

RECENT RECORDS OF BIRDS FROM THE YAMPA VALLEY, NORTHWESTERN COLORADO

STEPHEN G. MARTIN¹, PAUL H. BALDWIN AND
EDWARD B. REED¹

Department of Zoology
Colorado State University
Fort Collins, Colorado 80521

Few areas within the western United States remain as superficially explored ornithologically as the northern basins of the plateau area of Colorado and Utah, west of the Continental Divide, a region isolated from population centers and universities by high mountain rims. Results of the 1937 Carnegie Museum Expedition include systematic description of the avifauna occupying certain habitats within Utah's Uinta Basin (Twomey 1942). No equally intensive effort has dealt with the status of birds between this basin and the Continental Divide to the east. The relatively few distributional records originating prior to the mid-1960s for this region of Colorado have been included in Bailey and Niedrach's (1965) compendium of Colorado State birds, and field ornithologists' identifications for all of western Colorado up to 1969 have been assembled by Davis (1969).

Commencing in November 1970 and continuing through July 1973, we have censused the composition and seasonal changes of the avian communities of two vicinities in the Yampa Valley of northwestern Colorado. One sampling locality centers at a proposed power plant site 12 km SW of Craig, Moffat County and includes the valley as far east as Craig itself. Elevations of censused communities range from 1860 to 2250 m. The other site is 38 km to the east in Routt county and centers at Hayden Station, a coal-fired, steam electric plant 6.4 km E of Hayden; it includes low, mountainous areas 8 km to the southeast. At the Hayden study site, elevations are from 1980 to 2430 m.

Habitats at the two vicinities are comparable. Vegetation included woodland communities along the Yampa River flood plain comprised of open stands of narrowleaf cottonwood (*Populus angustifolia*), box elder (*Acer negundo*), and river hawthorn (*Crataegus rivularis*) having an understory of scattered dense patches of red-osier dogwood (*Cornus stolonifera*) and snowberry (*Symphoricarpos oreophilus*); riparian hay pastures; croplands of alfalfa and wheat; northern desert shrub stands of big sagebrush (*Artemisia tridentata*) and rabbitbrush (*Chrysothamnus nauseosus*); mountain shrub rangeland of serviceberry (*Amelanchier alnifolia*), choke cherry (*Prunus virginiana*), mountain mahogany (*Cercocarpus montanus*), snowberry, and Gambel's oak (*Quercus gambelii*); and cattail marsh, pond, and stream habitats. Southeast of Hayden at Grassy Creek, graded coal-mine spoil banks in various early stages of revegetation were also censused, as were nearby small stands of aspen (*Populus tremuloides*) and Douglas fir (*Pseudotsuga menziesii*) found on north-facing slopes up to 2430 m elevation. Montane or subalpine forests were not included in the study areas.

One hundred seventy-five species were encountered during 19 field periods including all months of the year except January; however, in this report we deal

mainly with those species listed by Davis (1969) as hypothetical (no previous specimens or photographic documentation), accidental, or rare on Colorado's Western Slope. Species found with greater regularity in this portion of Colorado were annotated by Warren (1908) and Hendee (1929). Certain species considered here have been reported previously from this portion of Colorado, but their status as indicated by Bailey and Niedrach (1965) is uncertain. The regularity and thoroughness of our censuses in the various habitats examined at Craig and Hayden now permit status clarification for these species, and it is a major purpose of the following narrative to provide a basis for these clarifications.

Podilymbus podiceps. Pied-billed Grebe. Few breeding records exist for Western Slope counties and none is given for northwestern Colorado. At least two pairs nested on a small pond 9 km SW of Craig during the summers of 1971 and 1972. On 9 July 1972, two adults were observed in a Yampa River overflow pond, near Craig, feeding small fish to four young. Pied-billed Grebes were observed in this vicinity through October 1972. In June and July 1973 individuals of this species were found on four ponds near Hayden and Craig. These records establish this grebe as a regular breeding species for this portion of the state. Twomey (1942:367) found it to be a rare migrant in the Uinta Basin, with no evidence of nesting.

