Levant Sparrowhawk *Accipiter brevipes* breeding populations in Yerevan and the Meghri region, Armenia

VASIL ANANIAN, KAREN AGHABABYAN, SIRANUSH TUMANYAN, GRIGOR JANOIAN & KEITH BILDSTEIN

The Levant Sparrowhawk *Accipiter brevipes* was first recognized as a breeding species in Armenia in the 1920s and has been reported as a breeder in the northeastern and southern parts of the country (Lyaister & Sosnin 1942, Dahl 1954, Adamian & Klem 1999). The species is included in the Armenian Red Data Book where it is classified as 'rare and apparently declining' (Movsesyan & Ayrumyan 1987).

Until recently, information on Levant Sparrowhawks was collected opportunistically and was limited to field records of individuals seen and occasional nesting events (Lyaister & Sosnin 1942, Dahl 1953, Dahl 1954, Adamian & Klem 1999). During 1996–2001 nests and territorial pairs were recorded in the Meghri region of southernmost Armenia (Aghababyan 2001). In 2008 we resumed studies in this area and have expanded our studies to include the capital city of Yerevan and some villages on the slopes of mount Aragats (Figure 1). Our principal objective was to assess the current status of the bird as a breeding species (Plate 1).

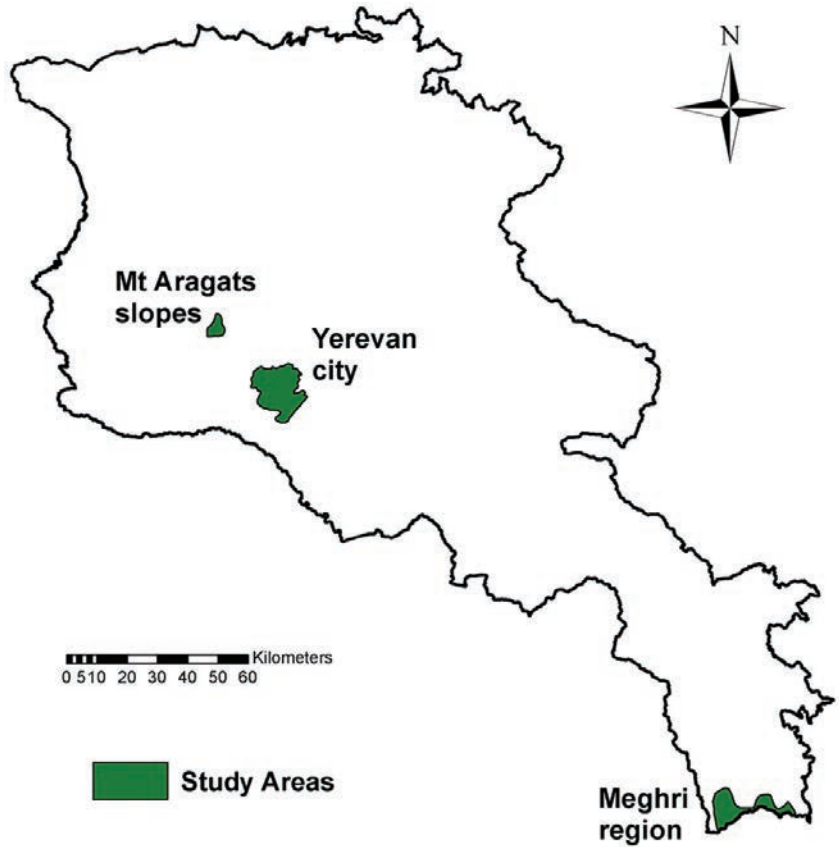

Figure 1. Map showing location of study areas, Armenia.

Plate 1. Levant Sparrowhawk *Accipiter brevipes* male at its nest site, June 2009, Meghri, Armenia. © *Vasil Ananian*

STUDY AREAS AND METHODS

Our survey areas included selected parts of Yerevan (*c*530 ha in total) and valleys in the Meghri region (*c*1033 ha in total), and a pilot study on the slopes of mt Aragats. The former two areas were selected due to the relatively higher number of available breeding season observations of the species there compared with other parts of Armenia. Villages on the slopes of mt Aragats were surveyed at some of the highest absolute elevations for the species (Lyaister & Sosnin 1942, Dementiev & Gladkov 1951, Cramp 1987).

Searches for nests took place from early May 2009 and 2010 and continued throughout nesting until mid July. A number of trips of from 3–14 days were organized for visits to both mt Aragats and the Meghri district. Various parts of Yerevan were surveyed more frequently and opportunistically throughout nesting.

