



SLENDER-BILLED VULTURE GYPS TENUIROSTRIS' DISTRIBUTION RANGE IS LIKELY SHRINKING IN ARUNACHAL PRADESH ACCORDING TO RECENT SURVEY

Zoology

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ABSTRACT

The Slender-billed Vulture (SBV) is an old world vulture currently distributed in India, Nepal, Bhutan, Bangladesh, Myanmar, Laos and Cambodia. It is enlisted as "Critically endangered" species and its population is declining. SBV has been previously reported from many areas of Arunachal Pradesh (A.P). Recently, we studied the current occurrence area of SBV from 2016 to 2019 in A.P and then we compared our finding with past spatial distribution range as reported by earlier researchers. After analysis, we found approximately 18.67%, i.e. around 1430.12 km², likely shrinkage in SBV distribution range. It is a significant decreased in range compare to the past range which was approximately 19431 km² and in the study it was found to be disappeared from two of six previously recorded districts of the state. Earlier, it was reported from Changlang, Papum Pare, East Siang, Lohit, Namsai and Lower Dibang Valley but in our extensive survey for four years, not a single individual was sighted from Changlang and Papum pare districts. Highest individuals of SBV were recorded from Daying Ering Memorial Wildlife Sanctuary of East Siang district and three other districts which are sharing border with Assam. These findings will help to formulate appropriate and effective conservation policies in the future to protect SBV and its habitat, as well as to stabilize the gradual shrinkage of its distribution range in A.P.

KEYWORDS

Slender-billed vulture, Distribution range, Shrinkage, Arunachal Pradesh

INTRODUCTION:

Vulture is an obligatory scavenger which is grouped into new world vulture and old world vulture and Slender-billed Vulture (SBV) is included in old world vulture. SBV is listed in critically endangered category of IUCN Red list of species since 2002 [1]. SBV's distribution range is along the Sub-Himalayan Range, i.e., India, Nepal, Bhutan and Bangladesh and to the South East Asian Countries, i.e., Myanmar, Laos and Cambodia [2]. In India, the distribution is restricted to east of Himachal Pradesh, Gangetic plains, in the south till northern Orissa and Northeastern part of India.

SBV is a 'residential bird, in Arunachal Pradesh (A.P.) [3]. There is very scanty literature on distribution and population of SBV of Arunachal Pradesh. Earlier SBV is reported from Naharlagun of Papum Pare district [4], Nizamghat of Lower Dibang Valley district [5] Chowkham and Namsai of Namsai district [6], [4], Pasighat and Daying Ering Memorial Wildlife sanctuary of East Siang district (DEMWS) [4], [7], [8] and from Namdapha National Park, Changlang district [9] in the past. Therefore, the present study was carried out to understand the current distributional pattern of SBV in the state. The findings of the study is an important insight on current distributional range of SBV in Arunachal Pradesh and it will facilitate to planning of appropriate and effective conservation policies in the future to protect SBV and its habitat.

MATERIALS AND METHOD

Study Area:

Our study on SBV distribution range encompasses the entire state of A.P. which is situated in the North Eastern part of the India having coordinates 26° 28' and 29° 30' N latitudes and 91° 30' and 97° 30' E longitudes with area of 83,743 sq.km. State has an elevation range between approx. 100m to 7000m with annual rainfall ranging between approx. 2000 to 3000mm. The area is covered by Tropical forests, sub-tropical forests, pine forests, temperate forests and alpine forests.

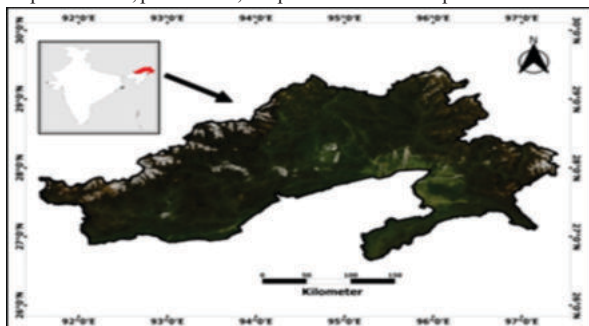


Figure 1: Map Showing Study Area (Arunachal Pradesh, India)

Data Collection:

We collected 16 geo-coordinates of SBV to know the occurrence point of SBV in A.P. using extensive field survey for four years, i.e., from 2016 to 2020, following Bibby and Burgess, 2000 method. 12 road transect was laid inside randomly selected 50x50 km grid across the study area, six transect in six districts from where vulture was reported earlier and six transect were laid randomly to see if there is any increase or decrease in the distribution range of SBV. Each transect was visited eight times in a year i.e. two times every season for four years of study period making a total of 384 visit. Speed of vehicle was approx. 40km/hr. Survey was carried out between 0800 hrs. to 1600 hrs. SBV recorded under one km distance from transect was recorded.

Also, we did literature review on historical reports on SBV till 2016 and compared it with the current occurrence records from 2016 to 2020. Since territorial individual exploits home range of approximately 50km² [10] and also, buffer of 50km is recommended around vulture breeding colonies [11]. Therefore, the buffer of 50km around SBV reported coordinates was prepared then by joining the end of outside buffer a polygon of SBV distribution was prepared and finally the area was calculated using "Raster layer calculator" tool in QGIS v. 3.10 [12].

