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NOTE

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STATUS, POPULATION ESTIMATES AND EFFECT OF URBANIZATION ON POST-BREEDING SHRIKES *LANIUS* SPP. IN MAHARASHTRA, INDIA

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True shrikes, *Lanius* species (Laniidae) are birds of open habitat and are important indicators of environment degradation and status of grassland communities (Hands *et al.*, 1989; Fusz & Yosef, 1998). The status, habitat preference and population trends of several shrike species have been studied in various parts of the world: Great Grey Shrike (*L. excubitor*) and Red-backed Shrike (*L. collurio*) in Sweden (Olsson, 1995), Loggerhead Shrike (*L. ludovicianus*) in peninsular Florida (Yosef, *et al.*, 1993), in the continental United States and Canada (Morrison, 1981; Burnside & Shephard, 1985; and Cadman, 1985; Hands *et al.*, 1989), Brown shrike (*L. cristatus*) in Hokkaido, Japan (Haas & Ogawa, 1995) and Rufous-backed shrike (*Lanius schach*), Bay-backed Shrike (*Lanius vittatus*), Red-backed Shrike (*L. collurio*) and Southern Grey Shrike (*Lanius meridionalis*) in India (Pande *et al.*, 2004). Of the twelve species of shrikes found in India six species are reported from Maharashtra in western India. (Ali & Ripley, 1989). Here we present the results of our observations on status, habitat choice and population estimates on three species of shrikes in Maharashtra, India, recorded during the recent survey and comparison with the results from our earlier shrike survey.

Methods

We conducted a roadside survey of shrikes by non-intersecting line transect method from Pune 18°29'N & 73°50'E to Ahmadnagar 19°06'N & 74°46'E on 01 December 2005 from 0800hr until noon. We rode on a motorbike at a speed of 25 to 30km/hr. Along with

shrikes we also recorded other insectivorous birds and raptors within a distance of 200m on either side of the road by using a 10 x 50 binoculars. We surveyed 122km and recorded the predominant habitat at the end of each kilometer. All the 122 locations recorded were classified into seven major habitat categories: urban (n = 52), agricultural (n = 19), urban fringe (n = 16), scrub and agricultural (n = 14), scrub (n = 10), ghat or winding hilly road (n = 7) and river in urban area (n = 4). Presence or absence of shrike species and their perch sites were also simultaneously recorded for each km. Data on exact location is on our file.

Results

A total of 47 shrikes were recorded along the 122-km census route, 0.38 shrikes / km or 1 shrike / 2.6km regardless of species. The shrikes observed were: Rufous-backed Shrike (n = 41, 87.2%), Bay-backed Shrike (n = 5, 10.6%) and Southern Grey Shrike (n = 1, 2.2%). All the three species are residents with local or seasonal movements and the present survey was conducted during the post-breeding period.

Urban habitat was predominant (42.6%) followed by agricultural (15.6%), urban fringes (13.1%), scrub with agricultural (11.5%), scrub (8.2%), ghats (5.7%) and river in urban area (3.3%) (Fig. 1). Occurrence of shrikes in various habitats was: 110% in scrub, 92.9% in scrub and agricultural, 89.5% in agricultural and 37.6% in urban fringes. We observed that the shrikes were absent in urban areas, ghats and around river in urban areas (Fig. 1). Amongst agricultural zones shrikes were seen in crops of millet, beans, gram, leafy vegetables, on ploughed fallow fields but were not seen in sugarcane fields.

Rufous-backed Shrikes occurred in four of seven habitats, Bay-backed Shrike in three of seven habitats and Southern Grey shrike in one habitat. Population density per kilometer of Rufous-backed Shrikes was highest in scrub (1.1) followed by agricultural (0.79), scrub and agricultural (0.77) and urban fringes (0.31). Population density of Bay-backed Shrikes per kilometer was: scrub with agricultural (0.15), agricultural (0.1) and urban fringes (0.06). Population density of Southern Grey Shrikes per kilometer: scrub with agricultural area (0.07). Scrub with agriculture was occupied by all the three species of shrikes.

All species of shrikes perched on electric wires (n = 44), Rufous-backed Shrikes also perched on trees (n = 2) and Bay-backed Shrike on bush (n = 1).

