

TREND OF POPULATION OF TIGER AND LEOPARD IN SIMILIPAL TIGER RESERVE : A CONSERVATION CONCERN

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Introduction

Media-based doubts have been expressed in recent years about the continued survival of Tiger in India. While causes for this are attributed to international market on Tiger products, critics have, nonetheless, released debates concerning the 'procedure of pug-mark census'.

As regards the 'pug-mark census method' there is no total substitute to it because of its wide applicability, replicability, cost effectiveness and precision. Besides, data obtained from pug-mark census also reveal the biological aspects of Tiger in the wild (Sagar and Singh, 1993; Singh, 1995).

The Tiger indeed may become extinct in the wild sooner than we think not just because of the market for Tiger products but for habitat shortage and inbreeding depression.

The present paper discusses the trend of population of Tiger in Similipal Tiger Reserve, Orissa, and the possibility of a population crash in the case of Tiger because of reduction in ecological density and possible inbreeding depression.

Methods

In Similipal Tiger Reserve pug-mark

census is based on the method (Choudhury, 1971) originally championed by the founder Field Director late S.R. Choudhury and subsequent improvements by Panwar, 1979; Pattnaik and Singh, 1993; Sagar and Singh, 1990, 1991. The method estimates the population of Tiger and Leopard.

Census is carried out in the month of January. During this month the weather is dry and cool; the forest undergrowth is still very dense hence the Tiger's area of movement is limited.

The Tiger pug-marks are searched along different routes which include river banks, beds of dry streams, forest roads, footpaths and animal tracks.

There are 48 census units, 187 census routes, and 3585 numbers of PIPs scattered over a route length of 1339 km. On an average each unit has to cover two routes every day. The density of the PIPs is 2.7 numbers per km or 19 per route.

The PIPs (Pug-Impression Pads) are specially prepared ground-pads where a layer of 2-3 cm fine soil is spread and the ground is made suitable for registering pug-mark impressions. Each PIP extends along the entire width of the road and stretches upto 200 cm along the length of the road. A number of such PIPs are laid down at strategic points.

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Census is carried out for six days. During this period each PIP is checked at least twice in three days interval. The tracings done in a prescribed form and the plaster casts are brought for analysis. The following was the work schedule for the year 1995-census year.

Preparation started : November 1994
 Training of staff : 23-27 Dec. 1994
 in the field
 Census dates : 03-08 Jan. 1995
 Completion of analysis : July 1995

During 1995-census year about 700 pieces of information were brought to us in the shape of plaster casts and tracings for analysis. Step by step data were compiled from tracings. Similar tracings and data from adjacent routes were compared and overlappings were discarded through meticulous and rigorous elimination processes.

After initial stages of manual work, the data were fed into a dBASE structure in a computer to generate reports. These reports are used for matching and elimination work which involve the consideration of a number of parameters including practical field knowledge.

Six students and three faculty members from M.P.C. College, Baripada and Karanjia Govt. College, Karanjia participated in the programme. For the first time NGO participation in Tiger census programme was thus ensured from 1995.

Results

The results of census during 1972 to 1995 in Similipal Tiger Reserve are presented in Tables 1 and 2. During 1993 the figures for Tiger were 24 male, 49 female

and 22 cubs, and for Leopard the figures were 33 males, 54 females and 12 cubs. During 1995 the figures were, Tiger : male 25, female 47, cub 25, total 97. and Leopard : male 37 female 47 cub 16, total 100. although there has been continuous improvement in census method and analysis, the figures of the census during the last several years appear to be similar and stable.

Discussion

During the last couple of years certain

Table 1

*Trend of population of Tiger in
Similipal Tiger Reserve.*

Year	Male	Female	Cub	Total
1972				17*
1975				30*
1976				46
1977	23	29	4	56
1979	22	39	4	65
1984	31	43	7	81
1986	32	51	6	89
1989	20	51	21	92
1990	22	51	21	94
1991	24	50	22	96
1992	24	49	22	95
1993	24	49	22	95
1995	25	47	25	97

*These figures are recognised to be incomplete because the entire area of STR wasn't covered.

