

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Papers in Ornithology

Papers in the Biological Sciences

11-22-2008

Body Weights and Species Distributions of Birds in Nebraska's Central and Western Platte Valley

William C. Scharf
Traverse City, MI

Josef Kren
Brian LGH Medical Center, Lincoln, NE

Paul A. Johnsgard
University of Nebraska-Lincoln, pajohnsgard@gmail.com

Linda R. Brown
Lincoln, NE

Follow this and additional works at: <https://digitalcommons.unl.edu/biosciornithology>

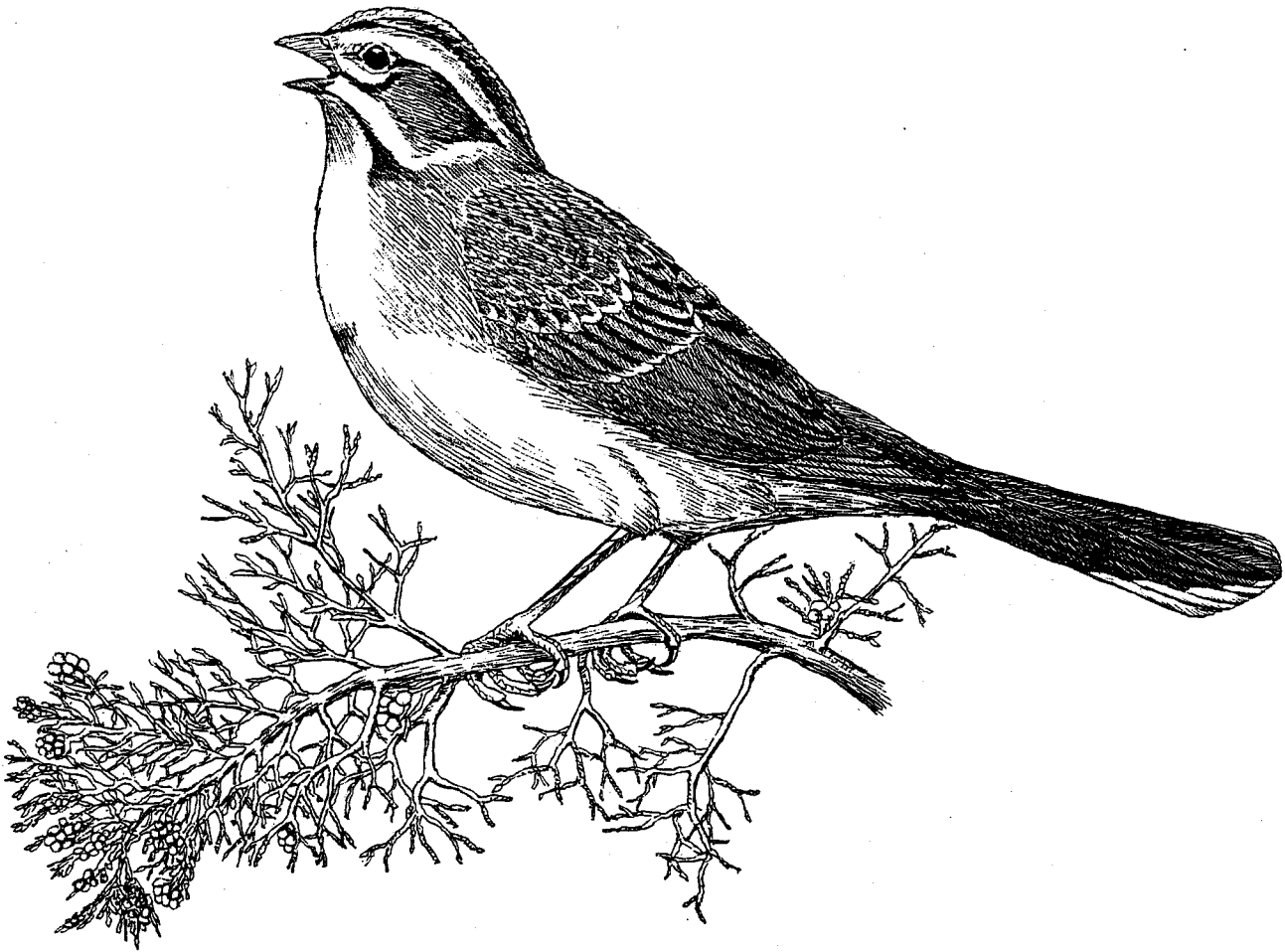


Part of the [Ornithology Commons](#)

Scharf, William C.; Kren, Josef; Johnsgard, Paul A.; and Brown, Linda R., "Body Weights and Species Distributions of Birds in Nebraska's Central and Western Platte Valley" (2008). *Papers in Ornithology*. 43. <https://digitalcommons.unl.edu/biosciornithology/43>

This Article is brought to you for free and open access by the Papers in the Biological Sciences at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Papers in Ornithology by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Body Weights and Species Distributions of Birds in Nebraska's Central and Western Platte Valley



By: William C. Scharf¹, Josef Kren², Paul A. Johnsgard³ and Linda R. Brown⁴

¹ 6241 Summit Ct., Traverse City, MI 49686

² Bryan LGH Medical Center, 1600 S. 48th St., , Lincoln, NE 68506

³ School of Biol. Sciences, University of Nebraska-Lincoln, Lincoln, NE 68588

⁴ 3745 Garfield, Lincoln, NE 68506.

Acknowledgments

We especially thank Mark Peyton of Central Nebraska Public Power and Irrigation District (CNPPID) and James Jenniges of Nebraska Public Power for logistic and financial support in the Central Platte Valley work. We also wish to thank Riley Anderson, Denyse Everett, Mary Hindelang, Laura Miller, Nick Morgan, and Andy Rockwood. John Berigan aided in all phases of the netting in 1993 and 1994, as a Howard Hughes Medical Institute Research Experience for Undergraduates. Cedar Point Biological Station and the University of Nebraska's School of Biological Sciences supported William C. Scharf's work through research funds, and the Nebraska Behavioral Biology group supported Josef Kren in 1995 and 1996. Josef Kren especially thanks his assistants John Berrigan, Joe Wolf, Kassia Reynard, and Amelia Zoerb. Numerous students and members of the Lincoln, Nebraska, Wachiska Audubon Society chapter also aided in netting activities. The Burdette and Myrna Gainsforth family, the Haythorn Ranch family, Gene Marshall and Gary Schubert, allowed work on their lands, and the Nebraska Game and Parks Commission similarly allowed access to land under their control. Roger Knaggs of CNPPID provided keys for company gates in later years. Work at CPBS was also authorized by an Institutional Animal Care and Use permit issued to W. C. Scharf by the University of Nebraska. Scharf, Kren and Brown banded under federal and state permits issued by the U.S. Geological Survey and the Nebraska Game and Parks Commission.

Abstract

Data are presented on nearly 18,000 bird-captures involving 125 species banded between 1992 and 2005 at two Platte Valley study areas in central and western Nebraska. Weight data for more than 11,500 individuals of 74 species are summarized by age, sex and banding site, including several species having larger samples than in any previously published reports. Breeding evidence was obtained for 67 species in one or both locations, and 108 of the total 125 species banded were migrants, 71 percent of which were Neotropical migrants. The largest banding totals were obtained at Cedar Point Biological Station, in Keith County, but large numbers were also obtained at sites in Dawson County, about 100 miles to the east. Hybrids of four sympatric species-pairs (Lazuli & Indigo Bunting, Black-headed & Rose-breasted Grosbeak, Spotted & Eastern Towhees, Bullock's & Baltimore Oriole) were documented at these locations.

Contents

Introduction.....	1
Methods.....	2
Capture Results.....	3
Discussion.....	17
Summary.....	27
Literature Cited.....	27

List of Tables

1. Total birds captured at CPBS, 1992-1997; 2000, & CPV, 2001-2005.....	28
2. Weights in grams of birds banded at Cedar Point Biological Station (CPBS), 1992-1997, 2000, and CPV, 2001-2005.....	35

List of Figures

1. Map of southwestern Nebraska, showing approximate locations of various banding sites mentioned in the text.....	2
2. Sketch of Mourning Dove.....	6
3. Sketches of adults of Western and Eastern Meadowlarks, and of adult males of Spotted and Eastern Towhees.....	15
4. Sketches of adults of Savannah Sparrow and Clay-colored Sparrow.....	17
5. Sketches of breeding males of Rose-breasted Grosbeak, Black-headed Grosbeak and hybrid phenotype, and of breeding males of Indigo Bunting, hybrid phenotype, and Lazuli Bunting.	19
6. Sketch of Common Grackle.....	21
7. Sketches of males of Baltimore Oriole, two male hybrid phenotypes and Bullock's Oriole	23

Body Weights and Species Distributions of Birds in Nebraska's Central and Western Platte Valley

William C. Scharf, Josef Kren, Linda R. Brown and Paul A. Johnsgard
e-mail address of senior author: wcscharf@charter.net

Introduction

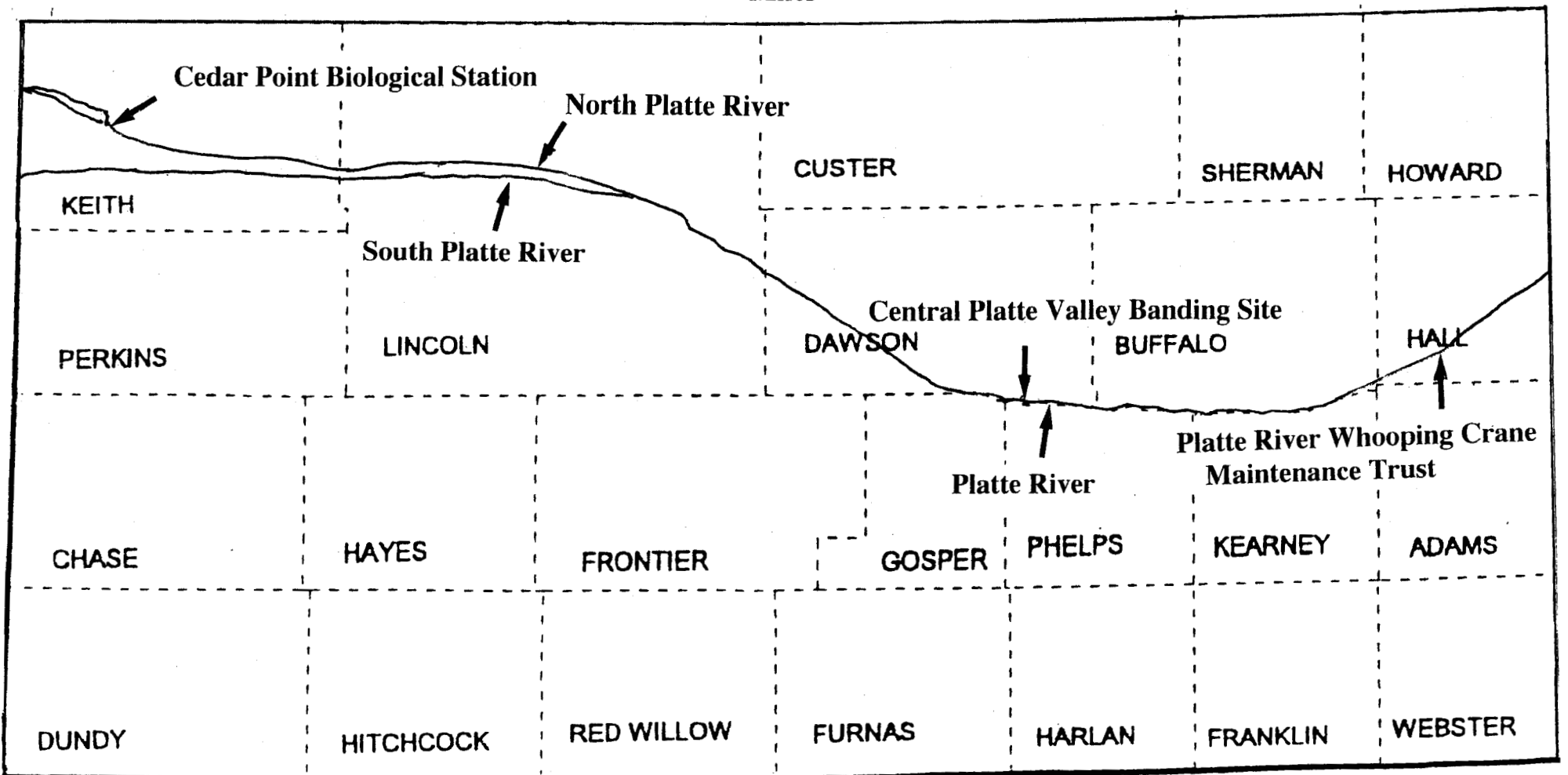
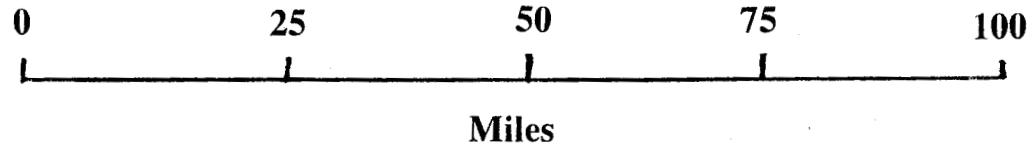
The avifauna of the University of Nebraska's Cedar Point Biological Station (CPBS), and the surrounding area of Keith County, in west-central Nebraska along the North Platte River, is one of the best-documented regions in Nebraska, and is known to be the most species-rich locality of the entire state (Brown *et al.*, 1995). Similarly, the avifauna of the central Platte Valley between North Platte and Grand Island is also well documented as a result of efforts by the U.S. Geological Service to manage the region for wetland birds, especially such rare and endangered species as the Whooping Crane (*Grus americana*), Least Tern (*Sterna albifrons*) and Piping Plover (*Charadrius melodus*) (Krapu, 1981, Faanes & Lingle, 1995). Additionally, Nebraska's Platte Valley (Fig. 1) is already recognized for its international importance as a migratory staging area for a half-million Sandhill Cranes (*Grus canadensis*), and for millions of geese and ducks. For simplicity in later discussions, the term "Platte Valley" implies riparian zones of both the central Platte and North Platte valleys of Nebraska.

We (WCS and JK) began intensive spring and summer mist netting at Cedar Point Biological Station (hereafter abbreviated as "CPBS") in 1992 and continued regularly through 1997. In 2000 an additional 501 birds were banded there. During that period, 13,080 birds of 118 species were captured. Of these, 12,693 are analyzed here, excluding first-day recaptures (Table 1).

Scharf began banding birds in the central Platte Valley near Lexington and Overton in 2001, at three sites, two on Jeffrey Island and one at Cottonwood Ranch. These sites owned by Central Nebraska Public Power and Irrigation District (CNPPID) and Nebraska Public Power District (NPPD) respectively, are located between 100 and 110 miles east of CPBS. Through the summer of 2005 4,883 birds were captured, including 971 recaptures, representing 96 species. This general location provides a useful basis for comparing possible regional breeding bird composition of western and central Platte Valley riparian habitats. The smaller database from the Central Platte Valley means that some comparisons between the two regions are still limited, but many interesting differences are nevertheless already evident. Scharf (2002, 2007) has analyzed some of these data as to guild associations and habitats sampled, as well as hybrid zones of towhees (Scharf 2005). Other aspects remain to be analyzed.

The riparian avian community located between Elm Creek, Buffalo County, and Grand Island, Hall County, has also been recently studied by Colt (1997), and provides a third source of avifaunal comparison. Netting studies (totaling 1,190 banded birds of 46

Fig. 1 Map of southwestern Nebraska, showing approximate locations of sites where bird-banding has been done by the authors or by Craig Davis.



species) at the Platte River Whooping Crane Maintenance Trust in Hall County, approximately 65 miles to the east of the central Platte sites, have provided distributional and population information (Davis, 2005b). These studies have been supplemented by population and density surveys using point-counts in various riparian woodland sites in the central Platte Valley between Overton and Grand Island (Davis, 2005a).

The primary purpose of this paper is to provide an overview of the CPBS and CPV mist-netting efforts through 2005, and to provide a quantitative summary of regional avifaunal and body mass information. Since the netting activities have typically begun in May, after the beginning of spring migration. Therefore, seasonal records for migrant species are not discussed here, but have been summarized earlier (Brown et al., 1995). In this paper “hatch-year” or “young” birds are ones assumed to have bred in the general vicinity of the netting locations, unless otherwise stated.

Methods

Netting activities between 1991 and 1997 were centered at the University of Nebraska’s Cedar Point Biological Station and the land surrounding it. The station is located about eight miles northeast of Ogallala, Keith County, and along the southern shoreline of Lake Ogallala, a small reservoir lying directly below Kingsley Dam (41° 10’ N, 101° 30’ W). Habitats sampled included the grassy areas immediately west of Goodall Lodge, the hills and cedar-lined canyons around CPBS, riparian gallery forests and shoreline growths of mature eastern cottonwoods and other deciduous hardwoods, a brush-lined irrigation ditch on the north shore of Lake Keystone, and wooded portions of the riparian zone within 100 m of the impounded North Platte River. Tree and large shrub species include willows (*Salix* spp.), red cedars (*Juniperus* spp.), eastern cottonwood (*Populus deltoides*), ash (*Fraxinus* spp.), chokecherry (*Prunus virginiana*), plums (*Prunus americana*), and mulberry (*Morus rubra*) growing in fencerows. The shrubby understory included chokecherry, willows, false indigo (*Amorpha fruticosa*), skunkbrush sumac (*Rhus aromatica*) and poison ivy (*Toxicodendron radicans*).

