NG-214; G-88; PE-146; AE-pl 261; AW-pl 254; AM(I)-286



I: 23-24 DAYS
PRECOCIAL 3
F: 7-10 DAYS

clearly demonstrate that foot feathering eases walking in these birds much

Experiments using feathered and plucked ptarmigan feet on soft snow vides thermal insulation, but its effectiveness has not been measured

by roughly 50 percent. the foot by about 400 percent and reduce the distance the foot sinks in snow the way snowshoes aid people. The feathers increase the bearing surface of

May; males spaced ca. 30' apart, occupy lek; male inflates air sacs on sides of neck ing and before incubation. Male Ring-necked Pheasants disrupt leks and attack and blueberry barrens) now extinct; dark race from s w LA and e TX (Attwater's gas development. E subspecies (Heath Hen, formerly in fire-maintained grasslands cally migratory. Seriously declining due to habitat conversion for agriculture, oil and May-Oct, ca. 1/3 of diet insects, esp grasshoppers. Conservation: In winter lebrown. 1.8" (45 mm). DIET: Oct-April, largely seeds, also waste grain, acoms. sacs inflated. Jumping displays follow and males run at each other with tail and neck tufts erect tail erect, wings drooped, then rapidly drops head and deflates sacs with "boom." BREEDING: Tallgrass prairie. 1 brood. DISPLAYS: Courtship: "booming" March-Selection, p. 251. Refs: Hamerstrom, 1980; Hamerstrom and Hamerstrom, 1973; Hens, p. 257; Leks, p. 259; Vocal Development, p. 601; Promiscuity, p. 145; Sexual adults; also reduce nesting success by laying their eggs in prairie-chicken nests. Winter flocks unisexual or mixed. ESSAYS: Birds and the Law, p. 293; Heath Prairie-Chicken) Endangered (sub)Species. NOTES: Eggs left covered during inydepression lined with dead leaves, feathers, grass. Johnsgard, 1973; Vance and Westemeier, 1979. NEST: Usu concealed in grass or shrubs in open habitat; shallow EGGS: Olive, spotted with dark

Lesser Prairie-Chicken

Supersp #8
Tympanuchus pallidicincius Ridgway









I: 22-24 DAYS PRECOCIAL 3 F: 7-10 DAYS





NG-214; G-88; PE-146; PW-pl 21; AE-pl 262; AW-pl 255; AM(I)-286

BREEDING: Shortgrass prairie. 1 brood. DISPLAYS: Courtship: "gobbling

yellowish-white, finely dorred with pale brown, olive. Oft unmarked. I.6" (42) esp in autumn and winter). Conservation: Winter resident, but some s move ment. Declining; current populations occupy <10% of range occupied prior in shrubs in open situations; shallow depression lined with grass. EGGs: Cream or other with tail and neck tufts erect, sacs inflated. NEST: Usu concealed in grass or head and deflares sacs with "gobble." Jumping displays follow and males run at each inflates air sacs on sides of neck, tail erect and wings drooped, then rapidly drops March-May; males occupy lek, usu on slight rise covered with short grasses. Male daily to feed on waste grain. Winter flocks of mixed sexes. ESSAYS: Birds and the miscuiry, p. 145; Sexual Selection, p. 251. REFS: Crawford and Bolen, 1975, 1976 Crawford and Stormer, 1980 Law, p. 293; Heath Hens, p. 257; Leks, p. 259; Vocal Development, p. 601; Pro Dien: Esp grasshoppers; also takes leaves, plant galls, and waste grain (latte NOTES: Unusually mobile for gallinaceous bird; may move several mile

> SEE: Temperature Regulation, p. 149; Feet, p. 239. REF: Hohn, 1977 Heath Hens and Population Sizes

cupido), is gone forever. species to be described scientifically, the Heath Hen (Tympanuchus cupido min us with the booming displays of its males. But the first variety of this The Greater Prairie-Chicken (Tympanuchus cupido pinnatus) can still enter-

condition of employment. In addition it appears that the hens were easy ward, but it was good to eat and the human population on the coastal plain refuge in 1907, and a predator control program was begun. By 1916 the tewer than 100 birds remained. A portion of the island was set aside as a everywhere but on Martha's Vineyard Island. By the turn of the century, introduced with pheasants and domestic chickens. By the mid to late 1800s, prey for introduced predators, especially cats, and susceptible to diseases wrvants made not having to eat Heath Hen more than a few times a week a centration of goshawks placed heavy predation pressure on the birds tha abitat and most of the nests. During the following winter an unusual condisaster overtook it. A natural fire in 1916 destroyed much of the remaining Heath Hen population had recovered to some 2,000 individuals, but then labilat destruction and releatless hunting had exterminated the Heath Hen was exploding. It was so common an item in diets that, in New England, escaped the fire. The Heath Hen was once common in brushy areas on the eastern sea

