

Mining A Threat to Ajmer Avifaunal Biodiversity

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1. INTRODUCTION

Ajmer is the one of the famous city of Rajasthan. area of Ajmer is 8, 481 km². its coordinated are 26.4499⁰North 74.6399⁰E.surrounded by beautiful Aravalli Ranges. Rich in Biodiversity as well as Minerals. Ajmer has a hot, semi-arid climate with over 55 centimetres (22 inches) of rain every year. According to 2011 Census Ajmer had population of 2, 583, 052.out of which 1, 324, 085 males and 1, 258, 967female.as the number of population increases their demand for food, shulter and cloth were also increases. Human being directly or indirectly depends on ores, minerals, elements. that is why mining starts for the extraction of minerals and elements that effects our biodiversity including Avifauna and Herpetofauna. the term *mining*¹ is used in its broadest context as encompassing the extraction of any naturally occurring mineral substances solid, liquid, and gas from the earth or other heavenly bodies for utilitarian purposes. Avifauna refers to the birds of a particular region, habitat, or geological period. Indian subcontinent contains about 1, 300 species, or over 13% of the world's birds (Grimmett *et al.* 1998) Herpetofauna term is used for the reptiles and amphibians of a particular region, habitat, or geological period. Present study is the effect of mining on local herpeto-faunal as well as avifaunal diversity. Iwe have observed both water as well as terrestrial birds. Out of 34 species the population status of 22 species is decreases and 12 stable. The main reason for decline in population is mining.

2. MATERIALS AND METHODOLOGY USED:

Materials:-

Digital Camera (Canon SX10, Nikon, Canon 1200D)

- Binoculars, Field Guide Books
- Observation Sheets, Motor cycle, watch

3. STUDY MTHODS

The study was based on the survey of the area. Quantitative avifaunal and herpetofaunal data were collected in the point count survey and combined with distance estimation with the help of binocular and camera; provide a means of estimating animal population densities. First we have selected the sites. We use motorcycle as transportation. Birds, reptiles and amphibians were identified with the help of field guide Books.

Most of the anurans species show their presence during the monsoon season. Regular surveys were made near the breeding grounds. Morphometric observations were also made for the Taxonomic identification and compared with the standard diagnostic keys. We also describe the IUCN status of the animals. the following methods were used during the study.

Visual Encounter Surveys This may be the most commonly used survey and census technique for Birds, amphibians and reptiles. This can be used to determine the species richness of an area, to compile a list and to estimate relative abundances of species in the area. As the name implies, this is a visual technique and is only appropriate for those Birds, amphibians and reptiles that can be seen while walking through a habitat. Assumptions underlying this method are discusses as are different types of designs (randomized-walk, quadtrat, and transect). Randomized-walk involves walking a randomly chosen distance at a randomly chosen compass direction repeatedly. Quadrats are square sampling areas (or varying size) placed at randomly selected sites within a study area; the quadrats are exhaustively checked for Birds, amphibians and reptiles and then these numbers are used to estimate total numbers within the entire study area. Transects are straight lines that can be set up permanently, data is then collected by walking down the line and counting all amphibians seen on either side of the line.

Audio Strip Transects This technique uses the voices of calling Birds and frogs to estimate relative abundances of calling males, relative abundances of all adults, species composition, breeding habitat or microhabitat use, and time of

breeding for different species. Personnel must learn the advertisement calls of the appropriate species. This method is good for species that are hard to see, either because they blend in with their habitat, or because their habitat may be inaccessible (high in the trees or in thick vegetation).

Transect Sampling Transects are straight lines that can be set up permanently, or temporarily; data is then collected by walking down the line and counting all birds, amphibians and reptiles seen on either side of the line. Randomized transect design allows researchers to effectively track species numbers, relative abundance and densities across habitat gradients.

Patch Sampling This method can be used to determine the number, relative abundances, and densities of species present in discrete subunits of an area of interest. Since birds, amphibians and reptiles density and species composition can change dramatically from one type of habitat to another, this method can be a valuable tool.

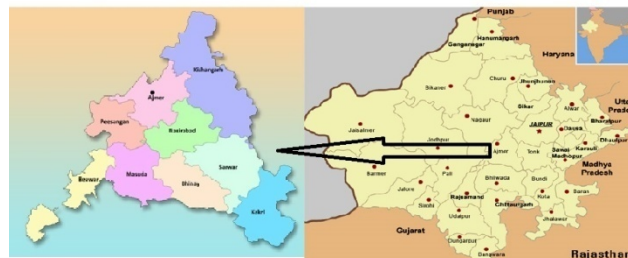
Quadrat Sampling Quadrats are square sampling areas (or varying size) placed at randomly selected sites within a study area; the quadrats are exhaustively checked for Birds,

amphibians and reptiles then these numbers are used to estimate total numbers within the entire study area.

4. STUDY AREA

Study area is ajmer district. Special emphasis on area related to siting of Godawan i.e sokliya and nearby area. data were collected from Peeprol Talab, Jaswantpura Talab, Chaat Talab, Sanod Talaab, Ramsar Talaab and graas land of Sokliya.