Table 1 : Details Of Transect Used For The Survey

T	Place	Distance (km)	District
T1	Sela to Tawang	73	Tawang
T2	Sessa to Bomdila	67	West Kameng
T3	Naharlagun to Sagalee	73	Papum Pare
T4	Yazali to Palin	62	Lower Subansiri and Kra Dadi
T5	Aalo to Kaying	49	Siang
T6	Tato to Mechuka	47	Shi Yomi
T7	Pasighat to Roing	94	East Siang and Lower Dibang Valley
T8	Jeep Ghat to Namsing	20	East Siang
T9	Tezu to Namsai	56	Lohit and Namsai
T10	Bordumsa to Miao	45	Changlang
T11	Walong to Kaho	74	Anjaw
T12	Longding to Kanubari	45	Longding

RESULT AND DISCUSSION:

During the survey a total of 103 individuals of SBV were recorded from four districts, i.e., East Siang, Lower Dibang Valley, Lohit and Namsai of A.P. SBV was recorded only from four district having area of 6225.91 km² in the present study which is 81.3 % of total area of 7656.03 km² (previously reported districts). East Siang district recorded the highest number (61.17%) of SBV in current survey

followed by Namsai (34.95%), Lohit (2.91%) and Lower Dibang Valley (0.97%). Highest individual of SBV was recorded in the year 2018 (52.47%) followed by 2017 (21.36%), 2019 (16.5%) and 2016 (9.7%) respectively.

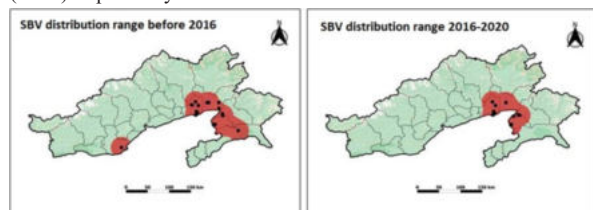


Figure2 Comparative Map Of Past And Present Distributional Range Of SBV In A.P

Table 2 : Detail Recordings Of SBV From 2016 To 2020

T	No. Ob	Year				NoI	Avg. no. SBV	Present/ Absent
		2016	2017	2018	2019			
T1	0	0	0	0	0	0	0	Absent
T2	0	0	0	0	0	0	0	Absent
T3	0	0	0	0	0	0	0	Absent
T4	0	0	0	0	0	0	0	Absent
T5	0	0	0	0	0	0	0	Absent
T6	0	0	0	0	0	0	0	Absent
T7	3	4	5	0	1	10	2.50 ±1.19	Present
T8	6	0	4	39	11	54	13.50 ±8.8	Present
T9	7	6	13	15	5	39	9.75 ±2.5	Present
T10	0	0	0	0	0	0	0	Absent
T11	0	0	0	0	0	0	0	Absent
T12	0	0	0	0	0	0	0	Absent
	16	10	22	54	17	103		

*T- transect, No.Ob- Number of observation, NoI- Number of individuals



Figure4 SBV soaring in the sky at DEMWS, East Siang

On comparing our findings with past spatial distribution range as reported by earlier researchers we found approximately 18.67%, i.e. around 1430.12 km², shrinkage in SBV distribution range. It is a significant decreased in range compare to the past range which was approximately 7656.03 km² and in the study it was found to be disappeared from two of six previously recorded districts of the state. Earlier, it was reported from Changlang, Papum Pare, East Siang, Lohit, Namsai and Lower Dibang Valley but in our extensive survey for four years, not a single individual was sighted from Changlang and Papum Pare districts. Highest individuals of SBV were recorded from Daying Ering Memorial Wildlife Sanctuary of East Siang district and three other districts which are sharing border with Assam.

Threats To SBV In Distribution Range:

Many threats to SBV were observed during the survey, which may directly or indirectly responsible for shrinking of distributional range

of SBV in the state, such as,

Urbanization:

as the population increase, land previously used for agricultural and animal husbandry is replaced with concrete buildings and highways.

Food Shortage:

excessive hunting of wild animals for consumption by local residents has resulted in a significant reduction in the number of wild ungulates on which vultures previously relied as food sources.

Proper Disposal Of Dead Livestock:

previously, dead livestock were left in the forest due to a lack of proper road connectivity; however, with new highways cutting through the middle of the jungle, it is much easier to access the jungle and transport dead livestock back home or sell it to meat vendors.

Poisoning:

Vulture deaths have been documented on several occasions as a result of poisoning. To seek revenge, herders poison the carcasses of cattle killed by wild predators and also to monitor stray dogs, feeding on this poisoned dead carcass leads to the death of vultures.

Habitat Destruction:

rampant illegal logging of large trees, as SBV is a tree nester and prefers tall trees for nesting [1].

CONCLUSION:

In our study, the small population of SBV found to distribute near the foothills of A.P. This scenario of occurrence of SBV mostly in foothill can be associated with food availability in form of abandoned, wash off and road killed carcass mostly livestock and open areas with large trees to roost and nest. However, the comparison between current distribution and past distribution range showed a significant decrease of distribution range in the state. SBV was not found from earlier reported areas i.e., Papum Pare and Changlang district which can be associated with rapid urbanization, habitat destruction and food shortage.

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