to some 200 by 1920, but then disease pushed the number of Heath Hens below 100 once again. From there on it was downhill, and the last living Heath Hen was recorded in early 1932. In its final years the population suffered from a surplus of males and a shortage of fertility. The 100-150 individuals that escaped both flames and hawks increased

been established on Nantucket or the nearby mainland, the birds would ion in breeding success of individuals, and random changes in genetic theaten their survival—deleterious environmental changes, random variaputher than large populations. If the entire island of Martha's Vineyard had may result in lowered fertility. All three are more likely to influence smal composition ("genetic drift") that will lead to loss of genetic variability and been a Heath Hen preserve, or if (more reasonably) a second colony had Populations are subject to three kinds of chance events that car

NG-214; G-86; PE-146; PW-pl 21; AE-pl 260; AW-pl 252; AM(I)-288

10-14 (5-17) PROMISC

I: Z1-Z4 DAYS PRECOCIAL 3 F: 7-10 DAYS

BREEDING: Grassland, savanna, partially cleared boreal forest, shrubland, sage

drooped, then rapidly drops head and deflates sacs with a weak "coo." Jumping

lek, usu on small knoll; male inflates sacs on sides of neck, with tail erect and wings brush. 1 brood. DISPLAYS: Courtship: "dancing" occurs April-May. Males occupy

FOLIAGE BROWSE

highly insectivorous. Also takes waste grain in winter. Conservation: Winter resident. Blue List 1972, 1978-82, Special Concern 1986; declining in some areas. Nores: Occ interbreeds with Greater Prairie-Chicken. Hard seeds may subocc unmarked. 1.7" (43 mm). DIET: Incl leaves, buds, flowers, nuts, fruit. Young grass, leaves, ferns, etc. EGGs: Light brown, dotted with reddish brown, lavender, displays follow, males run at each other with tail and neck tufts etect, sacs inp. 11; Promiscuity, p. 145; Hybridization, p. 501; Swallowing Stones, p. 269; Sexstitute in gizzard for gravel where latter is scarce. Forms mixed-sex winter flocks of ual Selection, p. 251. REFS: Evans and Moen, 1975; Hamerstrom, 1963; Moyles 10-35, occ to 100. ESSAYS: Leks, p. 259; Vocal Development, p. 601; Blue List, NEST: Usu concealed in grass or under shrub; shallow depression lined with

Sage Grouse

Centrocercus urophasianus Bonaparte

NG-214; G-86; PW-pl 21; AW-pl 253; AM(I)-284



I: 25-27 DAYS
PRECOCIAL 3
F: 7-10 DAYS
F

INSECTS FOLIAGE BROWSE

GROUND

erect and fanned, rapidly throw head back with wings held rigid and almost touching ground, and deflate sacs with loud popping. NEST: Concealed under sagebrush; greenish, finely dotted with browns. 2.2" (55 mm). DET: Incl flowers and buds shallow depression slightly lined with grass, sage leaves. EGGs: Olive, yellowish habitat conversion to agriculture, grazing, and herbicide use to eradicate sagebrush VATION: Locally migratory in winter. Blue List 1972-81, Special Concern 1982-86; from forbs. Almost exclusively sagebrush leaves in autumn and winter. Conserleks in April-May, strut and inflate neck sacs until nearly reaching ground; with tail BREEDING: Sagebrush communities. I brood. DISPLAYS: Groups of males occupy Gibson and Bradbury, 1986, 1987; Wiley, 1973. lection, p. 251; Promiscuity, p. 145. Form unisexual winter flocks. ESSAYS: Leks, p. 259; Blue List, p. 11; Sexual Se foraging. Lack muscular gizzard of relatives, thus limited to relatively soft food sage community, wet meadows or green areas are required by broods for inser have extirpated from much of former range, declining esp in n w. Nores: Within REFS: Autenrieth, 1986; Braun et al., 1977;