Ajmer District



5. RESULT AND DISCUSSION

Water Birds

S. No.	Scientific Name	Common Name	IUCN Status	Migratory Status	Population Trend	2010	2012	2014	2016
1	Aythya ferina, (Linnaeus, 1758)	Common Pochard	Vulnerable	Winter Visitor	Decreasing	200	170	130	125
2	Aythya nyroca, (Güldenstädt, 1770)	Ferruginous pochard/ Ferruginous Duck	Near Threatened	Winter Visitor	Decreasing	13	10	9	5
3	Anastomus oscitans, (Boddaert, 1783)	Asian Open bill	Least Concern	Winter Visitor	Stable	35	33	30	40
4	Mycteria leucocephala, (Pennant, 1769)	Painted stork	Near Threatened	winter Visitor	Decreasing	70	61	45	12
5	Hydrophasianus chirurgus, (Scopoli, 1786)	Pheasant-tailed jacana	Least Concern	Resident	Decreasing	22	11	12	7
6	Pelecanus onocrotalus (Linnaeus, 1758)	Great white pelican/ Rosy pelican	Least Concern	Winter Visitor	Stable	340	200	290	310
7	Pelecanus crispus (Bruch, 1832)	Dalmatian pelican	Vulnerable	Winter Visitor	Decreasing	170	160	70	65
8	Phoenicopterus roseus, (Linnaeus, 1758)	Greater Flamingo	Least Concern	Passage Visitor	Decreasing	40	36	21	-
9	Tachybaptus ruficollis, (Pallas, 1764)	Little grebe	Least Concern	Resident	Decreasing	28	20	21	17
10	Limosa limosa (Linnaeus, 1758)	Black-tailed godwit	Near Threatened	Winter Visitor	Decreasing	45	40	34	33
11	Tringa erythropus (Pallas, 1764)	Spotted redshank	Least Concern	Winter Visitor	Stable	13	15	12	11
12	Tringa tetanus (Linnaeus, 1758)	Common redshank	Least Concern	Winter Visitor	Stable	37	35	30	32
13	Chlidonias hybridus, (Pallas, 1811)	Whiskered tern	Least Concern	Winter Visitor	Stable	12	15	15	13
14	Sterna aurantia (Gray, JE, 1831)	Indian River tern/ River tern	Near Threatened	Resident	Decreasing	45	40	32	17

15	<i>Platalea leucorodia</i> (Linnaeus, 1758)	Eurasian spoonbill/ Common spoonbill	Least Concern	Winter Visitor	Stable	38	42	35	36
16	<i>Pseudibis papillosa</i> (Temminck, 1824)	Red-naped Ibis/ Black Ibis	Least Concern	Winter Visitor	Decreasing	63	57	40	43
17	<i>Threskiornis melanocephalus</i> (Latham, 1790)	Black-headed ibis/ Oriental white ibis	Near Threatened	Resident	Decreasing	45	40	31	20

Terrestrial Bird

S. No.	Scientific Name	Common Name	IUCN Status	Migratory Status	Population Trend	2010	2012	2014	2016
1	<i>Aquila nipalensis</i> (Hagson, 1833)	Steppe Eagle	Endangered	Resident	Decreasing	12	7	-	3
2	<i>Milvus migrans</i> (Boddaert, 1783)	Black Kite	Least Concern	Resident	Stable	110	98	140	120
3	<i>Neophron percnopterus</i> (Linnaeus, 1758)	Egyptian Vulture	Endangered	Resident	Decreasing	50	38	33	28
4	<i>Ocyrceros birostris</i> (Scopoli, 1786)	Indian Grey Hornbill	Least Concern	Winter Visitor	Decreasing	15	12	12	7
5	<i>Cursorius coromandelicus</i> (Gmelin, 1789)	Indian Courser	Least Concern	Resident	Decreasing	27	19	12	17
6	<i>Halcyon smyrnensis</i> (233olitari, 1758)	White-throated Kingfisher	Least Concern	Resident	Decreasing	20	16	12	10
7	<i>Copsychus saularis</i> (Linnaeus, 1758)	Oriental Magpie-Robin	Least Concern	Resident	Stable	8	13	10	9
8	<i>Luscinia svecica</i> (Linnaeus, 1758)	Blue throat	Least Concern	Winter Visitor	Stable	17	15	22	19
9	<i>Oriolus oriolus</i> (Linnaeus, 1758)	Eurasian Golden Oriole	Least Concern	Summer Visitor	Stable	7	5	9	7
10	<i>Ardeotis nigriceps</i> (Vigores, 1831)	Great Indian Bustard	Critically Endangered	Passage Visitor	Decreasing	04	02	-	-
11	<i>Sypheotides indicus</i> (Miller, 1782)	Lesser Florican	Endangered	Passage Visitor	Decreasing	27	20	16	15
12	<i>Ploceus philippinus</i> (Linnaeus, 1766)	Baya Weaver	Least Concern	Resident	Stable	47	40	39	45
13	<i>Psittacula cyanocephala</i> (Linnaeus, 1766)	Plum-headed Parakeet	Least Concern	Winter Visitor	Decreasing	78	70	63	55
14	<i>Psittacula eupatria</i> (Linnaeus, 1766)	Alexandrine Parakeet	Near Threatened	Resident	Decreasing	28	20	17	15
15	<i>Athene brama</i> (Temminck, 1821)	Spotted Owlet	Least Concern	Resident	Stable	37	35	33	36
16	<i>Bubo bubo</i> (Linnaeus, 1758)	Eurasian Eagle-Owl	Least Concern	Resident	Decreasing	9	7	6	2
17	<i>Zosterops palpebrosus</i> (Temminck, 1824)	Oriental White-eye	Least Concern	Resident	Decreasing	29	23	22	14