Plegadis chihi. White-faced Ibis. This ibis was an uncommon but regular migrant in both spring and fall, when individual flocks of 8-15 birds stopped at ponds south of Craig for durations of up to a week. We have observed them in early to mid-May 1971 and 1972, as well as in early September 1971. Davis (1969) considers this species to be a rare visitor to the Western Slope; Bailey and Niedrach (1965:117) give records only for Gunnison County. In eastern Utah, Twomey (1942:370) found this bird to be a common spring migrant.

Chen caerulescens. Snow Goose. From 23-30 October 1971, a flock of approximately 150 Snow Geese fed and rested in Big Bottom, a flat expansion of the Yampa River Valley, 6-12 km SE of Craig. This is our only observation of this species, suggesting it is a rare transient in northwestern Colorado. Twomey (1942) did not record the Snow Goose, and Davis (1969) describes it as a rare migrant through western Colorado, where most records have come from the Durango area.

Mergus merganser. Common Merganser. Aside from southwestern Colorado where it is a regular breeder, the Common Merganser has been designated a rare summer resident within the state (Bailey and Niedrach 1965:188; Davis 1969). In the censused portions of the Yampa River Valley, it nests regularly. Our frequent sightings of females and young in 1971, 1972, and 1973 add to those of Boeker (1953), who included this merganser as one of the six major species of waterfowl that breeds on the Yampa River; he estimated that in 1953 production of young mergansers on this river exceeded 1000. The species apparently does not breed in the Uinta Basin (Twomey 1942:375).

Buteo regalis. Ferruginous Hawk. A few sight records of this hawk exist for the Western Slope, including early reports and a pre-1900 nest in Moffat County, but little is known of its present occurrence within the region. Davis (1969) gives its status as "uncertain," believing it to be a rare summer resident.

¹ Present address: Ecology Consultants, Inc., P.O. Box 1057, Fort Collins, Colorado 80521.

Twomey (1942:380) found it only during migration in eastern Utah. We have three sightings of the Ferruginous Hawk at Hayden (15 May 1971; 14 August 1971; 23 August 1972) and two at Craig (8 April 1972; 7 June 1973), which indicate this *Buteo* is present regularly but in sparse numbers through open country of this region. We believe there continues to be a small breeding population of Ferruginous Hawks in Moffat and Routt counties.

Bonasa umbellus. Ruffed Grouse. Lupton (1973) lists the Ruffed Grouse as accidental for Colorado; for the period since 1920, he summarizes two sight records, both involving an adult with young. Bailey and Niedrach (1965) provide a third record, from 1899. A Ruffed Grouse was observed at close distance by Dr. P. N. Lehner on 4 June 1971 near an aspen-snowberry community 8.5 km SE of Hayden Station, eating serviceberry flowers, the first such sighting to our knowledge for northwestern Colorado. As reported by Twomey (1942:385), the species is fairly common in Utah's Uinta Mountains.

Grus canadensis. Sandhill Crane. Considerable evidence suggests that the Greater Sandhill Crane was once a widespread breeding species in western Colorado, inhabiting mountain parklands. Rockwell (1908) and Warren (1909) reported its presence during the breeding season in Montrose and Mesa counties and Felger (1910) found it nesting in Rio Blanco County. As given by Bailey and Niedrach (1965:299), its present breeding range is confined to portions of Routt County, especially in the Hahns Peak and California Park areas north of Hayden. Our observations have confirmed another breeding location for this species, in Big Bottom of Moffat County. In 1971 a minimum of three pairs nested there, and young birds were observed from time to time during July and August. In 1972 and 1973 at least two pairs were breeding. Ranchers in the valley indicate these cranes have been present in Big Bottom every summer since a pair initially nested there in 1963 or 1964. During migration, we have observed them in fields along the Yampa River within a kilometer of Hayden Station. On 9 July 1972 an adult was feeding in a hay meadow 11.5 km N of the abandoned coal town of Mount Harris, Routt County. In September 1972 a small flock was feeding in pastures along Elkhead Creek, 12 km NW of Craig.