> more Hens even if they managed to eat the same proportion of the more population would have escaped the fire, and the goshawks would have left have been much more secure. Then a larger portion of the Heath Hen are examples of deleterious environmental events). numerous survivors of the fire (fires and population increases of predators

the newly emerging ecological subdiscipline of conservation biology is to duced by genetic drift. In short, once a population drops below a critical the population. Similarly, the fertility of the hens may well have been represence of a single skilled predator could greatly influence the dynamics of which appear to be threatened. Chicken populations as well as those of the Lesser Prairie-Chicken, all of seriously endangered, and probably for the remainder of Greater Prairiespecies, Attwater's Prairie-Chicken (Tympanuchus cupido attwateri), which is tion is currently needed for the small, dark, southeast Texas form of this survival—that is, to determine "viable population sizes." Such a determinadetermine how large populations must be to have a reasonable assurance of size, its chances of extinction tend to increase greatly. A major challenge of Once the population was below 100, the failure of a few nests or the

SEE: The Passenger Pigeon, p. 273; Our Only Native Parrot, p. 279; The Labrador Duck, p. 85; Population Dynamics, p. 575. Refs: Halliday, 1978; Shaffer, 1981; Soulé, 1986.

from the displaying group, and then leave to nest and rear the young alone. a ritualized dance. Females approach the lek, choose and mate with a male certain members of the grouse family (prairie-chickens, Sharp-tailed inflate brightly colored air sacs on their necks, while repeatedly carrying out Grouse, and Sage Grouse) compete for mates at leks. During their displays, known as a "lek" or, sometimes, an "arena." In North America, males of munally at a traditional site (one used year after year). The traditional site is they call (often with a "popping," "gobbling," or "booming" sound) and The mating system of some species of birds involves males displaying com-

of the males performed three quarters of the copulations; in another, one to relatively few males string most of the young. In one study, about a third largely determined by his place in the male dominance hierarchy. This leads males is highly correlated with his position on the lek, which in turn is mates with the most females; in general a male's success at attracting female was involved in 17 of 24 observed matings. usually claiming the most central position. The central male also normally The male grouse hold territories on the lek, with the dominant male

Grouse display at dispersed sites, although, as in lekking species, the temales do not remain with the males after mating. In contrast, European Red Not all species of grouse establish leks. Spruce, Blue and Ruffed

NG-238; G-174; PE-172; PW-120; AE-pi 282; AW-pi 288; AM(II)-162

30'-50' (15'-70')

ABANDONED NEST

(1-6+)

ij

F - M I: 26-35 DAYS SEMIALTRICIAL 2 F: 35 DAYS

BIRDS SM VERTS













entary habits. As shown in studies of Tawny Owls in England, individuals hunt successfully in the dark. Their sensory abilities are coupled with sedwith the environment, especially such things as the heights of favorite hold a hunting territory in which they operate night after night. Familiarity perches above the ground, seems to be essential to the owls' ability knowledge of the habitat completes the job. pounce on prey. Hearing helps to replace the absence of sight, but intimate

SEE: What Do Birds Hear?, p. 299; Raptor Hunting, p. 223; Size and Sex in Raptors, p. 243; Site Tenacity, p. 189; Pellets, p. 297. REFS: Knudsen, 1980; Konishi, 1983; Martin, 1986

Birds and the Law

number of them, on account of the fatness and juiciness of their flesh"), chickens, but also to others such as Dunlin ("...my party shot a great and adults applied not just to game birds such as ducks, geese, and prairieother native birds once found their way to markets and dining tables. Readwere killed for sale as food, but few realize that an enormous variety of Most people interested in birds know that millions of Passenger Pigeons Eskimo Curlew, Belted Kingfisher ("... the eggs are fine eating"), Ameriimpressed with the number of species with which John James Audubon had ing his classic Birds of America, published in the early 1840s, one is quickly firsthand experience. His numerous comments on hunting and eating eggs

p. 425; Brood Reduction, p. 307; Breeding Season, p. 55. REFS: Adamcik and Keith, 1978; Marti, 1974; Turner and McClanahan, 1981.