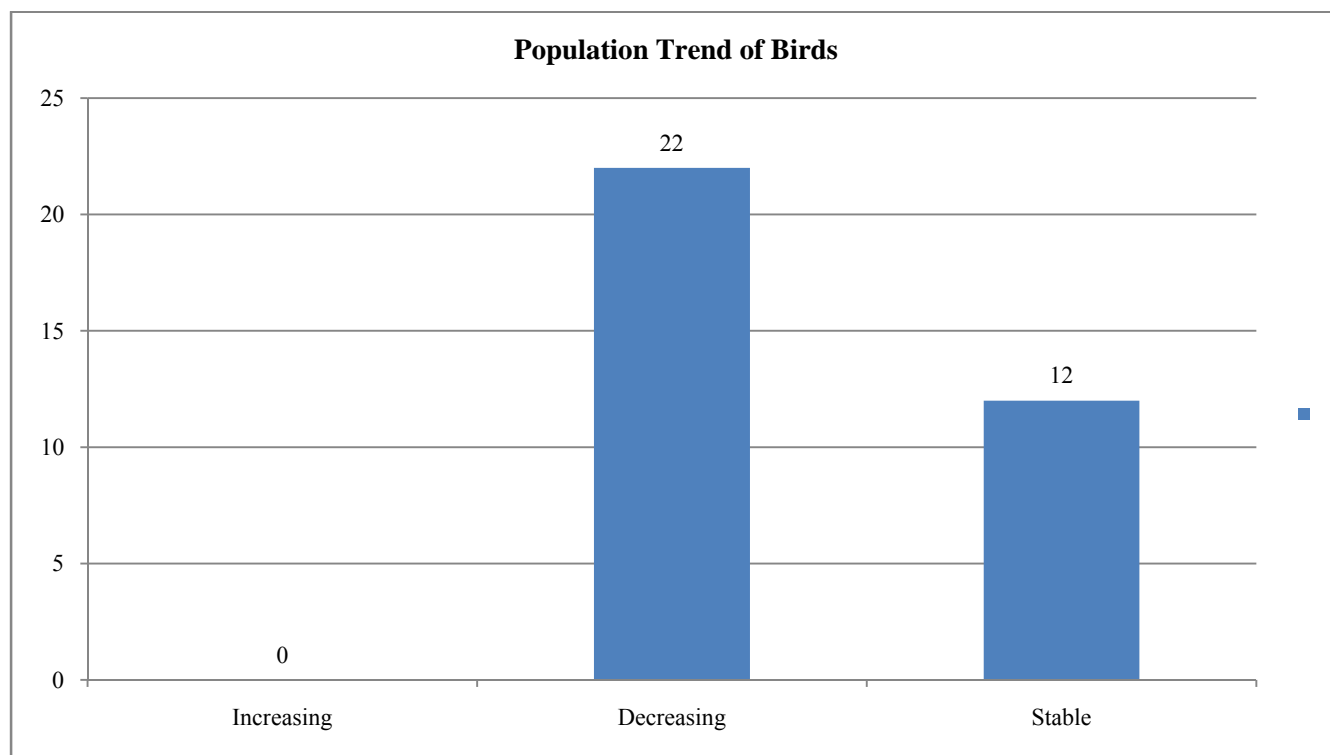
I have observed 17 species of water birds and 17 species of terrestrial birds.

Out of 17 species IUCN status of water birds 5 Species were Near Threatened, 2 Vulnerable and 10 Least Concern. Migratory Status of birds were 12 species winter visitor, 4 species Resident and 01 passage visitor. Population trend of Birds were 11 species decreases and, 06 species stable

Out of 17 species of terrestrial birds IUCN status of birds 01 Critically Endangered, 03 Endangered, 01 Near Threatened, 12 Least concern. Migratory Status of birds were 11- Resident, 3 Winter Visitor, 2 Passage Visitor, 1 Summer Visitor. Population trend of Birds 11 decreasing and 06 stable

Out of 34 species the population status of 22 species is decreases and 12 stable

Mining is the reason for decline in population.



According to Guidelines for preparation of state action plan for bustard's recovery programme, Government of India, Ministry of Environment and Forest the potential threats faced by the Bustard species in India as follows:

