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# Population status of Wild boars (Sus scrofa) in the Nilgiris South Forest Division, Tamil Nadu. https://doi.org/10.56343/STET.116.012.001.008

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# Abstract

The wild boar (*Sus scrofa*) is one of the widely distributed mammals found in all types of forests in India. The Indian wild boars live in the grass or scanty bush jungle and sometimes in the forest. They are omnivores. In order to estimate the population and to make change at policy level, the population status is highly warranted. The block count method was deployed to estimate the population of wild boars. The beats were divided into smaller units (5-7 Sq.km). Totally 532 individuals in seven ranges of 30.72 Sq. Km sampled area which is about 9.84% sampled area in all seven forest ranges altogether have been reported. Population of wild boar was high in Kundha range and Naduvattam range which is mainly because of the availability of suitable shelter and food sources and hence they have no reason.

The overall density of wild boar in the division was 17.32 individuals/Sq.Km. Of which the highest density was in the Naduvattam (41.29 /Sqkm) and Kundha (37.53/sqkm) Ranges. On the contrary, Parsons valley Range was recorded the lowest density of individuals (3.67/sqkm). On the other hand the Parsons valley range either invaded by invasive alien species in its most of the areas or poor agriculture practice by Dodas community provided neither not suitable shelters nor food resources which resulted in very low population density.

It was found that the sex ratio between Adult Male and Adult Female was highest in Pykara Range (1:2.25 individuals) which was followed by Udhagai South (1:1.61 individuals) and Governor Shola (1:1.38 individuals) forest ranges and low in overall population is mainly because of less food availability in those ranges. The food is important for breeding. Some time less availability of food might lead unsuccessful birth and mal nutrition to young ones led to more young ones mortality. But we need long term study to scientifically conclude such hypothesis. This was evidenced in the sex ratio between Adult Female and Young ones sex ratio in Naduvattam Range (1:2.36 individuals).

Key words: Wild boar, block count method, population, overall density

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## INTRODUCTION

Wild pigs are belonged to the species *Sus* and the genus *scrofa* which are not native to the Western Hemisphere. In fact, the same is true for all species within the swine family, Suidae (Mayer *et al.*, 1982). The recent native distribution of the Eurasian wild boar has been shown to extend from Western Europe to the Maritime Territory of eastern Siberia, extending Southwards as far the Atlas Mountain region of North Africa, the northern Mediterranean Basin and the Middle East north of the Arabian Peninsula, through India, Indo-China, Japan (including the Ryukyu Islands), Taiwan and the Greater Sunda Islands of Southeast Asia. The Eurasian wild boar is the single wild ancestor to most ancient and modern domestic swine breeds (Clutton-

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Brock 1981; Oliver et al., 1993; Giuffra et al., 2000). In the Eocene period, six or seven species of wild boars inhabited the Indian sub-continent. However, today only single species of wild boar is found in India. It is one of the widely distributed mammals in India and is found in all types of Forests. The colour of the wild boar is black mixed with grey, rusty brown and with white hairs. The young ones are brownish and old boars are more grayish. The newborns are brown with light black stripes. The tusks are well developed in the male. Both the upper and lower tusks curve outwards and project from the mouth. A well grown male boar stands 90 cms high at the shoulders and 120 cms high at the head. Body length sometimes reaches 180 cms. Its tail usually measures about 30 cms. Its weight may well exceed 230 kgs. Record measurements of lower tusk are 32.1 cms on the outside curve (Prater, 1971). The Indian wild boars live in the grass or scanty bush jungle and sometimes in the Forest. They are

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omnivores, eating most things that come on its way such as grains, tubers, fruits, roots, insects, snakes, offal and carrion. They usually feed in the early morning and late evening hours. In India agricultural depredation by wild boars is a major problem as they raid crops and utilizes the agro-ecosystem for food recourse and shelter. The wild boars notoriety as a crop pest is universal (Tisdell, 1982). Presently the wild boar populations are fragmented and relatively isolated populations become locally overabundant and depend upon agricultural crops in and around protected areas. There is paucity of information on ecology, conflicting informations are available on wild boars in the Indian sub-continent and the available information is of general nature and fragmentary (Shafi-khokhar, 1986; Ramachandran, et al., 1987, Ramdas, 1987, Ahmed-Samant, 1989, Ahmed, 1991). In the recent days the wild boars became menace to the farmers due to their feeding ability. In order to understand them and to make change at policy level, the population status is highly warranted. Population estimation and indexing techniques are necessary to monitor growth of wild boar population and evaluate the effectiveness of control and have a short term study was made in the Nilgiri South Forest Division.

