

THE BEHAVIOURAL BIOLOGY OF CHICKENS

Chickens are very sociable birds and are at their happiest when surrounded by other chickens. In one chicken flock there can be any number of hens but generally only one cockerel who is the dominant male. The dominant cockerel pushes other cockerels out of their flock when they start becoming big enough to be a threat to him. The dominant male is usually the mating partner for all of the hens that he watches over. The behavior of today's chickens basically is not much different. Because humans appreciate eggs for their nutrition value, they take them away from the hen before it has a chance to sit on them. Hens do not appear to be distraught by this, to the contrary they seem happy to lay another new egg, announcing it with a loud cackle! Chickens are gregarious birds and live together in flocks. They have a communal approach to the incubation of eggs and raising of young. Individual chickens in a flock will dominate others, establishing a "pecking order", with dominant individuals having priority for food access and nesting locations. This book forms an necessary resource in chicken biology and behaviour for students of veterinary science, behaviour and welfare, as well as profitable poultry producers and smallholder farmers wanting to improve their chickens' quality of life.

Contents: Introduction to Chickens; Chicken Behaviour; Broiler; Abnormal Behaviour of Birds and Chickens in Captivity; Genetics and Domestication in Chickens; Poultry Disease; Poultry Farming; Poultry Production; System of Poultry Science.

About the Author



Siddaiah received his Ph.D. in Pharmaceutical Sciences from Jawaharlal Nehru Technological University, Anantapur, 2011. He is awarded young scientist by SV University, Tirupati- 2010, at 2nd International conference on Medicinal plants and Herbal Products. He completed his B. Pharm M. Pharm and from Rajiv Gandhi University of Health Sciences, Bangalore. As well as he M.B.A from Human resource development Dravidian University, Kuppam Chittoor. He has few books & articles on his credit published in National/ International Journals. His most popular books are Cold Tolerance in Rice Cultivation, Integrated Control of Stored products Pests & Diseases, Nutrient Deficiencies of field Crops: Guide to Diagnosis and Management.



RANDOM PUBLICATIONS
PUBLISHERS • DISTRIBUTORS

4376-A/4B, Gali Murari Lal, Ansari Road, Daryaganj
New Delhi-110002, Ph : +91-11-43142548/43580356 / 23289044
Email : randomexports@gmail.com,
sales@randompublications.com,
info@randompublications.com