Searches were predominantly on foot. Suitable habitats (*ie* parks, orchards, village streets) were explored from 06.00 to 20.00 h using binoculars and spotting scopes. Birds were located aurally and visually. Elevated observation points were used where available. We recorded GPS coordinates at all located nests. Efforts were made to avoid disturbing nesting pairs.

Yerevan is in the semidesert and arid mountain steppe zones of the Arax river basin. The surveys covered wooded habitats in the city 900–1200 m asl. In Yerevan the species is known to breed in wooded parks, within the grounds of Yerevan zoo and botanical garden and in green plantations and orchards. Such areas are found mainly around the periphery of the city and along the Hrazdan river gorge. Surveyed sites had trees of up to 25–30 m high and shrubs, such as planted poplar *Populus*, ash *Fraxinus*, oak *Quercus*, maple *Acer*, plane *Platanus*, elm *Ulmus*, false acacia *Robinia*, linden *Tilia*, honeysuckle *Lonicera*, privet *Ligustrum* and elder *Sambucus*. Orchards and parks also had feral fruit trees

Plate 2. Habitat of Levant Sparrowhawk *Accipiter brevipes*, June 2010, in Yerevan, Armenia. © *Vasil Ananian & Levon Janoian*

and ornamentals including apple *Malus*, apricot *Prunus*, mulberry *Morus*, pear *Pyrus* and walnut *Juglans* (Plate 2).

The Meghri region occupies the southern slopes, spurs and foothills of the Meghri and Zangezur mountain ranges in the Arax river basin. At low elevations the area is characterized by a dry subtropical climate and lies in semidesert and post-forested shibliak zones 550–1100 m asl. The latter include human habitation at the bottom of valleys and gorges of the Meghri, Malev, Shvanidzor and Nyuvadi rivers, with permanent and seasonal streams and a network of irrigation canals. The surrounding highly indented landscape is dominated by steep arid rocky slopes covered with xerophytic vegetation and open juniper *Juniperus* woodland. In some places there are deciduous woodlands composed primarily of oak, hornbeam *Carpinus* and maple. Levant Sparrowhawks breed in orchards and tree plantations in and around villages and the town of Meghri (Plate 3). Widespread trees here include poplar, ash, elm, mulberry and plane. Walnut is particularly widespread and common.

Pilot surveys were conducted in an area of 440 ha of apparently suitable habitat on the slopes of mt Aragats (within 1500–2000 m asl), where the species has been recorded during the breeding season (Lyaister & Sosnin 1942, VA pers obs). The surveys covered the outskirts of Byurakan, Antarut, Orgov and Tegher villages. The villages are close to one another on the southeastern slopes and are situated amongst mountain steppe landscape, indented with deep rocky gorges of the Amberd river and its distributaries. Villages are rich in planted poplar and orchards holding various tall fruit trees and walnut.

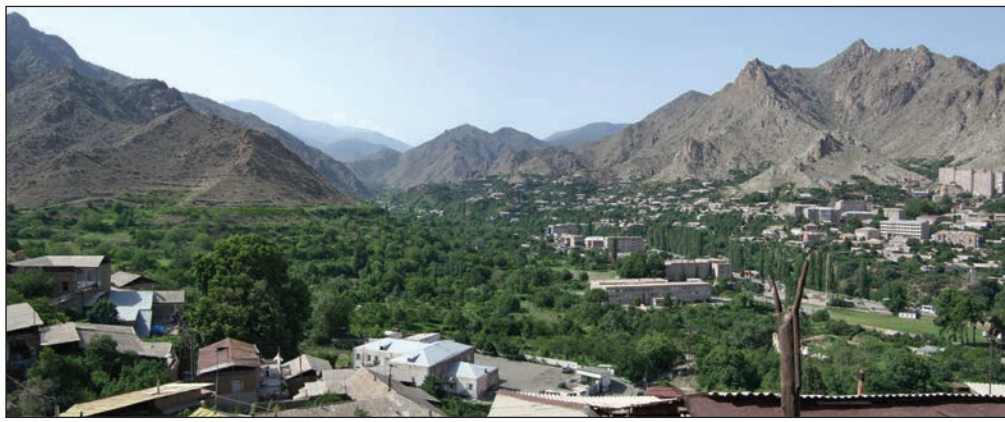

Plate 3. The town of Meghri, June 2009, in the Meghri region of southern Armenia, habitat of Levant Sparrowhawk *Accipiter brevipes*. © *Vasil Ananian*

RESULTS

Yerevan

One nest site in Yerevan has been known since 2003 and birds have been breeding at the site each year since its discovery (VA pers obs). Another nest site was found in 2006 (KA pers obs) and located again in 2009. In 2009 and 2010, an additional 5 active nests and a putative nest site with an apparently territorial pair were found.