Rallus limicola. Virginia Rail. Little is known of the status of this rail west of the Continental Divide in Colorado (Davis 1969). A report from Mesa County in 1970 (Ela 1971) was apparently the first record from western Colorado in many years. Although Boeker's (1954) census of marsh birds along Yampa River did not detect any Virginia Rails, we have heard them regularly near Craig during the breeding seasons of 1971, 1972, and 1973. An immature female specimen was also taken in a rodent snap trap in Big Bottom, 8 km SW of Craig, on 4 September 1971. Two sightings at Hayden indicate a breeding population occupies that region of the Yampa Valley as well: one was seen at Sage Creek, 6.5 km E of Hayden on 6 June 1971, giving scolding calls as it foraged under cattails; and another was found in cattails 1 km E of Hayden on 3 July 1973. Our observations indicate that this rail is a regular breeder in the northwestern counties of the state.

Capella gallinago. Common Snipe. Portions of the Yampa River Valley contain extensive cattail and sedge marshes. In the two areas where we have concentrated our studies, Common Snipe breed commonly

in these habitats. This species arrives in mid-April and remains in the valley until at least September. It is an especially conspicuous breeding bird in the Craig vicinity, as attested by a large number of windowing sites; yet, published annotations indicate it has a local breeding distribution on the Western Slope restricted to Routt and Gunnison counties (Davis 1969; Bailey and Niedrach 1965:327). Boeker (1954) found it breeding west of Craig near Maybell. We believe it is a common nesting species along the Yampa River.

Numenius americanus. Long-billed Curlew. Our single observation of one individual on agricultural fields near Craig on 25 August 1971 provides another Western Slope record for this species, which has been reported only rarely west of the Continental Divide in Colorado (Bailey and Niedrach 1965:329). The species appears in northwestern Colorado only rarely.

Calidris melanotos. Pectoral Sandpiper. For western Colorado, Davis (1969) gives hypothetical status and only one sight locality of the Pectoral Sandpiper, and Twomey (1942) did not find the species in the Uinta Basin. On 4 August 1971, a single bird was observed 9 km S of Craig along the edge of a small ranch impoundment, the only record we have for this region. It appears to be a rare migrant through this portion of northwestern Colorado.

Himantopus mexicanus. Black-necked Stilt. Only one observation from a pond 9 km S of Craig, on 5 May 1972, suggests the rarity of the stilt in northwestern Colorado. Very few records are available for the state; Bailey and Niedrach (1965:365) designate it as a rare summer visitor to Colorado, as Twomey (1942) does in the Uinta Basin.

Chlidonias niger. Black Tern. Davis (1969) assigns a hypothetical status to this species for the Western Slope and reports only two past sightings. We have noted this species on 15 May 1971 and from 30 May–1 June 1972, at two locations south of Craig. On 30 May 1972, color photographs were procured to document the species in western Colorado. From 24–26 July 1937, Twomey (1942:397) observed a breeding colony of 30 Black Terns along the Yampa River near Elk Springs, Moffat County, Colorado. Near Craig, it appears to be an uncommon spring migrant.

Melanerpes erythrocephalus. Red-headed Woodpecker. On 20–21 May 1972, we observed and photographed a Red-headed Woodpecker searching for food in a stand of dead cottonwoods in Big Bottom. On 6 June 1973, another was seen within a cottonwood grove close to Milner in Routt County. The two previous records of this species in Colorado west of the Continental Divide were made in 1877 and 1908 (Warren 1908; Bailey and Niedrach 1965) and the species has been assigned accidental status in western Colorado by Davis (1969). Our observations suggest it is rare, but not accidental. The bird is also known from the Uinta Basin, where Twomey (1942:407) found one dead male.

Dumetella carolinensis. Catbird. Although Davis considers it a rare summer resident found principally in the southern portion of the Western Slope, the Catbird is a common breeding species in lush undergrowth of cottonwood groves along the Yampa River near Hayden and Craig. It has been recorded on all our riverside censuses from mid-May through July, and also at Grassy Creek (5 June 1970). Wooding (1973) recently reported banding 17 Catbirds near Carbondale (Garfield County), attesting further to

the common occurrence of this species in appropriate habitats of Western Colorado.