₹.1895

ISBN 978-93-5111-994-4



9 789351 119944

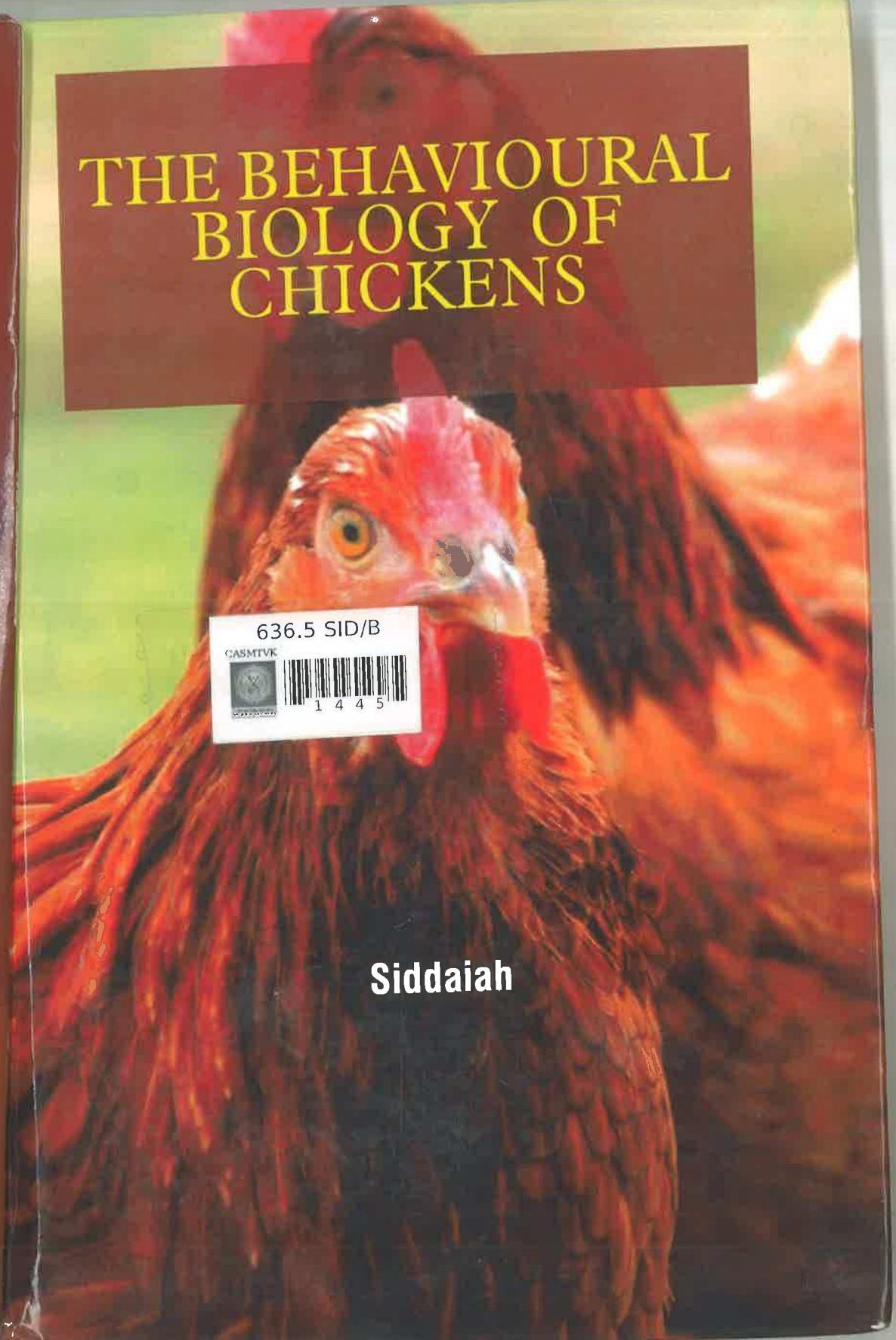
Size: Royal
Pgs.: 300 (Appx.)



THE BEHAVIOURAL BIOLOGY OF CHICKENS

Siddaiah

THE BEHAVIOURAL BIOLOGY OF CHICKENS



636.5 SID/B



1 4 4 5

Siddaiah

The Behavioural Biology of Chickens

Siddaiah



RANDOM PUBLICATIONS
NEW DELHI (INDIA)

The Behavioural Biology of Chickens

ISBN 978-93-5111-994-4

© Reserved

All Rights Reserved. No Part of this book may be reproduced in any manner without written permission.

Published in 2017 in India by

RANDOM PUBLICATIONS

4376-A/4B, Gali Murari Lal, Ansari Road
New Delhi-110 002

Phone : +9111-43580356, 011-23289044, 011-43142548

e-mail: sales@randompublications.com,
info@randompublications.com, randomexports@gmail.com

Type Setting by : Friends Media, Delhi-110089

Printed at : Sanat Printers

Preface

The humble chicken is thought to originate from the red jungle fowl and the grey jungle fowl, found in the rainforests of India. Today, the domestic chicken is thought to be more closely related to the grey jungle fowl due to the yellow colouring of its skin. Although they are similar, the Indian jungle fowl is about half the size of a domestic chicken today.

The chicken was thought to be domesticated more than 10,000 years ago where the Indians and later the Vietnamese bred chickens for meat, feathers and eggs. The domestication of chickens is thought to have then spread rapidly across Asia and into Europe and Africa resulting in the chicken being the most widely farmed animal today.

Specific behavioral patterns typical of the chicken are the search for feed, selection of the nest as a place for laying eggs, dust bathing and plumage care, flying and perching before resting. If a chicken settles down on a perch, the mechanism of its claws assures a firm grip, designed to prevent it from falling off a tree while asleep.