Discussion

Four habitats in open country were occupied by three species of shrikes in the post-breeding season with an overall density of 0.38 shrikes/km, which is less than half of that of Red-backed Shrikes *Lanius collurio* (1/km) in Hungary in post-breeding season, (Fusz & Yosef, 1998) and slightly less than that observed earlier by us (0.42 shrike/km) for Rufous-backed, Bay-backed, Southern Grey and Red-backed shrikes (Pande *et al.*,

2004). The urban habitat in the present census was also more (42.6%) as compared to that in our previous census (35.1%), which may explain the lesser population of shrikes.

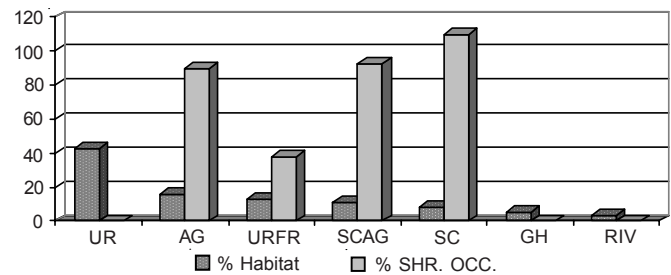
All three species of shrikes were seen in scrub with agriculture habitat. Southern Grey Shrike is habitat specific. We had recorded similar finding earlier when it was found in the same habitat of scrub and agriculture near hillocks (Pande *et al.*, 2004).

Though urban was the predominant habitat in this as well as our previous census, none of the *Lanius* species shrikes occupied it. In Hungary also the density of shrikes in urban area was as low as 0.1/km. (Fuisz & Yosef, 1998)

Other predominant insectivorous birds recorded in the present census were Black Drongo *Dicrurus macrocercus* (n = 18), Small Green Bee-eater *Merops orientalis* (n = 20), Large Grey Babbler *Turdoides malcolmi* (n = 26), egret sp. (n = 12), White-throated Kingfisher *Halycon smyrnensis* (n = 2), White-necked Stork *Ciconia episcopus* (n = 6), chats (n = 25), larks, doves and Indian Roller *Coracias benghalensis* (n = 1). These were seen more or less in all seven habitats recorded in the census though in much less number in urban areas. A total of 12 raptors of five species were recorded in agricultural (n = 4, 3 species), urban fringes (n = 3, 2 species), scrub (n = 2, 2 species), ghats (n = 1) and river in urban area (n = 2). Raptors recorded in this census were: Common Kestrel *Falco tinnunculus* (n = 5), Black-shouldered Kite *Elanus caeruleus* (n = 3), Eurasian Sparrow Hawk *Accipiter nisus* (n = 1), Eurasian Marsh Harrier *Circus aeruginosus* (n = 2) and White-eyed Buzzard *Butastur teesa* (n = 1).

Interestingly, Ali (1985) has mentioned that in 1929 while traveling from Pune to Solapur, (road parallel to the census route of the present study, and essentially comprising the same terrain and habitat) scrub with interspersed agricultural cropland was the predominant habitat with little urbanization, and the antelopes were so plentiful that there was hardly such period when Black Buck *Antelope cervicapra* herds were not encountered. In our present census we did not record any antelopes and the habitat type was predominantly urban. Unfortunately, no previous avian quantitative surveys from this area are available for comparison.

The present survey is therefore important and can be used along with our previous one as a reference in the future for monitoring the status of grassland and scrub communities to predict negative changes prior to drastic declines. The importance of so called 'undeveloped' and 'neglected' scrub areas and open grasslands to shrikes, raptors and other avian species is obvious from the present study. So also total absence of shrikes from urban habitat is noteworthy, indicating that shrikes are sensitive indicators of open habitat ecology. The necessity of wider, regular and repeated surveys is of paramount importance to categorically document the effect of any human developmental activities and changing agricultural practices.



UR - Urban; AG - Agriculture; URFR - Urban fringe; SCAG - Scrub & Agriculture; SC - Scrub; GH - Ghats; RIV - River in urban area.

Figure 1. Percent habitat availability and percent occupation of that habitat by shrikes regardless of species. Shrikes n = 47; 7 types of habitats in 122 localities.