Vireo olivaceus. Red-eyed Vireo. According to Davis (1969:30), only three records exist for the Western Slope, all from the southern half of the state; thus, it has been given rare status. From 28–31 May 1972, a singing male was observed and photographed in a cottonwood flood plain stand on the Yampa River 8.5 km E of Hayden. It was heard again on 17 June and 8 July 1972. On 6 and 8 June and 3 July 1973, two males were singing in the same woods. Activities of a pair we watched in June 1973 indicate that Red-eyed Vireos nest at this location. Twomey (1942:437) found it to be an uncommon migrant through riparian habitats of the Uinta Basin.

Seiurus noveboracensis. Northern Waterthrush. We have one record, observed along an irrigation ditch which winds through a cottonwood grove in Big Bottom, on 24 and 25 August 1971. No photograph or specimen was taken, so the species remains hypothetical on the Western Slope, although Bailey and Niedrach (1965) give a previous sighting from Moffat County and others from near Gunnison. It is clearly a rare species in this portion of the state. In northeastern Utah, Twomey (1942:445) found it to be a rare migrant in spring and fall.

Setophaga ruticilla. American Redstart. From 28–31 May 1972, we secured photographs of this warbler, previously hypothetical in western Colorado, from a dense cottonwood stand along the Yampa River 8.5 km E of Hayden. A minimum of six males was defending territories, and females were also noted. On 8 July 1972, four males and three females were observed at this location. Again in June and July 1973 at least five pairs of American Redstart were present in this woods, which was not censused in 1971. From observations of intersexual behaviors, we are certain this species nested here. In the past, American Redstarts have been observed near Grand Junction and Gunnison. Twomey (1942:449) encountered no individuals of this species, but referred to previous sightings directly west of Moffat County in Utah.

Dolichonyx oryzivorus. Bobolink. During the 1972 and 1973 breeding seasons, the Bobolink was a common species inhabiting natural hay meadows along the Yampa Valley from Hayden Station downstream to Craig. On 29 and 30 May 1972, numerous males were observed in late stages of courtship with females. They remained into July, when adults were seen feeding fledglings at three meadows on 9 July 1972. Similar courtship was observed in 1973. A rancher indicated to us that Bobolinks have nested on one of his fields for a number of consecutive summers. Previous reports of this species from northwestern Colorado come from Warren (1908), who found them breeding on three meadows near Steamboat Springs in 1907. Designations by Davis (1969:33) and by Bailey and Niedrach (1965:711) give it rare and irregular status in western Colorado; this appears not to be the case.

Quiscalus quiscula. Common Grackle. Bailey and Niedrach (1965) give no account of Common Grackles in Western Colorado, but these authorities note that this species appears to be extending its range within some portions of the state. We have made careful identifications of this species on three occasions within the Yampa Valley. On 2 July 1972, Phillip D. Creighton observed a male Common Grackle in flight and on the ground as it moved about a pasture within Big Bottom, in loose association with

a flock of nine Brewer's Blackbirds (*Euphagus cyanocephalus*). We watched a group of four Common Grackles as the birds foraged on a lawn at the park in Craig, on 2 July 1973, and a day later a single Common Grackle flew to a feeding location within 6 m of a picnic table we were occupying at the town park in Hayden. Hyde (1971) reported that a pair of Common Grackles was observed in Gunnison during summer 1970. Hence, this species might be establishing itself as a summer resident on Colorado's Western Slope.

Passerina cyanea. Indigo Bunting. On the evening of 20 May 1972, Martin observed a male Indigo Bunting on three occasions at distances varying from 5 to 8 m. It was located in a brushy cottonwood stand 1 km S of Craig. The individual, which had a typical bunting bill, was brilliant blue over its entire body, and gave no suggestion of wing bars or of ventral paleness, thereby dismissing the possibility it was an Indigo Bunting × Lazuli Bunting hybrid. Early the following morning, Reed watched the bird for almost 15 min from a distance of approximately 5–10 m, among a group of American Goldfinches (*Spinus tristis*) and House Finches (*Carpodacus mexicanus*). The bird did not sing on either date while we watched it. To our knowledge, this is the first account of an Indigo Bunting west of the Continental Divide in Colorado. Twomey (1942) did not find this species in the Uinta Basin of Utah in 1937.