## Study area

The study was conducted in the Nilgiri South Forest Division. The division comprises of 312 Sq.Km area and with seven Forest Ranges namely Korakundha, Kundha, Governor Shola, Udhagai South, Parsons Valley, Naduvattam and Pykara, which is further divided in to 30 Forest beats. The division covers part of the Nilgiri hills and areas surrounding areas of the upper Nilgiris. It is situated in the north western corner of Tamil Nadu and bounded by Nilgiris north Forest division on the north and east by Coimbatore Forest division on the South east by Kerala state on the South and by Mukkuruthi National Park and Gudalur Forest division in the west. The division falls between the latitude 10°11'10" and 11°31'10" North and Longitude 77°26'20" and 76°44'30" East (Fig. 1).



Fig.1. Location and Range administrative map of Nilgiri South Forest Division

## MATERIALS AND METHODS

The population estimation was done using Block count method (Berducou et al., 1982). The beats were divided into smaller units (5-7 Sq.Km). Totally 30 blocks were divided and about 60 persons were deployed for counting survey. Wild boars were counted from sample blocks selected uniformly across the entire division. A compartment map of the division was obtained and approximately 30 % of the beats demarcated on the map were randomly chosen and designated as census blocks. The sample blocks were systematically surveyed by a team of 2-3 people and all wild boar sightings were recorded in the prescribed data sheet. In addition, the age and sex of all the animals and indirect signs such as Track marks, earth digging and scats seen were recorded where ever possible. The mean density and range (confidence intervals) of wild boar numbers were calculated statistically for each Forest Range.

# RESULTS

**Table.1.** Consolidated Direct and Indirect sightingsof wild boar abundance in the Nilgiri South ForestDivision

S. No.	Forest range Range	Area(Sq.km)	Total number of direct Signs (n)	Total number of indirect Signs
1	Korakundha	/.8	33	5
2	Naduvattam	4.02	166	11
3	Governor shola	1.92	46	13
4	Parsons valley	5.99	22	29
5	Udhagai South	3.58	65	18
6	Pykara	2.64	21	33
7	Kundha	4.77	179	65
	Total	30.72	532	174

The study area included 30.8 Sq.Km in seven different Forest Ranges. The result revealed that totally five hundred and thirty two individuals were recorded. Out of five hundred and thirty two individuals, most of them were (n=195) young ones which was followed by females (n=188) and males (149). On the other hand, out of one hundred and seventy four indirect evidences most of them were tracks (n=85), which was followed by earth digging (n=49) and scats (n=50) (Table 1).

**Table.2.** Range wise status of wild boars in the NilgiriSouth Forest Division

S.	Name of the	Area	D	1	Total	
No.	Forest Range	(Sq.Km)	Male	Female	Υ	Total
1	Korakundha	7.8	10	10	13	33
2	Naduvattam	4.02	38	38	90	166
3	Governor shoal	1.92	13	18	15	46
4	Parsons valley	5.99	8	8	6	22
5	Udhagai South	3.58	18	29	18	65
6	Pykara	2.64	4	9	8	21
7	Kundha	4.77	58	76	45	179
Total		30.72	149	188	195	532

Among the Ranges Kundha Range scored highest number of individuals (n=179), which was followed by Naduvattam Range (n=166) and Udhagai South Range (n=65). On the contrary, Pykara Range attributed lowest number of wild boar direct sightings (n=21) followed by Parsons Valley (n=22) and Korakundaha Range (n=33) (Table 2) (Fig.2).