Table 2

*Trend of population of Leopard in
Similipal Tiger Reserve.*

Year	Male	Female	Cub	Total
1989	28	42	0	70
1990	34	50	12	96
1991	40	47	11	98
1992	33	54	12	99
1993	33	54	12	99
1995	37	47	16	100

academic as well as managerial issues relating to Project Tiger have been raised which deserve serious attention. Doubts have been expressed on continued survival of the Tiger. It is also alleged that doubtful procedures are adopted for "census". Unfortunately, stray instances have been used to draw general inferences about the management and census technique adopted in all Tigers reserves to the country. Sometimes such inferences, sadly, are from ombudsmen. The critics have ignored the need of keeping some good areas available for the Tiger to breed and propagate along with its prey base.

There are more than 1200 village in a 10 kms belt of the periphery of Similipal Tiger Reserve. Inside the reserve there are 65 revenue villages, out of which 4 are inside the core. Since the core area is also the proposed National Park, relocation of 4 villages is in the offing. As per the 1981 census the total population in the above villages in the core and buffer of the sanctuary was 8,643. The rate of increase of population has been 21.2% over the decennial period 1971-81. During 1991 census the human population inside the Similipal Sanctuary was 10,273 i.e., an increase by about 19%. This means, within the life of the Project Tiger the human population in Similipal Tiger Reserve has increased by about 40% (Prusty, 1996)

Data of Similipal from 1989 to 1995 indicates that the Tiger and Leopard population are more or less stable while there is a simultaneous increase in human population. Therefore, the areas where intense human activities exist, and which Tigers normally avoid, have increased. Thus it can be expected that the extent of areas occupied by a fixed number of Tigers has reduced. That is, the ecological density of Tiger in Similipal has decreased. If the trend continues a 'population crash must be expected as imminent'.

Population crash also can be expected to occur in an 'isolated' insularised population where there is 'inbreeding depression' (Frankel and Soule, 1981).

The 'ecodevelopment schemes' are good enough within 'textbook means' with some practical applicability to take care of the human dimensions causing pressure in the Tiger habitat. But certainly this should not be used as weapon to prevent relocation of a bare minimum number of villages from the core area. Instead of abandoning the idea of relocation or insisting on a voluntary relocation (which is a very impractical proposition in the Indian situation) the agencies funding for ecodevelopment should instead 'totally fund and carry out the relocation of villages' if the ultimate goal is to prevent a natural ecosystem turning into a 'human-system'.

SUMMARY

In Similipal Tiger Reserve pug-mark census is carried out to estimate the population of Tiger and Leopard. The procedures and work schedules have been standardised over the years. During twenty years of existence of Project Tiger the human population in Similipal Tiger Reserve has increased by about 40%. The census data on Tiger and Leopard from 1989 to 1995 indicates that their population are more or less stable. But the implications of a stable Tiger population against increasing human population in the Tiger Reserve is a clear indication that the ecological density of Tiger in Similipal has increased. If the trend continues there is risk of inbreeding depression and population crash. It is therefore, urged that 'ecodevelopment schemes' though take care of the human dimensions causing pressure in the Tiger Reserve, these should not stand bar against relocation of a bare minimum number of villages from the core area of the Tiger Reserve, if the ultimate goal is prevention of a natural ecosystem turning into a 'human-system'.

सिमलीपाल बाघ आरक्षित क्षेत्र में बाघ और तेन्दुओं की संख्या - संरक्षण का चिन्ता विषय

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सारांश

सिमलीपाल बाघ आरक्षित क्षेत्र में बाघ और तेन्दुओं की संख्या का अनुमान लगाने के लिए उनके पग चिन्हों की गणना की गई। बाघ परियोजना के पिछले 20 वर्षों के दौरान सिमलीपाल बाघ आरक्षित क्षेत्र में मानव जन संख्या लगभग 40% बढ़ी है। परन्तु बाघ आरक्षित क्षेत्र में बढ़ती जा रही मानव जन संख्या के समक्ष बाघों की संख्या स्थिर बने रहने का निहितार्थ यही है कि सिमलीपाल में बाघों के पारिस्थिकीय घनत्व में कमी आई है। यदि ढ़रा ऐसा ही चलता रहा तो इनके अन्तप्रजनन में मन्दता आने और जनसँख्या के टूट जाने तक का खतरा है। इसलिए इस बात पर जोर दिया गया है कि यदि हमारा अन्तिम लक्ष्य एक प्राकृतिक परिस्थिति-संहति को मानव प्रणाली में बदल जाने से बचाना है तो बाघ आरक्षित क्षेत्र के आन्तरिक खण्ड से कुछ न्यूनतम गांवों को हटाकर उन्हें अन्यत्र बसाने में कोई बाध्य खड़ी नहीं की जानी चाहिए।

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