Besides, chickens observe a strict hierarchy which they enforce with the so-called pecking order. Understanding these behavioral patterns is indispensable for assuring a poultry husbandry conducive to the well-being of the chickens.

Chickens are gregarious birds and live together in flocks. They have a communal approach to the incubation of eggs and raising of young. Individual chickens in a flock will dominate others, establishing a "pecking order", with dominant individuals having priority for food access and nesting locations.

Removing hens or roosters from a flock causes a temporary disruption to this social order until a new pecking order is established. Adding hens, especially younger birds, to an existing flock can lead to fighting and injury. When a rooster finds food, he may call other chickens to eat first. He does this by clucking in a high pitch as well as picking up and dropping the food. This behaviour may also be observed in mother hens to call their chicks and encourage them to eat.

This book forms an necessary resource in chicken biology and behaviour for students of veterinary science, behaviour and welfare, as well as profitable poultry producers and smallholder farmers wanting to improve their chickens' quality of life.

- Author

Contents

<i>Preface</i>	<i>v-vi</i>
1. Introduction to Chickens	1
Embryology	6
Breeding	7
Farming	9
As pets	11
Diseases and Ailments	12
In Religion and Mythology	13
As Food	17
2. Chicken Behaviour	29
A Revolution in Our Understanding of Chicken Behaviour	29
Chicken Behaviour and Emotions	33
Normal Behaviours of Chickens in Small and Backyard Poultry Flocks	36
Behaviour of Mature Chickens	39
Basic Chicken Behaviours	42
Behavioural Research	45
3. Broiler	64
Modern Breeding	65
General Biology	66
World Production and Consumption	73
Broiler Industry	73
4. Abnormal Behaviour of Birds and Chickens in Captivity	86
Feather Pecking	87
Cannibalism in Poultry	93
Vent Pecking	95
Toe Pecking	96
Feather-plucking	96
Polydipsia in Birds	100

5. Genetics and Domestication in Chickens	104
Basics	110
Genetics of Chickencolors	113
Poultry Genetics for Small and Backyard Flocks: An Introduction	123
Genetics of Significant Observable Traits in Chickens	125
6. Poultry Disease	134
History of Poultry Disease	134
Metabolic and Nutritional Diseases	141
Different Types of Poultry Diseases	142
Bacterial Diseases	159
7. Poultry Farming	202
Turkeys	203
Ducks	203
Chickens	204
Alternative Housing	205
Advantages and Disadvantages	209
Feed and Water	211
Physical Enrichment	213
8. Poultry Production	227
Characteristics of Poultry	227
Alternative Poultry Production	228
Poultry Production Management	238
Processed Poultry Products	241
9. System of Poultry Science	264
Standard Agricultural Practices	264
Genetically Modified Birds	270
Feed and Water of Poultry	274
Facilities and Environment of Poultry	277
Bibliography	279
Index	281

Introduction to Chickens

The chicken (*Gallus gallus domesticus*) is a type of domesticated fowl, a subspecies of the red junglefowl. It is one of the most common and widespread domestic animals, with a population of more than 19 billion as of 2011. Humans keep chickens primarily as a source of food, consuming both their meat and their eggs.

Genetic studies have pointed to multiple maternal origins in Southeast-, East-, and South Asia, but with the clade found in the Americas, Europe, the Middle East and Africa originating in the Indian subcontinent. From India, the domesticated chicken was imported to Lydia in western Asia Minor, and to Greece by the fifth century BC. Fowl had been known in Egypt since the mid-15th century BC, with the “bird that gives birth every day” having come to Egypt from the land between Syria and Shinar, Babylonia, according to the annals of Thutmose III. The chicken genome has changed less from feathered ancestors eradicated by the Cretaceous–Paleogene extinction event than those of other sequenced avian dinosaurs.