Fig.2. Overall mean population of wild boar in the study area

**Table.3.** Density of wild boar in different Forest Rangesin Nilgiri South Forest Division

		Commission	Dens	ity of dif	Overall density	
S. No.	Name of the Forest Range	Area (Sq.Km)	Adult Male	Adult Female	Young ones	of wild boars irrespective of sex
1	Korakundha	7.8	1.28	1.28	1.67	4.23
2	Naduvattam	4.02	9.45	9.45	22.39	41.29
3	Governorshola	1.92	6.77	9.38	7.81	23.96
4	Parsons valley	5.99	1.34	1.34	1	3.67
5	Udhagai South	3.58	5.03	8.1	5.03	18.16
6	Pykara	2.64	1.52	3.41	3.03	7.95
7	Kundha	4.77	12.16	15.93	9.43	37.53
	Total	30.72	4.85	6.12	6.35	17.32

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The overall density of wild boar in the division was 17.32individuals/Sq.Km. Of which the highest density was recorded in the Naduvattam Range (41.29/Sq.Km) followed by Kundha (37.53/Sq.Km), Governor Shola (23.96//Sq.Km) and Udhagai South (18.16//Sq.Km). On the contrary, Parsons valley Range was recorded lowest density of (3.67/Sq.Km) followed by Korakundha (4.23/sq.km) and Pykara (7.95/Sq.Km).(Table 3).

**Table.4.** Category of wild boar status with respect todifferent Ranges in the Nilgiri South Forest Division.

S.	Domas	Area	Mala	D/Area	Formalo	D/Area	Young	D/Area
No.	rarye	sq.Km Sq.Km Sq.Km		remale	Sq.Km	ones	Sq.Km	
1	Korakundha	7.8	10	1.28	10	5.32	13	1.28
2	Naduvattam	4.02	38	9.45	38	20.21	90	9.45
3	Governor shoala	1.92	13	6.77	18	9.57	15	9.38
4	Parsos valley	5.99	8	1.34	8	4.26	6	1.34
5	Udhagai South	3.58	18	5.03	29	15.43	18	8.1
6	Pykara	2.64	4	1.52	9	4.79	8	3.41
7	Kundha	4.77	58	12.16	76	40.43	45	15.93

The highest density of male individuals/Sq.Km was recorded in Kundha Range (12.16 / Sq.Km) followed by Naduvattam (9.45/Sq.Km) Governor Shola (6.77/ Sg.Km) and Udhagai South (5.03/Sg.Km). On the other hand, Lowest density was observed in Parsons valley Range (1.34/Sq.Km) followed by Korakundha (1.28/ Sq.Km) and Pykara (1.52/Sq.Km). Compared to male's female Highest density was recorded in Kundha (40.43/Sq.Km) followed by Naduvattam (20.21/ Sq.Km) and Udhagai south (15.43/Sq.Km). On the contrary, the Parsons valley Range showed lowest density of female individuals/Sq. Km. (4.26/Sq.Km) followed by Pykara (4.79/Sq.Km) and Korakundha (5.32/Sq.Km). The density of the young ones showed that it was highest in the Kundha (15.93 /Sg.Km) followed by Naduvattam (9.45/Sq.Km) and Governor shola (9.38/Sq.Km). On the contrary, Korakundha was recorded lowest density of young ones (1.28/Sq.Km) followed by Parsons valley (1.34/Sq.Km) and Pykara (3.41/Sq.Km) (Table 4).

**Table.5.** Encounter rate of wild boars in the NilgiriSouth Forest Division

Name of the Forest Range	Km walked	Overall individuals sighted	ER/KM walked
Korakundha	46	33	0.72
Naduvattam	22	166	7.55
Governor shola	39	46	1.18
Parsons valley	76	22	0.29
Udhagai South	74	65	0.88
Pykara	59	21	0.36
Kundha	139	179	1.32
Total	455	532	1.17

www.stetjournals.com Scientific Transactions in Environment and Technovation The Encounter Rate (ER) for the entire Nilgiri South Forest Division was 1.17/km. Of which, the highest ER was recorded in Naduvattam (7.55 individuals/ km) which was followed by Kundha (1.32/km). On the contrary, Pykara was recorded lowest ER/km (0.29/km) followed by Korakundha Range (0.72/km) and Udhagai Range (0.88/km) (Table 5).

**Table.6.** Sex Ratio between Adult Male and Adult Female and Adult Female and young ones in the Nilgiri South Forest Division.