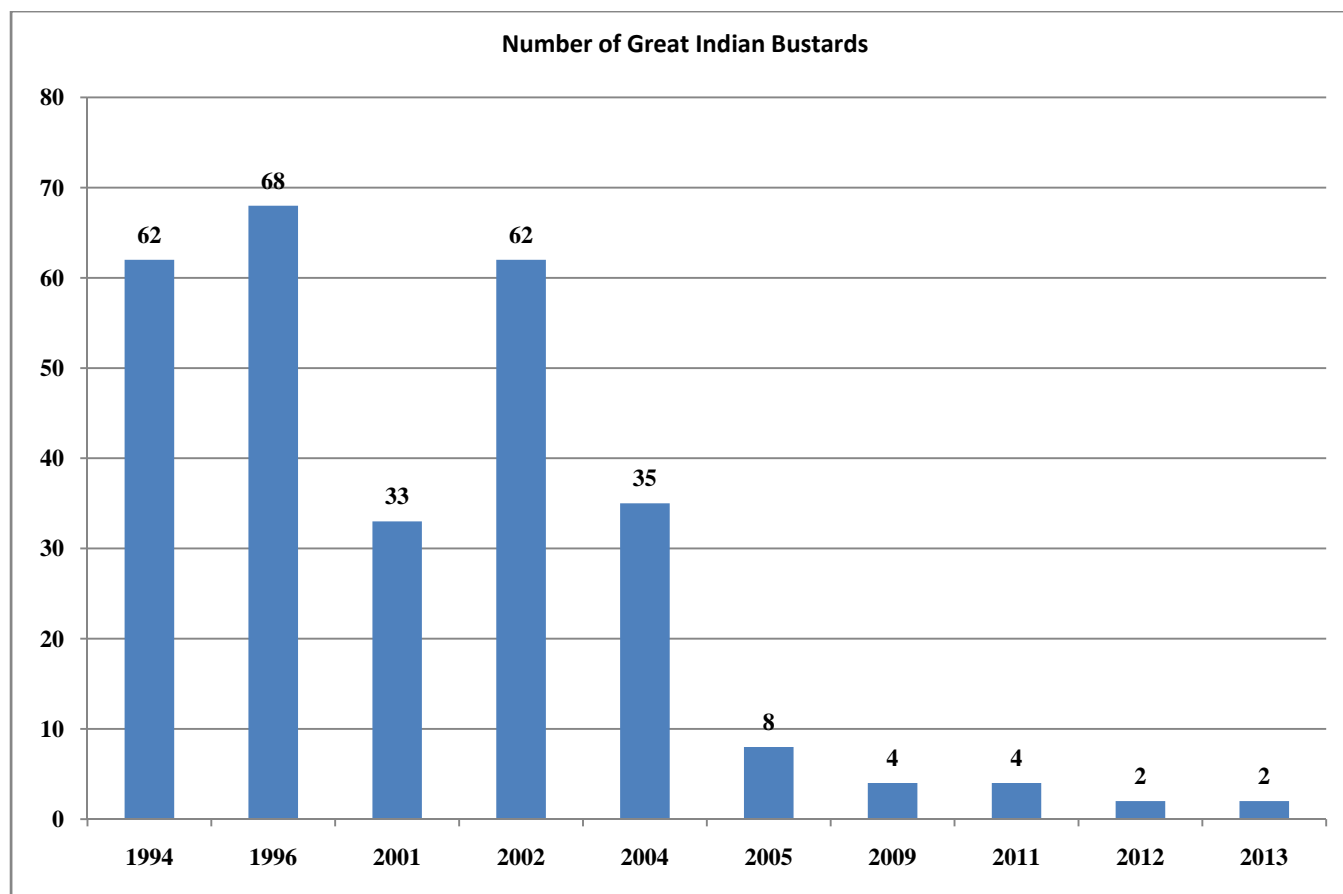
S. No	Threats/Activities/Issues	Degree of threats	
		GIB	Lesser Florican
1	Hunting/Poaching	High	Very High
2	Removal/Destruction of Eggs and Nests	High	Very High
3	Habitat destruction including changes in Land-use patterns, anthropogenic disturbances etc.	Very High	Very High
4	Overgrazing	Very High	Very High
5	Invasive species	High	High
6	Lack of Effective Grassland Management	High	High
7	Lack of interdepartmental Coordination	Medium	Medium

Degree of threats through Habitat destruction including changes in Land-use patterns,

Anthropogenic disturbances etc. is very High.

The population status and sighting of Great Indian Bustard observed in Ajmer district since 1994 as follows.

Year	No. of Great Indian Bustards
1994	62
1996	68
2001	33
2002	62
2004	35
2005	08
2009	04
2011	04
2012	02
2013	02



From the right to information Act 2005 I have collected the Status of mines i.e Number of Mines in Ajmer region from Department of Mines and Geology, Government of Rajasthan.

Department of Mines divided the Ajmer district in three regions Ajmer, Kekri and Beaware. I have collected only the data of Ajmer region and Results are suprising that government grant mining permission upto year 2065. Department of Mines and Geology, Government of Rajasthan has divided the mines in three category i.e class1, Class2, Class 3.The number of mines as follows.

Year	Class-1 (Number of Mines)	Class-2 (Number of Mines)	Class-3 (Number of Mines)
1996	3	18	15
1997	5	21	17
1998	7	25	22
1999	7	34	28
2000	7	41	33
2001	7	46	33
2002	7	50	34
2003	7	51	39
2004	7	60	58
2005	8	81	75
2006	8	84	102
2007	8	85	136
2008	10	108	160
2009	10	142	182
2010	10	159	197
2011	10	182	220
2012	11	192	243