Spiza americana. Dickcissel. An alfalfa field 1.5 km E of Hayden Station contained three singing males which were engaging in territorial encounters on 3 July 1973. This represents our only sighting of Dickcissels; they apparently are of irregular occurrence here and in other sections of western Colorado, where Davis (1969) considers them to be accidental. Previous to the 1973 record, the species has been noted west of the Continental Divide on only four occasions, in the Montrose and Gunnison areas.

Leucosticte spp. Rosy Finches. We found a flock of 315 rosy finches (*Leucosticte tephrocotis*, *L. atrata*, and *L. australis*) on nearly bare strip-mine spoil banks at Grassy Creek on 22 November 1970. They were feeding on seeds taken from dried Russian thistle (*Salsola kali*) plants protruding above the snow. Subsequent records (March and December 1971, March 1972) showed Rosy Finches to be the only wintering seed-eating birds exploiting the ruderal plants of the newly restored, strip-mined slopes.

ACKNOWLEDGMENTS

We are grateful for the field assistance of Phillip D. Creighton, Philip N. Lehner, and Joseph J. Trebella. Shirley Guisinger also contributed to field observations. The study was supported by the Yampa Project and by Ecology Consultants, Incorporated.

LITERATURE CITED

- BAILEY, A. M., AND R. J. NIEDRACH. 1965. Birds of Colorado. Vols. I and II. Denver Museum of Natural History, Denver.
- BOEKER, H. M. 1953. Waterfowl production in the Yampa River Valley, Colorado. M. S. Thesis, Colorado State Univ., Fort Collins.
- BOEKER, H. M. 1954. Wilson's Snipe and Sora Rail in Yampa Valley, Colorado. In Investigations of Woodcock, Snipe and Rails in 1953. U.S. Fish and Wildlife Serv. Spec. Sci. Rep. Wildlife No. 24.

- DAVIS, W. A. 1969. Birds in Western Colorado. Colorado Field Ornithologists, Boulder.
- ELA, L. 1971. No title. Colorado Field Ornithologist Newsletter No. 2.
- FELGER, A. H. 1910. Notes on birds and mammals of northwestern Colorado. Univ. Colo. Stud. 7: 132-146.
- HENDEE, R. W. 1929. Notes on birds observed in Moffat County, Colorado. Condor 31:24-32.
- HYDE, A. S. 1971. No title. Colorado Field Ornithologist Newsletter No. 2.
- LUPTON, D. W. 1973. Accidental and occasional bird species recorded from Colorado. The Colorado Field Ornithol. 15:16-19.
- ROCKWELL, R. B. 1908. An annotated list of the birds of Mesa County, Colorado. Condor 10: 152-180.
- TWOMEY, A. C. 1942. The birds of the Uinta Basin, Utah. Ann. Carnegie Mus. 28:341-490.
- WARREN, E. R. 1908. Northwestern Colorado bird notes. Condor 10:18-26.
- WARREN, E. R. 1909. Notes on the birds of southwestern Montrose County. Condor 11:11-17.
- WOODING, J. L. 1973. Notes from the Roaring Fork Watershed. The Colorado Field Ornithol. 15:27.

Accepted for publication 13 September 1973.

RELATION OF METABOLISM TO AMBIENT TEMPERATURE IN THE VERDIN

RAYMOND B. GOLDSTEIN¹

Department of Biology
New Mexico State University
Las Cruces, New Mexico 88003

The Verdin (*Auriparus flaviceps*) is an inhabitant of the Warm Desert of North America. The species is mainly insectivorous and diurnal and thus is exposed to maximal desert temperatures. As nonmigratory residents, Verdins must also endure the low temperatures of winter nights.