S.	Name of the	Sex category		
No.	Forest Range	AM:AF	AF:Y	
1	Korakundhha	1:01	01:01.3	
2	Naduvattam	1:01	01:02.4	
3	Governor Shola	01:01.4	01:01.2	
4	Parsons Valley	1:01	01:01.3	
5	Udhagai South	01:01.6	01:01.6	
6	Pykara	01:02.2	01:01.1	
7	Kundha	01:01.3	01:01.7	
Sex Ratio		01:01.4	01:01.5	

AM: Adult Male; AF: Adult Female; Y: Young ones

The sex ratio between Adult Male and Adult Female was highest in Pykara (1:2.25 individuals) which was followed by Udhagai South (1:1.61 individuals) and Governor Shola (1:1.38 individuals) Forest Ranges. Similarly Adult Female and Young ones sex ratio was highest in Naduvattam (1:2.36 individuals) followed by Pykara (1:1.69 individuals) and Udhagai South (1:1.61 individuals) Ranges (Table 6).

**Table.7.** Indirect sings of wild boars recorded in

 different Ranges of the Nilgiri South Forest Division

Name of the	Area	Area Number of Indirect			Total
Forest Range	sampled (Sq.Km)	Track	Earth digging	Scat	Number
Korakundha	7.8	2	1	2	5
Naduvattam	4.02	0	0	11	11
Governor shoala	1.92	5	6	2	13
Parsons valley	5.99	5	16	8	29
Udhagai South	3.58	2	6	10	18
Pykara	2.64	16	11	6	33
Kundha	4.77	55	9	1	65
	30.72	85	49	40	174

The result of indirect evidence showed that the Kundha Range was high (n=65) which was followed by Pykara (n=33) and Parson's Valley (n=29). In contrast, lowest evidences were recorded in Korakundha (n=5) followed by Governor shoal (n=13). Among the indirect evidences track signs were more (n=85) than earth digging (n=49) and scat (n=40) irrespective of the Forest Ranges (Table 7).

**Table. 8.** Density of indirect signs recorded in the

 Nilgiri South division

s.	Name of the	Sampled Area	Density/Sq.Km			Overall Density/
No. Forest Range	Sq. Km	Tracks	Earth digging	Scat	Sq. Km	
1	Korakundha	7.8	0.26	0.13	0.26	0.65
2	Naduvattam	4.02	0	0	2.74	2.74
3	Governor shoal	1.92	2.59	3.13	1.04	6.76
4	Parsons valley	5.99	0.83	2.67	1.34	4.84
5	Udhagai South	3.58	0.56	1.68	2.79	5.03
6	Pykara	2.64	6.06	4.17	2.27	12.5
7	Kundha	4.77	11.53	1.89	0.21	13.63
	Total	30.72	21.83	13.67	10.65	1.5

The density of indirect signs for the entire Nilgiri South Forest Division was 1.50 signs/Sq.Km irrespective of the Ranges. Among the Forest Ranges, the highest density of indirect sings were recorded in the Kundha (13.63 signs/Sq.Km) followed by Pykara (12.5 signs/ Sq.Km) and Governor Shola (6.76signs/Sq.Km.). On the contrary, Korakundha was recorded lowest density of signs (0.65/Sq.Km) followed by Naduvattam (2.74signs/Sq.Km) and Parsons valley Range (4.84signs/Sq.Km) (Table 8).

## DISCUSSION

Population estimation of wild animals is of prime importance to ecologists and managers. A variety of methods are available for estimating animal abundance (Lancia et al., 1994), but they involve the issue of estimating detection probabilities for specific kinds of count statistics (Buckland et al., 1993; Seber, 1982). Estimating population density of animal species, more specifically the mammalian species that attract conservation interest (Krishnan 1972) is an important tool for their conservation and population management (Karanth and Sunguist 1992; Varman and Sukumar 1995; Varman 1988). Estimation of animal abundance is of prime importance in wildlife management and in studies related to wildlife biology. The present study revealed that totally 532 individuals in seven forest ranges blocks of 30.72 Sg. Km sampled area, which is about 9.84% altogether in all seven forest ranges altogether. Nelson (1991) reported that the wild populations were only 325 in 1985 in forest in Wynad which reached upto 645 in 1989 and declined to 565 in 1990. The census figure in Periyar Tiger Reserve showed that there were about 500 wild boars in 1978, which was increased to 1100 in 1987, 1300 in 1988 and declined to 1290in 1989. Kerala Forest Research Institute and Kerala Forest Department (1993) jointly

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made a state-wide survey on wild boars. They reported that there were 40,963 wild boars in Kerala. This indicates that the wild boar population number showed increasing trend. The increased rate population of the Nilgiris South Forest Division in future could be compared with the above mentioned provisions studies.