Distances between the nests in Yerevan largely reflect the irregular distribution and sizes of suitable wooded habitats within the city. In a more homogenous and relatively extensive park with 21 ha of wooded habitat nearest neighbour distances for nests were *c*440 m from each other. Another nest site, in a different part of the city, was in a 2 ha isolated patch of poplars surrounded by degraded bare rocky grassland, close by an active rock quarry and highway.

Three of the nest trees occupied in 2009 were reoccupied in 2010. At two nest sites active in 2009, neither pairs nor nest were seen in 2010 although at one of the sites a sole female was recorded on several occasions perched on the previous year's nest tree.

Several parts of Yerevan with suitable habitat were not surveyed because of limited access (government-owned and private land). Adult birds were recorded on the perimeters of several of these sites during the breeding season.

Meghri region

In this part of the country appropriate habitats are widespread and, compared to Yerevan, homogenously distributed. We found 11 active nests in 2009. In 2010 all but one of the valleys visited in 2009 were revisited. Of the 8 active nests found in 2010 only one was in the same tree as in 2009. The 7 others were found 14–321 m from the previous year's nest tree. Average distance between the active nests was 739 m in 2009 and 532 m in 2010, with minimum distances of 203 (2009) and 193 m. Early in the breeding seasons of both 2009 and 2010 we found putative nest sites in two areas (*ie* regular presence of adult birds), but nests at these two sites were never found.

Nests sites in both Yerevan and the Meghri region were similar in that nests were found in tall (10–25 m) trees with adjacent open areas with exposed ground, rocks, and sparse cover of shrubs and grassy vegetation (Plate 4). Nest trees were usually found at the edge of a stand of trees or plantation or were growing isolated in an orchard, often close to a road or path. At all sites, there were high numbers of dead branches on or near the nesting tree with a patch of open ground below. The dead branches were used by birds as resting and hunting perches, as well as for copulation and prey-transfer in courtship. In Meghri, rock outcrops near nests provided additional elevated perches for birds. The proximity of active houses, commercial and public buildings, and highways did not appear to affect nest-site selection. Several nests were found as close as 15 m from occupied homes.

Mount Aragats

Despite thorough searches, no nests or potentially breeding birds were found.

DISCUSSION

Overall, information about Levant Sparrowhawks breeding in Armenia is limited and there are few nest reports in the literature. The first reports of the species in Armenia are in Lyaister & Sosnin (1942) who listed three nests including two with 4 and 5 eggs respectively. Those authors mentioned several breeding season encounters from various parts of Armenia (including both Yerevan and the Meghri region) and listed the Levant Sparrowhawk as 'widespread and quite common' in the country. Subsequently, Dahl (1949)

Plate 4. A typical Levant Sparrowhawk *Accipiter brevipes* nest site, June 2009, in the Meghri region, Armenia. © *Karen Aghababyan*

noted a nest found in east-central Armenia, and a probable nest in Yerevan is mentioned in Adamian & Klem (1999).

Our surveys found breeding Levant Sparrowhawks in almost all of the appropriate habitats we searched in Yerevan. Suitable breeding habitat in the city has increased since the 1950s as a result of extensive tree planting, which has provided favourable breeding conditions for the species. Successful occupation of forest plantations in human-dominated landscapes has been reported from Russian parts of the species' range as well (Fedosov 2006, Belik unpubl). Considering availability of isolated suitable habitats in Yerevan, we expect at least another 8–10 pairs of Levant Sparrowhawks are breeding in the city in addition to the 7 pairs we recorded. Thus the current population of breeding Levant Sparrowhawks in the city is probably 15–17 pairs.

Our surveys in Meghri covered much suitable habitat, but the existence of overlooked breeding pairs there is still likely. Breeding habitat distribution in the entire Meghri region suggests likelihood of existence of as many as 5–7 additional pairs of Levant Sparrowhawks. Together with known breeders this suggests a breeding population of 16–18 breeding pairs in the region, compared with an earlier estimate of 20–25 pairs (Aghababyan 2001).

Apparently the Levant Sparrowhawk has been largely overlooked in Yerevan and other parts of the country for the last several decades. This resulted in misclassification of the conservation status of the species and an underestimation of the species' abundance (Movsesyan & Ayrumyan 1987, Adamian & Klem 1999). The species is not uncommon in the study areas and we believe that surveys in riparian areas in river valleys in northeastern and elsewhere in southern Armenia would likely reveal additional breeding populations.