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Appendix I. Bird sighting record during bike transect from Pune to Ahmadnagar on 1 December 2005

Meter reading	Habitat	Bird/PRC	Number	Meter reading	Habitat	Bird/PRC	Number
768-769	U	DR	2	853	UF	0	0
780	U/A	BWK	1	854	A	BBS	1
781	A/SGCN	0	0	855	GHAT	0	0
782	R/U	EG/PH/MH	12,2,2	856	GHAT	DR	1
783	U/S	KF	1	857	UF	0	0
784/785	U/S	0	0	858	A	SGB	1
786	U/S	LTS/DR/W	1	859	A	LTS/W	2
787	U			860	A	LTS/W	1
788	S	LTS/W	1	861	A	LTS/W	1
789	S	LTS/W	1	862	A	LTS/W	1
790	S	LTS/W/KF	1	863	A	LTS/W/ROLLER	1,1
791	U	0	0	864	U	0	0
792	U	0	0	865	U	0	0
793	S	LTS	3	866	U	0	0
794	S	LTS/W	1	867	U	0	0
795	U	0	0	868	U	0	0
796	U	SGB	2	869	GHAT	LGB	10
797	S/A	LTS/T		870	GHAT	KES	1
798	S/A	LTS/W	1	871	S	LTS/W	2
799	S	LTS/DR/W	1	872	A	LTS/W	1
800	A	LTS/W/SGB	1,10	873	GHAT	0	0
801	U/R	0	0	874	U	0	0
802	U	0	0	875	GHAT	0	0
803	UF	BWK	1	876	S/A	DR	1
804	U	0	0	877	S/A/HL	LTS/GS	1,1
805	S	LTS/W/BBS	1,1	878	GHAT	0	0
806	UF	LTS/SPHK	1,1	879	A	LTS	1
807	U	KF/SGB	1,2	880	A/UF	DR	1
808	UF	LTS/W	1	881	A/UF	0	0
809	UF	0	0	882	U	0	0
810	UF	LTS/W	1	883	A	BBS	1
811	U/R	BAT/WNS	30,2	884	U	0	0
812	UF	DR/SGB/CHAT	4,1,3	885	A	KES	1
813	S/A	0	0	886	UF	DR	1
814	S/A	LTS/W	2	887	S/A	LTS	1
815	A	LTS/W	2	888	UF/A	BBS	1
816	S/A	LTS/W	1	889	U	0	0
817	A/S	LTS/W/KES	1,1	890	U	0	0
818	S/A	CHAT	2	891	U	0	0
819	U	0	0	892	U	0	0
820	UF	LGB	6	893	U	0	0
821	A/U	LGB	2				
822	S/A	LTS/W	1				
823	S	DR/SWL	2,6				
824	A/UF	0	0				
825	U	WNS	4				
826	U	SGB	1				
827	UF	LTS/W	1				
828	S/A	BBS/W/DR/LGB/BWK	1,2,2,1				
829	U	DR	2				
830	U	0	0				
831	U	0	0				
832	UF	LTS	1				
833	A	WEB/T	1				
834	A	KES/LGB	2,4				
835	UF	LBD	1				
836	U	0	0				
837	U	SGB	1				
838	UF	DR/SGB/CHAT	2,1,20				
839	A	0	0				
840	A	LTS/W	1				
841	S/A/HL	GS/BBS	1,1,1				
842	U	0	0				
843	U	0	0				
844	R/U	LGB/SGB/PBC	2,1,1				
845	U	0	0				
846	U	SGB	1				
847	U	DR	1				
848	S/A	LTS/W					
849	U	0	0				
850	A	LTS/W	2				
851	A	LTS/KES	2,1				
852	U	0	0				

Habitats:
A - Agriculture cropland; A/SGCN - Agriculture sugarcane; GHAT - Winding Ghats; R - Riverine; S - Scrub; H - Hillocks; U - Urban; UF - Urban fringe

Animals:
BAT - Bat sp.; BBS - Bay-backed Shrike; BWK - Black-shouldered Kite; CHAT - Chat sp.; DR - Drongo; EG - Egret sp.; GS - Grey Shrike; KES - Common Kestrel; KF - Kingfisher; LGB - Large Gray Babbler; LTS - Long-tailed Shrike; MH - Marsh Harrier; PH - Pond Heron; ROLLER - Indian Roller; SGB - Small Green Bee-eater; SPHK - Eurasian Sparrow Hawk; WEB - White-eyed Buzzard; WNS - White-necked Stork

Perches:
T, W

GPS readings:
Pune 18°29'N, 73°50'E; Ahmadnagar 19°06'N, 74°46'E