Among the ranges Kundha was scored highest number of individuals (n=179), which was followed by Naduvattam (n=166) and Udhagai South (n=65). On the contrary, Pykara attributed lowest number of wild boar direct sightings (n=21) followed by Parsons Valley (n=22) and Korakundaha range (n=33). The reason for more numbers of wild boars in Kundha range and Naduvattam range was mainly because of food availability. For instance in Kundha the people do extreme agriculture practice due to moderate climatic condition unlike upper Nilgiris, where the rain and frost are comparatively low and little higher temperature than the upper Nilgiris. This conductive climatic condition offered the people to do the different agriculture practices throughout the year. Similarly Naduvattam also recorded number of wild boars mainly because of availability of food which was facilitated by the tourists and transporters. All the route busses and tourist vehicles stop at Naduvattam as it is located at midpoint between Ooty and Gudalur. The thrown out items of food remains and wastes and some time spoiled food by the tourists and transporters pave the way for continuous food availability for the wild boars even near hotels and road sides. The Indian wild boars live in the grass or scanty bush jungle and sometimes in the forest. They are omnivores, eating most things that come on its way such as grains, tubers, fruits, roots, insects, snakes, offal and carrion. The growth of wild boar population could increase crop depredation also. As a consequence, crop damage is a growing problem, bringing concerns with respect to the control of boar numbers. As similar problems have also reported from the Basin of Geneva, a cross-border project started in 2002 (Fischer et al., 2004b).

The overall density of wild boar in the division was 17.32 individuals/Sq.Km. Of which the highest density was recorded in the Naduvattam Range (41.29/Sqkm) and Kundha (37.53/sqkm) Ranges. On the contrary, Parsons valley Range showed lowest density of individuals/Sq.Km (3.67/sqkm). The very high population density of wild boars in Kundha and Naduvattam ranges is probably due to all around these two ranges are neither suitable shelters nor available food sources for wild boars, so they have no reasons to migrate away and stay there in such high population density. On the other hand the Parsons valley range either invaded by invasive alien species in its most of the areas or there was poor agriculture practice by

Dodas community provided neither suitable shelters nor food resources which resulted very low population density. Plhal et al. (2014) recorded 64.3 individuals/ Sq.Km as highest density as well as 3.5-5.9 individuals/Sq.Km as lowest density of wild boar population in a forest environment of Brno areas. In the present study it was recorded that the sex ratio between Adult Male and Adult Female was highest in Pykara Range (1:2.25 individuals) which was followed by Udhagai South (1:1.61 individuals) and Governor Shola (1:1.38 individuals) forest ranges. It was quite interesting to note that the overall population was high in Kundha and Naduvattam ranges but the sex ratio between Adult male and Adult female was high Pykara and Uhagai south ranges this was mainly because of less food availability in those ranges. The food is important for breeding. Some time less availability of food might lead unsuccessful birth and mal nutrition to young ones which led to more mortality of young ones. This was evidenced in the sex ratio between Adult Female and Young ones sex ratio in Naduvattam Range (1:2.36 individuals). But we need long term study to scientifically conclude such hypothesis.

#### Management Recommendations

Kundha range and Nuduvattam range recorded higher number of wild boar population than any other areas. Policy level management intervention is required for these two ranges in order to control the growing population. Especially adequate compensation to be imparted for the crop depredation fields caused by wild boars.

Although in other areas the population is considerably good. The management intervention is required to curtail the population.

The population can be curtailed in high wild boar populated areas by doing castration for selective adult males.

Invasive alien species to be eradicated in order to provide suitable shelter and food for the wild boars in natural ecosystem.

Long term scientific studies are to be initiated to find out conflict status with reference to crop economic loss caused by wild boars, retaliatory killings. Predation by wild carnivores, etc. to bring out strong scientific outcomes which would definitely help the managers to amend new management policy issues for wild boar as well as human being co-existenence.

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