Verdins are among the smallest passerines in North America. Birds used in this study averaged 6.8 g ($n = 10$, range, 6.2-7.35 g). This small size and concomitant high surface-to-volume ratio accentuate problems of temperature balance and metabolic stress.

Lasiewski and Dawson (1967), in their summary of the literature on oxygen consumption in birds in relation to environmental temperature, give data for few species as small as Verdins and no data at all for an insectivorous inhabitant of temperate deserts. More recent studies have added some information (e.g., Mugaas and Templeton 1970), but they have not filled this gap.

MATERIALS AND METHODS

This study was conducted between 27 April and 29 May 1968. The birds collected for the study were from an area 6 miles E of Las Cruces, Doña Ana County, New Mexico. The dominant plants in this area, a slowly sloping mesa at the foot of the Organ Mountains, are creosotebush (*Larrea divaricata*), white thorn (*Acacia constricta*), range ratany (*Krameria parvifolia*) and, along the numerous arroyos where the Verdin nests, apache plume (*Fallugia paradoxa*), little leaf sumac (*Rhus microphylla*), and desert willow (*Chilopsis linearis*). For a more detailed description of this area and the ecology of resident Verdins, see Singh (1964), Moore (1965), and Raitt and Maze (1968).

The birds were collected on their nests approximately 1 hr after sunset. They were maintained in the dark overnight, allowing the experiments to be run with birds in a 12-hr post-absorptive condition.

An open-flow system was used. It consisted of a vacuum pump which passed the air through a column of Drierite (calcium sulfate) and a column of As-

carite to remove moisture and carbon dioxide. The air was then passed through the animal chamber, using a 308 × 85 mm plexiglass tube. Air entered the chamber through one end of the tube and exited through the other at a mean rate of 7.25 liters/hr ($n = 35$, range, 6.72-7.88 liters/hr, SD = 0.25). The bird rested on a wire mesh screen suspended 20 mm above the bottom of the chamber, over a layer of mineral oil. The chamber itself was housed in a darkened incubator. Air leaving the chamber passed through a second set of Ascarite and Drierite columns, through a wet test flow meter, and then through a F1100 Roger Gilmont meter into a Beckman E2 oxygen analyzer, on which oxygen percentages were recorded. Chamber temperatures were monitored by a Yellow Springs telethermometer.

Two sets of temperature groupings were utilized in the experiments with five birds in each set. With each bird in the first group, the ambient temperature was set at 20°C and then lowered systematically to 15°C and 10°C. All birds in this group died at temperatures below 10°C. In the second group the ambient temperature was started at 25°C and then raised to 30°C, 35°C, and 40°C. In each group the individual birds were allowed to remain at the experimental temperature for one hour before readings began. Readings were taken at 10-min intervals throughout the second hour. Oxygen consumption values (corrected to STP) used for analysis were based on the last two readings at each temperature and calculated by equation 5 of Depocas and Hart (1957).

RESULTS

Oxygen consumption results for the birds are summarized in figure 1. In order to find the line of best fit, a curvilinear regression line was plotted via a second-degree polynomial orthogonal comparison for equally spaced treatments (Steel and Torrie 1960: 222-229). This method was used because the data suggested a parabolic pattern. It was possible to use the orthogonal method because the readings were taken at 5-degree intervals. The formula of the parabola is $y = 11.1541 - 0.4550x + 0.0076x^2$, where y equals predicted ml O₂/g-hr and x equals ambient temperature. The values for the respective points falling on the line are: 7.37 ml/g-hr at 10°C; 6.07 ml/g-hr at 15°C; 5.09 ml/g-hr at 20°C; 4.53 ml/g-hr at 25°C; 4.34 ml/g-hr at 30°C; 4.53 ml/g-hr at 35°C; 5.11 ml/g-hr at 40°C.

Since it is impossible to have the birds remain completely without movement during an experiment of this type, the metabolic values obtained are measures of standard metabolism rather than basal metab-

¹ Present address: Department of Zoology, University of Nebraska, Lincoln, Nebraska 68508.