From 2001 through 2005 netting was done in the central Platte Valley (CPV), in southeastern Dawson County, at several local sites between six miles WSW of Elm Creek to four miles SW of Lexington, NE (40° 42’ N, 99° 40’ W). Habitats sampled included grazed and ungrazed wooded riparian habitats dominated by ash (*Fraxinus* spp.) and eastern cottonwood. Sites with trees from 40-80 years old with rough-leaved dogwood (*Cornus drummondii*), Russian olive (*Elaeagnus angustifolia*) and willow (*Salix* spp.) understories were selected. Nets were also set on in-channel islands, vegetated with willows and herbaceous vegetation. A third habitat sampled were two tallgrass prairies larger than 100 ha, that were dominated by warm-season grasses and managed by burning and grazing. One grassland site was burned the spring prior to netting; the other was burned three years previously.

Mist nets were opened at sunrise for at least six hours daily, weather permitting, for a collective total of 36,816 net-hours at CPBS (averaging 2.8 net-hours per capture), and 17,056 net-hours (averaging 5.6 net-hours per capture) in the CPV. Netting at CPBS was continuous from early May through early August, and occasional in March and October, while that at CPV extended from late April through early July. Captured birds were aged, sexed, weighed and banded with U.S. Geological Service bands.

A few early mass determinations were made with Pesola spring balances, but the majority of the mass data were obtained on triple-beam or electronic balances. Species with sample sizes sufficient for analysis are listed in Table 2. Sex determination of breeding birds was achieved by plumage for those species exhibiting adult plumage dimorphism. Breeding condition, and sex determination of non-dimorphic species, was based on male cloacal protuberances, or the presence of female brood patches (Pyle, 1997). Recently fledged birds were not sexed and were classified as hatch-year using plumage characters or incomplete skull ossification (Pyle, 1997). For simplicity in summarizing here, passerines older than hatch-year birds are usually identified in the text simply as “adults,” although actual banding records are more specific. The body-mass data included here (Table 2) are intended to supplement similar previously published data, such as those summarized by Dunning (1984, 1995). In the weight data, adults are classified by sex (M = Male, F = Female, U = Unknown) and age (AHY = After Hatch-Year; SY = Second-Year; ASY = After Second-Year) whenever possible. Weights of hatch-year (HY) individuals are listed separately, and Nestlings (“Nest”) are further separated.

A rough index to relative abundance for Platte Valley breeding species is indicated in the text by using “local” for species with up to ten probable or confirmed breedings along the Platte River of Nebraska (including the North and South Platte) as reported by Mollhoff (2001), “common” for species with 10-19 records, “very common” for those with 20-29 records, and “abundant” for those with 30 or more records. Relative abundance categories of migrant-only species were based on numbers of birds seen or captured at the two sites, as well as on published regional abundance estimates by Brown & Brown (2001) or Johnsgard (2005). In addition to the “permanent resident” species that are usually present in the Platte Valley year-around, “summer residents” are those species that seasonally migrate and winter beyond the Platte Valley, regardless of how far they might migrate. “Short-distance” migrants are here defined as non-breeders whose breeding ranges in interior North America overlap or nearly overlap with their wintering range, and “long-distance” migrants are those that regularly winter well to the south of their southernmost breeding ranges. Most long-distance migrants are also Nearctic-Neotropical migrants that winter in the Neotropics south of the Tropic of Cancer (Terborgh 1989). Winter ranges of long-distance migrants are from The Birds of North America accounts of each species (A. Poole and F. Gill, eds. The Academy of Natural Sciences, Philadelphia, PA).

Capture Results

Green Heron, *Butorides virescens*, is a local summer resident and long-distance migrant with central continent birds wintering along the Gulf Coast south to Nicaragua and Puerto Rico. One bird of unknown age was banded in the central Platte Valley.

Northern Harrier, *Circus cyaneus*, is a local summer resident and whereas some overwinter locally in the Platte Valley, others may be long-distance migrants wintering as far south as the Caribbean islands and northern South America. Two nestlings and one adult female were banded at a nest in Ackley Valley, a Sandhills wet meadow near CPBS.

- Sharp-shinned Hawk, *Accipiter striatus*, is migrant that follows small bird migrations to as far south as Panama. Some individuals may overwinter in the Platte Valley. Two second-year birds were banded at CPBS.
- Cooper's Hawk, *Accipiter cooperii*, is partially migrant with some individuals being permanent residents; many individuals migrate along with their prey birds as far south as the Yucatan Peninsula. One second-year bird was banded in the CPV.
- American Kestrel, *Falco sparverius*, is a very common permanent resident and short distance migrant in the Platte Valley. One adult-plumaged bird was banded in the CPV.
- Virginia Rail, *Rallus limicola*, is a nester in Platte Valley wetlands and long-distance migrant wintering from the Gulf to Central America. Six were banded at CPBS, including one hatch-year bird.
- Sora, *Porzana carolina*, is a local summer resident in Platte Valley wetlands and long-distance migrant. One adult was banded at CPBS.
- Killdeer, *Charadrius vociferus*, is an abundant summer resident and short-distance migrant in the Platte Valley. One adult was banded at CPBS and eight, including one hatch-year bird in the CPV. Weight statistics on those birds having sample sizes adequate for analysis are attached (Table 2).
- Spotted Sandpiper, *Actitis macularia*, is a long-distance migrant wintering from the Gulf of Mexico to central America. Sixteen, including 10 hatch-year birds were banded at CPBS. Forty-three, including three hatch-years, were captured in the central Platte Valley (Table 2).
- Semipalmated Sandpiper, *Calidris pusilla*, is a common long-distance migrant in the Platte Valley. One bird of unknown age was banded in the central Platte Valley.
- Least Sandpiper, *Calidris minutilla*, is a common long-distance migrant in the Platte Valley. One bird of unknown age was captured in the central Platte Valley.
- Mourning Dove, *Zenaida macroura*, is an abundant summer resident and short-distance migrant in the Platte Valley (Fig 2). Six were banded at CPBS, and 18 in the CPV, including two hatch-year birds at CPBS and four at CPV. (Table 2)
- Black-billed Cuckoo, *Coccyzus erythrophthalmus*, is a local summer resident and Nearctic-Neotropical migrant in the Platte Valley. Five adults were banded at CPBS.
- Yellow-billed Cuckoo, *Coccyzus americanus*, is a local summer resident and Nearctic-Neotropical migrant in the Platte Valley. Sixteen adults were banded at CPBS all of the western subspecies *occidentalis*. Three adults were captured in the central Platte Valley (Table 2).
- Eastern Screech-owl, *Otus asio*, is a common permanent resident in the Platte Valley. One gray-morph adult was banded at CPBS.
- Common Poorwill, *Phalaenoptilus nuttallii*, is a local summer resident and long-distance migrant in the western Platte Valley, mainly along ledges of rocky canyon walls. One adult was banded at CPBS.
- Belted Kingfisher, *Ceryle alcyon*, is a very common permanent resident and short-distance migrant in the Platte Valley. Thirty-one were banded at CPBS, including 25 hatch-year birds, and two in the central Platte Valley.
- Red-headed Woodpecker, *Melanerpes erythrocephalus*, is an abundant summer resident and short-distance migrant in the Platte Valley, breeding west into eastern



Fig. 2 Sketch of Mourning Dove, one of the most abundant breeding birds of the Platte Valley (Mollhoff, 2001). Drawing by Paul Johnsgard.

- Wyoming and Colorado. Seventeen, with three hatch-year birds, were banded at CPBS and eight, including one hatch-year, in the CPV (Table 2).
- Red-bellied Woodpecker, *Melanerpes carolinus*, is a local summer resident and short-distance migrant in the Platte Valley, breeding west probably at least to Garden County (Mollhoff, 2001). Five were banded, including one hatch-year bird, in the CPV. Davis (2001a) estimated its abundance ratio relative to the Red-headed Woodpecker as 10:34 (22.7 percent of combined population) in the central Platte Valley during the breeding season.
- Downy Woodpecker, *Picoides pubescens*, is a very common permanent resident in the Platte Valley. Sixty-three birds were banded at CPBS and 38 in the CPV. Hatch-year birds were 26 at CPBS and 11 at CPV (Table 2).
- Hairy Woodpecker, *Picoides villosus*, is a local permanent resident in the Platte Valley. Fifteen, including one hatch-year bird, were banded at CPBS and eight in the CPV (Table 2).
- Northern Flicker, *Colaptes auratus*, is an abundant permanent resident in the Platte Valley. Thirty-six yellow-shafted phenotypes, including 12 hatch-year, were banded at CPBS, and 74, including 11 hatch-year, in the CPV. Wintering birds at CPBS are red-shafted phenotypes, but many migrants and breeders are yellow-shafted (Brown & Brown, 2001). The individuals captured at CPBS were judged to be about 50 percent hybrids, and 25 percent each of the two typical racial phenotypes. No red-shafted flickers were captured in the CPV. CPBS lies within a very broad geographic zone of secondary contact and intergrades between the yellow-shafted and red-shafted races of this species (Short, 1965; Johnsgard, 1979; Sharpe et al., 2001) (Table 2).
- Olive-sided Flycatcher, *Contopus cooperi*, is a rare long-distance migrant in the Platte Valley. One adult was banded at CPBS.
- Western Wood-Pewee, *Contopus sordidulus*, is a local summer resident in the western Platte Valley and a Nearctic- Neotropical migrant, breeding east at least to Ash Hollow and Clear Creek, Garden County (Brown & Brown, 2001). Five adults were banded at CPBS. This species was not reported from the central Platte Valley by Davis (2005a).
- Eastern Wood-Pewee, *Contopus virens* is a local summer resident and Nearctic- Neotropical migrant in the central and eastern Platte Valley, with confirmed breeding records west along the North Platte to Keith County (Sharpe et al., 2001), and along the South Platte to the Colorado border (Short, 1961). There is so far only a single recent Colorado record of a territorial male Eastern Wood-Pewee, and no state breeding records (Kingery, 1998). They are also unreported as breeders for Wyoming. Four were banded at CPBS and two in the CPV, all adults. CPBS evidently lies within an apparently rather narrow secondary contact zone of the two wood-pewees, which also occurs along the South Platte and in the upper Niobrara Valley (Short, 1961; Sharpe et al., 2001). Local hybridization in these areas of western Nebraska is likely, but is difficult to establish in such similar-appearing species.
- Yellow-bellied Flycatcher, *Empidonax flaviventris* is a long-distance migrant in the Platte Valley passing between the Neotropics and boreal forests. Two adults were banded at CPBS.

Willow Flycatcher, *Empidonax traillii* and Alder Flycatcher, *Empidonax alnorum*. Both of these species winter in the Neotropics. The Willow Flycatcher is apparently local (probably common) summer resident and Nearctic-Neotropical migrant in the eastern Platte Valley, becoming less common westwardly. However the Willow Flycatcher is listed as a species of “Management Concern and Continental Importance” (Rich et al. 2004). The Alder Flycatcher is a common Nearctic-Neotropical migrant throughout the Platte valley in Nebraska. A total of 160 birds, with 120 presumed *traillii* and 40 presumed *alnorum* were banded at CPBS, although species identifications were sometimes sufficiently uncertain as to warrant discussing these two sibling species collectively as “Traill’s Flycatcher.” In the CPV, 92 birds identified as Willows were banded and 52 were identified as Alders. There were 13 hatch-year Willows from CPBS and 2 from CPV. These apparent breedings suggest that nesting by the Willow Flycatcher occurs substantially west of previously known Nebraska records (Mollhoff, 2001). One Alder Flycatcher from CPV was later recaptured near Tok, Alaska, August 2, 2001, and another that was banded at CPBS on May 28, 1993 was recovered at Fairbanks, Alaska, August 7, 1993 (Table 2).

Least Flycatcher, *Empidonax minimus*, is a very common long-distance Nearctic-Neotropical migrant in the Platte Valley. A total of 133 were banded at CPBS, including four hatch-year birds, the latter believed to be early fall migrants (July 30 to August 17). In the CPV 49 were banded, including two hatch-year birds (Table 2).

Eastern Phoebe, *Sayornis phoebe*, is a common summer resident, especially eastwardly in the Platte Valley and long-distance migrant wintering in the Neotropics. There are breeding records in the South Platte Valley west to Yuma County, Colorado (Kingery, 1998), and to extreme eastern Wyoming (Luce et al., 1997). Five were banded, with one hatch-year at CPBS, and two adults in the CPV.

Great Crested Flycatcher, *Myiarchus crinitus*, is a common summer resident and Nearctic-Neotropical migrant, breeding west probably to at least Morrill County (Mollhoff, 2001). Scattered breedings by Great Crested Flycatchers have also occurred in the South Platte, Arkansas and Cimarron valleys of eastern Colorado (Kingery, 1998). Fourteen adults were banded at CPBS, and 36, including six hatch-year birds, in the CPV (Table 2).

Western Kingbird, *Tyrannus verticalis*, is an abundant summer resident and Nearctic-Neotropical migrant in the Platte Valley, especially westwardly. A total of 123, including 43 hatch-year birds, were banded at CPBS, and seven adults in the CPV. Cedar Point bandings indicate a Western to Eastern Kingbird ratio of 1.37 to 1. In the Central Platte Valley bandings indicate a Western to Eastern Kingbird ratio of 1 to 7.57. Sixty-five miles farther east, Davis (2005a) estimated the Western Kingbird abundance ratio relative to the Eastern Kingbird as 1 to 23 during the breeding season (Table 2).

Eastern Kingbird, *Tyrannus tyrannus*, is an abundant summer resident and Nearctic-Neotropical migrant in the Platte Valley. Ninety, including 38 hatch-years, were banded at CPBS and 53, including six hatch-year birds, in the CPV (Table 2).

- Loggerhead Shrike, *Lanius ludovicianus* is a common summer resident and short-distance migrant in the Platte Valley. One adult was banded at CPBS, and one in the CPV.
- White-eyed Vireo, *Vireo griseus* is a rare long-distance migrant in the western Platte Valley, becoming increasingly common eastwardly. This species is year-round along the Gulf of Mexico, but many winter in the Neotropics of the Caribbean islands and Belize. One adult was banded at CPBS.
- Bell's Vireo, *Vireo bellii*, is a very common summer resident in the Platte Valley and Nearctic- Neotropical migrant wintering as far south as Nicaragua. The species is listed as a "Species of Continental Importance requiring immediate action" (Rich et al. 2004). A total of 207, including 34 hatch-years, were banded at CPBS, and 51, including 2 hatch-years in the CPV. These weight samples are substantially larger than any previously reported in the published literature (Brown, 1993) (Table 2).
- Warbling Vireo, *Vireo gilvus*, is a very common summer resident in the Platte Valley and long-distance migrant wintering south to Nicaragua. A total of 110, including 34 hatch-years, were banded at CPBS and 223, including 14 hatch-years in the CPV (Table 2).
- Red-eyed Vireo, *Vireo olivaceus*, is a local summer resident and Nearctic-Neotropical migrant in the Platte Valley, west probably to Scotts Bluff County in Nebraska (Mollhoff, 2001) and to northeastern Wyoming (Luce et al., 1997). Scattered breedings of Red-eyed Vireos have also occurred in the South Platte and Arkansas River valleys of eastern Colorado (Kingery, 1998). A total of 33, including two hatch-years, were banded at CPBS and 13 adults were banded in the CPV (Table 2).
- Blue Jay, *Cyanocitta cristata*, is an abundant permanent resident in the Platte Valley. A total of 68, including 11 hatch-years, were banded at CPBS, and 42, including 4 hatch-years, were banded in the CPV. Numbers declined sharply with the advent of West Nile virus, but seem to be rebounding now (Table 2).
- Black-billed Magpie, *Pica pica*, is a common permanent resident in the Platte Valley, mainly westwardly. Regular Platte Valley nestings now occur east to Dodge County (Sharpe et al, 2001), and vagrants often appear even farther east. Three were banded at CPBS, including one hatch-year bird. Davis (2005a) estimated its abundance ratio relative to the Blue Jay as 1:112 (0.8 percent of combined population) in his central Platte Valley study sites during the breeding season.
- Tree Swallow, *Tachycineta bicolor*, is a local summer resident and long-distance migrant in the Platte Valley. Fifteen, including seven hatch-year birds, were banded at CPBS, and 14, including three hatch-year birds, in the CPV (Table 2).
- Northern Rough-winged Swallow, *Stelgidopteryx serripennis* is an abundant summer resident in the Platte Valley and long-distance migrant. A total of 238, including 122 hatch-year birds, were banded at CPBS, and 10, including 5 hatch-year birds, in the CPV (Table 2).
- Bank Swallow, *Riparia riparia* is a common summer resident and Nearctic-Neotropical migrant in the Platte Valley. A total of 23, including 17 hatch-year birds, were banded at CPBS, and six, including two hatch-years (Table 2) in the CPV (Table 2).