TERMINOLOGY

In the UK and Ireland adult male chickens over the age of one year are primarily known as cocks, whereas in America, Australia and Canada they are more commonly called roosters. Males less than a year old are *cockerels*. Castrated roosters are called *capons* (surgical and chemical castration are now illegal in some parts of the world). Females over a year old are known as *hens* and younger females as *pullets* although in the egg-laying industry, a pullet becomes a hen when she begins to lay eggs at 16 to 20 weeks of age. In Australia and New Zealand (also sometimes in Britain), there is a generic term *chook* to describe all ages and both sexes. The young are called *chicks* and the meat is called *chicken*.

“Chicken” originally referred to young domestic fowl. The species as a whole was then called *domestic fowl*, or just *fowl*. This use of “chicken” survives in the phrase “Hen and Chickens”, sometimes used as a British public house or theatre name, and to name groups of one large and many small rocks or

Rugani, Rosa, Regolin, Lucia, Vallortigara, Giorgio, Imprinted numbers: newborn chicks' sensitivity to number vs. continuous extent of objects they have been reared with, *Developmental Science*, September 2010.

Smith,Carolynn L. and Johnson, Jane, The Chicken Challenge – What Contemporary Studies Of Fowl Mean For Science And Ethics, *Between the Species*, Vol. 15 (2012).

Smith,Carolynn L. and Johnson, Jane, The Chicken Challenge – What Contemporary Studies Of Fowl Mean For Science And Ethics, *Between the Species*, Vol. 15 (2012).

Smith,Carolynn L. and Johnson, Jane, The Chicken Challenge – What Contemporary Studies Of Fowl Mean For Science And Ethics, *Between the Species*, Vol. 15 (2012).

Smith, Colin, Bird brain? Birds and humans have similar brain wiring. *Science Daily* (Imperial College London), 2012.

Smith, Colin, Bird brain? Birds and humans have similar brain wiring. *Science Daily* (Imperial College London), 2012.

Specter M, "The Extremist," *The New Yorker*, April 14, 2003.

Wood-Gush and Duncan, 'Behavioral Observations in Domestic Fowl', 2001.

Index

- A**
- Accomplished 258
 - Adequate 232, 260
 - Aggressive Breeds 58
 - Ambient Temperatures 42
 - Anesthesia 206, 223, 265
 - Antibiotic Resistance 20, 21
 - Artificial Incubation 10, 107
- B**
- Barbiturate 270
 - Barren Environment 98
 - Brain Lesions 101
 - Broiler Farms 68, 79
 - Broiler Industry 73, 74, 81, 82
- C**
- Cannibalism 206, 207, 214, 215, 264, 265, 278
 - Carcass 267, 272
 - Cardiovascular Dysfunction 69
 - Chicken Behavior 29, 30, 33, 34, 35, 36, 37
 - Chicken Communication 29
 - Complex Patterns 118
 - Confinement 254
 - Consumption 230, 239, 240, 241, 243, 248, 249, 252, 258
 - Contamination 232, 237, 246, 251, 256, 260, 262
- D**
- Deboning 242
- E**
- Edible 242
 - Edible Components 18
 - Electrocution 273
 - Environmental Factors 97, 98
 - Euthanasia 268, 270, 271, 272
 - Evisceration 246
- G**
- General Biology 2, 66
 - Genetic Factors 99
 - Germplasm 230, 234, 235, 237
- I**
- Incredibly Precocious 34
 - Individual Recognition 39
 - Industry Statistics 82
 - Inherent 233
 - Insemination 219, 225, 226
 - Integument Lesions 70

L

Light Manipulations 91, 94

M

Mature Chickens 22, 39

Modern Breeding 65

Motivational Basis 88, 93, 102

O

Ocular Dysfunction 71

P

Pinioning 268

Poultry Genetics 123

Processing Plants 80, 84

Psychogenic Polydipsia 101

S

Sexlinked Barring 118, 120

Sexlinked Inheritance 111, 112

Skeletal Dysfunction 69

Slaughtering 232

Snood 267

Social Behaviour 3

Stocking Density 71

Substrate 214, 215, 216, 217

T

Tumbling 241

V

Vent Pecking 93, 95, 96