. Photo: K. Aghababyan. *Hàbitat típic del francolí en camps de fruiters a la zona de Meghri, Armènia.*

which reduces the small amount of cover that is present to protect birds (Figure 4). Interviews with Arevik National Park staff reveal that they know of the species but have no knowledge of any poaching because the birds occur outside the park boundaries that they monitor. Similar accounts were given by the State Inspectorate staff, who also remarked upon the lack of personnel and financial support for properly monitoring and enforcing laws prohibiting poaching.

Conservation status

In light of our results, the current status of Black Francolin in Armenia (DD; Aghasyan & Kalashyan 2010) was reassessed using Area of Occupancy criteria and the recorded number of mature individuals as having a Criteria D Endangered conservation status, that is, a population with no more than 250 mature individuals (IUCN Standards and Petitions Committee 2019).

Discussion

This species has slightly increased its distribution since 1995–2000 by expanding into orchards in the vicinity of small towns and villages; as well, it has moved upstream along gorges and valleys (Adamian & Klem 1999, Aghababyan 2001), a movement that could be related to the abandoning of orchards or climate change. The stability of its population is likely to be affected by the lack of human-associated mortality and there is currently no evidence that the presence of stray dogs and cats limits its breeding success. The burning of blackberry and reed thickets in early spring requires more study to determine how the elimination of this important breeding habitat affects the species. The lack of staff and financial support from the State Inspectorate limits or precludes any possibility of preventing poaching. Even if poaching enforcement is improved, the penalty of 50,000

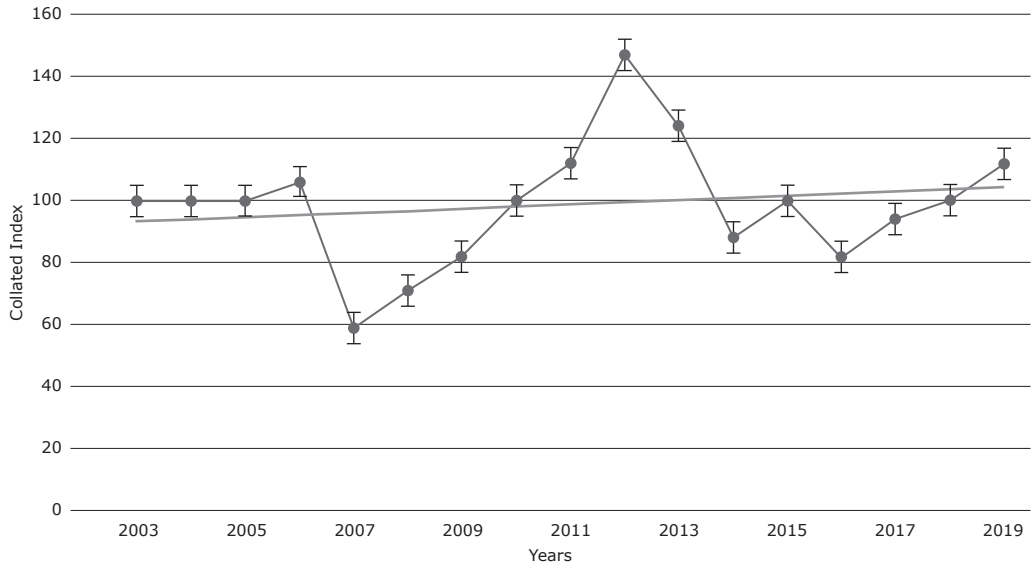


Figure 3. Population trend of the Black Francolin in Armenia in 2003–2019.
Evolució de la població de francolí a Armènia en el període 2003–2019.

Armenian Drams (equivalent to approximately 90 Euros) (Parliament of RA 2017) will need to be increased if it is to be an effective deterrent. Although the area in which the species occurs (Arevik) is expected to be a candidate as an Emerald Site (Fayvush *et al.* 2016), this important conservation designation has yet to be officially adopted and no species-specific management plan has been instigated. It is thus recommended that the following conservation measures be performed: (1) official designation of this species' range as an Emerald Site, (2) development of a monitoring and management plan for this site, (3) encouragement of more targeted birding for the species, which in turn will have a positive effect on the local economy, (4) an increase in penalties for poaching, (5) an increase in public awareness of the species, and (6) studies of the effects of burning thickets and other threats to the growth and sustainability of this population.

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Resum

Avaluació de l'estatus del francolí pitnegre *Francolinus francolinus* a Armènia

El francolí pitnegre *Francolinus francolinus* figura al Llibre vermell dels animals d'Armènia (2010) com a deficient en dades i requereix d'una nova avaluació del seu estat de conservació. L'estudi de l'espècie entre el 2003-2019 documenta la seva aparició al sud-est d'Armènia entre 375–600 metres sobre el nivell del mar, en matolls de ribera, boscos i horts amb matolls. Ocupa una superfície estimada de 12,2 km². El 2019 es calculava que la població era de 16–25 parelles reproductores. Del 2003 al 2009 la tendència demogràfica ha estat estable. No hi ha principals amenaces evidents, però es produeix una mica de caça furtiva i se sospita que els gossos i gats vagabunds en redueixen l'èxit reproductiu. Es recomana canviar l'estatus de l'espècie a Armènia per amenaçada (criteri D). Se suggereixen les següents

mesures de conservació: (1) designar oficialment la zona on viu l'espècie com a lloc de la Xarxa Maragda d'espais naturals protegits; (2) desenvolupar un pla de control i gestió; (3) fomentar l'observació d'ocells dirigida a l'espècie, que al seu torn augmentarà altres components de l'hospitalitat de l'economia local; (4) augmentar la pena per la caça furtiva; (5) augmentar tots els mitjans per conscienciar la ciutadania sobre l'espècie; i (6) estudiar la influència de la crema de matolls i totes les altres amenaces per al creixement i la sostenibilitat de la població.

Resumen

Evaluación del estatus del francolín ventrinegro *Francolinus francolinus* en Armenia

El francolín ventrinegro *Francolinus francolinus* figura en el Libro rojo de los animales de Armenia (2010) como deficiente en datos y requiere de una nueva evaluación de su estado de conservación. El estudio de la especie entre el 2003–2019 documenta su

aparición en el sudeste de Armenia entre 375-600 metros sobre el nivel del mar, en matorrales de ribera, bosques y huertos con matorrales. Ocupa una superficie estimada de 12,2 km². En 2019 se calculaba que la población era de 16–25 parejas reproductoras. De 2003 a 2009, la tendencia demográfica ha sido estable. No hay principales amenazas evidentes, pero se produce un poco de caza furtiva y se sospecha que los perros y gatos vagabundos reducen el éxito reproductivo. Se recomienda cambiar el estatus de la especie en Armenia por amenazada (criterio D). Se sugieren las siguientes medidas de conservación: (1) designar oficialmente la zona de distribución de la especie como Lugar Red Esmeralda de espacios naturales protegidos; (2) desarrollar un plan de control y gestión; (3) fomentar la observación de pájaros dirigida a la especie, que a su vez aumentará otros componentes de la hospitalidad de la economía local; (4) aumentar la pena por la caza furtiva; (5) aumentar todos los medios para concienciar a la ciudadanía sobre la especie; y (6) estudiar la influencia de las quemadas de matorrales y todas las demás amenazas para el crecimiento y la sostenibilidad de la población.



Figure 4. Burning of blackberry *Rubus caesius* thickets in the Meghri orchards. Photo: K. Aghababyan. Crema de matolls d'esbarzer *Rubus caesius* en els conreus de Meghri.

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