That said, the Levant Sparrowhawk in Armenia largely inhabits human-dominated agricultural and city landscapes which makes the species vulnerable to direct and indirect

effects of humans. In our study areas most people are unaware of accipiters breeding next to their houses and in public places largely because of the species' secretive nature. One of the major threats to city populations is the ongoing destruction and fragmentation of parks and forest plantations during building and road construction. Hunting has become increasingly popular in Armenia and boys with slingshots are frequently seen in both the countryside and cities, with some of the likely targets being Levant Sparrowhawk nests. We encountered two dead adult Levant Sparrowhawks in the Meghri which had died of unknown causes. Dead Peregrine Falcons *Falco peregrinus* have been found in the same area suggesting that pesticides might be a problem (Aghababyan & Tumanyan 2009).

Levant Sparrowhawk is included in Appendix II of the Berne Convention and in the latest edition of the Red Book of Armenia (Aghababyan 2010). It is protected in Khosrov and Shikahogh state reserves and in the newly established Arevik national park in Meghri region. We believe that enforcement measures against poaching, the control of the use of chemicals in agriculture, and increased public awareness regarding the species can all play a role in its protection.

ACKNOWLEDGEMENTS

Surveys were conducted by staff of the Acopian Center for the Environment (ACE) at the American University of Armenia and funded by the Acopian family and Hawk Mountain Sanctuary. Martin Abelyan drove throughout the studies. We thank Jennifer and Tom Lyman, Levan Janoian, Meike Schaefer and the rest of the ACE team for their support during the studies, including participation in nest surveying in Yerevan. Meike Schaefer additionally processed and archived collected GIS data. Dr Viktor P Belik has kindly shared his unpublished materials. The following people have greatly assisted and helped in various ways during the 2009 surveys: Surik Hovhanisyan and Meghri forestry staff, Zhirair Vardanyan (Institute of Botany), Mushegh Grigoryan, Armo Zakaryan and the heads of Byurakan, Orgov, Antarut, Tegher, Karchevan, Shvanidzor, Nrnadzor, Vardanidzor and Lehvaz villages.

REFERENCES

Adamian, MS & D Klem 1999. *Handbook of the Birds of Armenia*. American University of Armenia, USA.

Aghababyan, KE. 2001. [To ecology of Levant Sparrowhawk (*Accipiter brevipes*, Severtzov, 1850) in Meghry region of Armenia. *Vestnik MANEB, SaintPetersburg*] 6(42): 40–41. [In Russian]

Aghababyan, KE. 2010. *In*: Aghasyan, A & M Kalashyan (eds). *The Red Book of Animals of the Republic of Armenia*. Zangak, Yerevan.

Aghababyan, KE & S Tumanyan. 2009. On the breeding Peregrines *Falco peregrinus brookei* in some regions of Armenia. *In*: Sielicki, J & T Mizera (eds). *Peregrine Falcon Populations – status and perspectives in the 21st Century*. Turul, Warsaw, pp99–108.

Berne Convention on the Conservation of European Wildlife and Natural Habitats (1979). *European Treaty Series - No. 104.* http://conventions.coe.int/Treaty/en/Treaties/Html/104.htm.

Cramp, S (ed). 1980. *Handbook of the birds of Europe, the Middle East and North Africa*. Vol 2. Oxford University Press, UK.

Dahl, SK. 1949. [Essay on vertebrate fauna of Hayotsdzor Mountain Range. *Zoological Digest* Yerevan] 6: 5–96. [In Russian]

Dahl, SK. 1953. [Essay on vertebrate fauna of Bargushat and Meghri Mountain Ranges. *Zoological Digest* Yerevan] 8: 5–65. [In Russian]

Dahl, SK. 1954. [*Fauna of the Armenian SSR*. Vertebrates.] USSR Academy of Sciences Press, Yerevan. [In Russian]

Dementiev, GP & NA Gladkov (eds). 1951. [*The Birds of the Soviet Union*]. Nauka, Moscow. [In Russian]

Fedosov, VN. 2006. [Analysis of the state of the current population of Levant Sparrowhawk in the north of the Stavropol Region and adjacent territories.] *Strepet* 4 (1): 57–67. [In Russian]

Lyaister, AF & GV Sosnin. 1942. [*Materials on ornithofauna of the Armenian SSR*] (*Ornis Armeniaca*). ARMFAN, Yerevan. [In Russian]

Movsesyan, SO & KA Ayrumyan (eds). 1987. [Red Data Book of Armenia]. Armenian Academy of Sciences, Yerevan. [In Russian]

Vasil Ananian, Karen Aghababyan, Siranush Tumanyan, Grigor Janoian & Keith Bildstein, Acopian Center for the Environment, American University of Armenia, 40 Baghramian Ave, Yerevan, 0019, Armenia. vasil.ananian@gmail.com karen@aua.am