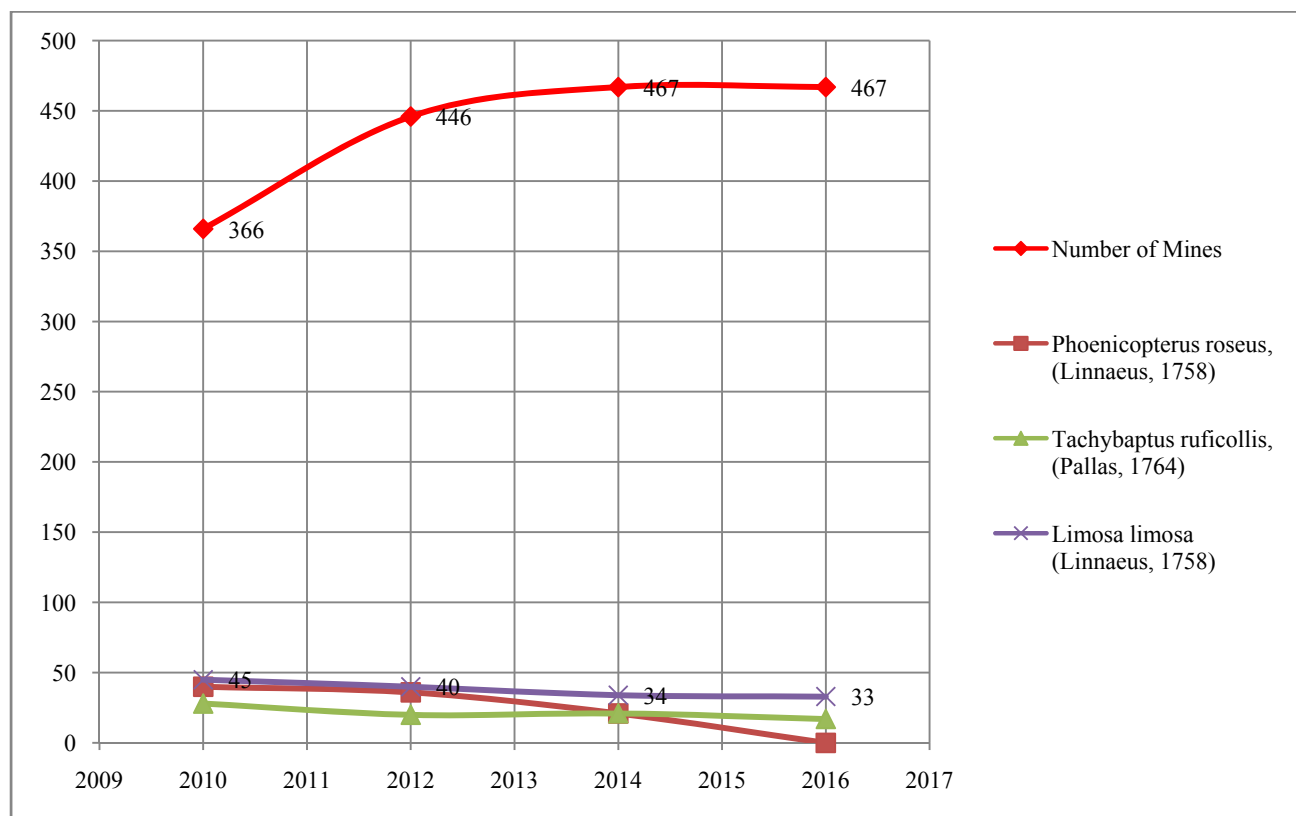
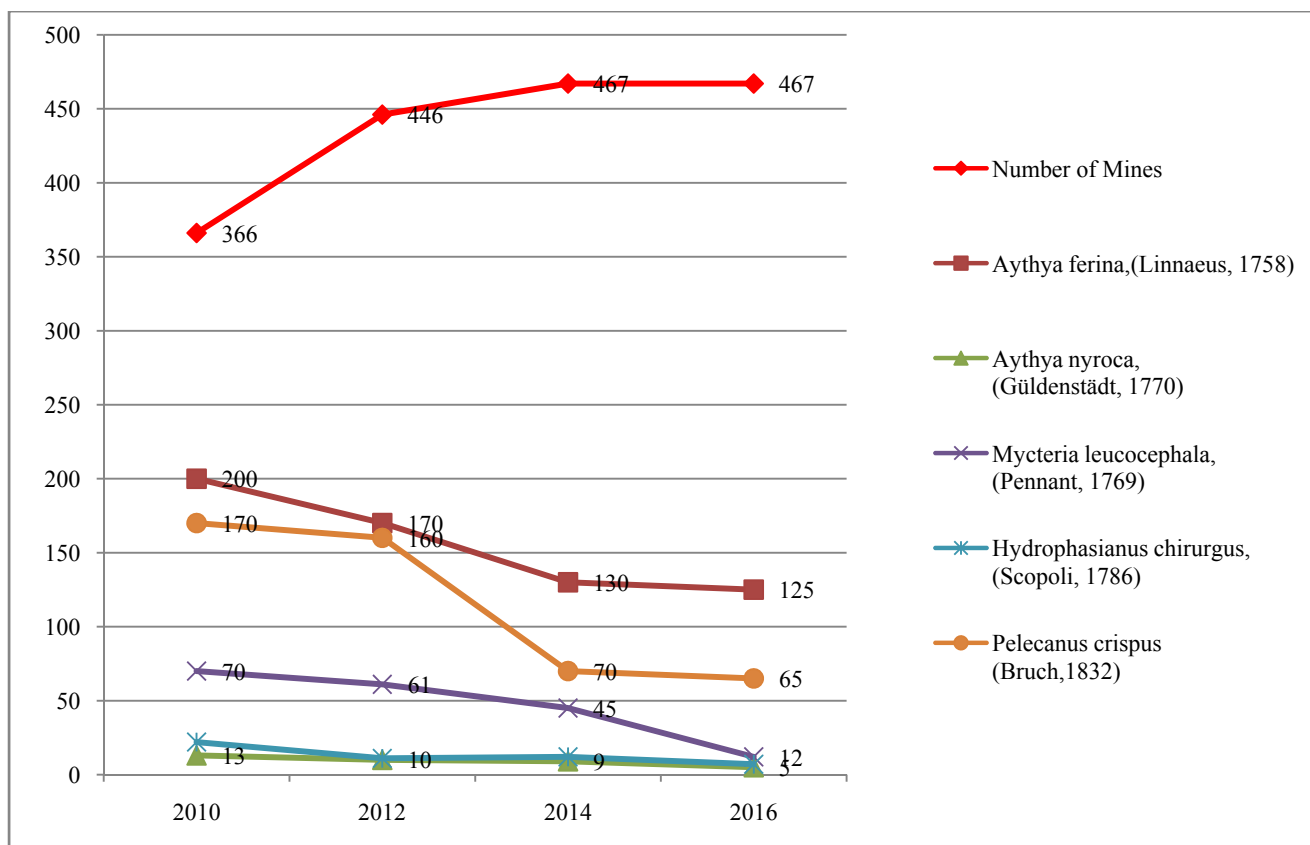
2013	11	194	260
2014	11	195	261
2015	11	195	261
2016	12	195	260
2017	12	195	260
2018	12	193	260
2019	12	187	259
2020	12	178	258
2021	11	170	258
2022	10	163	258
2023	9	156	258
2024	9	153	258
2025	9	143	258
2026	9	118	256
2027	9	115	253
2028	7	113	252
2029	7	88	251
2030	7	61	249
2031	7	43	248
2032	7	26	246
2033	7	24	246
2034	7	24	244
2035	7	23	243
2036	7	22	243
2037	7	22	243
2038	7	22	243
2039	6	21	243
2040	6	17	242
2041	6	17	242
2042	6	10	241
2043	6	2	238
2044	6	-	238
2045	6	-	238
2046	6	-	237
2047	6	-	235
2048	6	-	234
2049	4	-	230
2050	4	-	226
2051	4	-	222
2052	4	-	222
2053	4	-	221
2054	4	-	216
2055	4	-	197
2056	3	-	179
2057	3	-	153
2058	3	-	120
2059	1	-	98
2060	1	-	77
2061	1	-	62
2062	-	-	39
2063	-	-	18
2064	-	-	1