- Cliff Swallow, *Petrochelidon pyrrhonota* is an abundant summer resident and Nearctic-Neotropical migrant in the Platte Valley. A total of 648, including 69 hatch-years, were banded at CPBS, and none in the CPV. Hatch-year birds (68) comprised 9.8 percent of all initial captures, a very low percentage of young relative to the other swallows, and perhaps reflecting a very early summer departure of adults and newly fledged young (Table 2).
- Barn Swallow, *Hirundo rustica*, is an abundant summer resident in the Platte Valley and Nearctic-Neotropical migrant. Thirty-three, including 18 hatch-years were banded at CPBS. There were none in the CPV (Table 2).
- Black-capped Chickadee, *Poecile atricapillus* is an abundant permanent resident in the Platte Valley. A total of 259, including 127 hatch-years, were banded at CPBS, and 58, including 15 hatch-year in the CPV. A very steep decline in this species was noted in the CPV with the appearance of West Nile Virus, and recovery has not yet been noted (Table 2).
- Red-breasted Nuthatch, *Sitta canadensis*, is a common overwintering short-distance migrant in the Platte Valley. Five adults were banded at CPBS.
- White-breasted Nuthatch, *Sitta carolinensis*, is a common overwintering short-distance migrant throughout the Platte Valley, and a local permanent resident in the eastern Valley, possibly now expanding westward as a breeder (Sharpe et al., 2001). Two, including one hatch-year bird were banded at CPBS; 11, including 3 hatch-years were banded in the CPV (Table 2).
- Rock Wren, *Salpinctes obsoletus*, is a local summer resident and short-distance migrant in the western Platte Valley, breeding east regularly to Lincoln County. Twenty-seven, including 11 hatch-year birds were banded at CPBS (Table 2).
- House Wren, *Troglodytes aedon* is an abundant summer resident and short-distance migrant in the Platte Valley. There were 405, including 118 hatch-years banded at CPBS and 313, including 85 hatch-years in the CPV. Colt (1997) found this species to have the highest densities (average of 143 pairs per square kilometer) of any breeding bird in his central Platte Valley study areas. It also had the highest frequency of occurrence (average 96.5%) of any species. Davis (2005a) also reported it to have the highest breeding density of all breeders in central Platte Valley sites (Table 2).
- Marsh Wren, *Cistothorus palustris* is a local summer resident and short-distance migrant in Platte Valley wetlands and adjacent Sandhills marshes. Ten, including six hatch-years, were banded at CPBS (Table 2).
- Ruby-crowned Kinglet, *Regulus calendula* is a common migrant in the Platte Valley with breeding grounds in boreal forests in nearby mountains into Alaska. Many overwinter in Texas and Mexico. One adult was banded at CPBS.
- Blue-gray Gnatcatcher, *Polioptila caerulea* is rare in the western Platte Valley; a long-distance migrant that winters in Mexico, Cuba and as far south as Guatemala. One adult was banded at CPBS. The nominate race is a summer resident in the eastern Platte Valley, west to Saunders County (Sharpe et al., 2001). Mollhoff (2001) reported no bird-atlas breeding records west of Cass County, but a female in breeding condition was banded at CPBS. A breeding population of the western race *P. c. amoenissima* is evidently expanding into western Nebraska from

- Colorado and Wyoming (Sharpe et al., 2001), which might account for this species' unexpected presence and potential breeding at CPBS.
- Eastern Bluebird, *Sialia sialis*, is a very common summer resident and short-distance migrant in the Platte Valley. It is apparently only a seasonal migrant at CPBS, although recent breeding records extend west to Scotts Bluff County in the North Platte Valley (Sharpe et al., 2001), and even to extreme eastern Wyoming (Luce et al., 1997) and eastern Colorado (Kingery, 1998). A probable hybrid breeding involving the Mountain Bluebird (*Sialia currucoides*) has been reported from Dawes County (Wilson et al., 1985; 1986). Mountain Bluebirds breed fairly commonly in the Pine Ridge and Wildcat Hills, where Eastern Bluebirds are becoming increasingly prevalent (Sharpe et al., 2001). Mountain Bluebirds have not been seen at CPBS later than March 27 (Brown & Brown, 2001), and have not yet been banded there. Twenty-six, including eight hatch-years, were banded in the CPV. No hybrids have been noted (Table 2).
- Veery, *Catharus fuscescens*, is a rare Nearctic-Neotropical migrant in the western Platte Valley, becoming increasingly common eastwardly. One adult was banded at CPBS.
- Gray-cheeked Thrush, *Catharus minimus*, is a rare Nearctic-Neotropical migrant in the western Platte Valley, becoming increasingly common eastwardly. One adult was banded at CPBS, and one in the CPV.
- Swainson's Thrush, *Catharus ustulatus* is a common Nearctic-Neotropical migrant in the Platte Valley. CPBS bandings totaled 259 and 109 were banded in the CPV, all spring-migrating adults. There have been no recaptures. The surprisingly common migrants at CPBS are perhaps en route to breeding areas in the South Dakota Black Hills or Wyoming, the nearest known nesting areas. With such large numbers, many could be headed for northern boreal forests (Table 2).
- Hermit Thrush, *Catharus guttatus*, is a rare Nearctic-Neotropical migrant in the western Platte Valley, becoming increasingly common eastwardly. One adult was banded in the CPV.
- Wood Thrush, *Hylocichla mustelina*, is a rare Nearctic-Neotropical migrant in the western Platte Valley, becoming increasingly common eastwardly, and breeding locally in the Valley, west to about Platte County (Mollhoff, 2001). Three adults were banded, two at CPBS and one in the CPV. There was also one young at CPV.
- American Robin, *Turdus migratorius*, is an abundant summer resident in the Platte Valley and short-distance migrant. Two hundred and fifty birds, including 151 hatch-years, were banded at CPBS and 120, including 19 hatch-years, in the CPV. Colt (1997) found this species to have the third-highest densities (average of 44 pairs per square kilometer) of any breeding bird in his central Platte Valley study areas; it was substantially lower in rank according to Davis' (2005a) estimates. It also had the third-highest frequency of occurrence (average 80.5%) of any species. Banding records in the CPV show a marked decrease in robins since West Nile Virus has invaded (Table 2).
- Gray Catbird, *Dumetella carolinensis*, is a very common summer resident in the Platte Valley it migrates to the southeast U.S. with many going to the Neotropics. Some catbirds fly across the Gulf of Mexico. The species nests from the Atlantic coast

- to the Pacific coast. A total of 155, including one hatch-year, were banded at CPBS, and 589, including 39 hatch-years, in the CPV, the most frequently netted species in that area (Table 2).
- Brown Thrasher, *Toxostoma rufum* is an abundant summer resident and short-distance migrant in the Platte Valley, breeding west commonly to eastern Colorado. A total of 140, including 32 hatch-years, were banded at CPBS and 224, including 14 hatch-years, in the CPV (Table 2).
- European Starling, *Sturnus vulgaris*, is an abundant permanent resident in the Platte Valley. Forty-seven, including 19 hatch-years, were banded at CPBS and 13, including four hatch-years, in the CPV (Table 2).
- Cedar Waxwing, *Bombycilla cedrorum*, is a local summer resident and short-distance migrant in the Platte Valley. Seventy-seven, including 14 hatch-years were banded at CPBS, and 15 adults in the CPV (Table 2).
- Blue-winged Warbler, *Vermivora pinus*, is a rare Nearctic-Neotropical migrant in the western Platte Valley; on the “Continental Watchlist” (Rich et al. 2004). Two adults were banded at CPBS.
- Golden-winged Warbler, *Vermivora chrysoptera*, is a rare Nearctic-Neotropical migrant in the western Platte Valley. This is a species of “Continental Importance for immediate action” (Rich et al. 2004) in the Northern Forest Biome where it nests. One adult was banded at CPBS.
- Tennessee Warbler, *Vermivora peregrine*, is an uncommon Nearctic-Neotropical migrant in the western Platte Valley, becoming increasingly common eastwardly. Three adults were banded at CPBS and 14 in the CPV. Some favorable migration days result in many captures (Table 2).
- Orange-crowned Warbler, *Vermivora celata*, is a common Nearctic-Neotropical migrant in the Platte Valley. Thirty-seven adults were banded at CPBS and 60 in the CPV (Table 2).
- Nashville Warbler, *Vermivora ruficapilla*, is a very rare Nearctic-Neotropical migrant in the western Platte Valley, but a common boreal forest nester, and becoming increasingly common eastwardly. One adult was captured in the CPV.
- Yellow Warbler, *Dendroica petechia*, is an abundant summer resident and Nearctic-Neotropical migrant in the Platte Valley. Eight hundred and fifty-four adults, with 341 hatch-years were banded at CPBS and 222 Yellow Warblers, including 11 hatch-years in the CPV (Table 2).
- Chestnut-sided Warbler, *Dendroica pennsylvanica*, is an uncommon Nearctic-Neotropical migrant in the western Platte Valley, increasingly common eastwardly although some members of this species nest due north of the Platte River in Canada. Two adults were banded at CPBS and one in the CPV.
- Magnolia Warbler, *Dendroica magnolia*, is a very rare Nearctic-Neotropical migrant in the western Platte Valley, but common on its nesting grounds in the boreal forests from the Atlantic coast to British Columbia. One adult was banded at CPBS, and one in the CPV.
- Black-throated Blue Warbler, *Dendroica caerulescens*, is a very rare Nearctic-Neotropical migrant in the western Platte Valley, becoming increasingly common eastwardly where it is restricted to eastern boreal forests for nesting. Two adults were banded at CPBS and one in the CPV.

- Yellow-rumped Warbler, *Dendroica coronata*, is a common migrant in the Platte Valley, and winters in the southern and Gulf States. Thirty-three Myrtle and seven Audubon's were banded at CPBS, and 12 Myrtle Warblers in the CPV, all adults. No Audubon's were caught in the CPV (Table 2).
- Blackpoll Warbler, *Dendroica striata*, is an uncommon Nearctic-Neotropical migrant in the Platte Valley. Nine adults were banded at CPBS and three adults in the CPV.
- Black-and-white Warbler, *Mniotilta varia*, is an uncommon Nearctic-Neotropical migrant in the Platte Valley, and possible nester. Five adults were banded at CPBS.
- American Redstart, *Setophaga ruticilla*, is an uncommon Nearctic-Neotropical migrant and occasional nester in the central Platte Valley. Ten were banded at CPBS and 12 in the CPV, all adults (Table 2).
- Prothonotary Warbler, *Protonotaria citrea*, is a rare Nearctic-Neotropical migrant in the western Platte Valley. Two adults were banded at CPBS.
- Worm-eating Warbler, *Helmitheros vermivorus*, is a very rare Nearctic-Neotropical migrant in the Platte Valley. Three adults were banded at CPBS.
- Ovenbird, *Seiurus aurocapillus* is a common Nearctic-Neotropical migrant in the Platte Valley. A total of 65 adults were banded at CPBS and seven, including one hatch-year in the CPV. The nearest known breeding areas are in the Niobrara and Missouri valleys, although singing males could be heard at CPBS several times in June (Table 2).
- Northern Waterthrush, *Seiurus noveboracensis*, is an uncommon Nearctic-Neotropical migrant in the Platte Valley. Seven were banded at CPBS and five in the CPV, all adults. One captured in the CPV had a stopover time of three days, during which it gained 1.6 gm, or nearly ten percent of overall body mass.
- Mourning Warbler, *Oporornis philadelphia*, is an uncommon Nearctic-Neotropical migrant in the Platte Valley. Six were banded at CPBS and eight in the CPV, all adults (Table 2).
- MacGillivray's Warbler, *Oporornis tolmiei*, is an uncommon Nearctic-Neotropical migrant in the Platte Valley. Ten were banded at CPBS, and one in the CPV, all adults (Table 2).
- Common Yellowthroat, *Geothlypis trichas*, is an abundant summer resident, especially near water, in the Platte Valley and a Nearctic-Neotropical migrant. A total of 310, including 50 hatch-years, were banded at CPBS and 77, including two hatch-years, in the CPV. Colt (1997) found this species to have the fourth-highest densities (average of 42.5 pairs per square kilometer) of any breeding bird in his central Platte Valley study areas; it occupied fifth place in Davis' (2005a) point-count estimates (Table 2).
- Hooded Warbler, *Wilsonia citrine*, is a rare Nearctic-Neotropical migrant in the western Platte Valley, becoming increasingly common eastwardly. Two adults were banded at CPBS.
- Wilson's Warbler, *Wilsonia pusilla*, is an uncommon Nearctic-Neotropical migrant in the western Platte Valley, becoming increasingly common eastwardly. Three adults were banded at CPBS, and three in the CPV.
- Canada Warbler, *Wilsonia canadensis*, is a rare Nearctic-Neotropical migrant in the western Platte Valley, becoming more common eastwardly, but listed as a species of "Continental Concern" (Rich et al. 2004). Two adults were banded at CPBS.

- Yellow-breasted Chat, *Icteria virens*, is a local summer resident and Nearctic-Neotropical migrant in the Platte Valley. A total of 250, including 33 hatch-year birds were banded at CPBS and 15 adults in the CPV (Table 2).
- Scarlet Tanager, *Piranga olivacea*, is a local summer resident in the eastern Platte Valley. with probable recent breeding records extending west only to Saunders and Dodge counties (Mollhoff, 2001). Older nesting records extend west to Lincoln County (Sharpe et al., 2001). It is a Nearctic-Neotropical migrant wintering from Panama south through the Amazon Valley. Two adults were banded at CPBS, presumably both migrants; none was obtained in the CPV. Western tanagers (*Piranga ludoviciana*) have been rarely seen around CPBS (Brown & Brown, 2001), but have not been present during the breeding season.
- Spotted Towhee, *Pipilo maculatus*, is a local summer resident in the western Platte Valley and short-distance migrant, with winter range dipping into northern Mexico. Eastern breeding limits are confused by hybridization. A total of 182, including 14 hatch-year birds identified as this species were banded at CPBS, although many showed reduced degrees of white spotting that would suggest hybridization has occurred (Brown & Brown, 2002)(Fig. 3). In an earlier report, there were 87 such “spotted” towhees (e.g., birds with even a slight degree of dorsal spotting) banded in the CPV and 20 “pure” Easterns (18.7 percent) (Scharf, 2005). Including more recent data, there were 98, including four hatch-year “spotted” towhees (e.g., birds with even a slight degree of dorsal spotting) banded in the CPV (Table 2).
- Eastern Towhee, *Pipilo erythrophthalmus*, is a local summer resident and short-distance migrant in the eastern Platte Valley rarer westwardly (Scharf, 2005). Confirmed breeding by presumed Eastern Towhees has been reported as far west as three northeastern Colorado counties (Kingery, 1998), but is not yet reported for Wyoming. Winters in southern U.S. Two birds identified as this species were banded at CPBS, although Brown & Brown (2001) stated that “pure” Eastern Towhee phenotypes have not been verified (field observations) at CPBS. Twenty-four birds, including two hatch-years, were identified as Eastern Towhees, namely lacking dorsal spotting, were also banded in the CPV. The major area of secondary contact and associated hybrid zone occurs east of CPBS, and a large area of central Nebraska north of the Platte consists of hybrids, with the middle of the hybrid zone occurring approximately between Blair and the mouth of the Niobrara River (Sibley & West, 1959; Sharpe et al., 2001). Mollhoff (2001) judged the “boundary line” between the two to approximate a southwest to northeast line extending from about Keith County to Holt County, but clearly no narrow boundary zone can be established with the currently available data (Table 2).
- Chipping Sparrow, *Spizella passerine*, is a local summer resident in the eastern Platte Valley, breeding west probably to about Grand Island, but some populations extending to Alaska and the West Coast. It is a common migrant wintering in the southern U.S. with many extending into Mexico. On days of heavy migration, this species and the next often form flocks of 100 or more. A total of 340, including five hatch-year birds, were banded at CPBS and 31 adults in the CPV (Table 2).

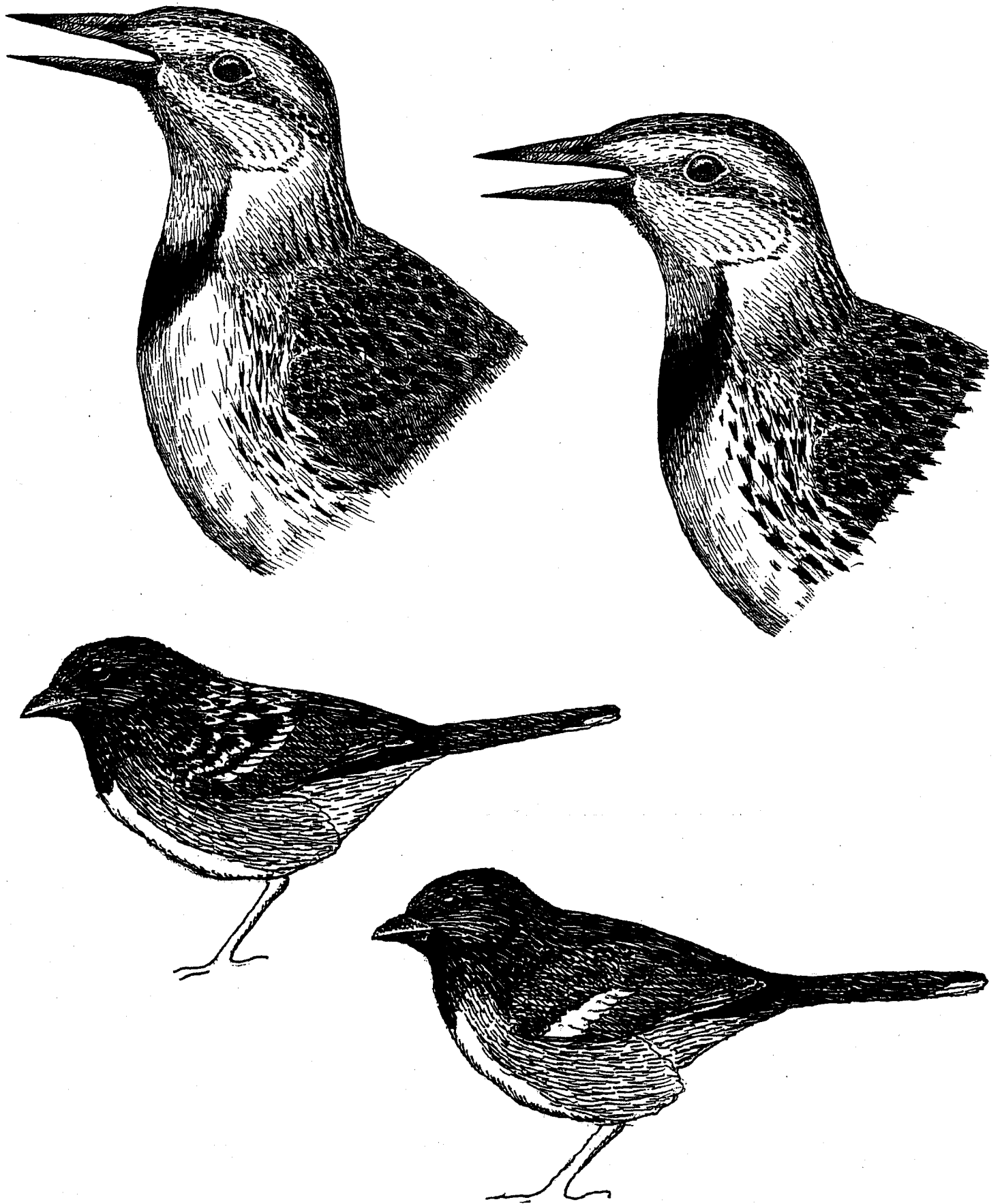


Fig. 3. Sketches of (left to right) Western and Eastern Meadowlarks (above), and Spotted and Eastern Towhees (below). Drawing by Paul Johnsgard.

- Clay-colored Sparrow, *Spizella pallida*, is a very common Nearctic-Neotropical migrant passing through the Platte Valley (Fig. 4). A total of 200 were banded at CPBS, and 43 in the CPV, all adults. These weight samples are substantially larger than any previously reported in the published literature (Knapton, 1994) (Table 2).
- Field Sparrow, *Spizella pusilla*, is a common summer resident in the Platte Valley and migrates to the Southeastern U. S. and northern Mexico in the winter. A total of 154, including 64 hatch-years, were banded at CPBS and 147, including nine hatch-years, in the CPV (Table 2).
- Lark Sparrow, *Chondestes grammacus*, is a local summer resident and Nearctic-Neotropical migrant in the Platte Valley. A total of 308, including 81 hatch-years, were banded at CPBS; one adult was banded in the CPV (Table 2).
- Savannah Sparrow, *Passerculus sandwichensis*, is an uncommon occasional local summer resident in the Platte Valley and long-distance migrant that winters southward to Belize and Honduras (Fig 4). One adult was banded at CPBS, and five, including four hatch-years, in the CPV. These hatch-year birds suggest that local breeding might rarely occur in the central Platte Valley, although no such records currently exist, and the nearest known breeding records are from northwestern Nebraska.
- Grasshopper Sparrow, *Ammodramus savannarum*, is a very common summer resident in the Platte Valley and winters from the Gulf States all the way to Nicaragua. This is a “Species of Continental Importance for management” (Rich et al. 2004). Thirty-three, including 10 hatch-year birds, were banded at CPBS and 85, including 11 hatch-years, in the CPV. These weight samples are substantially larger than any previously reported in the published literature (Vickery, 1996) (Table 2).
- Song Sparrow, *Melospiza melodia*, is a common summer resident in the Platte Valley and short-distance migrant. A total of 22, including two hatch-years, were banded at CPBS, and 157, including 21 hatch-years, in the CPV (Table 2).
- Lincoln’s Sparrow, *Melospiza lincolnii*, is uncommon in the Platte Valley; a migrant headed for nesting in boreal forests and wintering in southeastern states to as far south as Honduras. A total of 34 adults were banded at CPBS (Table 2).
- Swamp Sparrow, *Melospiza georgiana*, is a local summer resident and in central Platte Valley wetlands (west at least to Lincoln County) and adjacent Sandhills marshes, not yet known to breed at CPBS. This species winters in southeastern states to as far south as southern Mexico. One was banded at CPBS, and 21, including two hatch-years, in the CPV (Table 2).
- White-throated Sparrow, *Zonotrichia albicollis*, is a common long-distance and occasionally overwintering migrant in the Platte Valley. Six were banded at CPBS, and five in the CPV, all adults.
- Harris’s Sparrow, *Zonotrichia querula*, is a common long-distance and regularly overwintering migrant in the Platte Valley. One adult was banded at CPBS and two in the CPV.
- White-crowned Sparrow, *Zonotrichia leucophrys*, is a common short-distance and regularly overwintering migrant in the Platte Valley. A total of 86 (all *gambelii*) was banded at CPBS and 30 in the CPV (14 *leucophrys*), all adults (Table 2).

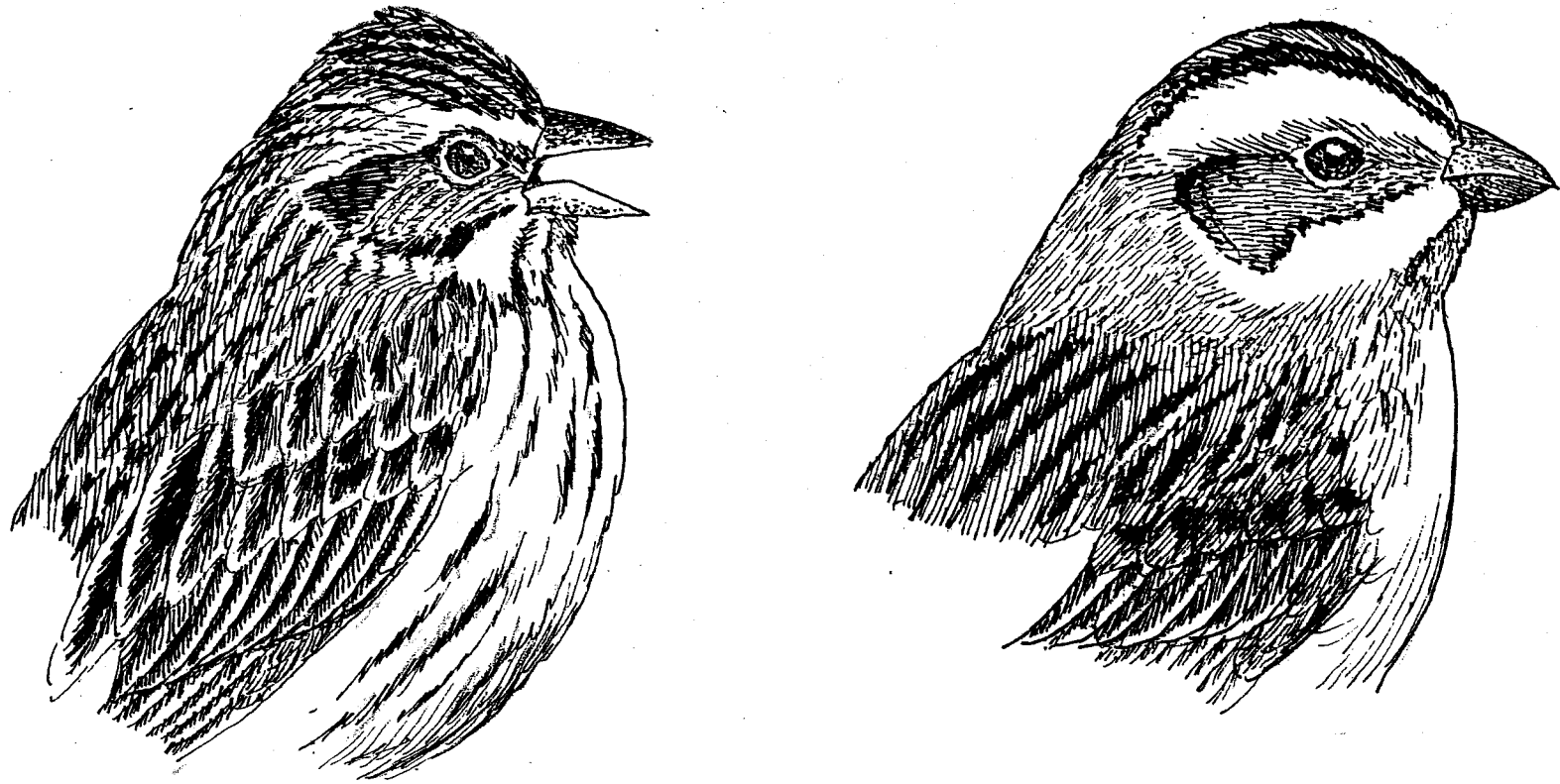


Fig. 4 Sketches of Savannah Sparrow (left) and Clay-colored Sparrow (right), regular migrants in the western Platte Valley. Drawing by Paul Johnsgard.

Dark-eyed Junco, *Junco hyemalis*, is a common short-distance and regularly overwintering migrant in the Platte Valley. A total of 17 Slate-colored (*hyemalis*) and 10 Oregon Juncos (*thurberi*) were banded at CPBS, plus one White-winged Junco (*aikeni*), all adults (Table 2).

Northern Cardinal, *Cardinalis cardinalis*, is a very common permanent resident in the Platte Valley, rarer westwardly. Colorado breeding seems to be currently limited to Yuma County (Kingery, 1998) and there are no Wyoming breeding records (Luce et al., 1997). A total of 71, including 19 hatch-years, were banded at CPBS and 50, including 7 hatch-years, in the CPV (Table 2).

Rose-breasted Grosbeak, *Pheucticus ludovicianus*, is a local summer resident and Nearctic-Neotropical migrant in the eastern Platte Valley, becoming rarer westwardly. There are only a few eastern Colorado breeding records (Kingery, 1998) and at least one Wyoming record (Luce et al., 1997). Seven adults were banded at CPBS and 21, including 4 hatch-years, in the CPV. See the Black-headed Grosbeak account for hybrids (Table 2).

Black-headed Grosbeak, *Pheucticus melanocephalus*, is a common summer resident and Nearctic-Neotropical migrant in the western Platte Valley, becoming rarer eastwardly. Probable breeding by Black-headed Grosbeaks in the Platte Valley has been reported as far east as Phelps County (Mollhoff, 2001). A total of 38, including five hatch-year birds, were banded at CPBS and nine adults with evidence of breeding (brood patch or cloacal protuberance) were banded in the CPV. The major region of secondary contact of *ludoviciana* with *melanocephalus* and their associated hybrid zone apparently occur somewhat east of the CPBS location (West, 1962; Johnsgard 2000). Among 42 grosbeaks banded at CPBS, seven appeared to exhibit some hybrid features (Brown et al., 1996)(Fig. 5). This species was not reported from the central Platte Valley by Davis (2005a) (Table 2).

Blue Grosbeak, *Guiraca caerulea*, is a local summer resident and Nearctic-Neotropical migrant in the Platte Valley. A total of 32, including one hatch-year bird, were banded at CPBS and three adults were banded in the CPV (Table 2).

Lazuli Bunting, *Passerina amoena*, is a common summer resident in the western Platte Valley and Nearctic-Neotropical migrant, becoming rarer eastwardly. Probable breeding by Lazuli Buntings in the Platte Valley has been reported as far east as Lincoln County (Mollhoff, 2001), but the species' eastern breeding limits are greatly confused by hybridization with Indigo Buntings. The major region of secondary contact and the associated hybrid zone of *amoena* and *cyanea* is apparently in the general vicinity of CPBS (Sibley & Short, 1959; Emlen et al., 1975; Johnsgard 2000). A high level of coexistence and hybridization also occurs in the Pine Ridge region (Sharpe et al., 2001). Forty-one were banded at CPBS, including one hatch-year bird. Intermediate-plumaged male *amoena-cyanea* phenotypes were noted commonly around CPBS station during many summers, and 16 were noted as probable hybrid phenotypes among 79 banded birds (20.2 percent) during 1993 and 1994, when special attention was paid to hybridization (Fig. 5) One adult was banded in the CPV. The species was not reported from the central Platte Valley by Davis (2005a) (Table 2).

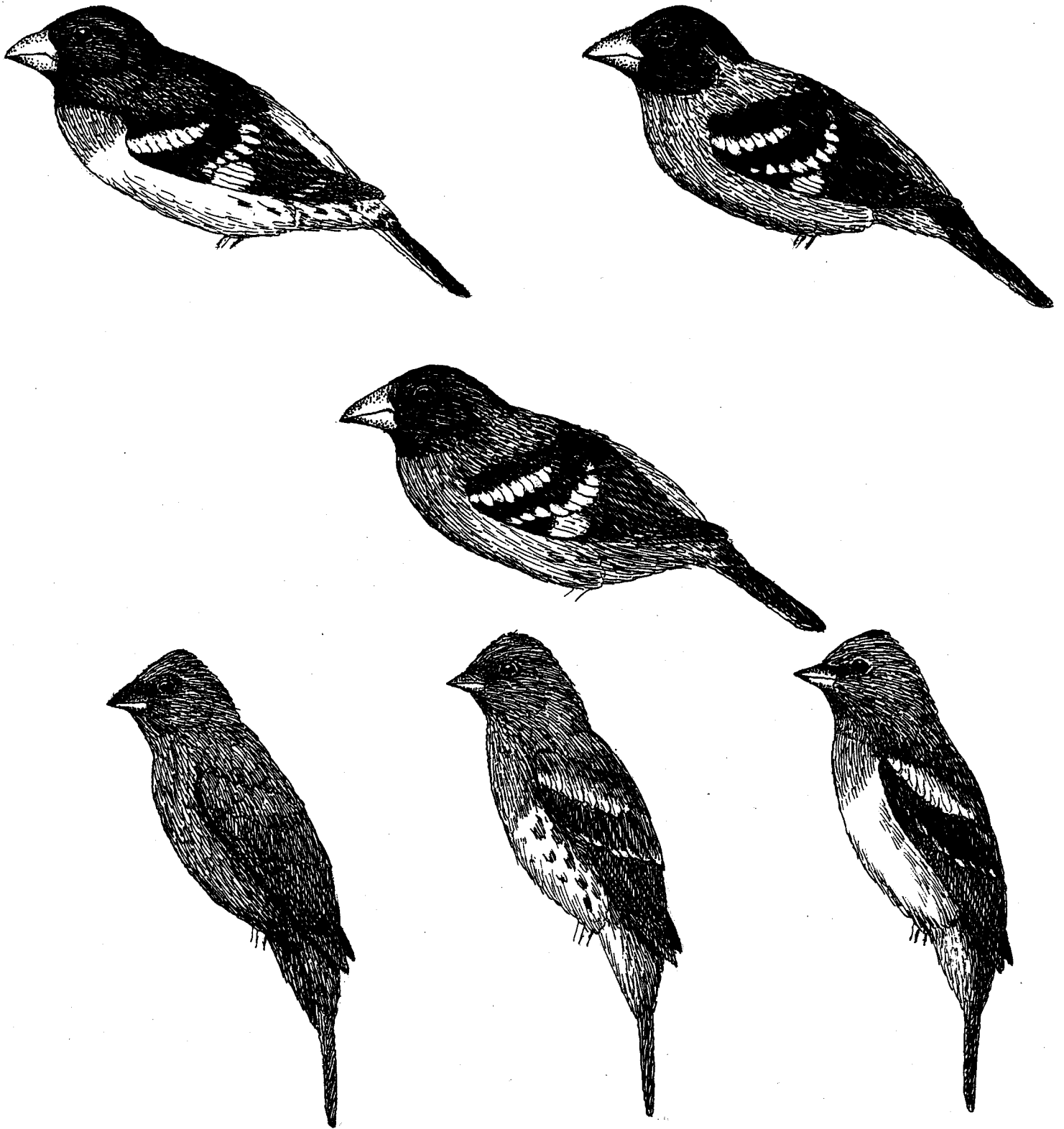


Fig. 5. Sketches of males of Rose-breasted Grosbeak (upper left), Black-headed Grosbeak (upper right), hybrid phenotype (middle), and (bottom, left to right) males of Indigo Bunting, hybrid phenotype, and Lazuli Bunting. Drawing by Paul Johnsgard.

- Indigo Bunting, *Passerina cyanea*, is a common summer resident and Nearctic-Neotropical migrant in the Platte Valley, rarer westwardly. Breeding in eastern Colorado probably occurred by invasion from both the Platte and Arkansas rivers (Kingery, 1998), and the few known Wyoming records include some hybrids with Lazuli Buntings (Luce et al., 1997). Forty-three, including one hatch-year bird were banded at CPBS and seven adults were banded in the CPV. See Lazuli Bunting account for hybrid phenotypes (Table 2).
- Dickcissel, *Spiza americana*, is an abundant summer resident in the Platte Valley and a Nearctic-Neotropical migrant. Reported as occurring in “clouds” in sugar cane fields in Venezuela. This is a “Species of Continental Importance for management” (Rich et al. 2004). The species now breeds fairly widely if erratically as far west as eastern Colorado (Kingery, 1998) and eastern Wyoming (Luce et al., 1997). A total of 60, including 17 hatch-years, were banded at CPBS and 16 adults were banded in the CPV (Table 2).
- Bobolink, *Dolichonyx oryzivorus*, is a local summer resident and Nearctic-Neotropical migrant in the Platte Valley. One adult was captured in the CPV.
- Red-winged Blackbird, *Agelaius phoeniceus*, is an abundant summer resident and short-distance migrant in the Platte Valley. A total of 1,074, including 422 hatch-years, were banded at CPBS, and 38, including two hatch-year birds were banded in the CPV (Table 2).
- Eastern Meadowlark, *Sturnella magna*, is a local summer and sometimes permanent resident in the eastern Platte Valley, becoming rarer westwardly (Fig. 3). This species has recently extended its western breeding range limits to northeastern Colorado, where it is still rare (Kingery, 1998). In contrast to the Western Meadowlark, the eastern species becomes increasingly limited to fairly wet meadow-like habitats in western Nebraska and also in the Nebraska Sandhills. Two were banded at CPBS and two in the CPV, all adults.
- Western Meadowlark, *Sturnella neglecta*, is an abundant summer resident and sometimes permanent resident in the Platte Valley. Seven were banded at CPBS and 15 in the CPV, all adults. Krapu (1981) judged the Western Meadowlark to be the most abundant breeding species in the Platte Valley, followed sequentially by the Common Grackle, Grasshopper Sparrow, House Sparrow, Mourning Dove, Brown-headed Cowbird and Red-winged Blackbird. These estimates do not conform well with our banding data, nor do they agree with the banding and point-count studies of Davis (2005a, 2005b), but probably reflect counts taken in more open-county and human-altered habitats (Table 2).
- Yellow-headed Blackbird, *Xanthocephalus xanthocephalus*, is a local summer resident and short-distance migrant in Platte Valley wetlands and adjacent Sandhills marshes. A total of 17, including 14 hatch-years, were banded at CPBS and none in the CPV where they pass through in early spring (Table 2).
- Common Grackle, *Quiscalus quiscula*, is an abundant summer resident and short-distance migrant in the Platte Valley (Fig. 6). A total of 27, including three hatch-years, were banded at CPBS, and 42, including 2 hatch-years, in the CPV (Table 2).

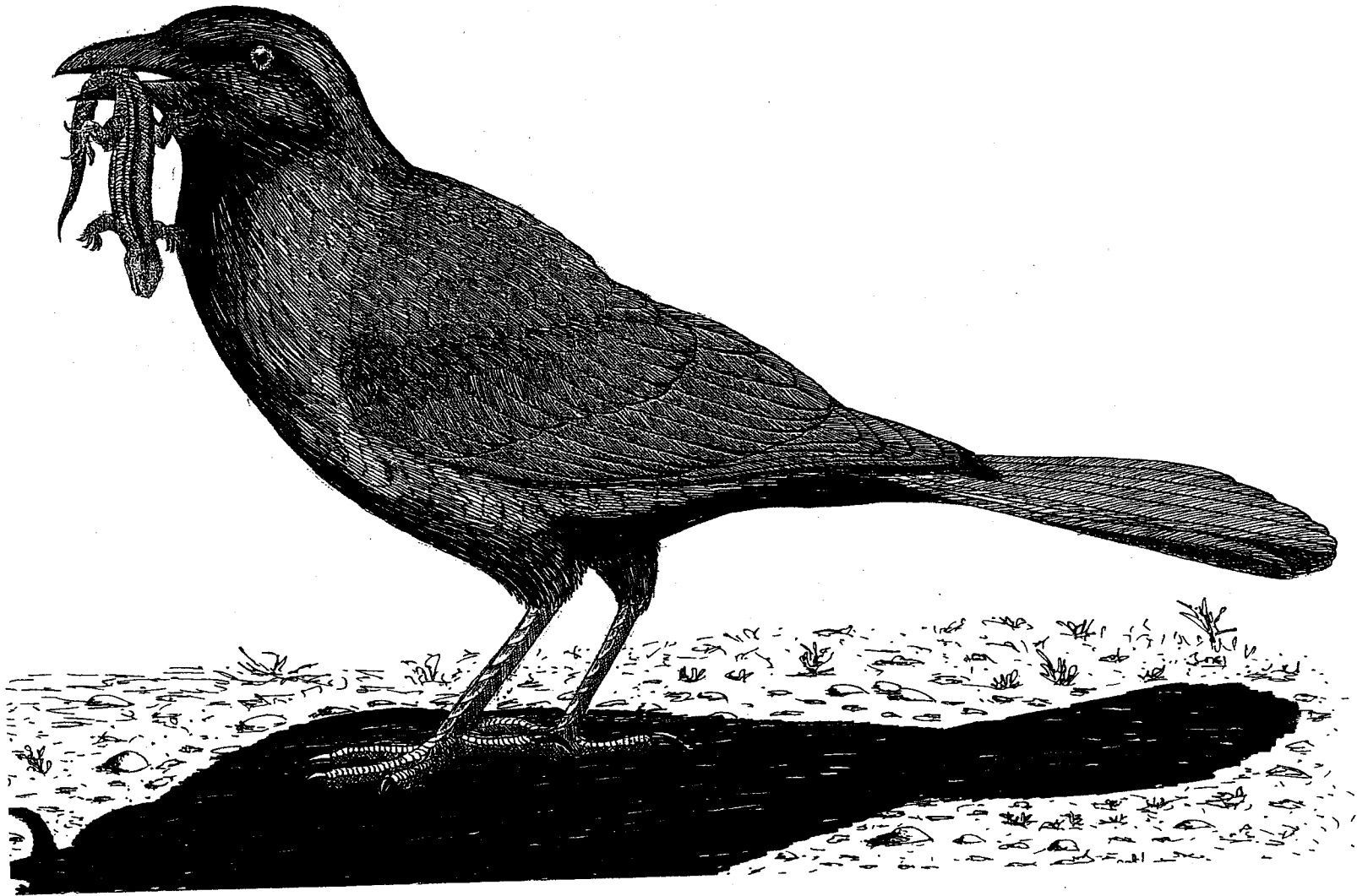


Fig. 6. Sketch of Common Grackle, one of the most abundant breeding birds of the Platte Valley (Mollhoff, 2001). Drawing by Paul Johnsgard.

- Brown-headed Cowbird, *Molothrus ater*, is an abundant summer resident and short-distance migrant in the Platte Valley. A total of 148, including 48 hatch-years, were banded at CPBS and 94, including three hatch-years in the CPV (Table 2).
- Orchard Oriole, *Icterus spurius*, is an abundant summer resident and Nearctic-Neotropical migrant in the Platte Valley. A total of 1,715, including 757 hatch-years, were banded at CPBS and 464, including 48 hatch-year in the CPV. Details of this species' biology at CPBS were published earlier (Scharf & Kren, 1996, 1997). These weight samples are substantially larger than any previously reported in the published literature (Scharf & Kren, 1996) (Table 2).
- Bullock's Oriole, *Icterus bullockii*, is a local summer resident and Nearctic-Neotropical migrant in the western Platte Valley. Possible breeding in the Platte Valley has been observed east to Keith County (Mollhoff, 2001). A total of nine birds identified as this species was banded at CPBS and 26 in the CPV. The species was not reported by Davis (2005a) from his central Platte Valley study sites. See the Baltimore Oriole account for hybrids (Table 2).
- Baltimore Oriole, *Icterus galbula*, is an abundant summer resident and Nearctic-Neotropical migrant in the Platte Valley, rarer westwardly. Baltimore Orioles are accidental in Wyoming, and extend to the eastern border of Colorado only along the South Platte and Republican rivers (Luce et al., 1996; Kingery, 1998). A total of 280, including 152 hatch-year, were banded at CPBS and 324, including ten hatch year, in the CPV. A total of 32 *galbula-bullockii* phenotypes were noted among 299 CPBS birds netted during 1993 and 1994 (10.7 percent), when special attention was paid to hybridization (Fig. 7). The major secondary contact and associated hybrid zone of these two species, once collectively regarded as the Northern Oriole, now apparently occurs somewhat west of CPBS (Rising, 1970; Corbin & Sibley, 1977), but during the mid-1900's apparently was centered in the vicinity of CPBS (Sibley & Short, 1964). Some hybrid phenotypes have occurred as far west as northeastern Colorado (Kingery, 1998). Colt (1997) judged this species to have the second-highest densities (average of 56 pairs per square kilometer) of any breeding bird in his central Platte Valley study areas, and also had the second-highest frequency of occurrence (average 87.5%) of any species. Davis (2005a) also estimated the Baltimore Oriole to have the second-highest densities of breeders in the same general area (Table 2).
- House Finch, *Carpodacus mexicanus*, is a local permanent resident in the Platte Valley. A total of 1299, including 878 hatch-years were banded at CPBS, and one adult was banded in the CPV. House finches first appeared near CPBS in 1985, but had reached Kearney before 1980. The installation of feeders resulted in a large influx of House Finches in the early 1990's. The virtual absence of House Finches at the CPV banding sites may reflect the fact that the netting sites there were mostly well away from human habitation, and Davis (2005a) also did not observe the species during his point-counts in riparian forests (Table 2).
- Red Crossbill, *Loxia curvirostra*, is an occasional short-distance migrant or irregular vagrant in the Platte Valley. Seven adults were banded at CPBS.
- Pine Siskin, *Carduelis pinus*, is a local migrant and occasional overwintering resident in the Platte Valley. A total of 59, including 4 hatch-years, were banded at CPBS.

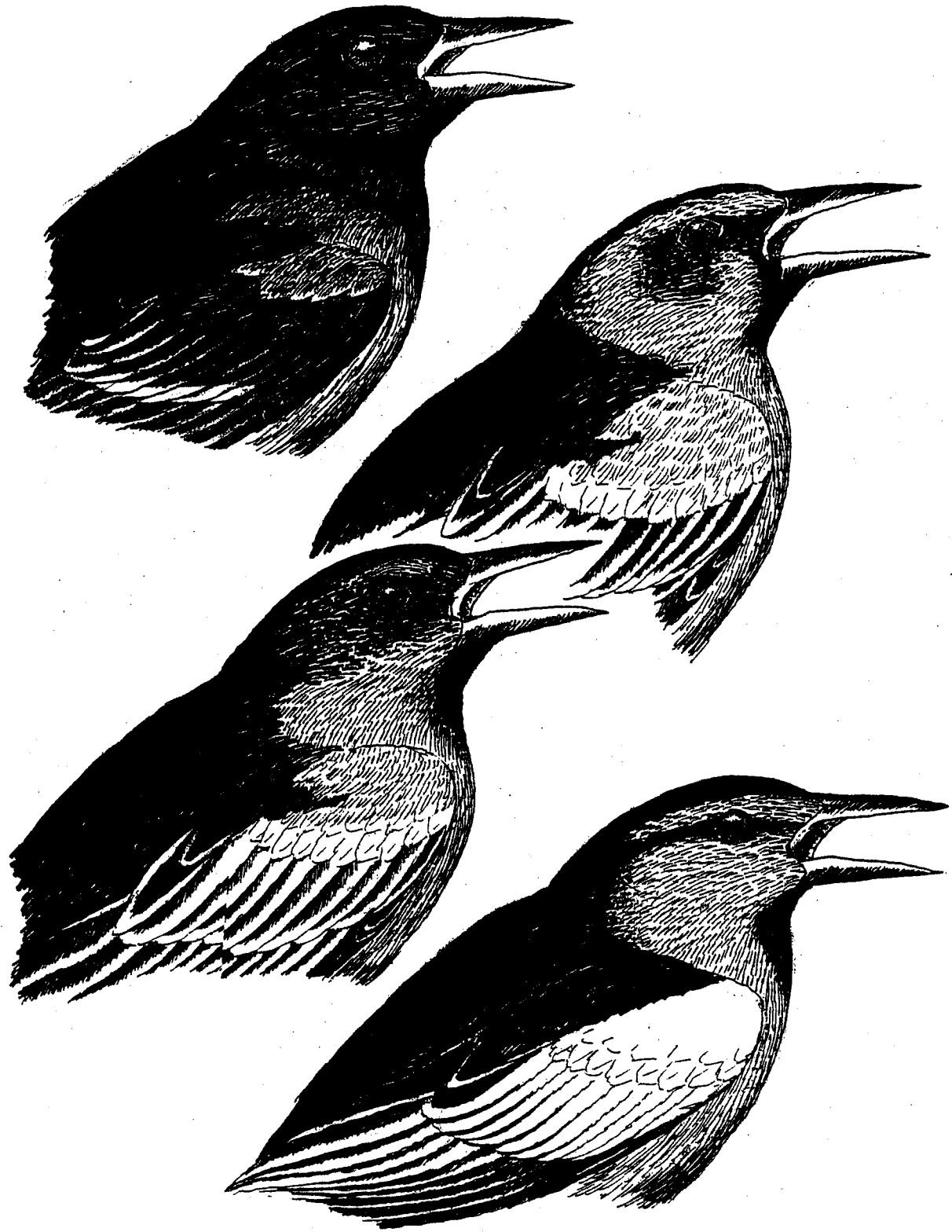


Fig. 7. Sketches of male Baltimore Oriole (above), two male hybrid phenotypes (middle) and Bullock's Oriole (below). Drawing by Paul Johnsgard.

Local breeding of this species evidently occurs around CPBS, at least sporadically (Scharf et al, 1993).

American Goldfinch, *Carduelis tristis*, is an abundant permanent resident and short distance migrant in the Platte Valley. A total of 908, including three hatch-years, were banded at CPBS and 306 in the CPV. The late nesting of this species meant that relatively few young were caught (Table 2).

House Sparrow, *Passer domesticus*, is an abundant permanent resident in the Platte Valley. One adult was banded at CPBS. This low banding rate does not reflect the species' overall abundance; Krapu (1971) judged it to be the fourth-most common breeding species in the Platte Valley, but Davis (2005a) reported an extremely low (0.01) frequency of occurrence in his central Platte Valley point counts.

Discussion

The Platte River Valley has been recognized as a major migratory stopover point for north-south avian migrants for a long period. It is especially valuable for riparian and woodland-adapted birds crossing the generally non-forested Great Plains, for it is one of a series of riparian "stepping stones" represented by eastwardly-flowing rivers between Texas and the Dakotas, namely (in south to north sequence) the Red, the Arkansas, the Smoky Hill, the Republican, the Platte and the Niobrara. North of the Niobrara River such northwardly-flowing rivers as the Missouri, the James and the Red offer continuous wooded habitats for migrating birds to follow while traversing the northern plains toward Canadian forest breeding grounds. Thus, such boreal forest-breeding species as Swainson's Thrushes and several warbler species nevertheless use the central and western Platte Valley as an important migratory way-station. Davis (2005b) asserts that the central Platte Valley is a sink (Pulliam 1988) for migratory bird stopover, citing a very small number of migrants that lost weight during stopover. Our capture sample is more than 12 times Davis' and we see great value for stopover survival in the riparian woodlands. To woodland-obligate birds using the riparian trees and shrubs, there is an apparent survival value compared to the alternative stopover habitat in surrounding grasslands and croplands for which these bird species are not adapted. In terms of weight gain or loss, we show that most birds are within average ranges for their species. Of the hundreds of Swainson's Thrushes banded most are heavy compared to weights from Illinois, and only a handful are underweight (Cochran and Wikelski, 2005). Few birds are recaptured to test the mass gain or loss question. Recapture of a Northern Waterthrush stopover on Jeffrey Island from 3 May to 6 May showed 6% mass increase during the stopover, and a 9% increase in mass of a Yellow-breasted Chat at site Cottonwood Ranch from 9 May to 11 May are indicative of the importance of the habitat for refueling. Other recaptures of stopovers are not as spectacular, and in one case lost mass. Specifically, one Northern Waterthrush account, with other direct comparisons to be published elsewhere. Some of these forest-adapted species such as the Swainson's Thrush and Yellow-rumped Warbler could be headed for closer breeding areas such as the southern Rocky Mountains or South Dakota's Black Hills and Nebraska's Pine Ridge region, where there are at least two Swainson's Thrush breeding records for Dawes County, Nebraska (Mollhoff, 2005).

In Davis' (2005b) Hall County population studies, 56 breeding species were identified, of which 53 percent were forest-edge, and 25 percent open-forest species,

followed by closed forest (16 percent) and forest-interior (3 percent). By comparison, at CPBS 27 breeding species had banding samples of at least 100 birds. Of these, 59 percent were forest-edge species, 18 percent were open-forest (woodlands with scattered trees) species, 18 percent were open-country (grassland-adapted) species and 4 percent were forest-interior species. This greater percentage of open-country species and fewer open-forest or forest-interior forms at CPBS mirrors the relatively open-country environmental conditions typical of Cedar Point. Of the 41 migrant species documented by Davis, 58 percent were long-distance Nearctic-Neotropical migrants and 42 percent were short-distance migrants. We had 108 species of migrants with 71 percent long-distance Nearctic Neotropical species and 23 percent were short-distance migrants and 6 percent were resident species. In both areas long-distance migrants represent a major part of the region's avifauna, but our larger sample illustrates more fully the value of the riparian woodlands for migrant use.

Migrants that utilize Platte River riparian woodlands for stopover, but do not breed there, utilize woodland stopover habitat for the essential completion of their life cycle as do birds in other riparian woodlands (Moore and Simons 1993, Moore and Aborn 2000, Parrish 2000, Petit 2000). Two species nesting in the Platte River riparian woodland, the Yellow-billed Cuckoo (often heard, but seldom captured) and the Bell's Vireo are considered priority species for Nebraska because of their continental declines (Forsberg 1999). Additionally, Eastern Towhee, Warbling Vireo, Harris's Sparrow, Grasshopper Sparrow, Dickcissel, Red-headed Woodpecker, and Willow Flycatcher are listed as "Species of Continental Significance" (Rich et al. 2004) that were encountered frequently in this study.

Besides serving as a major migration stopover point for both short-and long-distance migrants, an important role of the Platte Valley has been to provide a longitudinal range-expansion corridor, in allowing eastern deciduous forest birds to spread west across the plains, and in a similar manner but much reduced degree to allow western montane species to spread eastward. CPBS lies roughly halfway between the coniferous forests of the Rocky Mountain front ranges and the hardwood forests of the Middle Missouri Valley, and is surrounded with non-wooded habitats. The Platte Valley now provides a continuous riverine "bridge" of gallery forests connecting these two regions that are otherwise separated by about 500 miles of grass-dominated habitats. Some evidence suggests that the Platte's western portions were relatively wooded in historic times (Johnson & Boettcher, 2000), whereas other evidence indicates that the river historically was primarily a prairie river in central and western Nebraska (Currier and Davis, 2000). In line with the latter view, Knopf (1986) concluded that almost 90 percent of the Platte River's present riparian avifauna was absent from eastern Colorado prior to 1900. It thus seems likely that until well after the period of 19th-century settlement by Europeans the western reaches of the Platte in Wyoming and Colorado may have lacked substantial woodland cover altogether. If so, it has probably been far easier for eastern woodland-dependent bird species to spread toward the west, than for western forms to expand eastwardly from the Rocky Mountains.

Among the nearly 20 eastern deciduous forest songbird species that have breeding ranges extending west to CPBS via the Platte River Valley are the Blue Jay, Red-bellied Woodpecker, Eastern Phoebe, Great-crested Flycatcher, Red-eyed Vireo, Bell's Vireo, Black-capped Chickadee, Eastern Bluebird and Brown Thrasher. All of these now have

extended their breeding limits west into eastern Colorado (Kingery, 1998), and most of them also at least rarely breed west to eastern Wyoming (Luce et al., 1997). The Willow Flycatcher, Gray Catbird, and Bell's Vireo have also expanded their breeding ranges west to CPBS, but have evidently not yet reached eastern Colorado. The White-breasted Nuthatch, Scarlet Tanager and Blue-gray Gnatcatcher's eastern race, all typical of mature eastern hardwood forests, have reached the Central Platte Valley, but do not yet appear to be breeding at Cedar Point.

Some closely related western forest-breeding Colorado species, such as the Steller's Jay (*Cyanocitta stelleri*) and Mountain Chickadee (*Poecile gambeli*), have not yet correspondingly moved east into western Nebraska. However, the scrub-adapted western race of the Blue-gray Gnatcatcher now breeds in the Pine Ridge and Wild Cat Hills of western Nebraska as well as in eastern Colorado and Wyoming, and may still be moving eastwardly. A very few White-breasted Nuthatches also breed now in northeastern Colorado, but these are probable outliers of the resident Rocky Mountain population rather than pioneers from western Nebraska.

Some closely related eastern and western species have become extensively sympatric along the Platte Valley without apparently interacting significantly. The ranges of the Eastern and Western Kingbirds now broadly overlap without hybridizing, but they seem to have non-overlapping territories at CPBS. Likewise the Eastern and Say's Phoebes now overlap broadly in the Platte Valley of western Nebraska, but have rather different nest-site requirements and seem to interact very little.

In addition to these well-differentiated species, there are the especially interesting cases in which very closely related species pairs whose gene pools have probably been separated since post-Pleistocene times, have managed to expand in both directions and are now in secondary contact, resulting in competition not only for resources but also are now interactively competing for mates. Interspecific hybridization between these species pairs are perhaps better documented along the Platte Valley than any other single Great Plains river system, thanks mainly to the research of Charles Sibley and his students during the 1950's and 1960's (Sibley and Short, 1964a, 1964b, Sibley and West, 1959). The major interacting species pairs in the Platte Valley include the Eastern and Spotted Towhees, the Rose-breasted and Black-headed Grosbeaks, the Baltimore and Bullock's Orioles, and the Indigo and Lazuli Buntings (Fig. 3 & 5). The eastern (Yellow-shafted) and western (Red-shafted) races of the Northern Flicker exhibit a similar hybrid zone in this same region. All of these hybridize to some degree around CPBS (Brown and Brown, 2001).

Still largely unstudied are the possibly comparable interactions between the Eastern and Western Wood-Pewees, whose plumages are too similar to provide easy external evidence of hybridization (Rising & Schueler, 1980). Their ranges now overlap somewhat in the North Platte Valley, including the vicinity of CPBS. The Mountain Bluebird (*Sialia currucoides*) now overlaps locally with the Eastern Bluebird in the Pine Ridge and Scotts Bluff regions of Nebraska, and a possible hybrid breeding has been reported from Dawes County (Wilson et al., 1986). Fairly extensive hybridization between these two species has also been observed in southern Manitoba (Rounds & Munro, 1983). Two cases of apparent hybridization have been reported between the Scarlet and Western Tanagers in Minnesota and Kentucky (Mengel, 1963), but secondary contact between this species-pair is virtually absent in the Platte Valley.

The data provided here for the two banding sites offers an estimate of changing frequencies of interacting and hybridizing eastern and western species pairs along this hundred-mile stretch of river valley. For example, in the Indigo and Lazuli Buntings the percentages for the eastern (Indigo) species in the combined samples rise from 51.9 to 87.5 percent between the western and eastern locations. Likewise, for the Eastern and Spotted Towhee banding samples the percentage of the eastern species increases from 1 to 19.7 percent between Cedar Point and the CPV. Scharf (2005) reported banding 87 Spotted Towhees (including apparent hybrids) and 20 phenotypically pure Eastern Towhees (19 percent) in Dawson County's central Platte valley, also during the 2001–2004 breeding seasons. Davis (2005b) reported banding 33 Spotted Towhees and 13 Eastern Towhees (28 percent) during the breeding season at a banding station somewhat farther east, in Hall County, although he does not describe how he separated hybrids.

In our combined Rose-breasted and Black-headed Grosbeak banding samples the percentage for the eastern (Rose-breasted) species increased from 15.5 to 70 percent between CPBS and the CPV, although these ratios are based on fairly small sample sizes. Surprisingly, the percentages of Baltimore Orioles in the combined Baltimore–Bullock's capture samples at CPBS and in the CPV respectively were 96.9 and 92.6 percent, the opposite of the expected west-to-east ratio trend. This anomaly resulted from apparent hybrids being classified as Baltimore Orioles at CPBS, but as Bullock's Orioles in the CPV. Somewhat farther to the east, between Elm Creek and Grand Island, Colt (1997) reported no Bullock's Orioles, Black-headed Grosbeaks or Lazuli Buntings in his study sites, and did not attempt to separate the two towhee phenotypes. Likewise, Davis (2005a) also reported none of these four species in his breeding-season surveys between Overton and Grand Island. Interestingly, the centers of the four contact zones would all seem to be rather different among these species pairs, presumably reflecting their differing ecological adaptations as well as varied histories of secondary contacts and hybridization effects.

For less closely related species having marked ecological differences, some similar population trends are evident between the two banding sites. Examples include the Bell's and Warbling Vireos, the Orchard and Baltimore Orioles, and the Western and Eastern Kingbirds. In each case the first-mentioned species is more tolerant of shorter, more open woods or brushland. For the two vireos, the percentage of Warbling Vireos in the combined two-species vireo population rises from 34.7 percent at CPBS to 81.4 percent in the CPV. In Colt's (1997) Grand Island–Elm Creek study area the Warbling Vireo comprised 96 percent of the two species' combined densities, continuing this eastward trend favoring species adapted to taller and denser woodlands. Davis (2005a) reported numbers indicating a 97 percent representation by the Warbling Vireo in the same approximate area, based on point-counts. Among the kingbirds, the percentage of the eastern species rises from 28.6 percent at CPBS to 81.3 percent in the CPV, and to 100 percent in Colt's (1997) study area. Point-count estimates by Davis (2005a) for the same general area indicate that 96 percent of the combined breeding population consisted of Eastern Kingbirds. Among 12 kingbirds banded by Davis, all were Easterns (Davis, 2005b). All these species trends suggest that the forested riverine community in the central Platte Valley is a more mature and probably more extensive one than that in the vicinity of CPBS.

Summary

Nearly 18,000 birds of 125 species (including 67 apparently breeding species) were banded between 1992 and 2005 at two Platte Valley locations in central (Dawson County) and western (Keith County) Nebraska. Body weights of 74 species and more than 11,500 individuals are tabulated and statistically analyzed by age, sex and banding site. Breeding evidence was obtained for 67 species in one or both locations, and 108 of the total 125 species banded were migrants, 71 percent of which were Neotropical migrants. Sample sizes for at least four species (Bell's Vireo, Clay-colored Sparrow, Grasshopper Sparrow and Orchard Oriole) were obtained that are substantially larger than any previously published reports. These studies have established that this region of the Platte River Valley is one of the most biologically diverse and ecologically interesting breeding or migratory staging habitats for riparian woodland- and forest-adapted birds in North America. It is also is part of a major Great Plains secondary-contact zone along the Platte Valley involving at least six closely-related and east-west-oriented species-pairs of woodland-adapted songbirds that competitively interact. At least four of these species-pairs (Lazuli & Indigo Buntings, Black-headed & Rose-breasted Grosbeaks, Spotted & Eastern Towhees, Bullock's & Baltimore Orioles) also locally hybridize along the riparian forests and woodland of this section of the North Platte and Platte valleys, as do two races of the Northern Flicker, a situation that is rare if not unique in North America.

Literature Cited

- Brown, B.T. 1993. Bell's Vireo (*Vireo bellii*). In *The Birds of North America*, No. 33 (A. Poole and F. Gill, eds.). The Birds of North America, Inc. Philadelphia, PA.
- Brown, C. R., and M B. Brown. 2001. Birds of the Cedar Point Biological Station. *Occasional Papers of the Cedar Point Biological Station*, No. 1. 36 pp.
- _____, _____, P. A. Johnsgard, J. Kren, and W. C. Scharf. 1995. Birds of the Cedar Point Biological Station area, Keith and Garden Counties, Nebraska: Seasonal occurrence and breeding data. *Trans. Nebraska Acad. Sci.* 23:91-108.
- Colt, C. M. 1996. Breeding bird use of riparian forests along the central Platte River: A spacial analysis. MS thesis, Univ. of Nebraska-Lincoln.
- Cochran, W. W. and M. Wikelski. 2005. Individual migratory tactics of New World thrushes. 274-279. In: *Birds of Two Worlds*, R. Greenberg and P. P. Marra... Johns Hopkins University Press.
- Corbin, K. W., and C. G. Sibley. 1977. Rapid evolution in orioles of the genus *Icterus*. *Condor* 79:22-26.
- Currier, P. J. and C. A Davis. 2000. The Platte as a prairie river: A response to Johnson and Boettcher. *Great Plains Research* 10:69-84.
- Davis, C. A. 2005a. Breeding bird communities in riparian forests along the central Platte River, Nebraska. *Great Plains Research* 15:199-211.
- _____. 2005b. Breeding and migration bird use of a riparian woodland along the Platte River in central Nebraska. *North American Bird Bander* 30:109-114.
- Dunning, J. B., Jr. 1984. Body weights of 686 species of North American birds. *Western Bird Banding Assoc. Monograph No. 1*. Eldon Publ. Co., Cave Creek, Ariz.
- _____. 1993. *CRC Handbook of Avian Body Masses*. CRC Press, Boca Raton, Fla.

- Emlen, S. T., J. D. Rising and W. L. Thompson. 1975. A behavioral and morphological study of sympatry in the indigo and lazuli buntings of the Great Plains. *Wilson Bull.* 87:145-179.
- Faanes, C. A., and G. R. Lingle. 1995. Breeding birds of the Platte River Valley of Nebraska. Jamestown, ND: Northern Prairie Wildlife Center Home Page.
- Johnsgard, P. A. 1979. *Birds of the Great Plains: The Breeding Species and their Distribution*. Univ. of Nebraska Press, Lincoln.
- _____. 2005. *The Birds of Nebraska*. 9th. ed. Published by the author, Lincoln, NE.
- Johnson, W. C., and S. E. Boettcher. 2000. The presettlement Platte: Wooded or prairie river? *Great Plains Research* 10:39-68.
- Kingery, H. E (ed.) 1998. *Colorado Breeding Bird Atlas*. Colorado Bird Partnership and Colorado Division of Wildlife, Denver.
- Knapton, R.W. 1994. Clay-colored Sparrow (*Spizella pallida*). In *The Birds of North America*, No. 120 (A. Poole and F. Gill, eds.). The Birds of North America, Inc. Philadelphia, PA.
- Knopf, F. L. 1986. Changing landscapes and the composition of the eastern Colorado avifauna. *Wildlife Society Bulletin* 14:132-42.
- Krapu, G (ed.). 1981. The Platte River Ecology Study: Special Research Report. U.S. Fish & Wildlife Service, Northern Prairie Wildlife Research Center, Jamestown, ND 186 pp.
- Luce, B., B. Oakleaf, A. Cerovski, L. Hunter and J. Priday. 1997. *Atlas of Birds, Mammals, Reptiles and Amphibians in Wyoming*. Wildlife Game & Fish Dept., Lander, WY.
- Mengel, R. M. 1963. A second probable hybrid between the Scarlet and Western Tanagers. *Wilson Bull.* 75:201-203.
- Mollhoff, W. J. 2001. *The Nebraska Breeding Bird Atlas: 1984–1989*. Nebraska Game & Parks Commission, Lincoln.
- _____. 2005. The 2003-2004 Nebraska nest report. *Nebraska Bird Review* 73:15-19.
- Moore, F. R., and T. R. Simons. 1993. Habitat suitability and stopover ecology of Neotropical landbird migrants. In: *Status and Management of Neotropical Migratory Birds*. USDA Forest Service Gen. Tech. Report RM-229. USDA Forest Service, Fort Collins, CO.
- Moore, F. R. and D. A. Aborn. 2000. Mechanisms of en route habitat selection: how do migrants make habitat decisions during stopover? In: *Stopover Ecology of Nearctic-Neotropical Landbird Migrants: Habitat Relations and Conservation Implications*, Frank R. Moore, ed. *Stud. In Avian Biol.* No. 20.
- Parrish, J. D. 2000. Behavioral, energetic, and conservation implications of foraging plasticity during migration. In: *Stopover Ecology of Nearctic-Neotropical Landbird Migrants: Habitat Relations and Conservation Implications*, Frank R. Moore, ed. *Stud. In Avian Biol.* No. 20.
- Petit, D. R. 2000. Habitat use by landbirds along Nearctic-Neotropical migration routes: implications for conservation of stopover habitats. In: *Stopover Ecology of Nearctic-Neotropical Landbird Migrants: Habitat Relations and Conservation Implications*, Frank R. Moore, ed. *Stud. In Avian Biol.* No. 20.
- Pyle, P. 1997. *Identification Guide to North American Birds*. Pt. 1. Slate Creek Press, Bolinas, CA.

- Nearctic-Neotropical Landbird Migrants: Habitat Relations and Conservation Implications*, Frank R. Moore, ed. *Stud. In Avian Biol.* No. 20.
- Pyle, P. 1997. *Identification Guide to North American Birds*. Pt. 1. Slate Creek Press, Bolinas, CA.
- Poole, A. and F. Gill, eds. *The Birds of North America*. The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D. C.
- Pulliam, H. R. 1988. Sources, sinks and population regulation. *American Naturalist* 132:652-661.
- Rising, J. D. 1970. Morphology and evolution in some North American orioles. *Systematic Zool.* 19:325-351.
- _____, and F. W. Schueler. 1980. Identification and status of wood-pewees (*Contopus*) from the Great Plains: What are sibling species? *Condor* 82:301-308.
- Rounds, R. C., and H. L. Munro. 1983. A review of hybridization between *Sialia sialis* and *S. currucoides*. *Wilson Bull.* 94:219-223.
- Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Buthcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Inigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, and T. C. Will. 2004. *Partners in Flight North American Landbird Conservation Plan*. Cornell Lab of Ornithology. Ithaca, NY.
- Scharf, W. C. 2003. The avifauna of three habitats at Cottonwood Ranch and the Jeffrey Island Habitat Area, Nebraska 2001 and 2002. 31p. In: 2002 Wildlife Monitoring Report Submitted by Federal Energy Regulatory Commission Projects #1417 and #1835, J. L. Maher, ed..
- _____. 2005. New western breeding records for Eastern Towhees in central Nebraska. *Nebraska Bird Review* 73:26-28.
- _____, J. Berigan, and J. Kren. 1993. Pine Siskins in breeding condition along the North Platte River, Keith County, Nebraska. *Nebraska Bird Review* 61:144-5.
- _____, and J. Kren 1996. Orchard Oriole, *Birds of North America*, No. 255. American Ornithologists' Union, Washington, DC, and Academy of Natural Sciences, Philadelphia. 24 pp.
- _____ and _____. 1997. Summer diet of Orchard Orioles in southwestern Nebraska. *Southwestern Naturalist* 42: 127-131.
- _____. 2007. Woodland bird use of in-channel islands in the central Platte River, Nebraska *Prairie Naturalist* 39: 15-28.
- Sharpe, R. S., W. R. Silcock and J. G. Jorgensen. 2001. *Birds of Nebraska: Their Distribution and Temporal Occurrence*. Univ. of Nebr. Press, Lincoln.
- Short, L. L. Jr. 1961. Notes on bird distribution in the central Plains. *Nebraska Bird Review* 29:2-22.
- _____. 1965. Hybridization in the flickers (*Colaptes*) of North America. *Bulletin of the American Museum of Natural History* 145:1-118.
- Sibley, C. G., and L. L. Short, Jr. 1964. Hybridization in the buntings of the Great Plains. *Auk* 76:443-463.
- _____, & _____. 1964. Hybridization in the orioles of the Great Plains. *Condor* 66:130-150.

- _____, and D. A. West. 1959. Hybridization in the Rufous-sided Towhees of the Great Plains. *Auk* 76:326-338.
- Terborgh, J. 1989. *Where Have All The Birds Gone?* Princeton University Press, Princeton, NJ.
- Vickery, P. 1996. Grasshopper Sparrow (*Ammodramus savannarum*). In *The Birds of North America*, No. 239 (A. Poole and F. Gill, eds.). The Birds of North America, Inc. Philadelphia, PA.
- West, D. A. 1962. Hybridization in grosbeaks (*Pheucticus*) in the Great Plains. *Auk* 79:399-424.
- Wilson, B. L., J. Minyard and H. Minyard. 1985. Hybrid bluebirds in the Pine Ridge. *Nebraska Bird Review* 53:67.
- _____, and H. Minyard. 1986. Hybrid bluebird update. *Nebraska Bird Review* 54:26-27.



Table 1: Total Birds Captured at CPBS, 1992-1997; 2000 & CPV 2001-2005.																	
Common Name	Site	Totals		Young				After Hatch Year			Second Year			After Second Year			No Data
		Young	All	Nest	Hatch Yr. U	HYF	HYM	AHYF	AHYM	AHYU	SYF	SYM	SYU	ASYF	ASYM	ASYU	No data
Green Heron	CPBS		0														
Green Heron	CPV		1							1							
Northern Harrier	CPBS	2	2		2												
Northern Harrier	CPV		0														
Sharp-shinned Hawk	CPBS		2									2					
Sharp-shinned Hawk	CPV		0														
Cooper's Hawk	CPBS		0														
Cooper's Hawk	CPV		1								1						
American Kestrel	CPBS		0														
American Kestrel	CPV		1						1								
Virginia Rail	CPBS	1	5		1					4							
Virginia Rail	CPV		0														
Sora	CPBS		1						1								
Sora	CPV		0														
Killdeer	CPBS		1							1							
Killdeer	CPV	1	8		1					7							
Spotted Sandpiper	CPBS	10	16		10				6								
Spotted Sandpiper	CPV	3	43		3					40							
Seimipalmated Sandpiper	CPBS		0														
Semipalmated Sandpiper	CPV		1							1							
Least Sandpiper	CPBS		0							1							
Least Sandpiper	CPV		1							1							
Mourning Dove	CPBS	2	6		2				2	2							
Mourning Dove	CPV	4	18		4				4	10							
Black-billed Cuckoo	CPBS		5						1	4							
Black-billed Cuckoo	CPV		0														
Yellow-billed Cuckoo	CPBS		16						5	11							
Yellow-billed Cuckoo	CPV		3							3							
Eastern Screech-Owl	CPBS		1							1							
Eastern Screech-Owl	CPV		0														
Common Poorwill	CPBS		1							1							
Common Poorwill	CPV		0														
Belted Kingfisher	CPBS	25	31		6	10	9	2	3	1							
Belted Kingfisher	CPV	1	2		1					1							

CPBS: Cedar Point Biological Station-Western Platte Valley
CPV: Central Platte Valley

Common Name	Site	Young	All	Nest	Hatch Yr.U	HYF	HYM	AHYF	AHYM	AHYU	SYF	SYM	SYU	ASYF	ASYM	ASYU	No data
Red-headed Woodpecker	CPBS	3	17			3											
Red-headed Woodpecker	CPV	1	8			1				7							
Red-bellied Woodpecker	CPBS		0														
Red-bellied Woodpecker	CPV	1	5			1		2	2								
Downy Woodpecker	CPBS	26	63			22	1	3	14	18	5						
Downy Woodpecker	CPV	11	38			11			14	11	1			1			
Hairy Woodpecker	CPBS	1	15			1			5	8	1						
Hairy Woodpecker	CPV		8						3	3						2	
Yellow-shafted Flicker	CPBS	12	36			12											
Yellow-shafted Flicker	CPV	11	74			1		10	25	37						1	1
Olive-sided Flycatcher	CPBS		1														
Olive-sided Flycatcher	CPV		0														
Western Wood-pewee	CPBS		5						2	1	2						
Western Wood-pewee	CPV		0														
Eastern Wood-pewee	CPBS		4			1				1	2						
Eastern Wood-pewee	CPV		2								2						
Yellow-bellied Flycatcher	CPBS		2						1		1						
Yellow-bellied Flycatcher	CPV		0														
Trail's Flycatcher	CPBS	13	160			13			21	16	100					1	
Alder Flycatcher	CPV		52						2		44						1
Willow Flycatcher	CPV	2	92			2			10	2	73		3	2			
Least Flycatcher	CPBS	4	133			4			9	1	118						1
Least Flycatcher	CPV	2	49			2			1		41					5	
Eastern Phoebe	CPBS	1	5			1			2	1	1						
Eastern Phoebe	CPV		2						1			1					
Great Crested Flycatcher	CPBS		14						10	3	1						
Great Crested Flycatcher	CPV	6	36			6			11	9		3	1	2	2		1
Western Kingbird	CPBS	43	118						36	33	3				1	1	
Western Kingbird	CPV		7						3	4							
Eastern Kingbird	CPBS	38	90	2		36			30	21	1						
Eastern Kingbird	CPV	6	53			6			15	25		1	5		1		
Loggerhead Shrike	CPBS	1	1														
Loggerhead Shrike	CPV		1														
White-eyed Vireo	CPBS		1														
White-eyed Vireo	CPV		0														
Bell's Vireo	CPBS	34	207			34			258	63	102						
Bell's Vireo	CPV	2	51			2			13	2	8	13	7	5			1
Warbling Vireo	CPBS	34	110			34			23	33	20						
Warbling Vireo	CPV	14	223			14			57	63	36	15	19	1	3	8	1
Red-eyed Vireo	CPBS	2	33			2			8	10	14						
Red-eyed Vireo	CPV		13						5	2	3	2			1		

CPBS: Cedar Point Biological Station-Western Platte Valley
CPV: Central Platte Valley

Common Name	Site	Young	All	Nest	Hatch Yr.U	HYF	HYM	AHYF	AHYM	AHYU	SYF	SYM	SYU	ASYF	ASYM	ASYU	No data
Blue Jay	CPBS	11	68		11			22	6	3	11	3	3	7	1	1	
Blue Jay	CPV		42		4			11	4		12	8	3				
Black-billed Magpie	CPBS		3														
Black-billed Magpie	CPV		0														
Tree Swallow	CPBS	7	15		7			3	4	1							
Tree Swallow	CPV	3	14		3			4	5				1				1
N.Rough-winged Swallow	CPBS	122	238		122			39	55	22							
N.Rough-winged Swallow	CPV	5	10		5			2		1		2					
Bank Swallow	CPBS	17	23		17												
Bank Swallow	CPV	2	6		2			1	1		2						
Cliff Swallow	CPBS	69	648		69												
Cliff Swallow	CPV		0														
Barn Swallow	CPBS	18	33		18			8	5	2							
Barn Swallow	CPV		0														
Black-capped Chickadee	CPBS	127	259		127			64	34	29							
Black-capped Chickadee	CPV	15	58		15			20	17	1	2	1		1	1		
Red-breasted Nuthatch	CPBS		5					3	2								
Red-breasted Nuthatch	CPV		0														
White-breasted Nuthatch	CPBS	1	2		1												
White-breasted Nuthatch	CPV	3	11		3			2	2			1		2	1		
Rock Wren	CPBS	11	27		11			5	4	4							
Rock Wren	CPV		0														
House Wren	CPBS	118	405		118			60	128	100							
House Wren	CPV	85	313		85			54	108	52				1	6		7
Marsh Wren	CPBS	6	10		6				4								
Marsh Wren	CPV		0														
Ruby-crowned Kinglet	CPBS		1														
Ruby-crowned Kinglet	CPV		0														
Blue-gray Gnatcatcher	CPBS		1					1									
Blue-gray Gnatcatcher	CPV		0														
Eastern Bluebird	CPBS		0														
Eastern Bluebird	CPV	8	26		8			6	9		2	1					
Veery	CPBS		1														
Veery	CPV		0														
Gray-cheeked Thrush	CPBS		1														
Gray-cheeked Thrush	CPV		1						1								
Swainson's Thrush	CPBS		259					47	39	170							
Swainson's Thrush	CPV		109						21	65	7	7	5	2		2	
Hermit's Thrush	CPBS		0														
Hermit's Thrush	CPV		1							1							

CPBS: Cedar Point Biological Station-Western Platte Valley
CPV: Central Platte Valley

Common Name	Site	Young	All	Nest	Hatch Yr.U	HYF	HYM	AHYF	AHYM	AHYU	SYF	SYM	SYU	ASYF	ASYM	ASYU	No data
Wood Thrush	CPBS		2														
Wood Thrush	CPV	1	2			1					1						
American Robin	CPBS	151	250					47	51		1						
American Robin	CPV	19	120			19		22	45		9	16	1	2	3		3
Gray Catbird	CPBS	1	155			1		17	35	101		1					
Gray Catbird	CPV	39	589			36	3	86	245	41	28	97	9	11	28	3	2
Brown Thrasher	CPBS	32	140			32		26	53	28							
Brown Thrasher	CPV	14	224			14		38	66	21	26	40	3	5	5		12
European Starling	CPBS	19	47			19											
European Starling	CPV	4	13			4		6		2				1			
Cedar Waxwing	CPBS	14	77			14		26	31	4		1			1		
Cedar Waxwing	CPV		15					7	6	1							1
Blue-winged Warbler	CPBS		2														
Blue-winged Warbler	CPV		0														
Golden-winged Warbler	CPBS		1														
Golden-winged Warbler	CPV		0														
Tennessee Warbler	CPBS		3														
Tennessee Warbler	CPV		14					1		12			1				
Orange-crowned Warbler	CPBS		37					17	12	8							
Orange-crowned Warbler	CPV		60					26	32	1	1						
Nashville Warbler	CPBS		0														
Nashville Warbler	CPV		1							1							
Yellow Warbler	CPBS	341	854	4		337		182	313	10		2			5		
Yellow Warbler	CPV	11	222			11		46	11		16	10		1	22		5
Chestnut-sided Warbler	CPBS		2						2								
Chestnut-sided Warbler	CPV		1									1					
Magnolia Warbler	CPBS		1							1							
Magnolia Warbler	CPV		1						1								
Black-throated Blue Warbler	CPBS		2														
Black-throated Blue Warbler	CPV		1														
Yellow-rumped Warbler, Myrtle	CPBS		33					15	15			1					
Yellow-rumped Warbler, Myrtle	CPV		12					6	6								
Y.rumped Warbler, Audubon's	CPBS		7					1	4	2							
Y.rumped Warbler, Audubon's	CPV		0														
Blackpoll Warbler	CPBS		9					3	6								
Blackpoll Warbler	CPV		3					1		1	1						
Black-and-White Warbler	CPBS		5					3	1								
Black-and-White Warbler	CPV		0														
American Redstart	CPBS		10					7	1			1			1		
American Redstart	CPV		12					1	1		1	7		1	1		

CPBS: Cedar Point Biological Station-Western Platte Valley
CPV: Central Platte Valley

Common Name	Site	Young	All	Nest	Hatch Yr.U	HYF	HYM	AHYF	AHYM	AHYU	SYF	SYM	SYU	ASYF	ASYM	ASYU	No data
Prothonotary Warbler	CPBS		2						2								
Prothonotary Warbler	CPV		0														
Worm-eating Warbler	CPBS		3						1	2							
Worm-eating Warbler	CPV		0														
Ovenbird	CPBS		65					11	10	28	1						
Ovenbird	CPV	1	7		1					3		1	2				
Northern Waterthrush	CPBS		7														
Northern Waterthrush	CPV		5							4							1
Mourning Warbler	CPBS		6					1	5								
Mourning Warbler	CPV		8					1		1	2			1	3		
MacGillivray's Warbler	CPBS		10					2	8								
MacGillivray's Warbler	CPV		1														1
Common Yellowthroat	CPBS	50	310		50			84	170	5	1						
Common Yellowthroat	CPV	2	77		2			13	32		14	12					4
Hooded Warbler	CPBS		2														
Hooded Warbler	CPV		0														
Wilson's Warbler	CPBS		3														
Wilson's Warbler	CPV		3						3								
Canada Warbler	CPBS		2														
Canada Warbler	CPV		0														
Yellow-breasted Chat	CPBS	33	250		33			73	102	57		1	1				
Yellow-breasted Chat	CPV		15					4	2	1	3	2	2				1
Scarlet Tanager	CPBS		2														
Scarlet Tanager	CPV		0														
Spotted Towhee	CPBS	14	182	1	13			74	81	12							
Spotted Towhee	CPV	4	98		4			29	39		11	12		1	2		
Eastern Towhee	CPBS		2														
Eastern Towhee	CPV	2	24		2			6	10		1	3		1	1		
Chipping Sparrow	CPBS		340		5			9	6	320							
Chipping Sparrow	CPV		31							21		1	6				3
Clay-colored Sparrow	CPBS		200					1	2	196							
Clay-colored Sparrow	CPV		43					1		27			7				7
Field Sparrow	CPBS	64	154		64			24	32	34							
Field Sparrow	CPV	9	147		9			34	39	24	15	18		2	7		
Lark Sparrow	CPBS	81	308	9	81			64	118	43		1	1				
Lark Sparrow	CPV		1								1						
Savannah Sparrow	CPBS		1														
Savannah Sparrow	CPV	4	5		4					1							
Grasshopper Sparrow	CPBS	10	33		10			9	12	2							
Grasshopper Sparrow	CPV	11	85		11			31	43								

CPBS: Cedar Point Biological Station-Western Platte Valley
CPV: Central Platte Valley

Common Name	Site	Young	All	Nest	Hatch Yr.U	HYF	HYM	AHYF	AHYM	AHYU	SYF	SYM	SYU	ASYF	ASYM	ASYU	No data
Song Sparrow	CPBS	2	22			2		3		17							
Song Sparrow	CPV	21	157			21		24	61	5	14	19	1	2	9		
Lincoln Sparrow	CPBS		34														
Lincoln Sparrow	CPV		0														
Swamp Sparrow	CPBS		1														
Swamp Sparrow	CPV	2	21			2		2		14	1	1	1				
White-throated Sparrow	CPBS		6														
White-throated Sparrow	CPV		5							5							
Harris's Sparrow	CPBS		1														
Harris's Sparrow	CPV		2							2							
White-crowned Sparrow	CPBS		86														
White-crowned Sp.gambelii	CPV		16							8			8				
White-crowned Sp.leucophys	CPV		14							9							
Dark-eyed Junco, Slate-colored	CPBS		17					9	3	5							
Dark-eyed Junco, Slate-colored	CPV		0														
Dark-eyed Junco, Oregon	CPBS		10														
Dark-eyed Junco, Oregon	CPV		0														
White-winged Junco	CPBS		1														
White-winged Junco	CPV		0														
Northern Cardinal	CPBS	19	71	2	19			29	21	1		1			1	1	
Northern Cardinal	CPV	7	50		7			15	11		3	6		2	6		
Rose-breasted Grosbeak	CPBS		7														
Rose-breasted Grosbeak	CPV	4	21		1	2	1	4	1		2	4		1	5		
Black-headed Grosbeak	CPBS	5	38		5			5	3	1		6			18		
Black-headed Grosbeak	CPV		9						1			7		1			
Blue Grosbeak	CPBS	1	32		1			6				18		1	6		
Blue Grosbeak	CPV		3					2			1						
Lazuli Bunting	CPBS	1	41		1			12	10	1		10		1	6		
Lazuli Bunting	CPV		1								1						
Indigo Bunting	CPBS	1	43		1			16	1			6			10		
Indigo Bunting	CPV		7					4				3					
Dickcissel	CPBS	17	60		17			8	30	6		1					
Dickcissel	CPV		16					3	12			1					
Bobolink	CPBS		0														
Bobolink	CPV		1						1								
Red-winged Blackbird	CPBS	422	1074	345	77			296	19	1	64	30		75	66		
Red-winged Blackbird	CPV	2	38		2			21	1		2			12			
Eastern Meadowlark	CPBS		2														
Eastern Meadowlark	CPV		2					2									
Western Meadowlark	CPBS		7														
Western Meadowlark	CPV		15					10	5								

CPBS: Cedar Point Biological Station-Western Platte Valley
CPV: Central Platte Valley

