but otherwise similar, Blue-and-yellow Macaw, which third-hand reports suggested was sympatric with the Blue-throated Macaw (Ingels et al. 1981). Our observations confirmed this sympatry and showed that these macaws are outnumbered at our site by Blue-and-yellow Macaws by a factor of twenty or more.

Our guide (38 years old) was the only person we have found in that part of the Beni who in the past has trapped and traded large macaws. He reported that since 1977 he had caught perhaps a total of 1000 Blue-and-yellow and Red-and-green Macaws (*A. chloroptera*) and 6–9 Blue-throated Macaws and sold them to specialized businessmen/bird dealers from a major Bolivian city. In 1984, Bolivia outlawed this trade, and our guide stopped trapping macaws and switched to wage labor. Nevertheless, he reported that a few wealthy bird buyers in the major city still bought and traded small numbers of the most valuable, rarer macaws whenever international dealers placed orders. Moreover, he reported that an Argentinian bird dealer currently was offering illegal Bolivian dealers a high price for Blue-throated Macaws.

Because the Blue-throated Macaw may be extremely rare, still has a high price on its head, and is not yet assured protection from smugglers, we have chosen not to reveal the localities of our study or the name of our guide. Rather, we shall first determine the species' conservation status and implement measures for its protection. Scientists wishing further information about the species may write to the second author, who, in conjunction with Bolivian authorities, will evaluate each request.

Acknowledgments.—NYZS the Wildlife Conservation Society (WCS) financed this research in its entirety. We thank Mario Baudoin W., Director General of the National System of Protected Areas of the Bolivian National Secretariat of the Environment, for permission to do research in Bolivia. We also are grateful to Maria Marconi and Juan Pablo Arce of the Conservation Data Center of Bolivia for help with satellite imagery and cartography. Andrew Taber and Dolores Ayersa of WCS provided valuable logistical support and advice. We wish to extend our warmest thanks to the extremely hospitable Bolivian landowners and local people. Without expert guidance from our guide we never would have succeeded. We regret that security for the macaw prevents us from thanking these people here by name.

OTTO CARLOS JORDAN, *Zoológico de Santa Cruz de la Sierra, Santa Cruz, