

ABOUT THE AUTHORS

S. C. Mohapatra

Prof. S. C. Mohapatra is the retired Director of Central Avian Research Institute, Izatnagar. He obtained his B.V.Sc. and A.H. degree from Utkal University in 1960 and M.S. and Ph. D. Degrees from Virginia Polytechnic Institute and State University, USA in 1966 and 1968 respectively. His specialization is in the field of Poultry Breeding and Genetics. During his professional career spanning over a period of 36 years he worked in various capacities like poultry breeder and Professor of Poultry Science at IVRI, Izatnagar; Project Coordinator, All India Coordinated Research Project on Poultry Breeding, ICAR; Project Director, Project Directorate on Poultry and Director, Central Avian Research Institute, Izatnagar from which he superannuated in November 1996. He was the Editor of Indian Journal of Poultry Science from 1982 to 1988 and President, Indian Poultry Science Association from 1997 to 2002. As major Advisor he has guided 20 students for Masters Degree and 23 students for Ph. D. Degree. He has published more than 250 scientific papers in National and International journals of repute. He is the co-Author of a Book entitled "Poultry Production" published by the Indian Council of Agricultural Research. He has also written several Book Chapters and edited several Workshop and Symposia proceedings. In the recognition of his outstanding achievements in Academic Studies and Research he was presented the Graduate Award by Sigma Xi chapter of VPI in 1966. He is the recipient of Hari Omm Trust Award of ICAR; VASVIK Award of VASK, Mumbai; Thakur Ram Avtar Singh Award and Indian Poultry Science Association award for his outstanding achievements in research in the area of Poultry Breeding and Genetics and development of high producing layer and broiler stocks and their commercialization. He has visited UK, France, Germany, Thailand and Turkey in his professional capacity and has gained wide experience in the field of his specialization.

S. C. Mishra

Dr. S. C. Mishra is presently Dean of Extension, Orissa University of Agriculture and Technology. He was the Professor and Head of Post-Graduate Department of Poultry

Science and Senior Poultry Geneticist of AICRP on Poultry Breeding in the same University for more than two decades. He obtained his B.V.Sc. and A.H. Degree from O.U.A.T.; Masters Degree from IVRI and Ph. D. Degree from OUAT. As major Advisor he has guided 18 students for Masters Degree in Poultry Science and has published 52 papers in the field of Poultry Science in National and International journals of repute. He has coauthored 9 books in Poultry Science, 7 of which are used for distant education programme and 2 as Text Books for vocational course in Poultry Science at 10+2 level of Council of Higher Secondary Education, Orissa.

Das Kornel

Das Kornel was Director, Central Cattle Breeding Farm, Department of Animal Husbandry and Dairying, Ministry of Agriculture, Government of India till 1999. He obtained his M.V.Sc. Degree from OUAT, Bhubaneswar and was trained in Embryo Transfer Technology (Advances in Animal Reproduction) at University of Brisbane, Australia and Project Planning and Management at Hoenbekhus, Denmark. His subject of specializations are Animal Genetics and Breeding, Embryo Transfer and IVF embryo technology, Rural development, Biodiversity and Natural Resources Management, Backyard Poultry Production and Livelihood. He has published 40 papers in reputed National and International Journals and has published books in Livestock Development and Poor, Animal Biodiversity, Tribal Farming Systems and Anthropology. His lead publication 'Livestock and Poultry Genetic Resources in Orissa, Volume-1, has been widely appreciated.

He was awarded three gold medals by the University for his outstanding achievements in academic studies. He is also recipient of Common Wealth Animal Health Award, 1968. He was the team leader to establish Regional Embryo Transfer Laboratory, Central Cattle Breeding Farm, Similiguda and his team have earned the credit of producing first embryo transfer calf in Orissa and A.P. He has 10 years of experience in Tribal area livelihood institutional development, HRM, Project Planning and Implementation, as Danida Adviser; and experience as Programme Coordinator, Indo Swiss Natural Resource Programme, Bhubaneswar, Orissa specially in policy development and implementation with Government sector.

Indigenous Poultry Genetic Resources of Orissa

S. C. Mohapatra, S. C. Mishra & Das Kornel



HANSLI

1. General Information

Species	- Chickens
Breed, Variety, Line or Strain	- Breed
Country	- India
Habitat	- Widely distributed in Udala and Kaptipada blocks of Mayurbhanj district, Orissa. Also found in varying numbers in other blocks of Mayurbhanj district as well as in the adjacent district of Keonjhar.
Name, Local names & synonyms	- Hansli
Classification of stock	- Indigenous

2. Population data

Population size and structure

Because of the popularity of the male birds of this breed for their excellent fighting qualities and cock fighting being popular among the people of this region, population size is fairly large and as per are estimate may be more than 10,000. This includes both Mayurbhanj and Keonjhar districts.

Trends in number of females

The number of female appears to be more or less static since fighting males are required in limited numbers and those who are poor fighters are either sold or sacrificed for purpose of meat. Strong selection pressure for fighting qualities and use of those parents with history of victory of their progeny in fighting or full sisters of victorious cocks for reproduction only limit the number of females. The threshold number of adult females averages about 2 per family. The breedable female population may not be more than 2,000.

Risk Status

As stated above males of the breed are held in great esteem for their fighting qualities and the breedable population size is fairly large. Therefore the breed is not at risk.

Origin of the population

The origin of the population/breed is not known, but as per the owners of the stock they are raising these fowls since their known memory inheriting from their fathers and grandfathers. No introduction of exotic and local germplasm has been made in the recent past knowingly to maintain the fighting qualities. However this cannot be eliminated altogether since birds are received as gifts from time to time and also purchased from local market by some of the families which are introduced into the village stock which move together in the village, share the same scavenging area and consequently mate among themselves leading to introgression of genes from other population.

Source of population data

Data presented in this manuscript was collected by a survey conducted in the year 2004-2005.

3. Description of the breed

Carriage

Birds of both the sexes are fairly long. Typical males are bold and aggressive in nature. Body length in sample of bird measured varied from 71 to 74 cm in males and 48 to 57 cm in females and the height from 61 to 75 cm in males and 45 to 63 cm in females. The average values for males and females respectively were 72 cm and 54 cm for length and 67 cm and 52 cm for height. The spur is well developed and pointed when present. Spur however was absent in most of the specimens studied during the survey. Birds of both the sexes appeared to be lighter compared to their size although presented an alert and active appearance.

Plumage colour

Combs, wattles, face and earlobes are red. Beak and head are light yellow and eyes are light gray. Under colour of the body including breast and abdomen are slaty or dark steel gray. Hackle and saddle feathers are rich golden yellow in males and light golden yellow in females. Primary feathers are light yellow, secondary feathers are dark gray, coverts of the primaries are black. In some of the females, primary and secondary feathers are red in colour. Tail feathers are lustrous black with greenish sheen. In some of the specimens plumage colour on the ventral side of the body was black which extended up to hock joint.

Head

Head is small compared to body size, moderately deep and almost flat on the top. In the sample of birds measured the average head width was found to be 34 mm in males and 29 mm in females.

Face & Beak

Face is clean, smooth and light red in colour. Beak is small, strong, stout at the base, narrow and blunt at the tip and light yellow in colour in males and dull gray in females.

Comb and wattle

The birds of the breed are characterized by pea Comb. Comb is fairly well developed in males than in females. Comb is set firmly on the head. Wattles are small in both the sexes. Both comb and wattles are light red in colour. Single comb with 4 to 5 serrations was also encountered in some of the birds.

Eyes

Eyes are small, light gray in colour and placed almost in the middle of the head. Eyelids are red in colour.

Earlobes

The earlobe colour is red. The earlobes were oval in shape, smooth, medium to large in size and set closely to the head.

Neck

Neck is fairly long, uniformly thick but poorly fleshed with plenty of hackle feathers flowing over the shoulders in males. Neck feathers in both the sexes are moderately close. Hackle feathers flowing over the neck are less in females compared to males.

Body

Body is rectangular, moderately long, deep and well rounded. Back is moderately long and fairly broad. In the sample of birds measured body girth ranged from 41 to 44 cm in males and 32 to 39 cm in females, the average body girth being 42.6 cm for males and

35.5 cm for females. The keel bone is straight, long and well developed. It varied from 19.0 to 23.0 cm in males and 10.5 cm to 16.1 cm in females with average keel length being 20 cm in males and 13 cm in females. Breast is deep, broad and rounded. The plumage colour of the body and breast was dark grey. Breast angle was found to vary from 65 to 70 degrees in males and 55 to 60 degrees in females, the average values for breast angle being 67 degrees in males and 57 degrees in females.

Wings

Wings are medium to large in size, situated close to the body, well folded and carried horizontally. The primary and secondary feathers are folded in natural order. The front of the wings is well covered with hackle feathers. Upper portion of the wings are covered with golden yellow or pipe feathers same as in head. The lower end of the wing feathers are black with greenish sheen. Plumage colour on the ventral surface of the body was either dull black or grey.

As reported by the owners feather cover remains poor usually up to 5 or 6 months of age and remains so in good fighter cocks. Good fighters are usually slim and tall with majestic look when stand erect. Poor fighters put more weight and have more feathers than the good fighter Cocks.

It was interesting to see red flower like circular spots of about 0.5 cm in diameter on the elbow joint of good fighter cocks and it remained consistent on the both the wings of the bird and on the same place.

Skin

The skin colour varies from light pink to dark pink.

Leg and toes

Legs are strong, straight and placed well apart when seen from anterior. The colour of the shank and feet are usually yellow and this remained so in all the specimens of the breed examined. In the sample of birds measures shank length varied from 11.4 to 13.3 cm in males and 7.2 to 8.4 cm in females. The average Shank length was 12.2 cm in males and 7.6 cm in females. The width of the shank ranged from 10.7 to 15.4 mm in males and 8.9 to 12.3 mm in females, the average shank width being 13.3 mm for males and 9.3 mm for females. Both shank and feet are free from feathers. There are four toes in each leg placed well apart from each other.

Egg shell colour

The eggs are light brown in colour.

4. Uses, management conditions and performance

Main uses

The males of breed are very aggressive with high stamina and dogged fighting qualities and used for cock fighting which is a popular sport in this region. All the eggs produced are hatched and rarely used for consumption, until and unless the conditions like hot summer months are not favourable for obtaining a good hatch. Meat and eggs fetch a premium price in the market since eggs and meat of indigenous birds are considered tasty compared to those realized from farm-bred chickens. Cock fighting being popular, fighting cocks are sold at exorbitant prices usually 3 to 4 times higher than when sold for meat. Hansli fighting cocks prefer to die in the pit than to lose and survive.

Management conditions

The birds are raised in the backyard in smallholder production system and completely scavenge their feed requirements. The flock size varies from family to family, usually one cock is saved for every 3 to 4 hens for reproduction purpose. However all the male birds with potentiality to fight are saved and given utmost care. The available scavenging area determines the size of the chicken flock in the village. The flock size usually varies from 5 to 30 birds per family, which includes adults, growers and chicks.

Shelter is provided only during night. In most cases the birds share the same facilities as owners for the night shelter. The well to do families however provide separate housing facilities, which is usually a portion in the house, but separate from their living area. Use of bamboo basket is common for providing shelter during night as it helps in preventing predation.

Most of the owners do not provide any additional feed to the growers and adults although chicks, sick birds and broody hens are provided with additional care and supplementary feed. The male birds with demonstrable fighting quality are raised with utmost care and often kept indoors and provided with high-energy feeds available at home or purchased.

Mating is random among the village flock. Only the victorious males are allowed to reproduce and all other males are culled and sold in the market for meat purpose. However, all the available females in good health are allowed to reproduce. Fertility and hatchability is very high and in some instances all the eggs set are hatched into chicks resulting in 100% hatchability.

Age of maturity for each sex

The females mature at about 6 months of age whereas males mature little early and mount the females.

Standard weight (in kg.) of adult birds

Cock, 2.5 to 3; Hen 1.75 to 1.85; Cockerels 1.5 to 2; Pullets 1.2 to 1.4.

Average number of eggs laid per year

The females of the species show broodiness and lay eggs in three to four clutches in a year, no. of eggs in each clutch varying from 10 to 20. After each clutch, the broody hens sit over their eggs for hatching. The broody hens also take care of the brood of the chicks they have hatched and the next clutch starts usually after two months of hatching. Annual egg production varies from 50 to 60 eggs. Egg production declines with advancement of age and from year to year. It is therefore, not profitable to maintain the hens after one and half year of age.

Wide variation is observed for egg size. In most of the cases egg size is small and egg weight varies from 40 to 45 grams. During our survey we however came across few Hansli hens which produced eggs of large size. Egg weight varied from 52 to 58 grams.

Special qualities (disease resistance, adaptability to environmental stress)

As stated earlier the birds are lighter in weight compared to their size and capable of protecting themselves from predation by flying. The birds of the breed are highly adapted to their environment in which they are raised. It was reported that they are resistant to common intestinal parasites as well as ectoparasites like ticks and mites and perform well even in high ambient temperature and humidity in low input conditions.

7. Housing

Duration of Shelter & type of Housing	Districts	
	Mayurbhanj	Keonjhar
None		
Only at night	Yes	Yes
Confinement housing, litter floor	-	-
Confinement housing, slat or wire floor	-	-
Confinement housing, cage/battery	-	-
Type of housing Pucca/Kutchra/others	Bamboo baskets mostly, Kutchra houses sometimes and Pucca houses rarely.	Bamboo baskets mostly, Kutchra houses sometimes and Pucca houses rarely

8. Type of Management

Management systems	Districts	
	Mayurbhanj	Keonjhar
Backyard scavenging	Yes	Yes
Semi scavenging	For fighting cocks, chicks and sick birds.	For fighting cocks, chicks and sick birds.
Semi intensive	No	No
Intensive	No	No

9. Production environment descriptors

Climate modifiers

As stated earlier this breed of chickens is reared by poor and marginal farmers and resource poor tribals who have very little knowledge of modern poultry management. In most cases shelter is provided during night only and there is no provision to protect them either from hot or cold. They seem to be highly adapted to ambient temperature and humidity and other stress encountered through out the year both during day and night in their habitat. No light is provided during night all through their life cycle.

Disease and parasite control

RD and fowl pox are the two most common infectious diseases. The common endo parasites are the nematode worms and tape worms. Tick and lice are the common ectoparasites. Epidemic of RD is common and occurs almost through out the year. Vaccination and other measures for control and prevention of diseases is a new phenomenon. Vaccination against RD, is an occasional affair only when there is an epidemic. Nowadays the birds are vaccinated against RD and fowl pox but rarely given anthelmintic for control of parasites. Because of their scavenging nature birds belonging to different households meet freely during the day while scavenging which helps in the spread of diseases from one flock to another.

Feed and water modifier

Birds usually scavenge their feed requirements. Supplementary feed is only given to sick birds, chicks and sometimes to the broody hens. Locally grown cereal, their by-products, kitchen wastes etc. are usually given as supplementary feed. Since the birds are scavenging type they make efficient utilization of natural resources found unfit for



Hansli Cock with Pea Comb



Hansli Cock with single Comb



Hansli Hen



Hansli Hen

human consumption. Feeding of mineral supplements, vitamins and trace minerals and high-energy foods is not known even today. The stake holders have also very little knowledge about the balance feed. Fighting cocks are prized stock. The victorious cocks are given special care and fed with highly nutritious feeds available locally in the market and rarely sent for scavenging once they have proved their worth in fight.

The birds usually drink water outside if available. Otherwise they are provided water when they come back in the evening. The supply of drinking water is not restricted. Water is hard sometimes but free from salinity.

Human animal interaction

The birds move around the house and in the village through out the day. Housing is provided to them only during night. The flock owners are non-migratory in nature. The flock is supervised at least once daily. Since the birds of both the sexes move around freely in village, mating is uncontrolled random mating. Predation from wild animals including domestic dog, cat, mongoose and snakes is a problem depending upon the location of the villages.

System type

The birds of the breed are raised in low input backyard production system either as a component of mixed farming system or as mono culture scavenging production system.

Resource availability

The stakeholders who raise the birds are poor with little or no land but a few animals including poultry. Hens they are not in a position to supply the inputs as required for optimising production this not only inputs, feed, pharmaceuticals and biologicals but also shelter, veterinary care and credits.

10. Communities responsible for developing the breed along with their description i.e. farmers/nomads/isolated tribes.

The breed is patronized by people of all communities irrespective of caste, creed and religion. The major players in the field are Yadab (Gauda), Mohanta, Schedule tribes and Schedule Castes. Most of them are marginal farmers and landless labourers and of non-nomadic type.

11. Conservation status

As stated above the breed is not in risk as present. No conservation programme therefore is implemented.

G U J U R I

1. General Information

Species	- Chickens
Breed, Variety, Line or Strain	- Breed
Country	- India
Habitat	- Widely distributed in Baripada and Khunta blocks of Mayurbhanj district.
Name, Local names & synonyms	- Gujuri. They are also known as Thusuri, Kadamkhadia, Khairi, Kalua and Bansabania, name varying from place to place.
Classification of stock	- Indigenous

2. Population data

Population size and structure

Gujuri refers a group of medium sized indigenous fowl mostly found in Baripada and Khunta Blocks of Mayurbhanj District in Orissa. These fowls are raised in backyard in smallholder production system. The flock size varies considerably from family to family and range from 6 to 75 which include adult males, adult females, growing stock and chicks. Number of males maintained per family varies from 1 to 2 and adult hens from as low as one to as high as ten.

Trends in number of females

In spite of limited scavenging area the population of breeding females is fairly large because of their egg and meat. The threshold number of adult hens varies from 2 to 4 per family. The breedable female population size is fairly large and not less than 3,000.

Risk Status

As stated above the population size is large and hence the breed is not in risk.

Origin of the population

The origin of the breed is not known. The birds of the breed have been maintained by the farmers since long. There has been little migration from other populations of exotic or indigenous germplasm except for occasional mixing of birds through purchase and gifts.

Source of population data

Data utilized in this report for morphological characterization of the breed is based on a survey conducted in the year 2004-05.

3. Description of Breed

Carriage

The birds of both the sexes are active and alert with well-proportioned body and a pleasing appearance.

Plumage colour and pattern

Plumage colour varied from dark brown to maroon throughout the body and this remains consistent in both the sexes. Tail feathers are found to be more lustrous in males than

in females. In some specimens the plumage colour of shoulders on ventral side of the body were found to be deep brown in colour. The hackle feathers extend over the front portion of the wing.

Head

Head is moderately long, broad, deep and flat at the top. Head width was approximately 30 mm., being slightly higher in males than in females.

Comb and Wattles

Buttercup comb is very common. It is big in size and well developed in the both the sexes. Wattles are well rounded but smaller in size than seen in White leghorns. Comb and wattles are bright red in colour and this remains consistent for both the sexes. Males have bigger comb and wattles than the females.

Eyes

Eyes are small, round, well set in the head and brown in colour.

Earlobes

Ear lobes are medium in size, smooth and reddish brown in colour.

Face and Beak

Face is smooth with variation in colour from one individual to other. The Colour of the beak varies from golden yellow to pale yellow depending upon egg production cycle of the hen. Beak is small but strong and straight.

Neck

Neck is moderately long, strong well arched narrow in junction with head gradually widening towards shoulders. Plenty of hackle feathers flow over the shoulders in males.

Body

Body is fairly long, rectangular in shape, broad and deep. Feathering is close to the body and fluff is moderately full. Back is moderately long, somewhat broad near the shoulders and almost runs parallel to the ground with concave sweep to the tail. Saddle feathers are small but abundant in males. Breast is well developed, full and extends forward. The keel bone is long and strong. The average length of Keel bone was found to be 15 cm males and 11 cm in females. Mean value for breast angle was 60° in male and 50° in females.

The body length was 66 cm for males and 53 cm for females.

Body height was 57 cm for males and 54 cm for females.

Average girth of the body was higher in males compared to females. It was found to be 45 cm in males and 40 cm in females.

Wings

Wings are medium in size, compact, well folded and carried close to the body. Front of the wings are well covered by saddle feathers. Over lapping of primary and secondary feathers are in natural order.

Skin Colour

Skin colour is white or light pink.

Tail

Tail is moderately large and full. Male tail feathers overlap properly and carried at an angle of 80° to the horizontal back. Sickle feathers are small but nicely curved presenting a graceful appearance.

Legs and Toes

Legs are straight and positioned well apart from each other. Hock joints are well covered by body feathers. Shanks are medium in size, clean and free from feathers. Shank colour varied from light yellow to dark yellow in females but presented the golden yellow appearance in males. The bottom of feet and toes are pinkish white or pale in appearance.

Spur is well developed in males.

Egg shell colour

The shell colour of the egg varies from light to medium brown.

4. Uses, management conditions and performance**Main Uses**

It is a dual purpose bird and used both for production of egg and meat. Males are good fighters and hence used for fighting purpose which is a popular sport in this area. Most of the eggs produced are hatched since chicks pay more price than eggs. Eggs and meat are sold at premium price compared to eggs and meat realized from farm-bred exotic layers and broilers. Fighting cocks being in big demand are sold at very high price usually 4 to 5 times higher compared to when sold for meat.

Management conditions

The birds are raised entirely in the backyard in smallholder production system. Family flock sizes are highly variable and usually small. Modern management practices are not known to the stake holders to optimize growth and production. They are usually raised in input system under stressful conditions.

Birds are provided shelter only during night. In many instances separate housing facility is not available. So they share the same space along with owners when the flock size is small. When flock size is large they are provided separate housing facilities usually made of locally available materials. Bamboo baskets of different type and size are often used to prevent straying of birds and predation during night.

Birds of all ages meet their feed requirements by scavenging. Chicks, broody hens and sick birds however are provided additional feed and care as and when necessary. The input varies with economic condition of the farmers.

Water is provided ad-lib. Birds usually drink water before they go for scavenging or after they comeback in the evening.

Age of maturity for each sex

Males mature early than females. The females lay their first egg when they are about 6 months of age.

Standard Weight (in Kg.) for adults

Cock 2.5 Kg. : Hen 1.5 Kg.

Average number of eggs laid per year

Females of the breed lay eggs in 3 to 4 clutches, number of eggs in each clutch varying from 15 to 20 in number. Broodiness is most common in females like other indigenous fowl. The annual egg production varies from 80 to 100 eggs. The eggs are medium in size varying from light to medium brown in colour. After each clutch the hens brood their eggs and hatch the chicks. Hatchability is usually very high in winters and early summer and declines with increasing heat and humidity. Egg production declines from first to second year so it is uneconomical to raise the hens after first year of lay. Egg production also declines with advancement of age.

Special qualities

The birds of the breed show excellent adaptability to their native environment. They are tolerant to heat and cold stress encountered in their habitat and comparatively resistant to gastro intestinal parasites of poultry as well as to ticks and mites; also possess the ability to survive, produce and reproduce in low input system and in stressful conditions.

5. Native tract of distribution

Geographical Information

As stated earlier the breed is mostly encountered in Mayurbhanj district of Orissa. The information with respect to Mayurbhanj district is as follows -

Geographical Parameters	District
	Mayurbhanj
1) Latitude	21°-22° 30' N
2) Longitude	85°45'-87°30' E
3) Approx. area (km ²)	11,000
4) Name of the places	Baripada & Khunta blocks

Native Environment

Environmental Parameters	District
	Mayurbhanj
a) Average temperature	27.3° C
b) Minimum Temperature, month	12.2°.C, January
c) Maximum Temperature, month	41.0°.C, May
d) Average humidity	76%
e) Minimum humidity, month	56% March
f) Maximum humidity, Month	88% July
g) Annual rainfall	1557 mm
h) Peak rain, month	345 mm August
i) Elevation of land above sea level	53.5 mtrs.
j) Soil quality	Red Soil

Terrain features

- | | |
|----------------------------------|---|
| i) <u>Surface / Sub-straight</u> | <u>Stony or Rocky / Sandy / Swampy / Snow or Ice / hard surface / highly variable</u> |
| Mayurbhanj | Highly variable but no snow or ice |
| ii) <u>Average slope</u> | <u>Flat/hilly/steep/ very steep/highly variable</u> |
| Mayurbhanj | Highly variable |

6. Feeding

Feeding systems	District
	Mayurbhanj
Scavenging	Yes
Scavenging with supplemental feeding	Chicks, sick birds & broody hen
Free ranging	Yes
Free ranging with supplemental feeding	Partly
Full feeding with local feeds	Fighting cocks only
Full feeding with manufactured concentrates & local feeds	No
Full feeding with manufactured concentrates	No

7. Housing

Duration of Shelter & type of Housing	Districts
	Mayurbhanj
None	
Only at night	Yes
Confinement housing, litter floor	-
Confinement housing, slat or wire floor	-
Confinement housing, cage/battery	-
Type of housing Pucca/Kutcha/others	Bamboo baskets mostly, Kutcha houses sometimes and Pucca houses rarely.

8. Type of Management

Management systems	Districts
	Mayurbhanj
Backyard scavenging	Yes
Semi scavenging	For fighting cocks, chicks and sick birds.
Semi intensive	No
Intensive	No

9. Production environment descriptors

- i. **Climate modifiers** : Shelter is provided only during the night. There is no provision for night light. The birds of the breed are highly adapted to the ambient day and night temperatures, humidity and other stresses encountered in their habitat.
- ii. **Disease and parasite control** : RD and Fowl pox are the most important infectious diseases. The common endo-parasites are the nematode worms and tape worms. Tick and lice are most common ecto-parasites. Epidemic of RD occurs through out the year. In the past vaccination was an occasional affair only when there was an epidemic. The birds are routinely vaccinated at present, but rarely given anthelmintic for control of internal parasites. Birds belonging to different households meet freely during the day while scavenging. This helps in the spread of diseases from one flock to another.

- iii. **Feed and water modifier** : Birds usually meet their feed requirements by scavenging. Supplemental feed is only given to chicks, broody hens and sick birds. Locally grown cereals and kitchen wastes are given as supplementary feed. Vitamins, minerals and high energy foods are not provided since the owners are poor and cannot afford.
 - iv. **Human animal interaction** : The flock owners are non-migratory in nature. The birds move around the house throughout the day and provided shelter only during night and in bad weather conditions. Predation is common in normal circumstances. The predators are domestic and stray dogs, wild cats, mongoose, snakes etc. Predation from wild animals occurs when the villages are located near or within the forest area.
 - v. **System types** ; The birds of the breed are raised in low input backyard production system either as a component of mixed farming system involving crop and livestock or as mono culture scavenging production system.
 - vi. **Resource availability** : Drinking water is provided adlibitum at home. Birds also drink water outside during scavenging if available. In some areas the water is hard but not salty.
10. **Communities responsible for developing the breed along with their description i.e. farmers/nomads/isolated tribes.**
- The breed is patronized by people of several communities like Yadab, Mohanta, scheduled tribe and scheduled caste. All of them are farmers and not nomads.
11. **Conservation status** : No programme of conservation is implemented at present since the breed is not in risk.
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Gujuri Cock



Gujuri hen



Dumasil Cock



Dumasil Hen

DUMASIL

1. General Information

Species	- Chickens
Breed, Variety, Line or Strain	- Breed
Country	- India
Habitat	- Mostly found in Karaya and Jashipur blocks of Mayurbhanj district, Orissa.
Name, local names and synonyms	- The birds of the breed are known locally as Dumasil. Two varieties are recognized based on the plumage colour: Black and Brown. The black plumage variety is known as Kalua. The other variety whose plumage colour is Brown is known as Khairi. Some of the birds had naked neck suggesting the presence of naked neck gene. Birds with naked neck gene are heavier and more aggressive in nature.
Classification of stock	- Indigenous.

2. Population data

Population size and structure

Only a few birds of the breed were seen by us during our survey. According to information provided by the people the number of birds in each village is few and may be 20 to 30 as seen in Dhatikia and its surrounding villages. The population size is declining over the years. This led us to conclude that the population size is small. The flock size per family varied from 4 to 7 birds, which includes adult hens and cocks as well as growers and chicks. The number of breeding males varied from 1-2 depending upon the number of adult hens maintained by the family and ability of the cock to participate in cock fighting.

There are no organized farms. All the birds belonging to this breed are raised in smallholder production system as a component of integrated farming system involving crops and animals or as a monoculture system by the landless labourers.

Trends in number of females

As stated above, the population size is not very big. The number adult females capable of reproducing therefore appear to be limited and according to our estimate will be less than 1000.

Risk Status

The breed is in risk.

Origin of the population

Mahanta, Yadab and other general caste communities patronize the breed. They could not provide any information about the origin of the breed. However it appears that the breed owes its origin to the Black Australorp which was supplied to some of the farmers about 40 years back by the State Animal Husbandry Department.

Source of population data

Data was collected during a study conducted in the year 2004-2005 for morphologic characterization of domestic fowl, duck and geese germplasm available in the state. The financial grant for this purpose was provided by ISNRMPO, Bhubaneswar.

3. Description of the breed**Carriage**

Birds of both the sexes are alert and active and fairly large, about 80 cm in length and 70 cm in height. Some of the specimens presented a very uncomfortable appearance with poor gait.

Plumage colour

As stated above, two varieties are recognized based on plumage colour. These include black and Brown. In black variety plumage colour of entire body including wings is black from head to tail with greenish sheen. In Brown variety the plumage colour is uniformly lustrous dark brown from head to tail.

In some of the specimens the hackle feathers on the back were somewhat dark brown in colour whereas the colour of the rest of the body feathers was light black with greenish sheen.

Head

Head is Medium in size, deep and flat on the top, colour of head varying from dark brown to light black depending upon variety.

Face & Beak

Face is smooth and light red in colour. Beak is strong, stout and small. In some of the specimens the colour of the beak was yellow while in others it was horn like.

Comb and wattles

Pea comb is common. In few of the specimens buttercup comb was also noticed. In males Wattle is moderate in size, rounded at the bottom and free from wrinkles. Both comb and wattles are brick red in colour and well developed in males compared to females. In some females Wattles were poorly developed and very small in size.

Eyes

Eyes are compact and small. Eyelids are light red in colour.

Earlobes

Ear lobes are elongated, medium in size, light red in colour and placed close to the head.

Neck

Neck is moderately long, thick and well covered with hackle feathers in males. Feathering is moderately close on the neck in both the sexes.

Body

Body is more or less rectangular and rarely round in shape. The back of the body presents a slight convex appearance in normal standing position. Males have wider breast and longer keels than the females. The Breast is well developed, deep and projected forward. Breast angle varied from 65-70 degrees in males and 50 to 60 degrees in females in the samples measured. Keel bone is straight and strong. The average keel length was found to be 17 cm in males and 14 cm in females. Except for abnormal specimens back is

straight, medium in length and presented a slanting appearance from base of the neck to the beginning of the tail. The saddle feathers are scanty but well spread. Fluff is soft. Males are longer and taller than the females of the breed.

Wings

Wings are fairly large, placed close to the body, carried horizontally and backward. The front of the wings is well covered with breast feathers. The primary and secondary feathers are fairly broad and overlap in natural order.

Tail

Tail is long and projected backward. Tail feathers are carried straight in line with the surface of the back. Sickles are smaller than main tail feathers which are broad and loosely overlap each other presenting the appearance of a thick broom or like the tail of a female peacock. Main tail feathers and sickle feathers are lustrous black with greenish sheen in males.

Skin

The skin colour is pink. Few white skin birds were also encountered during the survey.

Leg and toes

The legs are long, strong, thick, and positioned well apart from each other. Shanks are longer and thicker in males than in females. In specimens measured shank length was found to be 11.3 c.m. in males and 9.00 cm in females. The Shank width was 14 mm in males and 11.2 mm in females. Thigh and hock joints are well covered with body feathers.

Toes are medium in length and four in number in each leg. They are long and placed well apart. Shank and toes are yellow in colour and this remained consistent in both the sexes.

The shank and toes are free from feathers and light yellow in colour.

Egg Shell colour

Eggs are light to medium brown in colour and medium in size ranging from 40-50 grams in weight. Few hens laid large eggs as high as 57-58 grams in weight.

4. Uses, management conditions and performance

Main uses

It is a dual-purpose breed and used both for egg and meat production. Males of breed are also used for fighting, but they are inferior in their aggressiveness and fighting qualities to those of Hansli, another popular breed of domestic fowl found in this area. Both egg and meat of this breed fetch a higher price compared to exotic farm bred chicken

Management conditions

The birds are raised in the smallholder production system with family flock size ranging from 4 to 7 in number, which includes adult hens, cocks, growers and chicks. Birds move around the village through out the day and are provided shelter only during night and bad weather. The birds scavenge their feed requirements. Most of the owners however give supplemental feeding since scavenging area is not adequate enough to meet the requirement of feed throughout the year. Bamboo baskets are very common for housing the birds but are of bigger size due to large size of the birds. Few of the farmers had

separate houses for housing the birds. The houses are usually made of locally available materials like bamboo, wood, mud etc. and of thatched roof. Only one cement concrete house of 5 to 6 ft. in height with poor ventilation was observed.

Broody hens, chicks, sick birds and fighter cocks are given special care in terms of feed, housing and protection from predators. Predation is common almost in all the villages. The main predators are - Jackal, dogs, wild cats and Mongoose. Wild animals also predate the birds in those villages which are located in or around the forest areas.

Age of maturity for each sex

Like other indigenous chicken breeds males mature early than females. The first egg is laid around 6 months of age.

Standard weight (in kg.)

Cock - 3 to 3.6, hen - 2 to 2.5.

Average number of eggs laid per year

The birds are less broody compared to other indigenous domestic fowl. Beside their good body weight, they also produce a good number of eggs varying from 100 - 150 annually as reported. The owners do not like broodiness therefore they do not allow the bird to sit over the eggs. To prevent broodiness the fertile eggs of this breed are usually hatched through use of broody hens of other indigenous breeds.

Special qualities

The birds of the breed possess ability to survive and perform in low input system of production in harsh environment as encountered in most of the villages. The birds are also resistant to internal parasitic infections, consequently anthelmintic are rarely used.

5. Native tract of distribution

Geographical Information

As stated earlier the breed is mostly encountered in Karaya and Jashipur blocks of Mayurbhanj district. The geographical information with respect to Mayurbhanja district is as follows :

Geographical Parameters	For Mayurbhanj District
1) Latitude	21°-22° 30' N
2) Longitude	85°45'-87°30' E
3) Approx. area (km ²)	11,000
4) Name of the places	Karaya and Jashipur blocks

Native Environment

Environmental Parameters	Mayurbhanj District
a) Average temperature	27.3° C
b) Minimum Temperature, month	12.2°.C, January
c) Maximum Temperature, month	41.0°.C, May
d) Average humidity	76%
e) Minimum humidity, month	56% March
f) Maximum humidity, Month	88% July
g) Annual rainfall	1557 mm
h) Peak rain, month	345 mm August
i) Elevation of land above sea level	53.5 mtrs.
j) Soil quality	Red Soil

Terrain features

- i) Surface / Sub-straight Stony or Rocky / Sandy / Swampy / Snow or Ice / hard surface / highly variable
Mayurbhanj Highly variable, No snow or ice
- ii) Average slope Flat/hilly/steep/ very steep/highly variable
Mayurbhanj Highly variable, flat and hilly areas are very common.

6. Feeding

Feeding systems	Feeding system actually practiced
Scavenging	-
Scavenging with supplemental feeding	Yes
Free ranging	-
Free ranging with supplemental feeding	-
Full feeding with local feeds	Fighting cocks, chicks, sick birds and broody hens.
Full feeding with manufactured concentrates & local feeds	-
Full feeding with manufactured concentrates	-

7. Housing

Duration of Shelter and type of housing.	Actually available
None	-
Only at night	Yes
Confinement housing, litter floor	-
Confinement housing, slat or wire floor	-
Confinement housing, cage/battery	-
Type of housing Pucca/Kutchra/others	Bamboo baskets mostly, Kutchra houses sometimes. Cement concrete house very rarely.

8. Type of Management

Management systems	Actually practiced
Backyard scavenging	Yes
Semi scavenging	Yes
Semi intensive	-
Intensive	-

9. Production environment descriptors

- I. **Climate modifiers:** Vulnerable section of the society including small and marginal farmers and landless labourers who have very little knowledge on modern poultry management rear this breed of chickens. In most of cases shelter is provided during night only and there is no provision to protect them either from hot or cold. They seem to be highly adoptable to ambient temperature encountered through out the year both during day and night. No light is provided during night all through their life cycle. Chicks which are hatched during winter are kept in the bamboo basket on straw bedding with little ventilation to protect them from cold and to provide warmth.

- II. **Disease and parasite control:** The most common infectious diseases are RD and fowl pox. The common internal-parasites are the nematode worms and tape worms. Tick and lice are the common ectoparasites. RD epidemic is common and occurs almost through out the year. Vaccination and other measures for control and prevention of diseases is a new phenomenon. Vaccination against RD, is an occasional affair and that to only when there is an epidemic. Nowadays the birds are vaccinated against RD and fowl pox but anthelmintic are rarely administered for control of parasites. Because of their scavenging nature birds belonging to different households meet freely during the day while scavenging which helps in the spread of diseases from one flock to another.
 - III. **Feed and water modifier:** Supplemental feeding is common due to limitation of scavenging area and inadequate availability of natural resources unfit for human consumption in all seasons of the year. Locally grown cereals, cereal by-product, kitchen wastes are usually given as supplementary feed. Since the birds are scavenging type they make efficient utilization of natural resources unfit for human consumption. Feeding of mineral supplements, vitamins and trace minerals and high-energy foods is not known. The stake holders have also very little knowledge about the balance feed.
 - IV. **Human animal interaction:** The birds move around the house and in the village through out the day. Housing is provided to them only during night. The flock owners are non-migratory in nature. The flock is supervised at least once daily. Since the birds of both the sexes move around freely in village, mating is uncontrolled random mating. Predation from wild animals including domestic dog, wild cat, foxes, mongoose and snakes is a problem depending upon the location of the village.
 - V. **System type :** The birds of the breed are raised in low input backyard production system either as a component of mixed farming system or as mono culture scavenging production system.
 - VI. **Resource availability:** The birds usually drink water outside if available. Otherwise they are provided water when they come back in the evening. The supply of drinking water is not restricted. Water is hard sometimes but free from salinity.
10. **Communities responsible for developing the breed along with their description i.e. farmers/nomads/isolated tribes.**

People of all communities irrespective of caste, creed and religion patronize the breed. The major players in the field are Santal, Yadab (Gauda), Mohanta, Schedule tribes and Schedule Castes. Most of them are marginal farmers or landless labourers and of non-nomadic type.
 11. **Conservation Status**

Although the breed is in danger no conservation programme has yet been undertaken.

VEZAGUDA

1. General Information

Species	- Chickens
Breed, Variety, Line or Strain	- Breed
Country	- Koraput and Malkangiri districts of Orissa, India
Habitat	- Widely distributed in tribal and rural areas even in towns of Malkangiri district and Jeypore subdivision of Koraput district of Orissa. Also found in small numbers in other parts of Koraput district and adjacent areas of Andhra Pradesh. Nilaguda, Hantagaon, Raniput, Digapur, Bisiput, Baliput, Hardaput, Jamunda, Konga, Charagaon and adjacent villages of Jeypore subdivisions are well known for breeding of this fowl especially for game purpose.
Name, local names and synonyms	- Vezaguda. The fowls of this breed are also known as Chitra (mixed colour), Kabra Chitra (Black and red in colour), Kandulbania (plumage colour like arhar seed), Biribania (plumage colour is like black gram seed), Rangda (plumage colour is dark reddish) and Kalia (plumage colour complete black) in some areas. White colour Vezaguda fowls are also occasional seen. (Kornel, 1999 and Mishra, 2004)
Classification of stock	- Indigenous

2. Population Data

Population size and structure

Vezaguda breed of chickens account for almost 20% of 12.4 lakhs of poultry (17th Livestock census, 2003) found in Koraput and Malkangiri districts. The size of the population as stated above is large because of the popularity of this breed both for egg and meat and excellent fighting qualities of the male Vezaguda fowls. Flock size varies from 5 to 40 between families. This includes hens, cocks, growers and chicks. Not more than one male is saved for purpose of breeding. All other males are sold to be used as fighting cocks or for meat.

Trends in number of females

In recent years poultry production activities have increased because of the awareness of the people about the importance of poultry egg and meat in human diet. There exists a big demand for Desi egg and meat which are considered delicious and superior to egg and meat from exotic farm-bred chickens. Poultry and poultry products are also cheaper compared to animal protein from other domestic animals. The males of the breed fetch a very high price as they are used for fighting purpose. In view of above the number of breeding female are on increase and will not be less than 5,000.

Risk status

The breed is not at risk at present.

Origin of the population

Not definitely known. First report of the breed was made by Kornel (1999), Consultant, Indo-Danish Integrated Livestock Development project, Koraput, Orissa. According to him the Vezaguda breed has been developed and nurtured by Koya, Matia, Dhulia and Bhumia tribes and Dom community of Koraput since ages. We were given to understand that the breed has been maintained in pure form by these tribes since the male birds are held in high esteem for fighting purpose. However, occasional mixing with other birds found in area or introduced in the neighbouring areas due to common scavenging area, purchase of birds from local markets as well as receipt of birds due to tribe's rituals and customs may not be ignored.

Source of population data

As stated earlier reports of the breed is that of Kornel, 1999 and Mishra, 2004. The present study was done in the year 2005 while doing a phenotypic characterization study of the domestic poultry breeds found in Orissa. Indo-Swiss NRM Programme, Bhubaneswar, Orissa provided financial grant for this study.

3. Description of the breed**Carriage**

Birds of both the sexes of this breed are alert and active. Adult cocks are fairly large with high stamina, majestic gait and aggressive nature. Males of the breed are well known for their fighting qualities and in great demand by the members of the communities nurturing the breed in their habitat.

Plumage

The predominant plumage colours are black, brown and white. The hackle feathers are of the same colours as the rest of the body the tail feathers are lustrous black with greenish sheen in all coloured varieties. The colour of comb wattles, face and ear lobes are red, head is light red in colour and beak yellow.

Head

Head is medium in size and deep.

Beak

Beak is usually strong and stout, more than 2 cm. in length and more than 1 cm. in width at the widest point.

Comb and Wattles

Pea comb is common. It is fairly large in size and firmly set on the head. Wattles are small. Both comb and wattles are brick red in colour and comparatively larger in males compared to females.

Eyes

Eyes are compact and present a bold look.

Earlobes

Earlobes are red in colour and medium to large in size.

Neck

Neck is fairly long, thick and covered thickly with hackle feathers, which are golden white or golden red or dark red in colour.

Body

Body is fairly round and somewhat long. Back is straight, long and parallel to the ground in normal standing position, but presents a slanting appearance from neck to the base of the tail while standing erect. The breast is well developed, projected forward and comparatively better developed in males than in females. In the sample of birds measured Breast angle ranged from 60-70 degrees in males and 54-65 degrees in females. Keel bone is straight, well developed and about 15-19 cm. in length. Like breast angle males have longer keel bones than females. Feathering is close, and well distributed all over the body, but scanty on thigh and joints.

In the sample of birds measured, length of Vezaguda breed of fowls varied from 70 to 91 cm. in males and 52 to 70 cm. in females and height varied from 67 to 77 cm. for males and 47 to 56 cm. for females.

The girth of the body was found to be higher for males than females and varied from 43 to 51 c.m. in males and 36 to 44 c.m. in females.

Wings

Wings are medium in size and carried close to the body. Primary and secondary feathers are folded in natural order specific to the, chicken species. Wing feathers are either white on the top with greenish black tinge at the tip or golden red in colour. Some of the males had red flower like spots more than ½ cm. in diameter on the wing joints of both the wings. This was more prominent on the males with dark plumage. Similar flower like spots was observed by us in another breed called Hansli found in Mayurbhanja and Keonjhar districts of Orissa.

Skin Colour

Skin colour varied from white to pink even to red in different specimens studied during investigation.

Tail

Males and females presented the characteristic tail pattern specific to the species. In males tail is medium in size and makes an obtuse angle at the base with the body. In most of the males studied tail feathers were glossy and greenish black in colour. In some of the specimens tail feathers were dropping type.

Legs and toes

Being a fighting type of chicken, legs are strong, straight and placed well apart from each other. The shanks and toes are clean and without any feathers. Males have longer shanks than females. In the birds measured shank length varied from 10 to 12 cm. in males and 8.5 to 9.00 cm. in females. Colour of the shank and feet was usually yellow in males and varied in appearance depending on the production status in females. Males have spurs. The size of the spur increases with age.

Egg Shell Colour

Eggs are light brown in colour and vary from 40 to 50 grams in weight.

4. Uses, management conditions and performance

Main uses

All most all the eggs produced are used for hatching as chicks fetch more price than eggs. Eggs are consumed only when it is absolutely necessary, viz. during the period of ceremonial affairs or in severe summer when hatchability is poor. Meat of the breed is reported to be very tasty and therefore birds are sold at a premium price in the local markets. The major use of the males however is for fighting and cock fighting is a popular sport in this region and of the tribes nurturing the breed. The males used for fighting are called *Katikukuda* and usually sold at a very high price ranging from 500 to 1000 rupees as reported by the keepers.

Management conditions on which flock is usually kept

All the birds of the breed are maintained under smallholder production system. The birds fend for themselves by scavenging in the common scavenging area of the village. The flock size varies considerably among the families ranging from as low as 5 to 40 in number. This includes adults, growers and chicks. Very rarely more than 2 hens and 1 cock are maintained by any family for breeding purpose. The number of birds in the village depends upon the size of the scavenging area and its richness. The birds move around the village throughout the day and provided shelter only during night. Separate housing facility is very rare since most of the smallholders are poor, landless labourers or marginal farmers. When the number of birds are few they share the same facility and space along with the owners during night. Few of the families use baskets made of bamboo for keeping the birds during night to prevent predation. Whenever the houses are made they are usually of low cost type and made of materials available locally. Such houses are poorly ventilated. Supplemental feeding is very rare and only practiced by few smallholders who are capable of providing. Supplemental food usually consists of locally available grains, grain bi-products, kitchen wastes etc.

Age of maturity for each sex

The male matures by six months of age where as it varies from 7 to 8 months in females. First egg is usually laid when the birds are more than 7 months of age.

Standard weight (in kg) for adults

Cock 2.5 to 3.5; hen 1.6 to 2.5

Great variation is observed in adult body weight of both the sexes. This is influenced as per our observation both by the care and feeding of the birds as well as the age of bird.

Average number of eggs laid per year

Broodiness is very common among the females. The females of the breed usually lay eggs in 3 to 4 clutches, number of eggs in each clutch varying from 8 to 15. As reported, of eggs produced per bird annually varies from 50 to 60.

Special qualities

The birds of the breed are well adapted to the environment and capable of protecting themselves from predators. They are comparatively resistant to worm infection like nematodes and tapeworms of poultry. The birds of the breed were found to be superior to exotic RIR chickens in low input environment in which they are reared. These included ability to survive, produce and reproduce in low plane of nutrition and in harsh environmental conditions encountered in their habitat.

5. Native tract of distribution

Geographical Information

As stated earlier the breed is mostly encountered in Koraput and Malkangiri districts. The geographical information with respect to Koraput and Malkangiri districts are as follows

Geographical Parameters	Koraput District	Malkangiri District
1) Latitude	18-19 ⁰ N	18-19.45 ⁰ N
2) Longitude	82-83.6 ⁰ E	81.15-83.30 E
3) Approx. area (km ²)	9000 Sq km	8000 Sq km
4) Name of the places	Jeypore Sub-division	In most places

Native Environment

Environmental Parameters	Koraput District	Malkangiri District
a) Average temperature	22.3 ⁰ C	22.3 ⁰ C
b) Minimum Temperature, month	5.3 ⁰ C, December	5.3 ⁰ C, December
c) Maximum Temperature, month	37.6 ⁰ C, May	37.6 ⁰ C, May
d) Average humidity	Not available	Not available
e) Minimum humidity, month	Not available	Not available
f) Maximum humidity, Month	Not available	Not available
g) Annual rainfall	1383 mm	1575 mm
h) Peak rain, month	418 mm, July	534 mm, July
i) Elevation of land above sea level	1000 metre	Less than 1000 metre
j) Soil quality	Red Soil, Black soil, Mixed	Red and laterite soil

Terrain features

i) Surface / Sub-straight

Koraput

Malkangiri

Stony or Rocky / Sandy / Swampy / Snow or Ice / hard surface / highly variable

Highly variable surface is common, but no snow or ice.

Highly variable surface is common but no snow or ice.

ii) Average slope

Koraput

Malkangiri

Flat/hilly/steep/ very steep/highly variable

Highly variable hilly area being common.

Highly variable hilly area being common.

6. Feeding

Feeding systems	Feeding system actually practiced
Scavenging	Yes
Scavenging with supplemental feeding	Only for males, chicks, broody hens and sick birds
Free ranging	Yes
Free ranging with supplemental feeding	No
Full feeding with local feeds	Yes. For fighting cocks only.
Full feeding with manufactured concentrates & local feeds	No
Full feeding with manufactured concentrates	No

7. Housing

Duration of Shelter and type of housing.	Actually practiced
None	-
Only at night	Yes
Confinement housing, litter floor	No
Confinement housing, slat or wire floor	No
Confinement housing, cage/battery	No
Type of housing Pucca/Kutchra/others	i) Mostly bamboo baskets are used when flock size is small ii) Kutchra houses made of locally available materials iii) Pucca houses are extremely rare

8. Type of Management

Management systems	Actually practiced
Backyard scavenging	Yes
Semi scavenging	Only for fighting cocks, chicks and broody hens
Semi intensive	No
Intensive	No

9. Production environment descriptors

- I. **Climate modifiers:** As stated earlier this breed of chickens is reared by poor and marginal farmers and resource poor tribals who have very little knowledge on modern poultry production. In most cases shelter is provided during night only and there is no provision to protect them either from hot or cold. They seem to be highly adaptable to ambient temperature and humidity encountered in their habitat. No light is provided during the night all through their life cycle.
- II. **Disease and parasite control:** RD and fowl pox are the two most common infectious diseases. The common endoparasites are nematode worms as well as tapeworms. Tick and lice are the common ectoparasite. Epidemic of RD is common and occurs almost throughout the year. Mortality is very high and sometimes entire flock may be wiped out. Vaccination and other measures for control and prevention of diseases is new phenomenon. Vaccination against RD, was an occasional affair in the past only when there was an epidemic. Nowadays the birds are vaccinated against RD and fowl pox and also given anthelmintic for control of parasites. Because of the scavenging nature, birds belonging to different households meet freely during the day while scavenging which helps in the spread of diseases from one flock to another.
- III. **Feed and water modifier :** Supplementary feed is only given to sick birds, chicks and to the broody hen and to the fighting cocks. Locally grown serials, their by-products and kitchen waste are usually given as supplementary feed. Since the birds are scavenging type they make efficient utilization of natural resources unfit for human consumption. Feeding of mineral supplements, vitamins and trace minerals and high-energy foods is not known. The stake holders have also very little knowledge about the balance feed.

- IV. Human animal interaction:** The birds move around the house and in the village through out the day. Housing is provided to them only during night. The flock owners are sedentary. The flock is supervised at least one time daily. The birds of both the sexes move around freely in village and mating is uncontrolled random mating. Predation from wild animals including domestic dog, wild cat, fox, hyena, mongoose and snakes is a problem due to location of the villages either near the jungles or within jungles.
- V. System type:** The birds of the breed are raised in low input backyard production system either as a component of mixed farming system or as mono culture scavenging production system.
- VI. Resource availability:** The birds usually drink water outside if available. Otherwise they are provided water when they come back in the evening. The supply of drinking water is not restricted. Water is hard sometimes but free from salinity.
- 10. Communities responsible for developing the breed along with their description i.e. farmers/nomads/isolated tribes.**
The breed has been developed and nurtured by Koya, Matia, Dhulia and Bhumia tribes and Dom community of Koraput. They are isolated tribes and non-migratory in nature.
- 11. Conservation status**
Since the population is fairly large and maintained by communities as specified in item no. 10 above no conservation programme exists at present.



Vezaguda Cock



Vezaguda Cock



Vezaguda Hen



A flock of Vezaguda fowls



Vezaguda Hens with newly hatched chicks



Bearded Vezaguda Cock



Vezaguda Cock fighting



Vezaguda cock with dubbed
Comb

Vezaguda selected
fighting Cocks





Dhinki Breed Fowls



Dhinki X Vezaguda Cock

DHINKI FOWLS

1. General Information

Species	- Chickens
Breed, Variety, Line or Strain	- Breed
Country	- India
Habitat	- Mostly found in urban and peri-urban areas of major towns like - Koraput, Rayagada, Jeypore, and Nawarangpur of undivided Koraput district and Paralakhemundi of Gajapati district mostly in the neighbourhood of Bobli of A.P., which has the history of war due to dispute arising with Vizianagaram rulers from a cock fight. (Kornel, 2004)
Name	- Dhinki.
Classification of stock	- Indigenous fowl. Mostly used for the purpose of meat and cock fighting.

2. Population Data

Population size and structure

Present only in small numbers and is raised in smallholder production system. The population size is declining from year to year. The total population of Dhinki fowls may not exceed 2-3 thousands at present. Best specimens of the breed are encountered in Koraput district mostly with Telugu cultivators. The flock size is usually small and may not exceed 10 per family.

Trends in number of females

The population size appears to static due to poor productivity, poor fertility and hatchability and illiteracy of the population patronizing the breed. Eggs are rarely sold. All the eggs produced are hatched since live birds fetch a better price than eggs. Dhinki meat is sold at a premium price usually more than broiler meat. The number of breedable females will not exceed 1,000.

Risk Status

The population is in risk.

Origin of the population

Not known. It was reported by the owners that they are keeping this breed of fowl since their known memory. It is becoming less popular at present due to availability of broiler birds in plenty for meat purpose and Vezaguda cocks are superior to Dhinki cocks in fighting.

Source of population data

The data used in this report was collected during a survey conducted in the year 2004. The financial grant for this purpose was provided by ISNRMPO, Bhubaneswar.

3. Description of the breed

Carriage

Birds of both the sexes are fairly large, alert, active and present a majestic appearance due to large head, prominent eyes and prominent breast.

Plumage colour

Plumage colour is highly variable. In most of the specimens the plumage colour is brown all over the body with a few black feathers on ventral surface. In others plumage colour is glossy, lustrous and multi coloured varying from intensive black with white mix to complete black.

Head

Head is fairly large, broad and deep.

Face & Beak

Face is smooth and light red in colour. Beaks are long, wide at the base and pointed at the tip.

Comb and Wattles

Pea comb which is small in size is common. Wattles are small. Both comb and wattles are brick red in colour.

Eyes

Eyes are large, prominent and present a bold look. Eyelids are white in colour.

Earlobes

Ear lobes are oval in shape, medium in size and red in colour.

Neck

Neck is long, slender and muscular (Mishra, 2004)

Body

Body is round, medium in size with slight concave back. The breast is well developed and projected forward. Keel bones are straight and fairly long. The male birds are good fighters. Cocks with narrow breast are considered to be good fighters while those with wide breast are good for meat production. The average breast angle was 65 degrees in males and 57 degrees in females.

Wings

The wings are strong, poorly feathered and carried horizontally. Primary and secondary feathers overlap each other in natural order. The tail feathers are small.

Tail

Tail is small and makes an acute angle to the body. Main tail feathers are longer than sickles. Both tail feathers and sickles are lustrous black.

Skin

The skin colour varies from pink to light red

Legs and toes

Legs are long, strong and fairly thick. Males have longer shanks than females. Shanks and toes are free from feathers. The average shank length was 11 cm in males and 9 cm in females.

Egg shell colour

Eggs are light to medium in colour. Egg weight varies from 40 to 45 grams.

4. Uses, Management conditions and performance

Main uses

Dhinki is a fairly heavy bird and used for production of meat. Meat is testier and fetches better price compared to exotic farm bred broilers. Dhinki cocks are used for cock fighting without tying any knife on the leg. The cocks usually fight with their beak, prick and injure the opponent till it bleeds profusely. The fighting cocks do not leave fighting until death or forcibly separated from each other.

Management conditions

The birds are raised in backyard in the smallholder production system and scavenge their feed requirements. Most of the farmers patronizing the breed provide supplemental feeds to birds of all ages.

The male birds with demonstrable fighting qualities are given utmost care and often raised indoors and provided with high-energy feeds. The flock size varies from 2-10 per family. This includes adults, growers and chicks. Most of the owners provide shelters during night. Separate housing is a problem. Bamboo Baskets are usually used to keep the birds during night. Water is provided at home and very rarely they drink water outside.

Age of maturity for each sex

Both male and female birds mature at about 5-6 months of age.

Standard weight (in kg) for adults -

Males— 2.75 to 3.25, females 2 to 2.5

Average number of eggs laid per year

Dhinki hens are poor in egg production. Broodiness is very common. They lay eggs in clutches with maximum of 3 clutches per year. The number of eggs per clutch usually varies from 10 to 15. Annual production is less than 40 eggs. Fertility and hatchability on fertile eggs set are generally poor and do not exceed 70%.

Special qualities

Well adapted to harsh environment encountered in their habitat and comparatively more resistant to internal parasitic infection. The males are good fighters. Meat is testier and fetches a better price in the local market.

5. Native tract of distribution

Geographical Information

As stated earlier the breed is mostly encountered in Koraput, Malkangiri, Nawarangpur and Gajapati districts. The geographical information with respect to Koraput, Malkangiri, Nawarangpur and Gajapati districts are as follows

Geographical Parameters	Korapur district	Malkangiri district	Nabarangapur district	Gajapati district
1) Latitude	18 ⁰ -18 ⁰ 75'	17 ⁰ 85'-18 ⁰ 45' N	19 ⁰ -20 ⁰ N	18 ⁰ 45' - 19 ⁰ 30' N
2) Longitude	82 ⁰ -83 ⁰ 15' E	81 ⁰ -82 ⁰ 30'	82 ⁰ -82 ⁰ 45' E	84 ⁰ -84 ⁰ 30' E
3) Approx. area (km ²)	9000	6000	5000	3000
4) Name of the places	Koraput and Jeypore towns	Malkangiri town	Nabarangapur town	Paralekhamundi

· Undivided Koraput District at present comprises of Koraput, Malkangiri & Nawarangpur & Rayagada districts.

Native Environment

Environmental Parameters	Koraput	Malkangiri	Nabarangapur	Gajapati
a) Average temperature	31.3 ⁰ C	31.3 ⁰ C	31.3 ⁰ C	30.6 ⁰ C
b) Minimum Temperature, month	5.3 ⁰ C December	5.3 ⁰ C December	5.3 ⁰ C December	17.1 ⁰ C January
c) Maximum Temperature, month	37.6 ⁰ C May	37.6 ⁰ C May	37.6 ⁰ C May	32.6 ⁰ May
d) Average humidity	NA	NA	NA	NA
e) Minimum humidity, month	NA	NA	NA	NA
f) Maximum humidity, Month	NA	NA	NA	NA
g) Annual rainfall	1383 mm	1575 mm	1436 mm	1368 mm
h) Peak rain, month	418 mm, July	534 mm, Jul y	440 mm, July	283 mm, August
i) Elevation of land above sea level	1000 metre	< 1000 metre	1000 metre	300-800 metre
j) Soil quality	Red, Black, Mixed	Red and laterite	Red, Black, Mixed	Brown forest land

Terrain features

i) Surface / Sub-straight Stony or Rocky / Sandy / Swampy / Snow or Ice / hard surface / highly variable

Koraput, Malkangiri, and Nabarangapur Districts.

Highly variable but no snow or ice

Gajapati district

Highly variable

ii) Average slope

Flat/hilly/steep/ very steep/highly variable

Koraput, Malkangiri and Nabarangapur Districts
Koraput and Malkangiri districts

Highly variable. Hilly areas are most common in

Gajapati district

Highly variable.

6. Feeding

Feeding systems	Feeding system actually practiced
Scavenging	Yes
Scavenging with supplemental feeding	By well to do farmers only
Free ranging	
Free ranging with supplemental feeding	
Full feeding with local feeds	Partly
Full feeding with manufactured concentrates & local feeds	Partly
Full feeding with manufactured concentrates	Partly

7. Housing

Duration of Shelter and type of housing.	Actually practiced
None	Partly
Only at night	By most people
Confinement housing, litter floor	
Confinement housing, slat or wire floor	
Confinement housing, cage/battery	
Type of housing Pucca/Kutchra/others	Bamboo baskets, mostly kutcha houses when flock size is more, Pucca houses rarely

8. Type of Management

Management systems	Actually practiced
Backyard scavenging	
Semi scavenging	Mostly
Semi intensive	
Intensive	

9. Production environment descriptors

- I. **Climate modifiers:** In most of cases shelter is provided during night only. There is no provision for climate modifiers to protect them either from hot or cold. These birds are highly adaptable to ambient temperature and humidity encountered in their habitat. No light is provided during night all through their life cycle. Chicks hatched during winter are kept in the bamboo basket on straw bedding to protect them from cold and to provide warmth.
- II. **Disease and parasite control:** The most common diseases are RD, fowl pox and internal and external parasitic infections. RD epidemic occurs almost through out the year. Vaccination against RD, was an occasional affair in the past and that to only when there is an epidemic. Nowadays the birds are vaccinated against RD and fowl pox regularly but anthelmintic are rarely administered for control of internal parasites. Similarly no drugs are used for control of external parasites.
- III. **Feed and water modifier:** Supplemental feeding is common due to limitation of scavenging area and inadequate availability of natural resources in all seasons of the year. Locally grown cereals, cereal by-product, kitchen wastes are usually given as supplementary feed. Mineral supplements, vitamins and trace minerals and high-energy foods are rarely given that to by well to do farmers only.
- IV. **Human animal interaction:** The birds move around the house and in the village through out the day. Housing is provided only during night. The flock owners are farmers and non-nomadic. The flock is supervised at least once daily. Since the birds of both the sexes move around freely in village, mating is uncontrolled random mating. Males are selected on the basis of their physical appearance, fitness and stamina. Males with proven fighting qualities are preferred to be used as male parents to reproduce the next generation. All the available females based on their phenotypic appearance are selected to be parents for producing next generation.

V. **System type:** The birds of the breed are raised in low input backyard production system.

VI. **Resource availability:** The supply of drinking water is not restricted. They are provided water throughout the day in the owner's house. The birds also drink water outside if available. Water is hard sometimes but free from salinity.

10. Communities responsible for developing the breed along with their description i.e. farmers/nomads/isolated tribes.

The breed is patronized by Telugu farmers living in urban and peri-urban areas. They belong to all the caste involved in farming and non-nomadic in nature.

11. Conservation status

All though the breed is in risk no conservation programme is implemented so far because of the availability of broilers for meat production and Veaguda males for cock fighting. It will be worthwhile to mention here that Veaguda breed is found in same locality and Veaguda males are superior fighters than Dinki males.

KALAHANDI FOWLS

1. General Information

Species	- Chickens
Breed, Variety, Line or Strain	- Breed
Country	- India
Habitat	- Widely distributed in Bhawanipatna, Khariar and Nawapara subdivisions of undivided Kalahandi district.
Name, local names and synonyms	- Kalahandi Fowls. Based on the plumage colour 3 distinct varieties are recognized. These include Kalahandi brown, Kalahandi Black and Kalahandi barred. The corresponding local names for the 3 varieties recognized on the basis of plumage colour are Khairi, Kabri and Chitri. About 20% of the domestic fowls found in the district belong to this breed. Kornel (1999,2004) had first reported the Kalahandi Breed of poultry.
Classification of stock	- Indigenous, dual purpose breed.

2. Population Data

Population size and structure

A large number of birds of this breed are raised in tribal, rural and peri-urban areas of Bhawanipatna, Khariar and Nawapara subdivisions of undivided Kalahandi district. The estimated strength of the population is about 2,00,000. All the birds are raised in smallholder production system and there is no existence of any organized farm. The flock size varies considerably among the smallholders from as low as 10 to 100 in number. These include adult cock and hens, growers and chicks.

Trends in number of females

From the survey conducted, it was found that the poultry population is gradually increasing in the district due to increased demand for poultry egg and meat of indigenous birds. Birds of the breed when sold in the market for meat purpose fetch a handsome price compared to broilers. The eggs are sold at a premium price compared to eggs realized from exotic stocks maintained in the organized farms. The number of breedable females is on increase due to big demand for egg and meat of indigenous chickens.

Risk status

Black and brown populations are neither in risk nor in danger rather the populations are increasing over time due to large demand of Desi hens for meat and eggs.

Origin of the population

It was reported by the stake holders that they are raising these chickens since ages and the chicken stock currently available probably was developed by their fathers and grandfathers. There has been no mixing of the stock in recent years. The breed is patronized by tribals, scheduled castes, scheduled tribes, backward as well as general caste people.

Source of population data

The information presented in this manuscript is based on a survey conducted by some poultry scientists during the year 2004-05. The financial grant for this purpose was provided by Indo-Swiss NRMPO, Bhubaneswar.

3. Description of the breed

Carriage

The birds belonging to breed are alert, active and vary from small to medium in size with well-proportioned body.

Plumage colour

Based on Plumage colour 3 different varieties are recognized as stated above. In Kabri variety the plumage colour of entire body is black with greenish sheen on tail and wing feathers. In some of the specimens the hackle feathers are reddish brown or white in colour. The comb, wattles and face are red. Beak and shanks vary from pale yellow to deep yellow in colour. In brown variety the predominant plumage colour is brown from base of the head to the base of the tail and extends up to thigh and hock joints. The hackle feathers are a mixture of black and brown in colour. In some specimens the black and brown mix colour extends over the back. The tail feathers are mostly black. Shank and toes vary from yellow to white in colour and some blacks are also seen. The colour of earlobes varies from pink to white. The colour of the comb, wattles and eyes were red in colour but varied in intensity from specimen to specimen. In barred variety the plumage was barred and varied from to green to dark slate in colour in different specimens studied.

Naked neck gene was also noticed in this breed. Naked neck variety is either having black or black and brown mixed plumage colour. The neck is mostly necked with only feathers on ventral surface of the neck. Naked neck variety has long necks compared to two varieties recognized on the basis of plumage colour.

Head

Head is small to medium in size, deep and slightly convex at the top. The head width varied from 27 to 41 mm in samples measured, males having wider head than the females. The colour of the head varies among varieties. It is black in Kabri, and Catechu red in brown variety.

Beak

Beak is strong, wider at the base and pointed at the tip. Beak length varied from 15 to 20 mm in sample of birds measured. Male birds with heavier body had longer beak than the females. The beak width varied from 8.5 to 14 mm at the widest point.

Comb and Wattles

Single comb with 5 serrations is very common. Pea comb was also seen in few of the birds sampled during study. The blade of the single comb is projected backward and in some specimens inclined downward. Wattles are fairly large, rounded at the bottom and free from wrinkles and folds. Combs and wattles were brick red in colour and comparatively larger in males than in females. Wattles were poorly developed in some of the birds.

Comb and wattles were poorly developed in Black variety compared to brown variety. The crosses resulting from black and brown varieties had well developed comb and wattles of bright red colour.

Eyes

Eyes were medium in size, placed centrally in head, and usually gray or black in colour.

Earlobes

Ear lobes are medium to large in size and white in colour in both black and brown variety. They were small and somewhat pinkish in colour in pea-comb variety.

Neck

Neck is medium in length, thick and covered with hackle feathers, which are golden brown in males and light to dark brown in females in brown variety. In black variety the hackle feathers are black.

Body

Body is small to medium in size and round in appearance. The back is straight in males and slightly concave in females. The Breast is well developed and projected forward both in males and females. In samples measured breast angle varied from 60 to 70 degrees in males and 55-60 degrees in females. Keel bone is straight and varied from 9 - 15 cms in length, males having longer keel bones than females. The girth of the body varied from 37-47 cm. Feathering was close, well distributed all over the body including thighbones and hock joints.

Males had longer body than females. The average body length on actual measurement was found to be about 70 cm in males and 55 cm in females. The height of the bird varied from 51 to 64 cm. in females and 69 to 78 cm in males.

Wings

Wings are medium in size and placed close to the body. Primary and secondary feathers are folded in natural order. In brown variety Wing feathers in females are brown or deep brown in colour as that of the rest of the body, whereas in males, it is bright lustrous and brown red in colour with 2 to 3 primary feathers presenting black, white and brown appearance. In black variety the wing feathers are either black in colour or a mixture of black and white.

Skin Colour

Skin colour is highly variable. White skin was observed in most of the specimens studied whereas it was either slaty or pink in others.

Tail

Tail is medium in size both in males and females and covered thickly with hen feathers in females and male feathers in males. Tail makes an obtuse angle to the base of the body. Tail feathers are black with greenish sheen in males in black variety and black in brown variety.

Legs and toes

Legs are strong, straight and placed well apart in females and closely in males. The shank and feet are free from feathers. Spur when present was well developed in males and absent in females. The toes are well separated from each other. The shank and toe colour varied from white to yellow in both the varieties. Males had longer shanks than females. It varied from 10 to 11 cm in males and 7 to 9 cm in females. Shank width varied from 8 to 12 mm in both the sexes.

Egg Shell colour

On actual measurement of six dozen eggs collected from different farmers egg weight varied from 40 to 52 grams. The length and width of the egg ranged from 52 to 56 mm 30 to 41 mm respectively. Egg shell colour was white in both black and brown variety.

4. Uses, management conditions and performance

Main uses

It is a dual-purpose bird and used for production of both egg and meat. Both males and females are used for meat purpose. About 50% of the eggs produced are used for consumption and other 50% for hatching of chicks. Males of the breed are rarely used for fighting purpose. Both egg and meat of this breed are considered testier than the eggs and meat realized from farm bred chickens, hence, fetch a better price in the market.

Management conditions on which flock is usually kept

All the birds are raised on the backyard in smallholder production system and scavenge their feed requirement. Supplemental feeding to birds of all ages is common and varies with economic status of the people. The flock size varies considerably from as low as 8 to as high as 100 in number. This includes adults, growers as well as chicks. Males account for 10 to 15% of the flock. The birds are provided with shelter both day and night except for period in which they scavenge their feed requirement. Almost all the houses we came across are thatched house made of locally available materials like bamboo, wood and mud. Floor was Kucha and walls having no windows. A portion of the door is made of bamboo net or wire net for light and ventilation. Supplemental feeding included locally available grains or grain by-products like - rice kani, rice bran, kitchen waste etc. The well to do families often purchased feed from the market either manufactured by commercial houses or made locally. Feeding of chicks by keeping them separately in bamboo boxes is common. Water is provided usually at home. The birds also drink outside if available during the time of scavenging.

Age of maturity for each sex

As reported the males mature early than the males. First egg is laid in around 5 to 6 months of age. Extra males are usually sold at about 3 to 4 months of age for purpose of meat.

Standard weight (in kg) of adult

Body weight varies between sexes and also with age. The adult body weight ranged from 2 to 3 kg in males and 1.3 to 1.7 kg in females.

Average number of eggs laid per year

The females of the species are medium type layers and egg production as reported varied from 100-150 eggs annually. The females are comparatively less broody than other indigenous fowls.

Special qualities

As reported the birds are well adapted to environment and capable of protecting themselves from predators. Predation however is a problem in remote areas. Birds of both the sexes are comparatively resistant to gastro intestinal parasitic infections.

5. Native tract of distribution

Geographical Information

Kalahandi fowls are found only in undivided district of Kalahandi which includes Kalahandi and Nawapara district at present. The geographical information with respect to undivided Kalahandi district is as follows-

Geographical Parameters	For undivided Kalahandi District
1) Latitude	19°-15' -21° 10' N
2) Longitude	82°15' -83°50' E
3) Approx. area (km ²)	8,000
4) Name of the places	Nawapara and Bhawanipatna.

8. Type of Management

Management systems	For Kalahandi & Nawapara Districts
Backyard scavenging	Yes
Semi scavenging	Partly
Semi intensive	
Intensive	

9. Production environment descriptors

- I. **Climate modifiers:** These birds are mostly maintained in free range /scavenging system of management with or without supplemental feeding. They are well adapted to their native climatic conditions and capable to survive, produce and reproduce in ambient temperature and humidity encountered in their habitat. No climatic modifiers are used. Shelter is provided only during night and during bad weathers. Light is not provided during night. Chicks hatched during winter seasons are kept in bamboo baskets or cardboard/wooden boxes with straw bedding to protect them from cold during night.
 - II. **Disease and parasite control:** The most common infectious diseases encountered are RD and fowl pox. Death rate is very high in absence of vaccination. Vaccination was an occasional affair in the past that to only when there was an epidemic. Vaccination against RD and fowl pox is routinely undertaken at present to protect the birds from these diseases. The birds are fairly resistant to internal parasitic infections. Consequently, very rarely treated against parasites.
 - III. **Feed and water modifier:** As stated earlier the birds are maintained in small holder production system and scavenge their feed requirements. They are provided supplemental feed only when the scavenging feed base is not adequate to sustain life and maintain productivity. Locally grown cereals and their by-product are most common ingredients used for supplemental feeding. Water available in the ponds and wells are given for drinking. No special care is taken for purification of water. The birds drink water at home or outside depending upon availability.
 - IV. **Human animal interaction:**
The birds move around the house and in the village through out the day. The flock owners are non-migratory in nature. The flock is supervised at least once daily. Since the birds of both the sexes move around freely in village, mating is uncontrolled random mating. Predation from wild animals including fox, hyena, domestic dog, cat, mongoose and snakes is a problem depending upon the location of the villages.
 - V. **System type:**
The birds of the breed are raised in low input backyard production system either as a component of mixed farming system or as mono culture scavenging production system.
 - VI. **Resource availability**
Water is provided to birds at home. They also drink water outside if available. Water is hard sometimes depending upon locality but free from salinity.
10. **Communities responsible for developing the breed along with their description.**
Kalahandi fowls are mostly patronized by Scheduled Castes and Scheduled Tribes as well as other backward classes. Most of them are marginal farmers or landless labourers and non-nomadic in nature.
11. **Conservation status**
The population size of both the black and brown varieties is fairly large. No conservation programme is implemented at present.



Kalahandi Black Cock



Kalahandi Black Hen



Kalahandi Brown Cock



Kalahandi Brown Hen



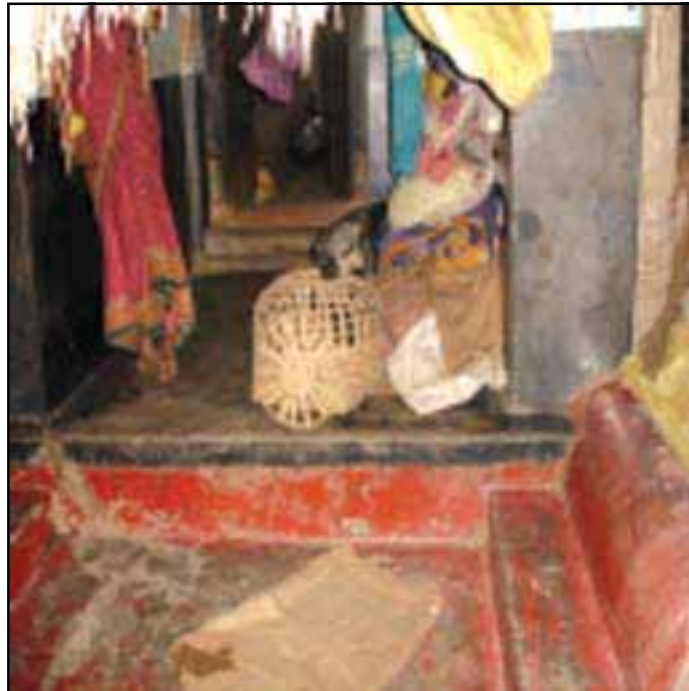
Kalahandi Barred Cock



Kalahandi Barred hen



A Chicken house



Poultry housed in a bamboo basket

PHULBANI FOWLS

1. General Information

Species	- Chickens
Breed, Variety, Line or Strain	- Breed
Country	- India
Habitat	- Mostly found in undivided Phulbani district which now comprises of two districts viz. Phulbani and Boudh.
Name, local name and Synonyms	- Phulbani fowls. Local name is Phulwari fowls. Based on the colour pattern it is called Kalia Kukuda (black coloured chicken) in Phulbani region and Kolathia Kukuda (Kolatha is popular variety of pulse grown in the area and the colour of fowls found in this area is similar to that of Kolatha) in Boudh region. Fowls in different shades of brown and white are also not uncommon.
Classification of stock	- Indigenous.

2. Population Data

Population size and structure

This breed of fowl is available fairly in large numbers in rural and tribal areas of Phulbani and Boudh regions of Phulbani district. They are maintained under smallholder production system. Family flock size varies considerably from as low as 4 to 5 to as high as 30 which includes adult hens, cocks, grower stocks as well as chicks. Population size of this breed will not be less than 40,000.

Trends in number of females

Poultry provides inexpensive animal protein in form of egg and meat. As a result the demand for poultry and poultry products is increasing over years. Consequently the size of poultry population is increasing to meet this increased demand. The breedable number of females is expected to be more than 10,000.

Risk status

The population is neither in risk nor in danger but getting diluted due to introduction of improved poultry stock supplied to different SHGs and in different welfare programmes undertaken by the Government for rural and tribal development.

Origin of the population

This breed of fowl is patronized by the tribal and rural communities of this region since ages without any intentional selection for high egg production or growth rate. Males of the breed are used for fighting but comparatively less aggressive than Hansli and Vezaguda fowls. As stated earlier pure specimens of breed are becoming rare from day to day.

Source of population data

The data used in this report were collected during a survey conducted during the year 2004-05.

3. Description of the breed

Carriage

The birds of both the sexes of the breed are active, alert and vary from small to medium in size. The females present a stout and stumpy appearance. The length of the birds varied from 42 to 71 cm on the samples measured.

Plumage

The plumage colours vary widely. The predominant colours are black, various shades of brown and white and it remains so throughout the body. The colour of the tail feathers however are uniformly black with greenish seen in all plumage colour variety. Pure specimens based on plumage colour are rare to find since birds of different plumage colours freely mate among themselves.

Head

Head is medium in size, deep and wide at the top. Head width varied from 12 mm to 30 mm in the sample of birds measured.

Face and Beak

Face is pinkish red in colour in all the varieties.

Beak is small, pointed at the top and wider at the bottom, dark slaty in colour in females and light colour in males. Beak length varied from 17.3 mm to 20.5 mm in sample of birds measured.

Comb and Wattles

Based on comb types two varieties are recognized. These are rose comb variety and single comb variety. Rose comb birds are more numerous than the single comb type and mostly encountered in Phulbani region although also encountered in Boudh region. Single comb varieties are mostly seen in Boudh region. Combs are fairly large in males than in females. Wattle is poorly developed, males having large wattles than females. Both Comb and Wattles are brief red in colour.

Eyes

Eyes are small to medium in size and light black in colour.

Earlobes

Ear lobes are oval in shape, white or light pink in colour.

Neck

Neck is small, well covered with hackle feathers and this remained consistent in both the sexes. In dark variety the hackle feathers are mostly brown and extend over the anterior portion of the back. Neck is thicker in males than in females.

Body

Body is round in appearance in both the sexes, but body girth is more in females than in males. On the samples measured body girth varied from 25 to 45 mm. Breast is well developed and projected forward in both the sexes. Breast angle varied from 45° to 65°. Keel bone is straight and varied from 11 - 17 cm. Males had longer keel and wider breast than females.

Wings

Wings are small and placed very close to the body, Wing feathers are of the same colour as that of the body.

Skin Colour

Skin colour varied from white to black.

Tail

Tail is small in size, black in colour with greenish tinge, presenting a compact and solid appearance in females. The pattern remains the same in males but 2 to 3 feathers are projected outside from the compact portion presenting typical male feather pattern.

Legs and toes

Legs are small but placed well apart. Shank and toes are clean and free from feathers. Colour of the shank is pinkish yellow in males and varies from light yellow to slaty colour in females. Shank is longer in males than in females.

Egg Shell colour

Most of the eggs are white in colour although few lay light brown coloured eggs were noticed.

4. Uses, management conditions and performance**Main uses**

Used both for production of egg and meat. The females are broody and hence used for hatching and rearing of chicks. Cocks are rarely used for fighting purpose.

Management conditions on which flock is usually kept

The birds are raised in the smallholder production system, usually as a component of integrated crop livestock farming system. Birds move around in the villages and scavenge their feed requirements. Supplemental feeding is not known and rarely practiced only for sick birds, broody hens and chicks. Supplemental feed consists of locally grown cereals and pulses and their bi-products. Shelter is provided during night and at the time of heavy rain. During hot summer days the birds prefer to scavenge below shady trees. Baskets made of bamboo are usually used for keeping birds and in poor families the birds share the same space as the family members. Predation is a big problem. The common predators are foxes, hyena, crow, dogs, jungle cats, jungle dogs, vultures and wild animals near the forest areas. Birds are poor flyers and hens are not able to protect themselves from predation. They usually drink outside if water is available or drink at home when return in the evening.

Age of maturity for each sex

The females mature at about 6 to 7 months of age and males little earlier than females.

Standard weight (in kg)

Males are heavier than females. The adult body weight varies from 1.2 to 1.5 kg in males and from 1.0 to 1.2 kg in females.

Average number of eggs laid per year

The females of the species are poor layers and they lay eggs in 3 - 4 clutches of 8-12 eggs in each clutch. Average egg production is about 40 eggs annually.

Special qualities

Birds are well adapted to their environment and fairly resistant to internal parasitic infection.

5. Native tract of distribution

Geographical Information

As stated earlier the breed is mostly encountered in undivided Phulbani District of Orissa which now comprises of two districts i.e. Kandhamal and Boudh. The geographical information with respect undivided Phulbani district is as follows -

Geographical Parameters	For Kandhamal and Boudh Districts
1) Latitude	19.50 ⁰ -20.50 ⁰
2) Longitude	83.30 ⁰ -84.30 ⁰
3) Approx. area (km ²)	10,000
4) Name of the places	Widely distributed throughout the district

Native Environment

Environmental Parameters	For Kandhamal and Boudh Districts
a) Average temperature	24 ⁰ C
b) Minimum Temperature, month	7.5 ⁰ C, December
c) Maximum Temperature, month	39.4 ⁰ C May
d) Average humidity	0-20
e) Minimum humidity, month	NA
f) Maximum humidity, Month	NA
g) Annual rainfall	Phulbani 1560 mm, Boudh 1211 mm
h) Peak rain, month	Phulbani 383 mm, Boudh 415 mm, August
i) Elevation of land above sea level	300-800 metre
j) Soil quality	Brown forest land

Terrain features

i) Surface / Sub-straight

Phulbani district
(Kandhamal and Boudh).

Stony or Rocky / Sandy / Swampy / Snow or Ice / hard surface / highly variable

Highly variable. Very cold in winter. Snowing occurs very thinly once in a while during winter season in high mountain peaks.

ii) Average slope

Phulbani district
(Kandhamal & Boudh)

Flat/hilly/steep/ very steep/highly variable

Highly variable. Flat and hilly areas are common.

6. Feeding

Feeding systems	Feeding system actually practiced
Scavenging	Yes
Scavenging with supplemental feeding	Yes
Free ranging	
Free ranging with supplemental feeding	
Full feeding with local feeds	
Full feeding with manufactured concentrates & local feeds	
Full feeding with manufactured concentrates	

7. Housing

Duration of Shelter and type of housing.	Actually practiced
None	
Only at night	Yes
Confinement housing, litter floor	
Confinement housing, slat or wire floor	
Confinement housing, cage/battery	
Type of housing Pucca/Kutchra/others	Mostly bamboo baskets used. Kutchra houses are also encountered in fairly well to do families.

8. Type of Management

Management systems	Actually practiced
Backyard scavenging	Yes
Semi scavenging	Yes
Semi intensive	
Intensive	

9. Production environment descriptors

- i. **Climate modifiers:** Vulnerable section of the society including small and marginal farmers and landless labourers who have very little knowledge on modern poultry management rear this breed of chickens. In most cases shelter is provided during night only and there is no provision to protect them either from hot or cold. They seem to be highly adaptable to ambient temperature and humidity encountered through out the year both during day and night. No light is provided during night all through their life cycle. Chicks which are hatched during winter are kept in the bamboo basket on straw bedding with little ventilation to protect them from cold and to provide warmth.
- ii. **Disease and parasite control:** RD and fowl pox are the two most common infectious diseases. The common endo parasites are the nematode worms and tape worms. Lice is the common ectoparasites. RD epidemic is common and occurs almost throughout the year. Vaccination and other measures for control and prevention of diseases is a new phenomenon. Vaccination against RD, is an occasional affair and that to only when there is an epidemic. Nowadays the birds are vaccinated against RD and fowl pox but anthelmintic are rarely administered for control of parasites. Because of their scavenging nature birds belonging to different households meet freely during the day while scavenging which helps in the spread of diseases from one flock to another.
- iii. **Feed and water modifier:** Scavenging area is limited in most of the villages. As a result most of the households supply feed at home which usually includes locally grown cereals, cereal by-products, kitchen wastes etc. Feeding of mineral supplements, vitamins and trace minerals and high-energy foods is not known. The stake holders have also very little knowledge about the balance feed. No special care is taken for treatment of water.

- iv. **Human animal interaction:** The birds move around the house and in the village through out the day to scavenge their feed requirements. They are kept in doors either in separate houses constructed or in the same place along with owners during night and bad weathers. The poultry farmers are non-migratory in nature. The flock is under constant supervision since they move around the house. Mating is random mating. Predation from wild animals including domestic dog, cat, fox, hyena, crow, mongoose and snakes is a problem depending upon the location of the villages.
- v. **System type :** The birds of the breed are raised in low input backyard production system either as a component of mixed farming system or as mono culture scavenging production system.
- vi. **Resource availability:** Birds are provided water at home and they drink as and when they require. The birds also drink water outside if available. The supply of drinking water is not restricted. Water is hard sometimes but free from salinity.

10. Communities responsible for developing the breed along with their description i.e. farmers/nomads/isolated tribes.

The Scheduled Tribes account for 51.5% of the total population of present Phulbani district and 12.9% of Boudh district. The Scheduled Castes account for 18.21% of Phulbani district and 19.63% of the Boudh district. For these Scheduled Castes and Scheduled Tribes poultry is a source of livelihood and more than 90% of Scheduled Tribe and Scheduled Caste maintain poultry in their backyard. Poultry also is raised by other backyard communities in the undivided Phulbani district. Most of the families patronizing poultry are either small or marginal farmers or landless labourers but not nomads.

11. Conservation status

No conservation programme is under operation at present.



Phulbani Cock White Plumage



Phulbani hen



Phulbani Cock Black Plumage



Phulbani Hen Black Plumage

Duck Genetic Resources

The Duck belongs to the family Anatidae. The male duck is known as drake and the female as duck. The domesticated duck belongs to the genus *Anas* and species *platyrhynchos*. The drake is homogametic like male chicken and possesses 80 chromosomes and the female possesses 79 chromosomes. The immature young ones till they are well feathered are known as ducklings. Most of the domesticated breeds of ducks are the descendants of wild mallard. Ducks as a class are distinguished from other Anatidae by their smaller size, shorter necks, flatter bodies, shorter legs and broader bills.

Ducks are next in order in importance to domestic farm in the state in respect of popularity, number as well as in demand for egg and meat. According to 17th livestock census, 2003 the duck population of the state was 0.61 million and accounted for 3.5 per cent of the total poultry. Duck egg production in 2003-04 reached 232 lakhs compared to 9079 lakhs from domestic fowl. Mayurbhanja, Kalahandi, Keonjhar, Bolangir, Nawarangpur, Balasore, Malkangiri, Koraput, Jagatsinghpur and Baragarh are the major duck producing Districts of the State.

Kornel 1996 and 2004 and Mishra 2004 reported about the duck genetic resources of the State. According to them Muscovy ducks, an established breed developed in South-America is raised in the State since long time. Other duck genetic resources include different population of small ducks which vary in plumage colour and breed true. These include white, khaki, bluish black, black and white mixed. All these different colour ducks are known as Orissa ducks.

MOTI HANSA

1. General Information

Species	- Duck
Breed, Variety, Line or Strain	- Breed
Country	- India
Habitat	- Mostly found in plains of Koraput, Nawarangpur, Kalahandi and Nawapara districts. Also found in small numbers in costal districts of Orissa.
Name, local names and Synonyms	- Moti Hansa In some parts of the state they are also known as Naka Hansa. In Kalahandi and Nawapara districts it is known as Kudi Hansa. In costal belt it is also called China Hansa. They look similar to that of Muscovy ducks an established breed of duck developed in South America.
Classification of stock	- Indigenous mostly used for meat production.

2. Population data

Population size and structure

Moti Hansa are very popular because of their large body size, pleasing appearance and used for production of meat. Population size may exceed 15,000 in the above four districts alone. The family flock size varies considerably from as low as 5 to as high as 30. This includes adult drakes, ducks and ducklings.

Trends in number of females

Demand for duck egg and meat is increasing over the years like that of chicken egg and meat. Ducks are of special importance in Kalahandi and Nawapara districts since the girls in this region do not consume chicken egg and meat after attaining puberty whereas there is no such restriction for duck egg and meat. As a result the duck population is increasing from year to year. As per our estimate the female breeding stock of Moti Hansa may not be less than 3,000 in Koraput and Kalahandi districts alone.

Risk Status

As stated above this breed of duck is in great demand and population size is fairly large. Hence the breed is not in risk.

Origin of the population

Earlier report on Moti Hansa in Orissa is that of Kornel 1996 and 2004 and Mishra, 2004. According to their reports Moti Hansa which looks similar to that of Muscovy ducks originated in South America. How and when they were imported to our country and consequently to our State still remain debatable. It has been suggested by Kornel, (1999) that the past rulers of Orissa imported this breed of duck for fancy purposes and this led the foundation stone for Moti Hansa in Orissa.

Source of population data

Data presented in this manuscript for describing the breed characters of Moti Hansa was collected by some poultry scientists during the year 2004-2005. The financial grant for this purpose was provided by ISNRMPO, Bhubaneswar.

3. Description of the breed

Carriage

The birds of both the sexes are alert and active and present an attractive appearance. Head and neck extends forward when in motion.

Plumage colour and pattern

Plumage is placed close to the body, firm and lustrous. Based on plumage colour, three different varieties were identified by us. These include black, white and brown. Two more varieties, blue and buff are reported in the literature but was not encountered by us during our survey. Plumage colour for black, brown and white varieties have been presented below separately.

In black variety, the plumage colour of the head is lustrous black; back and tail feathers are lustrous black with greenish sheen; Wings, breast and thigh are black; shanks and feet light black in some and yellowish black in others. Neck plumage feathers are a mixture of white and black. Bill is dark horn and eyes are dark brown.

In white variety, the plumage colour of the bill is light horn, eyes are blue, caruncles are red, shank and feet are light yellow. The plumage colour of body in adult is white. In some of the birds dark coloured feathers were also seen on the top of the crown.

In brown variety, the plumage colour of the bill is light pink, eyes are brown, eyelids are pinkish or light red, shanks and toes are white or light yellow. The plumage colour of entire body including dorsal surface of the neck and tail feathers are brown. The plumage colour on the ventral side of the neck is white. Some white coloured feathers were also seen in the wings, but this varied in magnitude from one sample to another.

We also came across during our survey some Moti Hansa with mixed plumage colour involving white, brown, deep black and blue.

It has been reported that the black plumage in the wings change to white during second year. The wing feathers which are changed to white with advancement of age include under and upper wing covers and axillaries.

Head

Head is large in size and flat on the top. The head is larger in males than in females. Crest is present in this species of ducks irrespective of sex, but it is well developed in some than others. In the samples measured head width averaged 35 mm in males and 30 mm in females.

Face & Bill

Caruncles are found on both sides of face as well as above and below the eyes. In the samples measured all the caruncles were fairly large and uniform in size. Bill is short with a fleshy tubercle at its base. Bill is larger in males than in females. The length of the bill varied from 40 to 45 mm in males and 32 to 35 mm in females. The average width of the bill was 20 mm in males and 15 mm in females.

Eyes

Eyes are round, medium in size, bluish to black in colour and surrounded by pinkish red eyelids in black and white varieties. It was little faint in other varieties.

Earlobes

The earlobes are fairly large in size compared to chickens and take the colour of the variety.

Neck

Neck is neatly arched and carried forward. It is widest at the anterior portion of the back.

Body

Body is round, fairly deep, well proportioned and well fleshed. The back of the body is longer than its width. There is a slight depression on the back just in front of shoulder. The abdomen is fairly spacious and large, larger in females than in males for accommodating reproductive organs. Breast is broad and plump. Keel bone is longer in males than in females. Similarly, breast is wider in males than in females. In the samples measured the average breast angle was 80° in males and 70° in females. Keel length average over both the sexes was 16 cm. Body girth was about 50 cm in males and 40 cm in females.

Wings

Wings are strong, muscular and attached close to the body. Primary wing feathers extend beyond secondary feathers.

Skin

The colour of the skin is either white or yellow.

Leg and toes

Thighs and shanks are short but strong; comparatively longer in males than in females. Shanks are light yellow in black varieties, light black in white varieties and white/light yellow in brown varieties. The toes are fairly long and placed well apart from each other. Shank length exceeded more than 6 cm in males and 5 cm in females. The average width of the shank was 11 mm in males and 9.5 mm in females.

Tail

Tail is long and as wide as back. In males 2 of the tail feathers are curved upward and backward at its tip. This helps in identification of sex.

4. Uses, management conditions and performance**Main uses**

The Moti Hansa are primarily used for production of meat. Duck eggs are sold at higher price than chicken eggs because of their large size. Duck meat is also sold at a comparatively higher price because of its less availability.

Management conditions

The Moti Hansa are raised in the backyard in smallholder production system. They scavenge their feed requirements. Supplemental feeding varies from family to family. The ducks like to remain on floor than in water during scavenging if available. They scavenge around backyard. As stated above flock size is highly variable.

Moti Hansa is patronized by Scheduled Tribes as well as by other communities like Mali and farming community.

Shelter is provided only during night. Separate housing facilities are provided by some families who can afford it, otherwise the ducks occupy the same space as those of their owners. Bamboo baskets are usually used when flock size is small to house them during night. This helps from predation.

Age of maturity for each sex

Moti Hansa in small holder system mature in about 6 to 8 months of age. Males mature late than females. In order to obtain fertile eggs drakes should be older than ducks.

Standard weight (in kg.)

Adults male : 3.5 females, adult female : 2.5. Kornel in 1999 reported the body weight as high as 6 kg for males and about 3.5 to 4 kg for females.

Average number of eggs laid per year

The Moti Hansa produce a few number of eggs as those of Desi Fowl. In Koraput Moti Hansa lay about 50 eggs annually. As reported the average annual egg production is about 60 eggs in Khariar and about 80 eggs in Nawapara. Kornel (2004) reported one Moti Hansa laying 35 eggs per clutch, such three clutches in a year. She was from Malkangiri region.

Unlike other breeds of ducks the Moti Hansa show broodiness. They sit on their eggs and hatch ducklings. Broodiness and body size are negatively co-related with egg production and this limits their production potential. Egg size varies considerably from flock to flock. In the samples measured, egg weight varied from 50 to 65 grams. The incubation period for Moti Hansa is 35 days whereas other variety of ducks it is 28 days.

Special qualities

The Moti Hansa are well adapted to the local environment. High day temperature is not a problem when there is source of water in which they move around. It has been reported that these ducks are fairly resistant to diseases and worm infections.

5. Native tract of distribution

Geographical Information

Moti Hansa are found in most parts of the State. But real concentration is in the districts of Kalahandi, Nawaparaa, Koraput and Nawarangpur. The geographical information with respect to these districts are as follows :

Parameter	District			
	Kalahandi,	Nawapara	Koraput	Nawarangpur
1) Latitude	19°-15' -20° 50' N	20°-21° 10' N	17°-19° 15' N	17°-19° 15' N
2) Longitude	82°15' -83°50' E	82°15' -82°45' E	82° -83° 30' E	82° -83° 30' E
3) Approx. area (km ²)	8,000	3,000	9,000	5,000
4) Name of the places	Bhawanipatna sub-division.	Nuapada block and Khariar Sub-division.	Koraput, Jeypore and Kundra blocks	Nawarangpur and Umakot blocks

Native Environment

Parameter	District			
	Kalahandi	Nawapara	Koraput	Nawarangpur
a) Average temperature	26.8° C	26.8° C	22.3° C	22.3° C
b) Minimum Temperature, month	12.0° C Jan.	12.0° C Jan.	05.8° C Jan.	05.8° C Jan.
c) Maximum Temperature, month	41°, May	41°, May	37.6°, May	37.6°, May
d) Average humidity	0-20	0-20	NA	NA
e) Minimum humidity, month	NA	NA	NA	NA
f) Maximum humidity, Month	NA	NA	NA	NA
g) Annual rainfall	1284 mm	1026 mm	1376 mm	1436 mm
h) Peak rain, month	363 mm Aug.	298 mm Aug.	362 mm Aug.	440 mm, July.
i) Elevation of land above sea level	259.0 mtrs.	259.0 mtrs.	912.2 mtrs.	912.2 mtrs
j) Soil quality	Red soil, Black soil, Mixed	Red soil, Black soil, mixed	Red Soil, Black soil, Mixed	Red Soil, Black soil, mixed

Terrain features

- i) Surface / Sub-straight Stony or Rocky / Sandy / Swampy / Snow or Ice / hard surface / highly variable
 Kalahandi Highly variable. But not snow or ice.
 Nawapara Highly variable. But not snow or ice.
 Koraput Highly variable. But not snow or ice.
 Nawarangpur Highly variable. But not snow or ice.
- ii) Average slope Flat/hilly/steep/ very steep/highly variable
 Kalahandi Highly variable.
 Nawapara Highly variable.
 Koraput Highly variable.
 Nawarangpur Highly variable.

6. Feeding

Parameter	District		
	Kalahandi	Nawaapara	Koraput
Scavenging	Yes	Yes	Yes
Scavenging with supplemental feeding	Yes	Yes	Yes
Free ranging	Yes	Yes	Yes
Free ranging with supplemental feeding	Yes	Yes	Yes
Full feeding with local feeds	Yes	Yes	Yes
Full feeding with manufactured concentrates & local feeds			
Full feeding with manufactured concentrates			



Moti Hansa grey



Moti Hansa black



Moti Hansa white



Moti Hansa black & white

7. Housing

Parameter	District		
	Kalahandi	Nawaapara	Koraput
None			
Only at night	Yes	Yes	Yes
Confinement housing, litter floor			
Confinement housing, slat or wire floor			
Confinement housing, cage/battery			
Type of housing Pucca/Kutchu/others	Kutchu & Bamboo baskets	Kutchu & Bamboo baskets	Kutchu & Bamboo baskets

8. Type of Management

Parameter	District		
	Kalahandi	Nawaapara	Koraput
Backyard scavenging	Yes	Yes	Yes
Semi scavenging	Yes	Yes	Yes
Semi intensive			
Intensive			

9. Production environment descriptors

The Moti Hansa are raised by small holders in low input-low output production system as a component of mixed farming system involving crop and livestock. They are well adopted to their habitat and fairly resistant to most of the common duck diseases including internal worm infections. The common diseases encountered are duck plague and duck hepatitis. They meet their feed requirements by scavenging. Additional feed is provided only by those families who can afford it. Like chickens locally grown cereals, cereal by-products and kitchen wastes are provided as feed. Water is provided ad libitum. No special care is taken for purification of water. Predation is not uncommon for the villages located near to the forest areas. No climate modifiers are used. Vaccination against diseases is not practiced even today. No anthelmintic are used to protect them from internal parasitic infection. Stake holders are ignorant about balance feed. Feeding of mineral supplement, vitamin and trace minerals is not known. Shelter is provided only during night and in bad weathers. The flock owners are non-migratory in nature. Predation from wild animals including domestic ducks, cat, mongoose and snakes is problem depending upon location of the village. The ducks are provided water in the house for drinking. They also drink water outside if available.

10. Community responsible for developing the breed along with their description i.e. farmers/ nomads/ isolated tribes.

As stated above the breed is an established breed and was developed in South America. It was probably imported to the state centuries back by the past rulers of Kalinga. Because of its meat qualities and ability to survive in low input production system it has been adapted in the state mostly by Scheduled Tribes and other backward classes who are not nomads. Like chickens ducks have social and cultural value to these stake holders. They also provide additional income besides food in form of egg and meat.

10. Conservation status

No conservation programme is in progress.

ORISSA DUCKS

1. General Information

Species	- Duck
Breed, Variety, Line or Strain	- Breed
Country	- India
Habitat	- Mostly found in Koraput, Malkangiri Nawarangpur, Kalahandi, Nawapara, Mayurbhanja and Jagatsinghpur districts, although can be seen all most in all parts of Orissa in very small numbers. Earlier reports of white duck known as Koraput fight duck, Khaki duck, black and white duck and bluish black duck are those of Kornel 2004 and Mishra 2004.
Name, local name and synonyms	- Orissa Duck Known in different regions according name of the place like Koraput white duck, Koraput Khaki duck etc.
Classification of stock	- Indigenous, dual purpose breeds.

2. Population data

Population size and structure

Population size is fairly large and estimated to be not less than 200 thousands. They are mostly raised in small holder production system. Family flock size vary from as low as 5-6 to as high as 30. There are also few small organized farms mostly encounter in coastal areas like Pipili, Nimapara and Jagatsinghpur Blocks. The flock size in organized farms exceed more than 100. This includes drakes, ducks and ducklings.

Trends in number of females

The number of breeding females is increasing over years due to increase in demand of duck egg and meat. Duck egg and meat are sold at a higher price compared to chicken. The estimated number of breeding ducks is 20,000.

Risk Status

Not in risk.

Origin of Population

Not known. Raised by stakeholders since their known member.

Source

Data utilized in this report was collected through a limited survey carried out during the year 2004-05 as per the recommendation of 'Biodiversity of Livestock in Orissa and its Role' workshop. The financial grant for this purpose was provided by ISNRMPO, Bhubaneswar.

3. Description of the Breed

Carriage

Because of their small body size they are classed as light variety of ducks. They are used both for production of egg and meat. Very sensitive to environment and fly away to slight disturbance. Back is parallel to the ground. They alert and active and present a pleasing appearance.

Plumage Colour

Plumage colour varies according to variety. Plumage colour is white like Pekin ducks in Koraput white duck and white ducks found in other areas of the State. In Khaki duck the plumage colour is similar to Khaki Cambel except that their breast and abdomen plumage is of dark mung colour. Head, neck and wing bars are bronze with grayish shade in drakes and lustrous like peacock copper coloured plumage. Plumage is black with bluish sheen in bluish black type. In this variety the Head, Neck and wing bars are light black with bluish sheen (Mishra 2004). In black white mixed colour duck 75 per cent of the plumage is dull black and least shining.

Head

Mostly round, slender and proportionate to the body.

Bill

Varies according to variety. It is yellow in colour in white variety and varies from light grey to dark grey in other varieties. In General males have longer bills than the females. In the samples major the width of the bill varied from 22 mm to 30 mm.

Eyes

Eyes are round, somewhat bluish in colour in white duck and black or brownish in colour in other varieties.

Ear lobes

Ear lobes are small and are of the same colour as that of body plumage.

Neck

Name is small in size, widest at the base and gradually tapers down towards the head. A distinct white lone separate the neck from rest of the body in koraput Khaki ducks.

Body

Body is small and round. Back is longer than its width. Back is flat uniformly in all coloured varieties and runs parallel to the ground abdomen slender and makes an acute angle to the ground. Abdomen is full, round, capacious and bigger in ducks compared to drakes due to female reproductive Organs in the abdomen. Keel is small. Males have wider breast than females. In the samples measured the breast angle varied from 60 to 65 degrees in male and 55 to 62 degrees in females.

Wings

Medium in size, placed close to the body and the proportionately bigger in size than the body. Plumage colour of the wings usually is of same colour as that of the body. Wings colours are found to be black in black variety and carried in the same level as that of back. Wings bones are strong.

Skin Colour

Varies from white to yellow.

Tail

Tail is usually small in size. Mostly carried at the same level as that of the back. Tail feathers are of the same colour as that of the body. Two tail feathers are curved upward in drake but not in duck. This help in identification of sex.

Shanks and toes

Shanks are usually small, comparatively longer in males than females. Shanks are smaller than chickens in length but wider and bony. In the samples measured Shank length varied from 5 to 6 cm. Shank colour varied with age and becomes dark orange/yellow in adults. Shanks are free from feathers in the samples measured. Toe nails are well developed in adults.

Egg shell Colour

All the eggs irrespective of variety is white.

4. Uses, management conditions and performance**Main Uses**

It is a dual purpose breed and used both for production of egg and meat. Duck eggs are large in size than chicken eggs, average egg weight varies from 55 to 65 gm.

Management conditions

Ducks do not flourish in confinement and require more space than chicken. Ducks prefer wet and muddy conditions but can thrive in dry condition also. Free access to pond, tanks, river banks and lakes reduce the overhead costs of rearing ducks. Ducks are voracious eaters and foragers. In backyard system of rearing they thrive on snails, fingerlings, earthworms, insects and vegetation when reared in ponds and lakes which reduce the feed cost. Ducks raised in smallholder system are raised zero/no input system. Birds are provided shelter only during the night. Bamboo baskets of different type and size are used to house them when number is small. When flock size is large they are housed in separate houses which may be made of cement concrete or Kuchha houses made of locally available materials. Birds of all ages meet their feed requirement by scavenging in water bodies or in open area available in the villages. Some farmers also provide feed at home. Ducks have preference for set mash. Birds usually drink water during scavenging in village ponds failing which water is provided at home.

Age of maturity for each sex

Ducks start laying around six month of age. Drakes mature late. Mating is random. The incubation period is 28 days for Orissa ducks compared to 35 days for Muscovy ducks. For proper hatching high humidity is essential for this purpose water is sprinkled over the hatching eggs. Duck eggs have lower hatchability than chicken eggs. For efficient hatch duck eggs need to be cool during incubation. Ducks do not hatch their own eggs. Broody hens are used for hatching purpose in village conditions.

Standard Weight (in Kg.) for adults

The body weight at maturity in ducks varies from 1.3 to 1.5 Kg. Adult body weight varies from 1.5 to 2.2 Kg. in ducks and 2 to 3 Kg. in drakes. Males are heavier than females.

Average number of eggs laid per year

Annual egg production varies from 100 to 130 eggs. Egg production declines from first year to second year.

Special qualities

Orissa ducks are well adapted to their habitat. They are also combatively resistant to most of the common duck diseases. They posses the ability to survive produce and reproduce in low input system of management and in stressful condition.

5. Native tract of distribution

Geographical information

As stated above ducks are found in most of the districts of Orissa although concentration is more in some districts than other. The information will expect to Orissa State are as follows:

Geographical Parameters	Orissa state
1)Latitude	17 ⁰ 48'-22 ⁰ 34' N
2)Longitude	81 ⁰ 24'-87 ⁰ 29' E
3)Approx. area (km ²)	155707
4)Name of the places	Districts of Koraput, Malkanagiri, Nawarangpur, Kalahandi, Nawapara, Puri, Jagatsinghpur mostly.

Native Environment

Environmental Parameters	Orissa state
a)Average temperature	Varies from district to district usually from 30 ⁰ -35 ⁰ C
b)Minimum temperature, month	Varies from district to district. 2 ⁰ -15 ⁰ C, January
c) Maximum temperature, month	38 ⁰ -47 ⁰ C, May
d) Average humidity	70%
e) Minimum humidity, month	60% March
f) Maximum humidity, month	Above 90% July
g)Annual rainfall	Varies from district to district. Averaged over districts exceed 1200 mm
h)Peak rain, month	Exceed 400 mm, August
i)Elevation of land above sea level	Varies among districts
j)Soil quality	Varies greatly among district

Terrain features

- i)Surface / Sub-straight Stony or Rocky / Sandy / Swampy / Snow or Ice / hard surface / highly variable
Highly variable but no snow or ice.
- ii) Average slope Flat/Hilly/steep/very steep/highly variable
Highly variable having flat, hilly steep areas.

6. Feeding

Feeding systems	Feeding system actually practiced
Scavenging	Yes
Scavenging with supplemental feeding	When scavenging area is not sufficient
Free ranging	Yes
Free ranging with supplemental feeding	Yes
Full feeding with local feeds	Yes
Full feeding with manufactured concentrates & local feeds	
Full feeding with manufactured concentrates	

7. Housing

Duration of Shelter and type of housing	Actually practiced
None	
Only at night	Yes
Confinement housing, litter floor	
Confinement housing, slat or wire floor	
Confinement housing, cage/battery	
Type of housing Pucca/Kutcha/others	i) Mostly bamboo baskets are used when flock size is small. ii) Kutcha houses made of locally available materials iii) Pucca houses are extremely rare

8. Type of Management

Management systems	Actually Practiced
Backward scavenging	Yes
Semi scavenging	Yes
Semi intensive	
Intensive	

9. Production environment descriptors

- i) **Climate modifiers** : Not practiced.
- ii) **Disease and parasite control** : Duck plague and duck hepatitis are the common diseases. Vaccination is rarely practiced. Anthelmintic are not given against parasites. The Orissa ducks appear to be resistant to most of the common duck diseases and parasites.
- iii) **Feed and Water modifier** : Not practiced.
- iv) **Human animal interaction** : The ducks move around the village and water bodies throughout the day and scavenge their feed requirements. Predation do occur sometimes only during night.
- v) **System types** : The birds of the breed are raised in low input backyard production system either as a component of mixed farming system or as mono culture scavenging production system.
- vi) **Resource availability** : The birds usually drink water outside if available. Otherwise they are provided water when they come back in the evening. The supply of drinking water is not restricted.

10. Community responsible for developing the breed along with their description i.e. farmers/nomads/isolated tribes.

The breed has been developed by different ethnic tribes.

11. Conservation Status

No conservation programme is under progress.



Orissa White Duck



Orissa Khaki Duck



Orissa Khaki



Orissa Blue and White Duck

RAJ HANSA

1. General Information

Species	- Geese
Breed, Variety, Line or Strain	- Breed
Country	- India
Habitat	- Mostly found in Koraput, Nawarangpur, Kalahandi and Nawapara districts, although can be seen all most in all parts of Orissa in very small numbers. Earlier report of Raj Hansa, a domestic avian genetic resource of the State of Orissa is that of Das, 1999 and 2004 and Mishra, 2004.
Name, local name and synonyms	- Raj Hansa.
Classification of stock	- Indigenous

2. Population data

Population size and structure

Raj Hansa and other breeds of geese are mostly used for their meat and fat. Geese liver is a delicacy in some parts of the world. In Koraput district geese is patronized by Bhatra and Bhumia tribes for its meat and used for the same purpose by Kondh and Sabar communities of Kalahandi and Nawapara districts. Geese is also used in this part of the country for security purpose since they make very strong noise when they see a newcomer or any other species like jackals, dogs, snakes etc. They also help in deweeding. Raj Hansa and other breeds of geese are known to be closest graziers.

There is no organized farm for Raj Hansa except at Kabisuryanagar, Ganjam. They are usually raised in smallholder production system as part of the integrated farming system involving crop and livestock. Population size is small and by our estimate it may not exceed 10,000 in the State of Orissa.

In our survey of Mayurbhanja, Puri, Koraput, Kalahandi, Nawapara, Nawarangpur and Ganjam districts, we came across Raj Hansa mostly in pairs one male and one female in several places and maximum flock size was 7 which included one adult male and one adult female and 5 young stock. In Kabisuryanagar there were more than 50 in one flock.

Trends in number of females

As stated above the population size is small. Demand for Raj Hansa meat is only by a few tribal communities. They respect Raj Hansa and believe it brings peace. Because of this demand for Raj Hansa is not great. This limits the number of individuals required consequently number of females used for reproduction. As per our estimate number of breeding females all over the State may not exceed two thousands.

Risk Status

The population size is small, so also size of the breeding population. However, the population is not in risk at present.

Origin of the population

The tribal communities patronizing the Raj Hansa could not provide any information about the origin of the stock. Based on the fragmented information obtained from various sources it may be concluded that Raj Hansa has been there in the State since a long time. Probably these birds were brought to the country/state by wealthy traders who had trade connections with foreign countries and/or by ex- rulers for fancy purposes.

Source of population data

Data presented in this manuscript for describing the breed characteristics of Raj Hansa were collected during the year 2004-2005. The financial grant for survey of poultry genetic resources was provided by ISNRMPO, Bhubaneswar.

3. Description of the breed

Carriage

The birds of both the sexes are active and alert with well proportioned body and present a pleasing appearance. Like ducks neck and head extends forward while in motion, only when walking. During swimming in the water neck and head mostly remains erect and upward making a 90° angle with the body.

Plumage colour and pattern

The plumage colour of Raj Hansa breed which we came across at different places during our survey was solid white all through body including wings, tails and heads. The colour of the bill, shank and toes was yellow and eyes light blue. However some varieties are available as reported by Das, 1999 in which the wing colours are light grey. Most of the geese available at Kabisuryanagar have dark grey plumage.

Head

Head is small compared to body size, moderately deep, slightly convex on the top with a knob or protuberance just near the base of the beak.

Face & Bill

Face is clean, smooth and white in colour in white variety and grey in colour in grey variety. Bill is wider at the base and tapers sharply towards the tip. Bill is yellow in colour.

Eyes

Eyes are small, round, small in size and light blue in colour.

Neck

Neck is long and round. It is somewhat thicker and longer in males compared to females.

Body

Body is long, round, flat on the ventral side and widest at the shoulders. Abdomen is capacious and somewhat larger in females compared to males to accommodate female reproductive organs. Breast is fairly wide and projected forward. Keel bone is well developed. Males have wider breast and longer keels than females.

Wings

Wings are fairly large, strong and placed close to the body.

Skin

The colour of the skin is white.

Leg and toes

Legs are strong, placed wide apart from each other. Shanks and toes are yellow or pink in colour. Toes are placed well apart from each other.

Tail

Tail is small, extends backward and remains in the same level as that of back of the body.

Egg Shell colour

Egg shell colour is white.

4. Uses, management conditions and performance**Main uses**

The main uses of the breed include the production of egg and meat and fat. Geese liver is considered a delicacy. Geese are used as fancy birds, for de-weeding, for sacrifice during religious ceremonies.

Management conditions

The Raj Hansa breeds of geese available in the State are maintained in smallholder production system under scavenging system of management. They possess the ability to catch fish and snails from the pond by deeping their head into water. Usually no supplemental feeding is provided to geese in scavenging system of management since they are capable of taking care of themselves. Adult geese need no shelter. They can take care of themselves remaining outside. However, young Raj Hansa need shelter so also the sick birds and broody Raj Hansa. Lakes, ponds and rivers are preferred habitat for the Raj Hansa. Females of the species show broodiness and if allowed they hatch their own eggs. Raj Hansa eggs also can be hatched by use of broody hens. The incubation period is about 31 days. For obtaining good hatchability there is a need to sprinkle water on the eggs daily. Similarly, it may be necessary to turn the eggs daily if not done by mother.

Age of maturity for each sex

Males mature earlier than females. The first egg is laid at about 18-24 months of age.

Standard weight (in kg.)

Male -3.5 kgs., females - 3.0 kgs.

Average number of eggs laid per year

Raj Hansa of Orissa lay 15-20 eggs annually. Eggs are large in size and vary from 90 to 100 gm in weight. The hatchability is poor for the first few eggs. Therefore, eggs are rarely saved before the goose attains 2 years of age for hatching purpose. The longevity varies from 10 to 15 years irrespective of sex. The goose (female Raj Hansa) can reproduce satisfactorily up to 10 years of age. The gander (male Raj Hansa) however loses its fertilizing ability very quickly hence not allowed for reproduction after 5 years of age.

Bonding among the pairs is strong and this remains for a long duration. This sort of preferential mating requires more number of males for production of fertile eggs. The goose remains monogamous throughout egg production, incubation and rearing of chicks. The gander takes care of the young ones in absence of goose.

Special qualities

They are resistant to diseases, well adapted to the environment and can live exclusively on vegetation and require little care.

5. Native tract of distribution

Geographical Information

Most of the Raj Hansa available in the State are found in undivided district of Kalahandi, Koraput and Ganjam. The geographical information with respect to these three districts are as follows.

Parameter	District		
	Kalahandi,	Koraput	Ganjam
1) Latitude	19°-15' -21° 10' N	18°-21° 10' N	18°-20° N
2) Longitude	82°15'-83°50' E	82°15'-82°44' E	84° -85° 15' E
3) Approx. area (km ²)	8,000	3,000	11,000
4) Name of the places	Nawapara and Bhawanipatna.	Koraput block	Chikiti

Native Environment

Parameter	District		
	Kalahandi	Koraput	Ganjam
a) Average temperature	26.8° C	26.8° C	26.7° C
b) Minimum Temperature, month	12.0° C Jan.	12.0° C Jan.	17.1° C Jan.
c) Maximum Temperature, month	41°, May	41°, May	32.6°, May
d) Average humidity	0-20%	20-60%	60-80%
e) Minimum humidity, month	NA	NA	NA
f) Maximum humidity, Month	NA	NA	86 %, August
g) Annual rainfall	1284 mm	1376 mm	1213 mm
h) Peak rain, month	363 mm Aug.	362 mm Aug.	232 mm Aug
i) Elevation of land above sea level	259.0 mtrs.	259.0 mtrs.	16.0 mtrs.
j) Soil quality	Red soil, Black soil.	Red Soil, Black soil	Red soil, and Laterite siuk abd vkacj siuk

Terrain features

- | | |
|----------------------------------|---|
| i) <u>Surface / Sub-straight</u> | <u>Stony or Rocky / Sandy / Swampy / Snow or Ice / hard surface / highly variable</u> |
| Kalahandi | High variable but no snow or ice. |
| Koraput | High variable but no snow or ice. |
| Ganjam | Mostly plain. |
| ii) <u>Average slop</u> | <u>Flat/hilly/steep/ very steep/highly variable</u> |
| Kalahandi | Highly variable. |
| Koraput | Highly variable. |
| Ganjam | Mostly flat. |

6. Feeding

Feeding systems	Feeding system actually practiced
Scavenging	Yes
Scavenging with supplemental feeding	When scavenging area is not sufficient
Free ranging	Yes
Free ranging with supplemental feeding	Yes
Full feeding with local feeds	Yes
Full feeding with manufactured concentrates & local feeds	
Full feeding with manufactured concentrates	

7. Housing

Duration of Shelter and type of housing	Actually practiced
None	
Only at night	Yes
Confinement housing, litter floor	
Confinement housing, slat or wire floor	
Confinement housing, cage/battery	
Type of housing Pucca/Kutchra/others	i) Mostly bamboo baskets are used when flock size is small. ii) Kutchra houses made of locally available materials iii) Pucca houses are extremely rare

8. Type of Management

Management systems	Actually Practiced
Backward scavenging	Yes
Semi scavenging	Yes
Semi intensive	
Intensive	

9. Production environment descriptors

The geese flock available at Kabisuryanagar is maintained in semi scavenging system of management. In all other places these birds are maintained in free range/scavenging systems of management. Additional feed is provided only to chicks, broody and sick birds. Ran Hansa breed of geese are resistant to most of the diseases and parasite infection and well adapted to the climatic condition prevailing in the State. They need very rarely veterinary aid. They drink water from village pond or any other source available nearby. When such facilities are not available water is provided at home. Predation from wild animals is occasionally encountered. They usually live outside and no shelter is provided.

10. Communities responsible for developing the breed along with their description i.e. farmers/nomads/isolated tribes.

As stated above, the Raj Hansa Breed of geese is mostly patronized by Bhatra and Bhumia tribes of Koraput and Kondh and Sabar communities of Kalahandi district. These tribes and communities are farming communities and non-nomadic in nature.

11. Conservation status

No conservation programme exists so far.



Geese (brown wing)



Raj Hansa



Raj Hansa in water

INDIGENOUS KNOWLEDGE



1. Elongated eggs with pointed ends hatch to male chicks whereas eggs with rounded ends hatch to female chicks. This belief is prevalent almost in all districts of Orissa.

2. They separate the spoiled eggs from good eggs by emerging them in a bowl of water. It is believed that the spoiled eggs are those which float whereas good eggs sink into the water. This practice is also followed in the rural areas.



3. In Nawapara district of Orissa the girls after attaining puberty are not allowed to consume chicken egg or meat whereas there is no such restriction for consumption of duck egg and meat. Duck egg and meat are permitted.

4. In Koraput district certain communities/ethnic tribes over the year of personal experience have developed an indigenous method of treating birds against Marudi disease which is in English known as RD. According to them 100 gram of green haldi, 25 gram of ripened chilli, 15 gram of garlic and 50 gram of root of Apamaranga are mixed together after grinding and mixed with 2 kg of rice kani. One gram of this mixture given to each bird for a period of five days. It has been said that this cures the marudi disease, also prevents it in those birds who were not affected.



5. 100 gram of roots of Bhairamal is cut into tiny pieces and boiled in one litre water. The boiling process continues in mild heat till the water is reduced to half. This aliquot is separated from the roots. This aliquot is applied to body of birds to prevent tick and lice infestation.



Apamaranga plant

6. Most of the tribes believe that most of the diseases either in man or animals or birds are caused only when the supernatural power is unhappy. Therefore, in all calamities including diseases of poultry sacrifice of animals and chickens is a routine practice and even continues in recent years.

7. Koya tribe dub the single comb by indigenous surgery in fighting cocks.

8. Caponization of cockerels is a practice by Kondh tribes.

9. Muscovy ducks are mated to local ducks to produce heavy but infertile progeny by Kondh tribe and some other communities in Western Orissa. They are called 'Bodhia' or mule ducks and yield more meat.



Bhairamal plant

10. In order to reduce broodiness and bring the hen back to lay eggs, broody hens are repeatedly dipped in cold water and in some cases, the farmers insert one of her wing feather into hen's nostril that remains intact for one to two days.

PEOPLE OF ORISSA WHO HAVE DEVELOPED THE INDIGENOUS POULTRY BREEDS

PAROJA

Poroja, Paraja or Parja is the Oriya version of the Sanskrit word Praja meaning the common people. The name Paraja, according to Thurston and Rangachari (1995), is derived from the Oriya words Po and Raja (son and king). Thus Paraja stands for sons of kings. Here we



Bodo Poroja women

have taken the Jhodia Paraja / Sano Paraja and Bodo Paraja tribe only.

They live in the undivided districts of Koraput and Kalahandi of Orissa State. They come under tribal dominion with many features-social, cultural and economic as well as the belief system; being common with the neighbouring major tribes like the Gond, the Gadaba, the Kondh as well as the primitive tribes such as the Bonda and the Didayi. The Bodo Paroja abhors beef and buffalo meat and follow the Hindu customs like observance of purificatory rituals when a cattle dies in their households while the Jhodia Paroja relish beef and meat from dead animals also.

The Jhodia Parajas, also called the Desia Paroja are considered as loyal, more quiet and civilized.

The Paroja village has a well organized socio-political system. The traditional village council has the Jani as the saurdotal head. The secular head is known as Muduli who is assisted by the Challan. These three important persons along with a few selected village elders regulate the socio-cultural and even economic life of the village. The magico-religious functionaries of the village are called Disari, Gunia, Bhattanayak and Gurumai. Their presence is required in all village and family functions.



Jhodia Poroja children

Parajas worship their own pantheon along with the gods and goddesses belonging to the Hindu pantheon. Danteswari, Landi, Jhakar Debta, Mahapuru, Nisan Debta etc. are worshipped by them in different occasions. They even worship the ancestral spirits to whom they call Duma Debta. They observe Asadhi Parab, Nuakhai, Diali Parab, Pus parab, Chait Parab and Baulani Jatra ceremony.

Agriculture-wet, dry and shifting type, is the epicenter of the Paroja economy. Quite a number of crops ranging from cereals, oil seeds, small millets, vegetables to fruits, cotton and sugarcane are grown by the Paroja.

They are fond of livestock and poultry. They rear cows, bullocks, buffaloes, goats, sheep, pigs, poultry and ducks.

Bodo Parajas are good farmers, but land fertility and environment degradation is their problem. The Koraput sheep breed with twins and early maturity has been developed by Bodo Paroja, Bhatra and Bhumia tribes of Koraput district.

K O Y A

Koyas live in Northern catchments area of the river Godavari spreading across the boundaries of the neighbouring districts of the State of Andhra Pradesh, Chhatisgarh and Orissa. In the latter state, they are mostly concentrated in Malkangiri, Korkunda, Kalimela and Padia blocks of Malkangiri district.

The Koya habitat, in the State of Orissa, stretches across the uplands and hills covered with valuable timber trees and the plain fertile land, with minerals natural resources and the not so fertile lands carpeted with unidentified green with a height of 10' (Mohapatra-1992-93:1) as well as canopied with bamboo forests. The Koya country is therefore has the capacity of sustaining two basic economic activities namely agriculture and pastoralism.



Koyaman (Photo: S. B. Saxena)

Koya villages consist of several small hamlets called 'Guda'. Each Guda in fact is a small village having its own traditional village council and 'End Beyal' - the dancing ground. Their houses are the indicative of the owners economic status. Rice is their staple cereal.



Koya house with wooden poultry night shelter

Apart from it they like pulses, vegetables, and green leaves, fish, meat and egg as side dishes. They are tobacco users and have special likings for liquor-particularly the sago palm juice, rice and ragi beer and liquor distilled from rice, mahua flower and pulp of mango and jackfruit. Koyas are beef eaters.

The most important religious ceremonies (Pandu) observed are Bijja Pandu, Kodta Pandu, Bumud Pandu and Idu Pandu. Influenced by the neighbouring Hindu communities they also observe festival like Ratha Jatra.

The Koyas subsist on agriculture- both wet and dry type, as well as on shifting cultivation.

They keep different species of livestock and poultry. Cattle are kept to smoothen agricultural activities and for meat. The vast stretches of pasture land do not enthuse the Koya to go for keeping buffaloes through the neighbouring Madias like the fancy of keeping he and she buffaloes. Their animals are small in size. It is observed that the number and variety of livestock enhances the economic status of the owners. They do not milk cows except in Motu region.

The pasture land of the Koya habitat has no more potentiality of sustaining a large number of bovine animals. The waterlogged grassy fields can no longer accommodate thousands of semiaquatic buffaloes as in the past. The sheep and goats can survive on green grass and fodder found abundantly on fields that come under either Common Property Rights (CPR) or under the control of the Government. Pigs are reared for meat and for sacrifice before the deities supposed to live in hills, brooks and forests. Poultry birds are kept under scavenging condition and the eggs are seldom considered as the food of high nutritional value. The tribe has lived around a cattle centered economy. The goat is well bred, and is one of the heavy weight, fast growing and early maturing type. They are known as Malkangiri goat breed; the Matia grow a good meat type Malkangiri goat breed too. Koyas are fond of cock fighting and have evolved the famous Vezaguda poultry breed. It is shared with Matia, Bhumia, Bhatra and Dom Cast people as principal breeders.

SANTAL

Risley (1891: 224-234) describes them as a large Dravidian tribe, classified on linguistic grounds as Kolorian and mostly found in western part of West Bengal, Northern Orissa, Bhagalpur and Santal Praganas.

In Orissa, Santals are found in large numbers in the districts of Mayurbhanj, Keonjhar and Balasore. The Santals predominate other tribes in the blocks of Rairangpur, Jeshipur and Bahalda. Quest for livelihood under the non-farm sector made them to fan out into the neighbouring districts of Angul, Dhenkanal, Sundergarh, Sambalpur, Jajpur and even Cuttack. The Santals speak a language known as Santali belonging to the Munda group of languages falling under the category of the Austro-Asiatic sub family of the Austric family of languages. However, they know Oriya very well.



Tribal market - selling ducks

Rice is the staple food. It is occasionally substituted by minor millets, maize and wheat. Vegetables, pulses, meat and dry fish are taken as side dish. Handia is their traditional drink. It is also offered to family as well as village deities on special occasions.

The Santal life style is associated with many fairs and festivals. Some of the important festivals are Erok-seim, Harihar-seim, Iri-Guddi-seim, Janthar, Saharas, Magha-sim and Baha (ibid).

Traditionally the Santals are the agriculturists who practice dry cultivation on rain fed uplands and wet cultivation in fertile wetlands. They raise a variety of crops ranging from paddy, maize, pulses, oil seeds and vegetables to sabai grass and bamboo.



A wide variety of animals and birds are domesticated by the Santals. They keep traction animals like bullock, buffalo and even cows to ease their agricultural operation. The so called 'meat animals' - goats and sheep are reared with great care. They keep pigs to subsist on kitchen and farmyard waste. Invariably all Santal families keep chickens, pigeons and ducks while a few rich among them take the pride of keeping Raj Hansa. Dogs are tamed to accompany them in hunting expeditions. Being avid sport lovers and merrymakers they rear bucks and cocks and keep them fighting fit through rigorous training. The Hansli, Gujuri and Dumasil are the poultry breed reared for meat and egg. The Hanslis are well fed (with paddy and coarse cereals) and kept indoors and are expensive to rear. These two varieties lay small number of eggs while the Dumasils are used in magic- religious function. The cocks and fighting cocks (Hansli variety) are tended with great care.

Ready for market : A Santal Women

BHUMIA

The Bhumia is an agrarian community, which derived its name from the Sanskrit word Bhumi meaning the land. Bhumia are inhabiting in Jeypore and Chhattisgarh states.

In Orissa most of them are found in the district of Nabarangpur and in the blocks of Kundra and Boipariguda belonging to the Koraput district.

They speak a corrupt form of Oriya which is also known as Basturia.

In Orissa there exist two subgroups of Bhumia namely Bada Bhumia and Sana Bhumia.

The Bhumias are divided into a number of exogamous septs called Bansa like Nag, Bagh and Surya (Senapati & Mohanty - 1971:118).



Bhumia lady selling poultry in weekly market



Proud Bhumia family with prized cock

Each Bhumia village or hamlet has a headman called Naik. The post is hereditary. Usually the richest man of the village is conferred with the title Naik. Bhatnaik is supposed to provide leadership to the people of 10 to 12 villages. He settles the village feuds and orders the Naik to settle the disputes of the village under his leadership. Bhatnaik is authorized to convene the meeting of the Naiks and to hold discussions with his counterparts of other groups of villages.

Their village deity is Budhi Thakurani. A goat is sacrificed to her during the month of Chaitra. Other deities of lower dominance are Nisani, Mauli and Ran Devata. They observe the Balijatra - the festival of fertility rites, with great pomp and ceremony.

The economy of the Bhumia veers around agriculture. They supplement their family income with sale proceeds of the domestic animals and birds. Every Bhumia family keeps goat, sheep, cow, bullock, buffalo and poultry birds to meet the contingent cash needs and ritualistic needs to appease the village deities and unsatiated or ired spirits.

Bhumias rarely milk the cow. The bovine animals are kept for smothering the agrarian practices like ploughing and manuring the soil. Goats and sheep succumb to 'Mae' - the smallpox (F&MD) and the Khura-infection of the hoof. They treat the infected animals and birds indigenously and at times go for appeasement of the village deity with no positive results. They have taken to keep domestic animals and birds as a way of life.

The Bhumia tribes men have developed the Vezaguda poultry breed, Koraput ducks and Koraput sheep breed with other neighboring tribes.

B H U Y A N

Risley (1891:11) submits that Bhuyan is also spelt as Bhuiya, Bhuinya, Bhuiyan and Bhumiya.

Bhuyan, the archaic forest people are found in the Bansapal block of Keonjhar district and in the sub-division of Bonai and Pallahara belonging to the districts of Sundergarh and Dhenkanal respectively. The name Bhuyan might have its origin from the Sanskrit word Bhumi meaning land or earth. Nayak, Bhuyan and Naik are the common surnames used by them.

Bhuyans are worshippers of the sun. (Dalton - 1872 : 139). The Dharam Devta (sun god) and Basukimata (Earth Goddess) are the two prime benevolent Supreme Beings. Both are worshipped both communally and individually.

The village Panchayat of the Bhuyans is known as Darbar. The village headman called Pradhan presides over the Darbar. Pirha is a confederation of a group of villages. At this level there exist Pirha Panchayat which has a secular headman called Sardar. The Darbar decides disputes of village level, distribution of land for shifting cultivation and the date to observe the religious ceremonies. The Pirh Panchayat settles the intervillage disputes and subjects relating to traditional customs and practices by the social offenders.

The Hill Bhuyans have taken up the slash and burn cultivation. Almost all families keep domestic animals to further their agricultural and ritual needs. Apart from the traction animals (bullocks & buffaloes) they keep cows and she buffaloes mostly for breeding purpose. Goats and sheep are mostly reared for use as the sacrificial animals. At times goats and sheep are bartered for articles with higher unit costs. The males with penchant for hard beverage sell the draft animals withdrawn from active services or she-cattle tired of begetting calves to the non-tribal cattle traders.

Bhuyans are yet to take a few tips from their Gauda neighbours to rear cattle for the purpose of economy. They know the use of milk and milk products. Curd and butter oil produced by them are just enough to meet their ritualistic needs. Milk, according to them, is nothing but the diet fit for the patients. The Hill Bhuyans are even not prepared to feed the babies with cow milk. Egg is still considered as a food for the healthier ones and tabooed to be taken by the pregnant women and lactating mothers. The primitive Bhuyans, once kept domesticated pigs, to subsist on kitchen yard and farm yard refuses (inclusive of non-edible portions of ripen fruits) has abandoned the practice of keeping them but their Juang brethren have gone for rearing pigs both as sacrificial animals and meat animals. A few members of the former regale pork covertly.

Primitive Bhuyans expect their domesticated animals and bird to fend themselves and multiply.

KONDH

The word Kondh, according to McPherson, has been derived from the Dravidian word 'Konda' meaning hill. It has other phonetic variations like Kandha, Kandh, Kondh, Khand and Kond. The Kondh are hill people (Singh - 1998 : 590) and their habitant popularly known as Kondh country stretches across valley bottoms, foot hills, plain lands, uplands and plateaus of the Eastern Ghat mountain



Desia Kondh in Laxmipur, Koraput

r a n g e
s a n d w i c h e d
b e t w e e n
g r e a t r i v e r



Kondh man with tobacco cigar
systems namely the Godavari in the south and the Mahanadi in the north.

Most of the Kondh country lies in the districts (undivided) Phulbani, Koraput and Kalahandi in Orissa. Their population in the State, according to 1991 census, is 11,40,374. The decennial (1981-91) growth rate of the community is computed as 15.27 percent.