Common Name	Site	Young	All	Nest	Hatch Yr.U	HYF	HYM	AHYF	AHYM	AHYU	SYF	SYM	SYU	ASYF	ASYM	ASYU	No data
Yellow-headed Blackbird	CPBS	14	17		14												
Yellow-headed Blackbird	CPV		0														
Common Grackle	CPBS	3	27		3			10	5					3	2	1	
Common Grackle	CPV	2	42		2			10	22		5			2	1		
Brown-headed Cowbird	CPBS	48	148	3	36	4	5	62	36								
Brown-headed Cowbird	CPV	3	94		3			51	17		5	2		9	7		
Orchard Oriole	CPBS	757	1715		757			367	23	4	12	236		15	300		
Orchard Oriole	CPV	48	464		48			3			68	98		79	165	1	2
Bullock's Oriole	CPBS		9					1	3			1			4		
Bullock's Oriole	CPV		26					1			2	16		2	5		
Baltimore Oriole	CPBS	152	280		152												
Baltimore Oriole	CPV	10	324		10			24	5	2	31	46	2	58	146		
House Finch	CPBS	878	1299		878			96	14			1			1		
House Finch	CPV		1								1						
Red Crossbill	CPBS		7					3	4								
Red Crossbill	CPV		0														
Pine Siskin	CPBS	4	59		4			29	16	10							
Pine Siskin	CPV		0														
American Goldfinch	CPBS	3	908		3			406	168	8		67		1	255		
American Goldfinch	CPV		306					113	5	2	2	30		6	146	1	
House Sparrow	CPBS		1														
House Sparrow	CPV		0														

CPBS: Cedar Point Biological Station-Western Platte Valley
CPV: Central Platte Valley

Table 2: Weights in Grams of Birds Banded at Cedar Point Biological Station (CPBS),1992-1997, 2000 and Central Platte Valley (CPV) 2001-2005													
Species		Females After Hatch Year				Males After Hatch Year				Unknown Sex and Hatch Year			
		#	Mean	Range	St. Error	#	Mean	Range	St.Error	#	Mean	Range	St. Error
Killdeer	CPBS												
	CPV									7	86	76.1-95.6	2.31
Spotted Sandpiper	CPBS									6	37.2	20.5-46.1	3.97
	CPBS									10HY	42.2	36-52	1.87
	CPV									43	42.2	33-53	0.82
Mourning Dove	CPBS												
	CPV									5	116	107.3-131	4.1
	CPV									2HY	73.25	70.3-76.2	2.95
Yellow-billed Cuckoo	CPBS									6	57.6	54.5-63.5	1.33
	CPV												
Red-headed Woodpecker	CPBS									9	78.1	72.4-94	2.25
	CPV									8	68.1	57.6-73.8	1.71
Downy Woodpecker	CPBS	8	25.15	22.7-26.5	0.41	19	26.2	22.4-36	0.67	13HY	23.9	4.4-21	0.39
	CPV	16	26.5	24.3-29.5	0.36	13	25.7	23.8-28.1	0.32				
Hairy Wooecker	CPBS					6	71.6	67-76	1.55				
	CPV	3	64.8	62.2-68.3	1.81	5	68.7	63.2-73.4	1.6				
N. Flicker(Yellow-shafted)	CPBS	3	126.8	125-129.4	1.32	6	127	119.4-133.3	2.55	5 HYM	119.3	95.3-127.8	5.9
	CPV	22	128.7	114.4-150.4	1.98	34	128.7	107.6-143.1	1.57	11 HYM	106.4	92.1-128.5	3.5
Trail's Flycatcher	CPBS	18	13.6	11.3-15.3	0.26	16	13.3	12.2-17.8	0.26				
	CPV												
Willow Flycatcher	CPBS	9	12.96	10.7-14.8	0.44	5	13.2	11.8-14.1	0.42	71	14.2	10.2-19.9	0.22
	CPV												
Alder Flycatcher	CPBS												
	CPV									52	14.4	11.2-17.9	0.2
Least Flycatcher	CPBS									75	11.6	8.9-15	0.15
	CPV									46	11.6	9.1-16.5	0.2
Great Crested Flycatcher	CPBS												
	CPV	15	32.7	29.2-37.6	0.71	10	32.8	28.9-37.6	0.88				
Western Kingbird	CPBS	23	41.5	37.8-51.2	0.68	25	40.1	32.8-44.6	0.53	42HY	38.2	9.5-43	0.77
	CPV												
Eastern Kingbird	CPBS	22	38.5	23.5-47.9	1.09	13	38.35	34.8-41	0.53	36HY	38.9	35.2-42.5	0.29
	CPV	15	39.1	36-46.5	0.8	30	39	11.8-45.1	1.01				
Bell's Vireo	CPBS	52	10.15	8.5-12.1	0.11	58	9.5	8.1-11	0.08	30HY	10.1	8.9-11.5	0.11
	CPV	26	9.85	8.6-11.1	0.12	9	9.5	7.8-10.6	0.24				
Warbling Vireo	CPBS	21	13.7	11.4-20.8	0.41								
	CPBS									16	13.4	11.5-15	0.22
	CPV	75	14	11.6-17.2	0.12	91	13.1	11.3-14.8	0.08	29HY	13.5	11.4-15	0.14

Species		Females After Hatch Year				Males After Hatch Year				Unknown Sex and Hatch Year			
		#	Mean	Range	St. Error	#	Mean	Range	St. Error	#	Mean	Range	St. Error
Red-eyed Vireo	CPBS	4	19.8	16.9-22.4	1.2	7	15.8	11.6-21	1.16				
	CPV	7	19.75	16.5-23.6	1.04								
Blue Jay	CPBS	18	83.85	22.1-94.9	1.21	4	86.85	82.1-92.9	2.23				
	CPV	20	87.35	77.4-105.6	1.5	12	89.6	84.1-95	0.93				
Tree Swallow	CPBS									5	20.5	17-24	1.24
	CPBS									7HY	17.2	16-18.5	0.36
	CPV	4	17.7	16.4-19.4	0.66	5	19.4	18.7-20.2	0.26				
N. Rough-winged Swallow	CPBS	20	15.4	12.9-22.1	0/43	30	15.4	13.1-18	0.22	86HY	14.2	11.5-17.6	0.11
	CPV												
Bank Swallow	CPBS												
	CPBS									6	13.3	12.5-14.5	0.31
	CPV									17	12.86	11.5-14.5	0.2
Barn Swallow	CPBS	7	18.1	16.4-21	0.6	5	17.1	16.5-20	0.65	16HY	16.4	10.5-18.5	0.45
	CPV												
Cliff Swallow	CPBS	113	20.8	19-26.4	0.14	97	20.7	16.5-27	0.21	49HY	19.9	12.5-25.7	0.26
	CPV												
Black-capped Chickadee	CPBS	50	12.2	10.4-15	0.13	24	12.9	11.5-15.1	0.16	112HY	12.2	9.7-15.1	0.09
	CPV	23	12.5	11-14.2	0.19	17	13.1	12.2-14.7	0.16				
White-breasted Nuthatch	CPBS												
	CPV	4	19.55	18.2-20.7	0.56	4	20.4	19.4-21	0.37	2HY	20.2	19.3-21.1	0.9
Rock Wren	CPBS	4	15.9	14.7-17.1	0.49	3	14.8	13.4-15.8	0.73	11HY	15.9	14.4-18.1	0.31
	CPV												
House Wren	CPBS	43	11.1	9-15.9	0.23	93	10.6	9-16.0	0.09	96HY	10.1	8.6-12	0.07
	CPV	18	10.9	8-13.5	0.34	35	10.3	9.2-11.5	0.11				
Marsh Wren	CPBS	1	10	10		4	13.3	11.4-15.5	0.85	6HY	11.7	9.8-12.9	0.44
	CPV												
Eastern Bluebird	CPBS												
	CPV	8	30.35	28.1-36.2	1.01	10	29.5	23.5-36.2	0.98				
Swainson's Thrush	CPBS	12	36.5	33.4-43.7	0.83	15	33.9	29.7-39.1	0.73	106	34.1	26-43.5	0.34
	CPV									109	36.6	26.8-47.2	0.33
American Robin	CPBS	20	80.59	71.3-92.9	1.2	26	77.1	56-85.9	1.26	101HY	76.3	59.8-91.8	0.58
	CPV	24	79.9	61.4-92.1	1.07	86	74.7	59.1-84.2	0.51				
Gray Catbird	CPBS	15	36.9	22.5-43	1.29	28	34.2	10.5-40.5	0.96	68HY	37.9	32-46.2	0.38
	CPV	119	38.1	32.7-47	0.32	368	34.9	13.9-52.6	0.14				
Brown Thrasher	CPBS	13	71.6	63-84.5	1.69	28	68.2	61-94	1.18	26HY	66.6	32-75.8	1.61
	CPV	71	71.2	62.6-87.5	0.59	113	69.4	60.7-83.4	0.39				
European Starling	CPBS	9	74.6	66.9-79.6	1.35					15HY	71.1	61.1-78.3	1.2
	CPV												
Cedar Waxwing	CPBS	19	33.7	28.5-44	0.93	25	33.5	26-42.5	0.86	14HY	29.5	24.4-38.7	1.08
	CPV	7	36.8	30.5-47.1	2.63	6	32.7	29.2-40.8	1.77				

Species		Females After Hatch Year				Males After Hatch Year				Unknown Sex and Hatch Year			
		#	Mean	Range	St. Error	#	Mean	Range	St. Error	#	Mean	Range	St. Error
Tennessee Warbler	CPBS												
	CPV									14	10.7	8-13.8	0.45
Orange-crowned Warbler	CPBS	7	10.6	8.5-12	0.46	4	12.2	8-20.3	2.8	4	9.35	8.2-10	0.43
	CPV	7	11	10.6-11.5	0.12	32	10.2	8.4-12.3	0.13				
Yellow Warbler	CPBS	111	10	9-12.6	0.07	250	10	8.3-14.5	0.07	295HYU	9.8	7.4-19.5	0.06
	CPBS									27HYM	10	8.9-11	0.12
	CPV												
Y-rumped Warbler(Myrtle)	CPBS	10	12.8	10.5-15.1	0.46	10	13.7	12.5-15.5	0.32				
	CPV	6	13.37	12.6-15.1	0.39	5	14.28	13.1-16.1	0.53				
Y-rumped Warbler(Audubon's)	CPBS	1	13.5	13.5		2	13	12.5-13.5	0.5				
	CPV												
American Redstart	CPBS												
	CPV	3	8.93	8-9.6	0.83	9	8.72	7.7-9.8	0.25				
Ovenbird	CPBS	10	18.5	15-26	0.97					15HY	18.3	15.2-21.5	0.36
	CPV												
Mourning Warbler	CPBS	1	11.5	11.5		4	11.13	10.5-11.5	0.24				
	CPV	4	11.9	10.1-13.4	0.69	3	13.6	11.9-15.3	0.98				
MacGillivray's Warbler	CPBS					4	11.1	10.5-11.5	0.24				
	CPV												
Common Yellowthroat	CPBS	55	10.4	9-14.0	0.14	157	10.4	9-14.0	0.06	30HY	9.6	8.5-10.4	0.09
	CPV	9	10.6	9.5-12.1	0.26	46	9.9	8.6-12.9	0.12				
Yellow-breasted Chat	CPBS	60	26.96	21.5-35.5	0.38	89	25.46	15.5-36	0.25	32HY	25.7	23-31	0.34
	CPBS									42	26.3	17.5-31	0.37
	CPV	7	27.8	25.4-30.8	0.77	3	27.7	26.2-28.5	0.75				
Eastern Towhee	CPBS												
	CPV	8	38	35.4-40.8	0.72	14	39.8	34.2-44.2	0.63				
Spotted Towhee	CPBS	39	37.87	32.5-44.5	2.87	47	37.9	30-44.6	0.45	13HY	34.9	30.4-38.6	0.69
	CPV	39	38.9	31.2-46.6	0.24	51	40.2	34.3-45.2	0.36				
Chipping Sparrow	CPBS									69	12.5	8.8-15.5	0.15
	CPV									29	13.1	12-14.6	0.13
Clay-colored Sparrow	CPBS									89	11.8	9.5-14.5	0.12
	CPV									42	11.4	9.4-13.2	1.35
Field Sparrow	CPBS	12	12.93	10.8-14.7	0.3	11	13.2	12.0-14	0.2	38HY	13	11.5-14.9	0.14
	CPBS									12	13.1	10-14.5	0.37
	CPV	44	13.4	12.3-15.6	0.15	60	13.5	11.9-15.2	0.08				
Lark Sparrow	CPBS	28	28.8	26.6-34.4	0.37	77	28.7	24.8-33.9	0.2	60HY	27.2	19.5-31.9	0.35
	CPV												
Grasshopper Sparrow	CPBS	6	16.3	15.5-17.6	0.39	8	16.65	15.9-17.9	0.22	10HY	15.65	13.5-16.5	0.27
	CPV	31	16.3	11-20.6	0.32	42	16.9	14.9-18.6	0.11				
Song Sparrow	CPBS									18	20.1	18.5-22.5	0.24

Species		Females After Hatch Year				Males After Hatch Year				Unknown Sex and Hatch Year			
		#	Mean	Range	St. Error	#	Mean	Range	St. Error	#	Mean	Range	St. Error
	CPV	21	20.9	19.8-22.4	0.16	86	20.2	17.4-22.3	0.13				
Lincoln's Sparrow	CPBS									14	17.7	16.7-20	0.24
	CPV												
Swamp Sparrow	CPBS												
	CPV									21	17.6	14.2-20.6	0.3
W-crowned Sp.(Gambel's)	CPBS									32	27	24-36.5	0.54
	CPV									16	27.8	21.9-30	0.54
W-crowned Sp.(leucophrys)	CPBS												
	CPV									9	26.4	21.9-30.2	0.98
Dark-eyed Junco	CPBS	9	19.7	18.1-22.2	0.44								
	CPV												
Northern Cardinal	CPBS	22	41.25	33.8-56.4	1.08	16	40.8	37.5-44.1	0.67	12HY	39.9	36.8-45.5	0.72
	CPV	20	42.8	37.7-53.1	0.83	23	40.9	38.7-44.1	0.27				
Rose-breasted Grosbeak	CPBS												
	CPV	9	41.1	37.1-48.6	1.14	12	40.9	37.1-44.5	0.57				
Black-headed Grosbeak	CPBS	5	48.3	45-54.1	1.64	18	47.3	41.9-58	1.12	5HY	45.7	42.5-50	1.31
	CPV	1	50	0		8	45.8	40.6-54.8	1.53				
Blue Grosbeak	CPBS	3	29.5	29-29.9	0.28								
	CPV												
Lazuli Bunting	CPBS	9	15.6	13.5-18	0.49	17	14.9	13.4-16.3	0.22				
	CPV												
Indigo Bunting	CPBS	14	13.4	11.7-14.8	0.23	23	14.3	11.4-23.9	0.48				
	CPV	4	13.35	12.1-14.5	0.61	3	14.4	13.8-14.6	0.24				
Dickcissel	CPBS	7	24.2	22-29.5	1	29	28.8	20.5-39	0.56	15HY	26.3	20.5-30.5	0.88
	CPV	3	27.5	26.2-29.7	1.12	13	29.4	26.4-32.2	0.49				
Red-winged Blackbird	CPBS	64	43.3	35.5-55	0.39	34	63.8	32-77.1	1.46	39HY	43.3	38.9-52	0.43
	CPV	23	43.7	38.5-51.2	0.7	13	68.8	64.6-74.9	0.91				
Western Meadowlark	CPBS												
	CPV	10	91.5	79.1-102.9	2.43	4	110.7	101.1-118.6	3.66				
Yellow-headed Blackbird	CPBS	2	49	47-51	2					9HYF	49.5	47-51	0.5
	CPBS									2HYM	78	77-79	1
	CPV												
Common Grackle	CPBS	9	93.9	86.7-108.7	2.4	7	102.8	79.4-114.1	4.66				
	CPV	15	89.45	80.6-96.7	1.24	23	116.2	98.8-127.5	1.45				
Brown-headed Cowbird	CPBS	43	40.6	33.7-48.2	0.44	19	47.7	37.6-58.2	1.01	31HY	41.5	31-53	1
	CPV	64	40.35	13.7-45.7	0.51	26	50.25	42.2-56.1	0.73				
Orchard Oriole	CPBS	310	19.6	11.4-27.4	0.1	433	20.3	17.1-38.9	0.08	735HY	19.2	10.5-23.5	0.05
	CPV	147	19.7	16.5-25.9	0.12	262	21	17.2-120.4	0.39				
Baltimore Oriole	CPBS	27	33.4	28.6-40.5	0.51	66	34.2	18.4-40.7	0.42	144HY	32.9	10.5-53	0.37
	CPV	113	33.1	24.4-40.1	0.26	193	34.6	28.7-41.5	0.15				

<i>Species</i>		Females After Hatch Year				Males After Hatch Year				Unknown Sex and Hatch Year			
		<i>#</i>	<i>Mean</i>	<i>Range</i>	<i>St. Error</i>	<i>#</i>	<i>Mean</i>	<i>Range</i>	<i>St. Error</i>	<i>#</i>	<i>Mean</i>	<i>Range</i>	<i>St. Error</i>
Bullock's Oriole	CPBS	1				8	35.65	32.6-38.3	0.72				
	CPV	5	34.5	31.9-40.4	1.52	20	33.5	29.2-36.4	0.53				
House Finch	CPBS	139	21.1	17-27.5	0.16	78	21.6	19-24.2	1.15	810HY	20.9	11.9-25.6	0.15
	CPV												
Pine Siskin	CPBS	28	12.55	11-14.8	0.19	15	12.8	10-14.5	0.31				
	CPV												
American Goldfinch	CPBS	335	13.2	8.2-17	0.07	417	13	10.2-17	0.06				
	CPV	119	12.66	10-8-14.9	0.068	177	12.44	8-13.8	0.048				