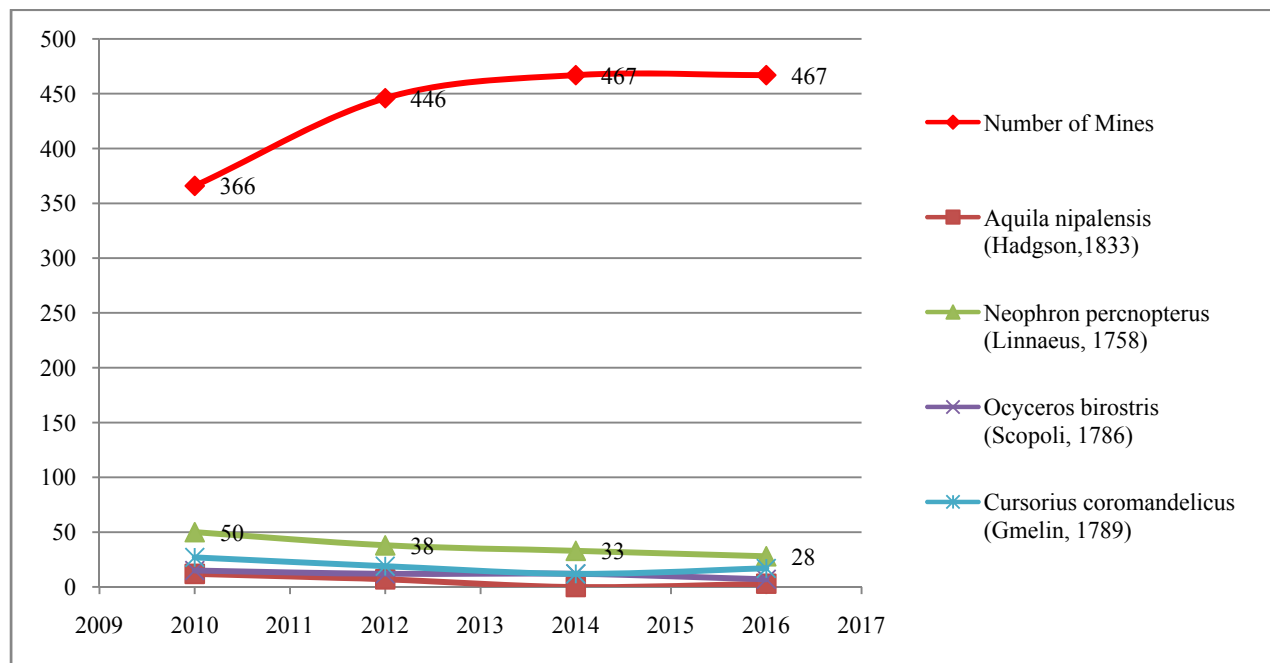
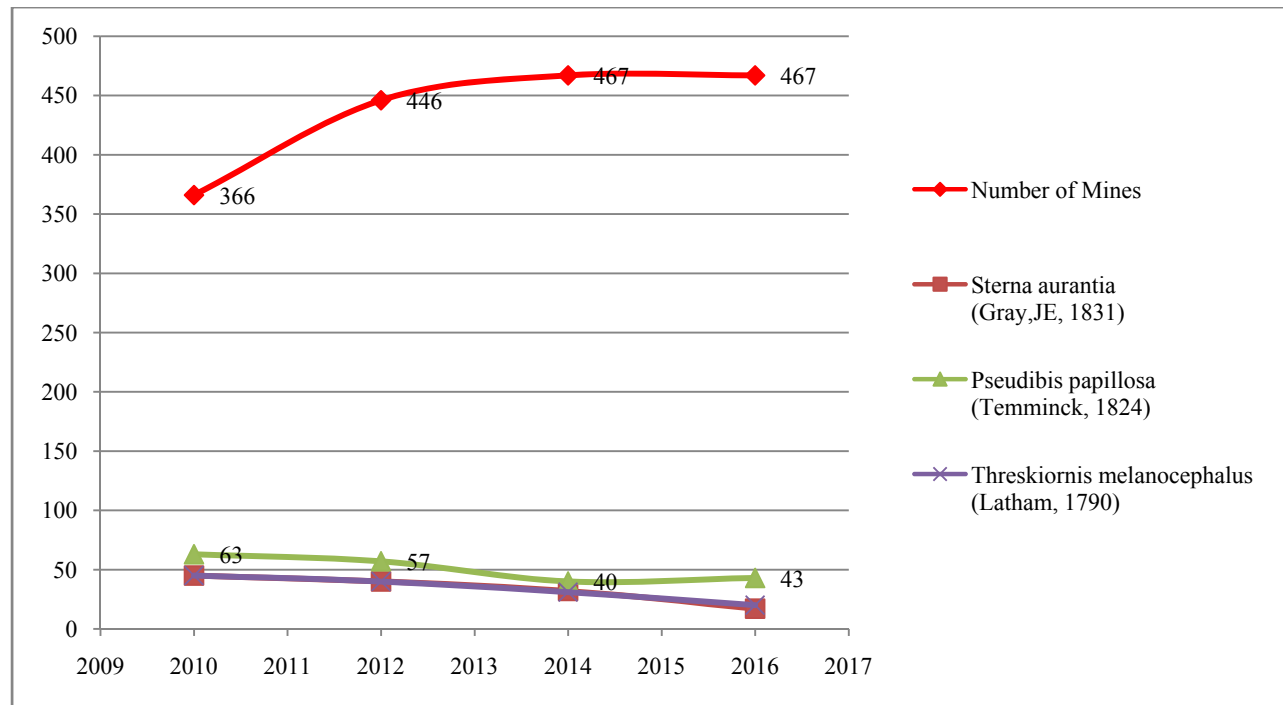
Water Birds