Hill Kondhs are scantily dressed while the Desias put on dresses like any other rural folk. The women are fond of ornaments. Kondh women are fond of tattooing their faces. A few Desia males keep long hair to signify their status in the society as a Shaman, priest or a man with mystic power to contain evil spirits, The females attend to their hair lock seriously.

They believe that the land belongs to them and others are none but intruders.

Family is the smallest unit in the Kondh social organization and they have nuclear family system. In administrative structure several Kondh villages constitute a Mutha. In each village there still exists a village council headed by Jani - the religious and secular headman. He is assisted by Bishimajhi. The Barika belonging to the Domb or Pana community acts as the village messenger. At Mutha level the Mandal acts as its head. The Desia Kondhs still have the Mutha system symbolically.

The affluent Desia Kondhs of the plain areas are able to get the ritualistic services of the low class Brahmans. In the interior regions the Jani is summoned to perform the ritualistic orgies.

The Kondh's belief system centered round the Dharani Penu - the Supreme Being. Meriah Puja or Toki Puja was offered in the past to appease her. At present the Kedu Puja (buffalo sacrifice) is conducted even by the Hinduised Khonds for the appeasement of the Dharani Penu.

The highly vulnerable and very localized Kondh economy is anchored to the wet as well as shifting cultivation. They supplement their family income with collection and sale of Minor Forest Produce, wage earning from farm and non-farms sector. Sale proceeds of the produce from Animal Husbandry sector comes as a great help to them during lean periods and observance of festivals as well as rituals. The goats, sheep and pigs domesticated by them are treated as promissory bonds with high liquidity. The poultry birds are reared to get a few coppers to meet the daily or weekly cash needs. The Kondhs consider possession of cows and draft animals reflects ones economic health, more the number wealthier the owner.

Consumption of milk is considered as a luxury among the people of the Kondha belt. Egg is considered as a rich man's food. Kondhs are fond of poultry, ducks and expert in catching wild fowls. They are good local animal surgeons which can be seen from castration of pigs and caponization of cockrels.

ANNEXURE-1

DEFINITIONS FOR THE TERMS USED IN THIS REPORT FOR DESCRIPTION OF POULTRY BREEDS

Abdomen	: The under part of the body extending from the point of keel bone to the vent.
Back	: Upper surface of the body extending from base of the neck to the beginning of the tail.
Bands	: Stripes on the feather.
Barring	: Alternate bars or stripes extending across a feather. Mostly seen in case of Barred Plymouth Rock.
Beak	: Projection of the mouth consisting of upper and lower mandibles.
Blade	: Rear part of the single comb.
Breed	: A group of birds with common Ancestry and resembling in shape, size, conformation, growth, temperament, egg shell colour and breed true to type.
Carriage	: The attitude and posture of a bird while walking.
Chicken	: Domestic fowl usually under one year of age but used loosely in this country to signify birds of all ages.
Cock	: A male fowl usually above one year of age.
Comb	: A fleshy growth, projecting on the top of the head. It varies in size, and type in different breeds. Common comb types are single, rose, pea and walnut. Other varieties encountered are butter cup, cushion, strawberry, V shaped etc.
Covert	: Feathers covering tails and wings.
Dark slate	: Very dark grey approaching almost black.
Down	: The initial hairy covering of the chicks. It also refers to feather like growth sometimes found on the shanks, toes, feet, or webs of the feet of fowls.
Dropping wing	: Wing carried loosely folded against the body with the wing points carried below horizontal.
Ear lobe	: The loosely folded skin under the ear. It varies in shape, size and colour.
Enamel	: Refers to the whiteness found in the earlobes of the Mediterranean breeds.
Face	: Skin around and below the eye.
Fawn	: A soft grayish tan.

Fluff	: The soft feathers around the thighs and posterior part of fowl and also in the downy part of a feather. Hair like growth sometimes found on shanks and feet of clean legged fowls is also called fluff.
Ground Colour	: The predominating colour of body plumage.
Hackle	: Neck feathers of males, which are long, narrow and pointed. The saddle plumage of male are also called hackle feathers.
Head	: Skull, comb, face, eyes, beak, earlobes and wattles, together constitute the head.
Hen Hock or	: A female fowl over one year of age.
Hock Joint	: Joint between the thigh and the shank.
Knee Joint	: Same as hock joint.
Knob	: Protuberance.
Lacing	: The edge of a feather differing in colour from that of ground colour.
Leg	: Both thigh and shank constitute the leg.
Leg Feathers	: Refers to the feathers seen on thighs or shanks.
Lesser Sickles	: The long curved feathers except the top pair found in the tail of the male.
Lustre	: Brightness of sheen.
Marking	: Refers to different marking on the plumage, like barring, lacing, penciling, sprangling etc.
Pea comb	: A triple comb, resembling three single combs which are small and joined together at the base with middle one being higher than the other two, each having small, but distinctly divided serrations.
Pencilling	: Small marking or stripes on a feather.
Plumage Primary	: Feathers in the body of the fowl.
Feathers	: Same as flight feathers.
Rose comb	: A broad but small comb with rounded points on top and with a spike at the back, varies considerably in length, width and carriage according to the breed.
Secondaries	: The quill feathers of the wing between the first and second joint which are visible when the wings are folded.
Serrations	: V shaped notches between the points of single comb.
Shank	: Leg below the hock joint, but does not include foot and toes.
Sheen	: Bright surface gloss on the back plumage. Bright surface gloss in the colour is called Lusture.
Shoulder	: The upper part of wing.

- Sickles** : The long curved feathers of the male's tail. Although, the term is usually used to signify the top pair only. Sometimes it is also used to mean the tail coverts. The long curved feathers other than the sickles are known as lesser sickles.
- Single comb** : Refers to the fleshy growth on the head which is narrow when seen from the front and having five spikes one behind the other. The space between the spikes is called serrations. It varies in shape, size and number of serrations according to the breed.
- Slipped Wing** : When the wing is not folded properly or not held up in proper position.
- Solid colour** : Uniform colour all through.
- Spur** : A horny projection usually found on the shanks of males. Sometimes it may also be seen in females.
- Strawberry Comb** : Also known as walnut comb. When a comb resembles a strawberry both in its outline and surface, it is called strawberry comb.
- Stripe** : Found usually in Partridge variety. Refers to the prominent marking down the middle of hackle feathers.
- Surface colour** : Refers to the plumage colour of a fowl which is visible when the bird is in a normal or natural position.
- Sweep** : An immediate curve or turn.
- Symmetry** : Well proportioned.
- Tail coverts** : The curved feathers in front of and at the side of the tail.
- Tail Feathers** : The straight and stiff feathers of the tail.
- Thigh** : The part of the leg above the shank.
- Thai Lower** : The portion of the leg between hock and hip joint.
- Under colour** : Refers to the colour of the under part of feathers. Not visible when the bird is in normal position.
- Variety** : A subdivision of the breed which differs in plumage colour, comb type etc. from other groups of the same breed.
- Walnut Comb** : When the comb resembles that of a walnut.
- Wattle** : The fleshy appendages found on the base of the beak. Well developed in males than in females.
- Wing coverts** : The small feathers found in the bend of the wing covering the roots of the secondary quills.
- Wing fronts** : The front edge of the wing near the shoulder.
- Breed at risk** : Any breed that may become extinct if the factors causing its decline in numbers are not eliminated as mitigated.

Breeds may be in danger of becoming extinct for a variety of reasons. Risk of extinction may result from inter alia, low population size; direct and indirect impacts of policy at the farm, country of international levels; lack of proper breed organization; or lack of

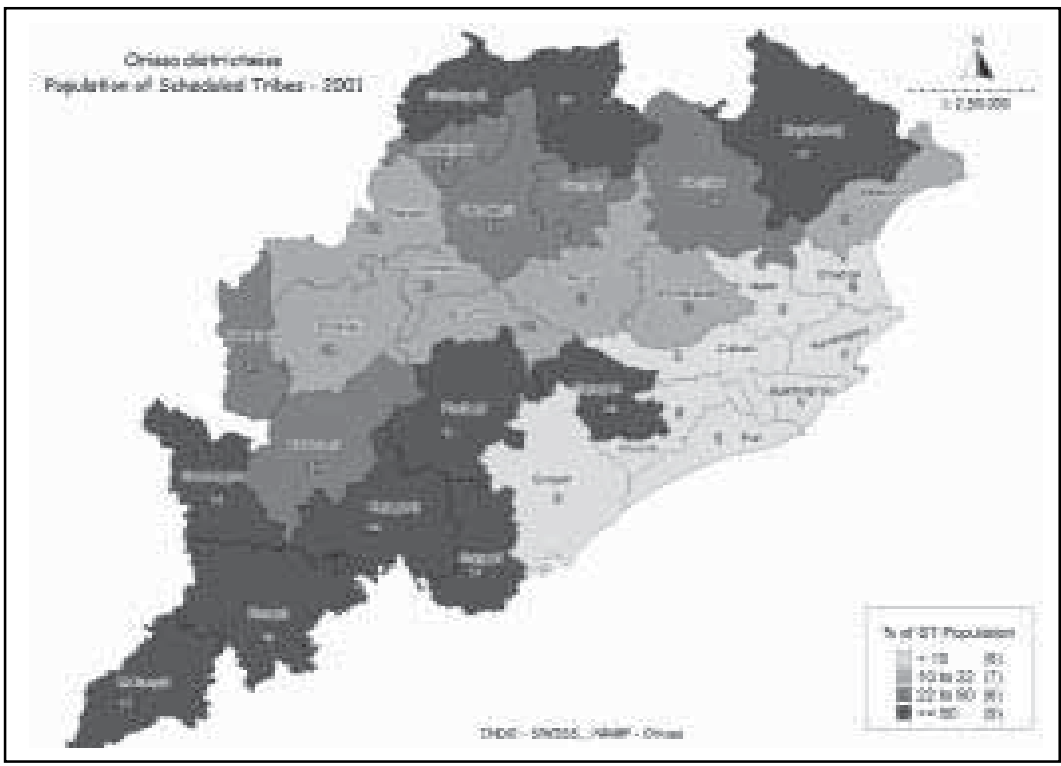
adaptation to market demands. Breeds are categorized as to their risk status on the basis of , inter alia , the actual numbers of male and / or female breeding individuals and the percentage of purebred maintained, endangered- maintained, and not at risk.

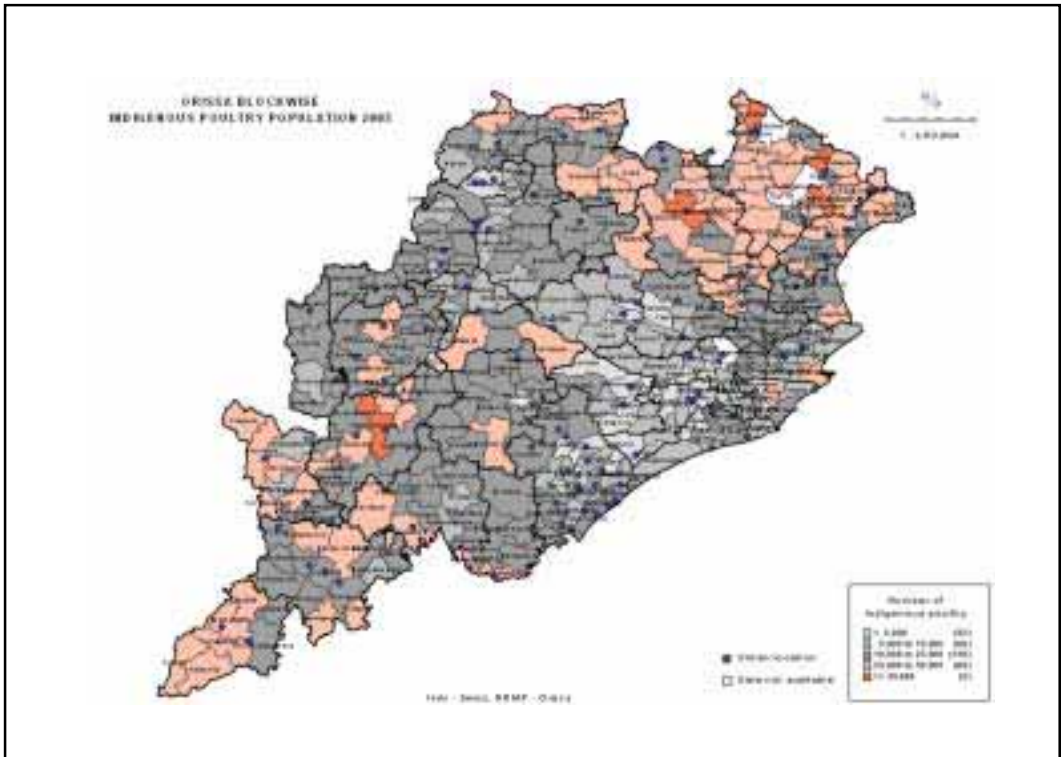
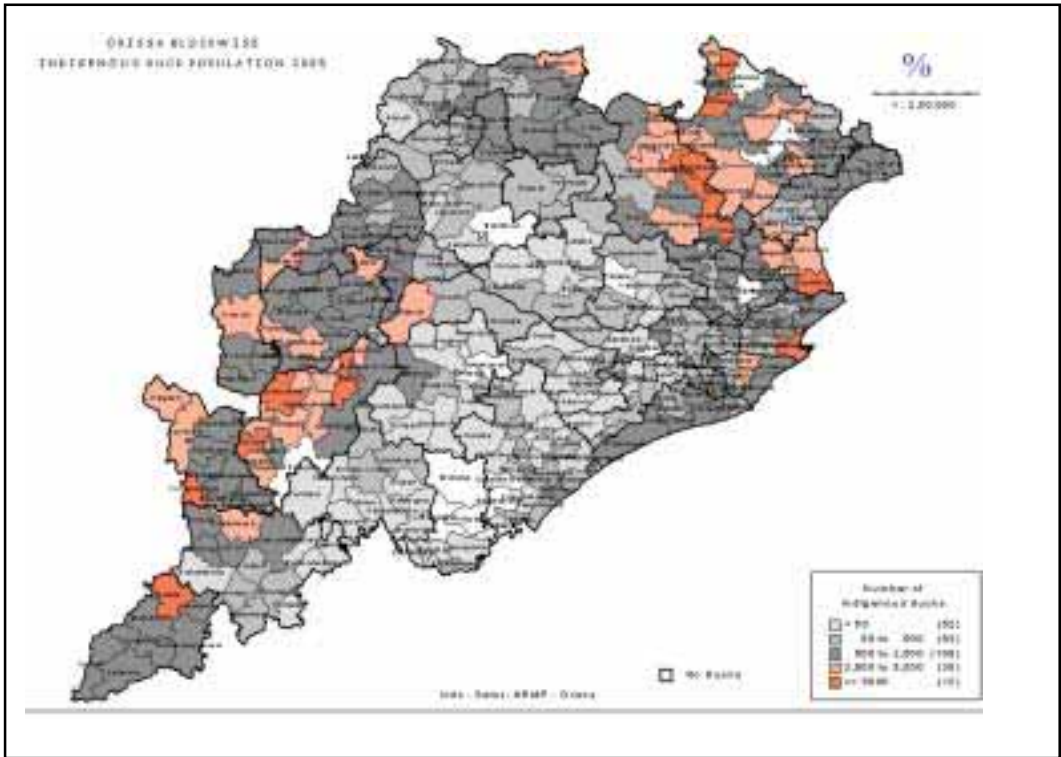
Breed not at risk: A breed where the total number of breeding females and males is greater than 1000 and 20 respectively; or the population size approaches 1000 and the percentage of pure bred females is close to 100 per cent and the overall population size is increasing.

Endangered breed: A breed where the total number of breeding females is between 100 and 1000 or the total number of breeding males is less than or equal to 20 and greater than five; or the overall population size is close to, but slightly above 100 and increasing and the percentage of purebred females is above 80 per cent; or the overall population size is close to, but slightly above 1000 and decreasing and the percentage of purebred females is below 80 percent.

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Indigenous Poultry Genetic Resources of Orissa

S. C. Mohapatra, S. C. Mishra & Das Kornel

Indigenous Poultry Genetic Resources

A survey report for State of Orissa

The use and sharing of information contained in this document is encouraged, with due acknowledgement of the source.

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Design Layout

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Printing

Photos

Kornel Das and Tapas Mohanty

Publisher

Intercooperation India - Delegation, Hyderabad and
Indo-Swiss Natural Resources Management Programme, Orissa, Bhubaneswar

Citation

Indo-Swiss Natural Resources Management Programme - Orissa, Bhubaneswar
with Government of Orissa
IS-NRMPO Programme Series - 4
Intercooperation Delegation, Hyderabad, India

Copies available from:

Delegation - Intercooperation India
8-2-351/r/8, Road No.3, Banjara Hills,
Hyderabad 500034, India,
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ACKNOWLEDGEMENT

This documentation research on Indigeneous Poultry Genetic Resources of Orissa is a culmination of series of actions including desks study and two workshops to plan the study with all stakeholders including professionals and farmers in the field, researchers from University and organisations and many others. We are thankful to all of them for their sincere cooperation.

The study team is extremely thankful to Mr. Ashok Tripathy, Former Commissioner-cum-Secretary, F&ARD, Government of Orissa, Miss. Lucy Maarse, Former Deputy Coordinator and IC delegate, Dr. (Capt.) K. R. Viswanathan, Head, WRSU, Swiss Agency for Development and Cooperation, New Delhi and Mr. C. J. Venugopal, Commissioner-cum-Secretary, F&ARD, Govt. of Orissa, Ms. Rupa Mukerji, IC Delegate, India, Hyderabad, Mr. B. K. Dhal, Director, Department of AH&VS, Government of Orissa and Prof. K. Pradhan, Former Vice Chancellor, Orissa University of Agriculture & Technology, Bhubaneswar for vision and all support given to complete the study.

IS-NRMPO office and Department of Animal Husbandry and Veterinary Services, Orissa has also given considerable support allowing access to data, information on animal genetic resources of Orissa and recommendations documents. The study team is grateful to them for their support and encouragement.

The study team also takes this opportunity to thank the IS-NRMPO, Bhubaneswar for entrusting the task of field study and documentation of Poultry Genetic Resources.

The study team is thankful to NBAGR, Indian Council of Agricultural Research, Kornel and FAO, Rome for providing the study format to describe the poultry genetic resources.

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FOREWORD

More than a billion people of the world, mostly in developing countries live in poverty. Eradication of poverty and malnutrition therefore, have been the major concern of the world at present. The evaluation reports from a number of projects undertaken in developing countries indicate that the village poultry play a significant role in poverty alleviation and enhancing gender equity among the disadvantaged communities in the developing world.

Poultry forms a common source to which the landless, the poor and the marginal farmer including ethnic tribal groups and those with no livestock attach high source economic values. The new thrust on sustainable food and nutrition security gives higher priority to village chicken production in food security programme.

According to FAO nearly one third of the world's livestock breeds are currently at risk of disappearing and the extinction rate stands at about six breeds per month. Poultry genetic resources are considered to be one of the most endangered. About 50% of the poultry breeds registered in DAD-IS are classified as being at risk and this is the highest percentage of breeds at risk of all species contained in DAD-IS. Commercial poultry breeds are not catalogued in DAD-IS nor the lines kept in reserve by the breeding companies or at Universities.

In developing countries village chicken represent a diverse gene pool that could comprise unique genetic features. Due to the development in the given environment they might be better adapted to survive under harsh conditions of scavenging. Very little efforts have been made to characterize the local breeds especially from genetic point of view.

FAO, therefore, on the request of the global community has started the programme for the conservation and management of farm animal genetic resources including poultry since 1992. The primary objective of this programme is to identify, monitor and characterize domestic animal diversity; use and develop animal genetic resources to promote productivity and sustainability in agriculture worldwide; manage genetic resources to assure long-term availability; train and involve people in management and use of animal genetic resources and communicate the world community about the importance of diversity in domestic animals.

Indo-Swiss Natural Resource Management Programme, Orissa, Bhubaneswar in collaboration with Department of Fisheries & Animal Resources Development, Government of Orissa, organised two Workshops viz. "Alleviation of Poverty through Poultry Production" and "Bio-diversity of Livestock in Orissa and its Role" during November 2003 and February 2004 respectively. During deliberations and discussions in the above workshops it was apparent that poultry is of special importance for people of Orissa since most of them are non-veg. and meat, egg and fish constitute an important component of their diet. Poultry egg and meat are consumed most as they are the most inexpensive source animal protein available and accepted by all sections of the society irrespective of the caste and religion unlike beef and pork. Further the people have a preference for egg and meat of the local poultry breeds over that of farm bred exotic chickens. No systematic studies however have been undertaken so far to characterize the indigenous poultry genetic resources/ local breeds available in the State and to evaluate their contribution to the farming community. The workshop, therefore recommended that the indigenous poultry genetic resources/ local poultry breeds available in the State should be studied and characterized for their genetic attributes at the earliest because of its importance to state's economy. This study was therefore undertaken to identify major indigenous poultry genetic resources / local breeds of poultry available in the State

and to characterize them for their genetic attributes. The study was carried out mostly in those districts with high tribal population and those with high concentration of local poultry breeds like Korput, Malkangiri, Nabarangpur, Kalahandi, Nuapada, Mayurbhanj, Phulbani, Boudh etc. since modern civilization has not made any visible impact in the life style of these people so far, consequently it is expected that local poultry breeds nurtured by these ethnic communities since long time as a means of their livelihood have more or less been maintained in the pure form as before without any significant introgression of genes from industrial poultry.

The major findings of this study are presented in this book. The book has 10 chapters, first seven of which are devoted to local chicken breeds followed by two chapters dealing with the duck breeds and last chapter, the geese. The format suggested by FAO for description of avian genetic resources have been adopted by the authors for describing the breed characteristics. Information have also been provided about the habitat of the breeds including a brief description of the communities responsible for the development of local breeds and their conservation.

It is hoped that this book will provide much needed information on indigeneous poultry genetic resources of the local breeds of poultry of Orissa and will serve as a valuable source of reference to research workers, students, teachers, planners and administrators interested in poultry production activities.

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PREFACE

More than a billion people of the world, mostly in developing countries live in poverty. Eradication of poverty and malnutrition therefore, have been the major concern of the world at present. The evaluation reports from a number of projects undertaken in developing countries indicate that the village poultry play a significant role in poverty alleviation and enhancing gender equity among the disadvantaged communities in the developing world.

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In developing countries village chicken represent a diverse gene pool that could comprise unique genetic features. Due to the development in the given environment they might be better adapted to survive under harsh conditions of scavenging. Very little efforts have been made to characterize the local breeds especially from genetic point of view.