Irruptions, p. 639; Pellets, p. 297; How Owls Hunt in the Dark, p. 291; Mobbing, Cache prey; defrost frozen cache by "incubating" it ("prey thawing"). ESSAYS: for several months. Adults perform distraction display. Daytime roost in dense coni ŧ

snowshoe hare density; disperse when hare numbers crash. Young hatch asynchroning bird oft snow-covered in n; early eggs may freeze. Population density in n tracks

small area in space. The Barn Owl's brain thus contains a "neural map" of

time and intensity differentials and responds only to sound issuing from one region of the midbrain. Each cell is sensitive to a unique combination of Both sides of owl's head with feathers pulled back to expose asymmetry of the ears

successful that today it is arguably the most widespread bird species auditory space. So armed, it is little wonder that the Barn Owl has been so

But their auditory systems are not the only reason that some owls can

near trunk. Most do not breed before second year. Arctic populations eat more birds ously; rapidly develop ability to regulate body temperature, fly at 63-70 days, fed ground in log, among rocks; of sticks, moss, hair, shredded bark, rootlets, etc., lined slightly with feathers and down. Perennial. EGGs: Dull white. 2.2" (55

phibians, reptiles, scorpions. Mainly nocturnal, but also hunts crepuscularly. Ejects

CONSERVATION: Winter resident. Occ uses nest box. NOTES: Incubat-

DIET: Esp rabbits and rodents, pheasants, quail, passerines, occ fish, an

play; ritually feeds female. Pair bill, bob, call, and click. NEST: In abandoned tree

BREEDING: Conif or decid forest and woodland, swamp, orchard, park, riparian forest, semidesert. I brood. Displays: Male performs noisy aerial courtship dis-

nest of raptor, corvid, occ squirrel; also tree cavity, cave, crevice, stump, and on

NG-240; G-176; PE-174; PW-120; AE-pl 285; AM(II)-170

Strix varia Barton Supersp #20



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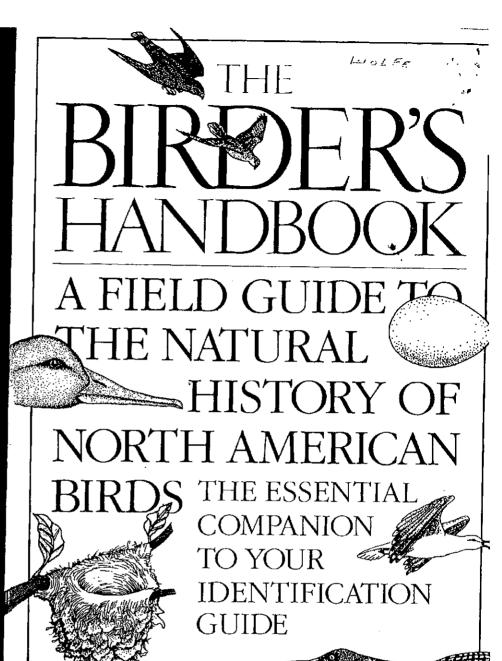




HOVER &

WONOG:

extends beyond 4 months. Light, quiet, slow-flapping flight, oft gliding. Audibly small cavity nests may leave earlier than young in roomier cavities; parental care shrews, also crayfish, amphibians, reptiles, rarely fish, insects. Ejects pellets. Of use abandoned nests (esp hawk, also squirrel, crow), scraping hollow in remnant bow with half-spread wings, wobbling and twisting head side to side. NEST: Also valleys. 1 brood. Displays: Loud vocals by perched male and female. Pair nod, snaps beak. Drinks and bathes. Not easily disturbed from daytime roost. Range expanding to the n w. NOTES: Male feeds incubating female. Young from hunts diurnally. Feeding perch near nest. Conservation: Winter resident BREEDING: Dense conif and mixed conif/decid forest, wooded swamps and river Birds Hear?, p. 299; Altricial Young, p. 581; Parental Care, p. 555. Pellets, p. 297; How Owls Hunt in the Dark, p. 291; Mobbing, p. 425; What Do Rarely on ground. EGCs: White. 2.0" (50 mm). DET: Esp mice, squirrels, hares, lining; may add green sprigs to open nest, but no material added to cavity. Perennial 1984; Devereux and Mosher, 1984; Earhart and Johnson, 1970



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1230 Avenue of the Americas Published by Simon & Schuster Inc.

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Designed by Oporornis Agilis

Manufactured in the United States of America

Library of Congress Caraloging in Publication Data Ehrlich, Paul R.

The birder's handbook: a field guide to the natural history of North American birds / Paul R. Ehrlich, David S. Dobkin, and Darryl Wheye.

North America.
I. Dobkin, David S.
QL681.E37 1988
598.297—dc19 p. cm. 1. Birds—North America—Identification. 2. Birds—

II. Wheye, Darryl. III. Title.

ISBN 0-671-62133-5

87-32404

ISBN 0-671-65989-8 Pbk.

and Elliot Dobkin; who share with us Gabriel, Adria, Ruth Ehrlich; and all those Dedicated to: Ida Wheye;

watching birds the pleasure of