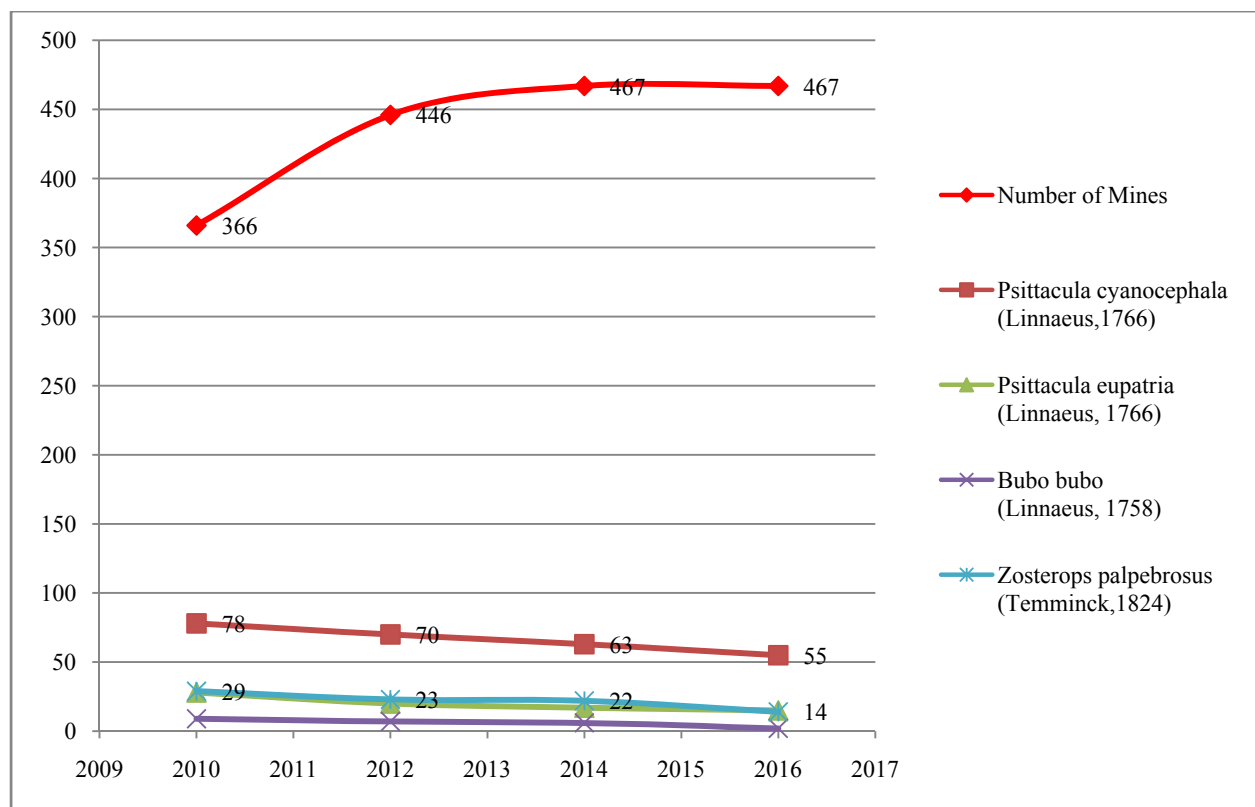
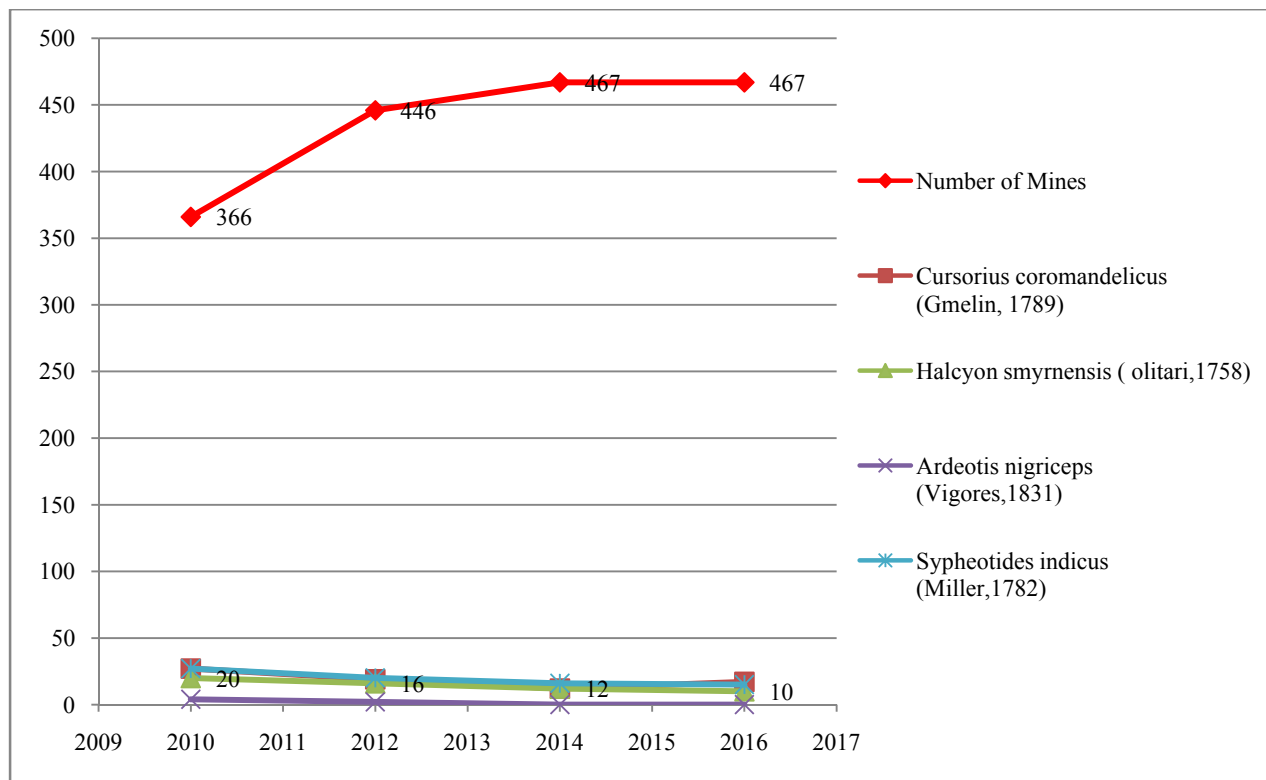
	Year →	2010	2012	2014	2016
	Number of Mines --->	366	446	467	467
S. No.	Scientific Name(↓) (Number of Individuals) →				
1	<i>Aythya ferina</i> , (Linnaeus, 1758)	200	170	130	125
2	<i>Aythya nyroca</i> , (Güldenstädt, 1770)	13	10	9	5
3	<i>Mycteria leucocephala</i> , (Pennant, 1769)	70	61	45	12
4	<i>Hydrophasianus chirurgus</i> , (Scopoli, 1786)	22	11	12	7
5	<i>Pelecanus crispus</i> (Bruch, 1832)	170	160	70	65
6	<i>Phoenicopterus roseus</i> , (Linnaeus, 1758)	40	36	21	-
7	<i>Tachybaptus ruficollis</i> , (Pallas, 1764)	28	20	21	17
8	<i>Limosa limosa</i> (Linnaeus, 1758)	45	40	34	33
9	<i>Sterna aurantia</i> (Gray, JE, 1831)	45	40	32	17
10	<i>Pseudibis papillosa</i> (Temminck, 1824)	63	57	40	43
11	<i>Threskiornis melanocephalus</i> (Latham, 1790)	45	40	31	20