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so far to characterize the indigenous poultry genetic resources/ local breeds available in the State and to evaluate their contribution to the farming community. The workshop, therefore recommended that the indigenous poultry genetic resources/ local poultry breeds available in the State should be studied and characterized for their genetic attributes at the earliest because of its importance to state's economy. This study was therefore undertaken to identify major indigenous poultry genetic resources / local breeds of poultry available in the State and to characterize them for their genetic attributes. The study was carried out mostly in those districts with high tribal population and those with high concentration of local poultry breeds like Korput, Malkangiri, Nabarangpur, Kalahandi, Nuapada, Mayurbhanj, Keonjhar, Phulbani, Boudh etc. since modern civilization has not made any visible impact in the life style of these people so far, consequently it is expected that local poultry breeds nurtured by these ethnic communities since long time as a means of their livelihood have more or less been maintained in the pure form as before without any significant introgression of genes from industrial poultry. The major findings of this study are presented in this book. The book has 10 chapters, first seven of which are devoted to local chicken breeds followed by two chapters dealing with the duck breeds and last chapter, the geese.

S. C. Mohapatra
S. C. Mishra
Das Kornel

Executive Summary

Orissa, with landmass area of 15.67 million hectares is the 10th largest State of Indian Union and is situated in the eastern coast of India between 17° 48' - 22°34' North latitude and 81° 24' - 87° 24' East longitude . It is rich in natural resources and very rich in biodiversity. There are 62 ethnic tribal groups (adivasis) in the State who belong to Austro-Asiatic, Dravidian, Indo-Aryan and mixed groups. Scheduled Castes and Scheduled Tribes account for 22.1% and 16.20% respectively of the total population of 36.7 million. 85% of the total population live in rural Orissa and mainly depend on agriculture for their livelihood. Animal husbandry is the major source of additional income for majority of households. About 80% of the rural households keep animals of one or more species including poultry and depend partly or wholly on these animals for their livelihood.

Poultry is the most common domesticated species of animals kept by most of the poor, landless and marginal farmers in rural and tribal areas in the state in their backyard. Keeping of poultry in small numbers as a part of integrated farming system involving crop and livestock is centuries old and continues today even after 50 years of industrial poultry production. Indigenous poultry/ local breeds of poultry are more numerous compared to commercial hybrid poultry and account for more than three quarters of the total poultry raised in the State (Livestock Census 2001).

Chickens are most popular species of poultry raised in the backyard in small holder production system and account for more than 90 per cent of total indigenous poultry raised in unorganized sector followed by ducks. Women are mostly responsible for raising of poultry in backyard since men remain away from home for work .

The family flock size vary greatly from region to region, village to village even from family to family in the same village. In Koraput district, family flock size varied from as low as 2 to as high as 30. In Mayurbhanj district, however, a few large flocks with flock size as high as 100 chickens per flock were encountered. The flock here includes cocks, hens, growers, and chicks.

Local breeds of poultry are the main stay and backbone of rural backyard smallholder production system. They are superior in adaptability to local climate and survive, produce and reproduce on low plane of nutrition. They also are relatively less susceptible to diseases and less prone to predator attacks.

Almost 100 per cent of the indigenous poultry resources/ local breeds have coloured plumage although they differ from each other in respect of plumage colour and pattern, body shape and size, comb type and other anatomical features as well as for their eggshell colour. Some of the indigenous poultry genetic resources/ local breeds maintained by ethnic tribals of undivided Koraput, Kalahandi, Mayurbhanj, Keonjhar and Phulbani districts, however, were found to breed true to type atleast for plumage colour and other anatomical attributes and differed from other indigenous poultry genetic resources. These poultry germ plasm have been maintained by the ethnic tribes since their known memory without any intermixing of exotic germ plasm.

Based on morphologic characters, ten distinct local populations / breeds, seven of which are chicken, two duck and one geese were identified and characterized. These include Hansli, Gujuri and Dumasil breeds of chicken in Mayurbhanj district, Vezaguda and Dhinki breeds of chickens in Koraput district, besides Kalahandi and Phulbani fowls found in Kalahandi

and Phulbani district respectively. Among the two duck breeds identified Orissa ducks are widely distributed in all part of the State although found fairly in large numbers only in tribal areas of Koraput and Kalahandi districts as well as in coastal districts of Puri and Kendrapara. Moti Hansa (Muscovy) is found in small numbers almost throughout the State but mostly concentrated in undivided Koraput, Kalahandi and Bolangir districts. Rajhansa breed of geese is the only breed of geese available in the State. Previous reports on Kalahandi, Phulbani, Vezaguda and Dhinki breeds of chickens, Moti Hansa and Orissa ducks and Rajhansa in the State are those of Kornel (1996 and 2004) and Mishra (2004). In this study three more new breeds of chickens viz. Hansli, Gujuri, and Dumasil were identified beside those already reported and breed characteristics of all the old and new breeds have been described which are as follows.

Hansli

A local breed of chicken characterized by pea-comb, red ear lobe, dark steel gray body, rich golden yellow hackle and saddle feathers in males and light golden yellow in females, with wide breast, long keel and long shanks. Female of the breed lay brown coloured eggs. Found mostly in Udala and Kaptipada Blocks of Mayurbhanj District in Orissa. Cocks are popular for their fighting quality. Adult body weight varies from 2.5 to 3.0 Kg. in males and 1.75 to 1.85 Kg. in females.

Gujuri

A medium size local breed of chicken found in Baripada and Khunta Blocks of Mayurbhanj and characterized by buttercup comb, red ear lobes, long rectangular body, dark brown plumage, lustrous tail feathers, with medium size keel, shanks, and light to medium brown eggshell colour. Used for production of egg and meat. Males are used for fighting. The average body weight is 2.5 kg. for males and 1.5 kg. for females.

Dumasil

A fairly large local breed of chicken with majestic gait, black or brown plumage, pea comb, red ear lobes, long keel bone, well developed breast, as well as long and thick shanks. Females of the breed lay brown coloured eggs. Mostly used for meat production. Cocks are good fighters. The adult body weight varies from 3 to 3.6 kg. for males and 2 to 2.5 kg. for females.

Vezaguda

Developed and patronized by Koya, Matia, Dhulia, and Bhumia tribes and Dom community mostly found in Koraput district. The cocks of the breed are good fighters and prefer to die than to loose. The breed is characterized by high stamina, majestic gait, pea comb, long neck, red ear lobe, varying plumage colour, well developed breast, long keel bone and long shanks. Females of this breed lay brown colour eggs. Adult body weight varies from 2.5 to 3.5 Kg. for cocks and 1.6 to 2.5 kg. for hens.

Dhinki

A large local breed of chicken used for meat production, patronized by Telugu speaking farmers of undivided Koraput district with highly variable plumage, large head, pea comb, red ear lobe, round body, well developed breast, with long keel and shank bones. Female of the breed lay brown coloured eggs. Adult body weight varies from 2.5 to 3.5 kg. for males and 1.6 to 2.5 kg. for females.

Kalahandi

A medium size local breed of chicken found in undivided Kalahandi district and mostly used for production of egg and meat. Three varieties viz. black, brown and barred are recognized. Characterized by single comb, white ear lobes, medium size body, white skin with black tail feathers with greenish sheen, medium size shanks and fairly well developed breast. Adult body weight varies from 2-3 Kg. in males and 1.3 to 1.7 Kg. in females.

Phulbani

Found in Phulbani and Boudh districts. Present a stout and stumpy appearance. Characterized by rose comb, white ear lobes, small keel bone, and shorter shanks. Female of this breed lay white shelled eggs. Mostly used for production of egg and meat. Two varieties are recognized based on plumage colour i.e. black and Kolathia. Adult body weight varies from 1.2 to 1.5 kg. in males and 1.0 to 1.2 kg. in females.

Moti Hansa

Muscovy ducks are popularly known as Moti Hansa in the State and mostly found in undivided Koraput, Bolangir and Kalahandi districts; used primarily for meat production. Based on plumage colour three varieties are recognized. These include black, white and brown. Plumage colour varies from one variety to another. Head is large with crest present in both the sexes. Caruncles are found on the both sides of the face as well as above and below the eyes. Thigh and shank are short. Tail is long and wide. Adult body weight is 3.5 kg. for males and 2.5 kg. for females. Kornel 1996, however, reported higher body weight for adult Moti Hansa which was 6 kg. for males and 3.5 kg. for females. They hatch their own eggs, and lay eggs in three clutches.

Orissa ducks

Mostly found in Puri, Kendrapara, Koraput and Kalahandi districts. Several varieties are recognized based on plumage colour. Light in weight and used for production for egg and meat. Ducks do not hatch their own eggs. They are usually hatched by use of broody chicken hen. Body weight in adults varies from 2.0 to 3.0 kg. in drakes and 1.5 to 2.2 in ducks.

Raj Hansa

Only breed of geese found in the State. White plumage Raj Hansa is common although few gray plumage geese are also available. The breed is characterized by long neck which extend forward while walking. Head is small and face is clean. Females lay white shelled egg. Males mature late than females. Longevity is fairly high. Used for production of meat. Female of this breed hatch their own eggs. Average adult body weight is 3.5 kg. for males and 3.0 kg. for females.

Among the seven chicken breeds available in the State, cocks of Hansli and Dumasil breeds of Mayurbhanj and Vezaguda and Dhinki fowls of Koraput are very aggressive and used for cock fighting. Kalahandi and Phulbani breeds of fowls are used for production of egg and meat and rarely for fighting.

Naked neck gene was found to be present in Hansli, Dumasil as well as in Vezaguda breeds of fowls. The naked neck cocks were seen to be more aggressive although not much used for fighting purpose.

Great variation was observed among the different breeds of chickens for comb type. While pea comb was common to Hansli, Dumasil, Vezaguda and Dhinki, Rose comb was

encountered in Phulbani fowls, single comb in Kalahandi fowls and buttercup comb in Gujuri fowls. Wattle size varied to some extent among the breeds. Both comb and wattles were larger in males, compared to females and of brick red in colour. Hackle feathers were well pronounced in Hansli and Vezaguda males compared to other indigenous breeds identified.

Ear lobe colour was red for all the local breeds of chickens except for Kalahandi and Phulbani fowls for which ear lobe colour was white. Consequently eggshell colour varied from light to dark brown in colour in all the breeds except Kalahandi and Phulbani breeds which lay white shelled eggs.

All the seven local breeds of chickens exhibit broodiness and hatch their own chicks and take care of them after hatch. As a result their egg production is interrupted after each clutch. Almost all the breeds lay eggs in three to four clutches, clutch size varying from as low as 8 to 10 to as high as 20 to 25. They appear to be some selection against broodiness in Kalahandi fowls as a result they lay about 100 to 150 eggs annually compared to 50 to 60 eggs by other local breeds.

Egg size was found to be small uniformly in all the seven local breeds of chickens identified on the basis of this study. The average weight of the eggs was approximately 40 gm. at about 30 to 35 weeks of age. Some birds were seen to lay larger eggs which exceeded more than 50 gm. in weight. This was mostly encountered in Hansli, Dumasil and Vezaguda breeds of fowl.

Fertility as well as hatchability was found to be very high for all the breeds except for Dhinki. As a result the population size of Dhinki breed is on decline and the breed is in risk. Fertility & hatchability is severely affected in summer months, therefore, hatching is not undertaken during hot summer.

The winning cocks are given utmost care and mostly used to reproduce next generation in the breeds known for their superior fighting qualities like Hansli, Dumasil and Vezaguda. Selection is rarely practised in these breeds either for egg or meat. In all other breeds the males are selected on the basis of vigour, body weight and phenotypic appearance and all the available females are used to reproduce next generation.

The housing requirements are very simple as they are provided shelter only during night. Only few people have separate houses for housing of poultry while in most of the cases they occupy the same place as those of owners. When flock size is small Bamboo baskets are used to house the birds during night to prevent straying and predation.

The chickens maintained by the families in their backyard, fend for themselves by scavenging. Supplemental feeding in the form of broken rice, ragi, rice bran or other locally available material is practised only by limited number of families.

The mortality is very high in the local breeds of poultry. Sometimes the entire flock is wiped out due out break of certain diseases. Ranikhet disease (RD) and fowl-pox are the most common killer diseases of chickens, similarly the important duck diseases are duck plague and duck hepatitis. The epidemics of RD occurs almost throughout the year. Studies have revealed that mortality is significantly reduced when flocks are vaccinated against RD. All the species of poultry seem to be fairly resistant to gastrointestinal parasitic infection and in most of the places use of anthelmintics for control of parasites still not known.

Orissa is rich in jungle fowls which are mostly seen in the forests of undivided Koraput, Kalahandi and Phulbani districts. Phulbani fowls of today are very similar in their

plumage colour and even body shape to the jungle fowls found in the forests of Orissa. Jungle fowls are caught by the local people using Desi fowl as bait and use it for meat purpose. It is claimed that the indigenous poultry breeds developed and nurtured by ethnic tribes are the direct descendants of the jungle fowls.

Moti Hansa is primarily used for production of meat. The breed characters of Moti Hansa are similar to that of Muscovy ducks, an established breed of duck developed in South America. How and when these ducks were imported to the State is not known. Moti Hansa hatches its own eggs and the incubation period is 35 days compared to other ducks for which incubation period is 28 days. Hatching upto 35 eggs per clutch has been recorded for Moti Hansa.

Orissa ducks are more numerous than Moti Hansa and several varieties of Orissa ducks have been recognized based on their plumage colour. All the varieties of Orissa ducks are dual purpose breeds and used for production of both egg and meat.

Raj Hansa is the only breed of geese found in the State. They are available both in white and gray colour. They have limited use for meat but are of great help in deweeding and also serve for the family security purposes.

There does not appear to be any problem in marketing of local poultry. Most of the households dispose off their produce like eggs or chickens in nearby markets whereas those away from the towns sell at their door step. Although may vary from family to family, half of the chicken raised are consumed by the owners at the time of festivals or during the visit of their beloved guests. Poultry birds are also given as gifts in marriages and other functions and used in religious ceremony.

The chickens are usually sold either for table purpose or as game birds for fighting. The fighting cocks fetch a premium price usually 2 to 3 times higher than those which are sold for table purpose. The requirement of fighting cocks, however, is limited and that too at festive occasions. People of Laxmipur and Koraput blocks get comparatively less money for their produce compared to Jeypore and Kundra blocks due to lack of suitable marketing infrastructure. Same situation more or less is encountered in other districts.

Almost all the eggs produced are used for hatching and not a single one is consumed in Koraput district except in summer months when hatching is a problem. The situation is however is different in Kalahandi, Nawapada, Mayurbhanj, Phulbani and Boudh districts where more than 50 per cent of the eggs are either consumed or sold.

Great variation is observed among the villages for scavenging area and those with higher scavenging areas realize more money from the sale of their birds which are healthy.

Predation by wild cats and other wild animals is a problem in most of the villages situated either near or within the forest area.

Although no definite evidence is available about the origin of different populations/ local breeds, ethnic tribal groups seem to have played a significant role for development and maintaining the uniqueness of the breeds nurtured by them for years without any introgression from outside. Koya, Matia, Dhulia and Bhumia tribes and Dom community of Koraput have primarily been responsible for the development of Vezaguda fowls; Telugu speaking farmers of Koraput district for development of Dhinki fowls; Shantala, Bhumij and Mahanta community of Mayurbhanj for development of Hansli fowls; Kondh tribes of Phulbani and Boudh districts for development of Phulbani fowls; and Kondh and Sabar tribes of Kalahandi

for Kalahandi fowls; Bhatra and Bhumia tribes of Koraput; Kandha & Sabar communities of Kalahandi & Nawapada for maintaining Moti Hansa.

For ethnic tribal groups and communities indigenous poultry are of special interest because of their socio-religious use. Plumage colour and sex of the bird differ from one purpose to another.

Raising of local poultry breeds in backyard is an important source of livelihood for the rural people of Orissa. 63% of the owners of the backyard poultry are Scheduled Tribes, 17% Scheduled Castes and rest 20% owned by OBCs and other communities. Small holdings containing 1-3 hens per unit were found to be more efficient producer of eggs compared to those with 4 or more hens per unit. Main interest of the poultry farmers having backyard poultry is not production of eggs as returns are very low from sale of eggs. They hatch all their eggs and sale them as birds. Data suggest a negative association between size of holding and productivity, whereas, literacy has a positive impact on the productivity of birds. There is no evidence to show that the Scheduled Tribe small-scale poultry operators are less efficient managers of poultry compared to other communities. The major problem of the backyard poultry sector is high mortality. Average annual income from backyard poultry is Rs.2200 per household although the variation across households is very large. When mortality is reduced, income per household increases by 18.1 %.

Poultry keeping in backyard gives very high return as the investment is very low.

The local breeds of poultry/ indigenous poultry genetic resources are held in high esteem even after 50 years of industrial poultry production because

- a) Local poultry breeds exhibit superior adaptability in their habitat and possess the ability to survive, produce and reproduce on low plane of nutrition and sub-optimal management.
- b) The inputs required are very small as they scavenge their feed requirements and are raised with little veterinary care.
- c) They possess the ability to protect themselves from predators.
- d) All the local breeds show broodiness and hatch their own chicks making the system auto-generating.
- e) People have a preference for eggs and meat of indigenous poultry compared to those realized from farm-bred chickens consequently eggs and meat from local breeds are sold at a premium price
- f) Cock fighting is a popular sport for the ethnic tribes and the local breeds are superior to exotic breeds in fighting
- g) Use of coloured bird for socio-religious use.

Livestock output at present accounts for more than half of agricultural production in developed countries and one third in developing countries. The growing number of urban and more affluent population in the developing world including India, most likely will demand a richer, more diverse diet with more of meat and milk products. As a result global demand will increase from 209 million tonnes in 1997 to 327 million tonnes in 2020 for meat to a strong livestock revolution. Industrial poultry production could be fastest growing sector with an expected increase in output of about 80 per cent until 2020 due to its high rate of reproduction, superior FCR and universal production technology. The other livestock commodities are expected to grow @ 50 per cent per year during the same period.

Other factors which will contribute to growth of poultry industry in Indian subcontinent include : increase in growth of human population; geographical shifting of production centers to developing countries like China, India, Brazil and Mexico due to stringent animal welfare measures adopted in the industrial west; improvement in poultry production technologies; policies and initiatives recently undertaken by the Government of India to promote rural backyard poultry production through venture capital fund etc. The demand for organic egg and meat is increasing over the years especially in the industrially developed Western countries even though they cost more and cut through the wallet. Small holder backyard poultry production utilizing local breeds therefore is expected to increase the profitability of this system of production, but the super markets will benefit. .

Smallholder backyard poultry production utilising local breeds sooner or later is expected to come under serious competition with the commercial poultry sector and if not well planned the genetic resources of local poultry shall be lost, as it has already happened in most of the developed countries. Conservation of local poultry breeds *in situ* along with improvement for traits like meat and eggs will increase competitiveness to survive in the market. The socio-religious use of local poultry breeds, superior adaptability in their habitat, ability to perform in low input production system and the production system which is similar to organic production will be the competitive advantages of backyard system over commercial poultry production. The government however, should extend all support to this system of production since this is a means of livelihood of poorer sections of the society and will help in food production, food security, gender equity and providing employment to women. Improvement of local breeds and their conservation for future use also should be the joint responsibility of the government and farming community.

RECOMMENDATIONS

- ◆ In order to improve egg production there is a need to record the performance of individual hens for egg production. It is not a problem to obtain this information since each hen lays her eggs in a separate nest regularly. This will provide information on laying capacity and hatching performance for each hen. Those hens with higher egg production and hatchability should be selected to reproduce next generation.
- ◆ Since most of the small holder poultry farmers are poor, government should extend assistance to improve the poultry farming system. In such cases, limited Government poultry farms are to be used for selective breeding of local poultry breeds and their multiplication for supply to the villagers. Within a time frame the skills are to be transferred to farmers at village level. Attempt, however, should be made to retain broodiness in the local stocks since it makes the system autogenerating.
- ◆ Through regular exhibition of local poultry breeds, the local breeders/ associations should be recognised and encouraged for their work.
- ◆ All the poultry stocks should be vaccinated against the most common killer diseases like Ranikhet Disease (RD) and Fowl pox. The Ranikhet disease is the same classical Newcastle Disease (ND).
- ◆ Poultry farmers should be given training on basics of poultry production and selection of breeds.
- ◆ Extension support for health care, input supply, market linkages and other aspects should be readily available at village level. The people should participate in the health care and breed development programme.
- ◆ Small packs of R.D. vaccine containing preferably 50 or less doses of the vaccine to be made available to reduce wastage and make it economical for farmers.
- ◆ Most tribals and people in Koraput, Balangir and Kalahandi districts of Orissa have special affinity for duck meat preferably Muscovy ducks, therefore, the breeds need conservation, development and promotion through farming community.

Suggested Research

Although more than two-third of the total poultry available in the state are raised in backyard in smallholder production system, research and development efforts have been either negligible or nonexistent. In view of the importance of backyard poultry for economic upliftment of rural poor, it is suggested that this should receive priority in planning process as well as in research and development. The research and development areas should include :

- ◆ To identify 'risk factors' in development and conservation of indigenous poultry breeds/ populations and the technologies that are giving adverse and unfavourable cost and return structure in smallholders indigenous poultry need reevaluation.

- ◆ To develop an extended inventory of feed resources available locally for formulation of least cost poultry rations.
- ◆ To develop/update and standardise husbandry practices for low input backyard poultry production.
- ◆ Development of simple breeding techniques to bring about improvement of the local breeds.
- ◆ Socio-economic evaluation of available technologies and development of new technologies to promote rural poultry production.
- ◆ To develop a thermostable Ranikhet disease (RD) vaccine which can be used by oral/nasal routes. The Lentogenic R.D. virus thermo stable vaccine production is a challenge. It shall eliminate the cold chain dependency; especially to reach in accessible rural villages where mostly poor live.
- ◆ Development of a Fowl-pox vaccine which can be used and be effective to below 8 weeks chicks.
- ◆ Development of a dual type of bird which can withstand rural conditions of management and feeding regimes.
- ◆ The course curriculum for Veterinary Science students should contain a chapter on rural and backyard poultry production.
- ◆ Measures to protect smallholder backyard native germplasm farmer's interest in the wake of commercial poultry production.
- ◆ Farming of local duck breeds should be promoted in the coastal belt of the state to exploit its otherwise unutilised vast feed resources.
- ◆ In some parts of western Orissa especially in Kalahandi and Nuapada districts women do not eat chicken after attaining puberty but there is no such taboo for eating of duck meat and eggs. Therefore there is a need to promote duck farming specially of Moti Hansa, in this part of the state to improve nutrition of the women.