Terrestrial Bird

	Year →	2010	2012	2014	2016
	Number of Mines --->	366	446	467	467
S. No.	Scientific Name(↓) (Number of Individuals) →				
1	<i>Aquila nipalensis</i> (Hadgson, 1833)	12	7	-	3
2	<i>Neophron percnopterus</i> (Linnaeus, 1758)	50	38	33	28
3	<i>Ocyrceros birostris</i> (Scopoli, 1786)	15	12	12	7
4	<i>Cursorius coromandelicus</i> (Gmelin, 1789)	27	19	12	17
5	<i>Halcyon smyrnensis</i> (237olitari, 1758)	20	16	12	10
6	<i>Ardeotis nigricaps</i> (Vigores, 1831)	04	02	-	-
7	<i>Sypheotides indicus</i> (Miller, 1782)	27	20	16	15
8	<i>Psittacula cyanocephala</i> (Linnaeus, 1766)	78	70	63	55
9	<i>Psittacula eupatria</i> (Linnaeus, 1766)	28	20	17	15
10	<i>Bubo bubo</i> (Linnaeus, 1758)	9	7	6	2
11	<i>Zosterops palpebrosus</i> (Temminck, 1824)	29	23	22	14







It is my observation that Mining at Aravalli ranges is one of the big reason of decline in population of animals and destruction of biodiversity.

6. RECOMMENDATION

There must be full ban on mining, hunting and Human anthropogenic activities.

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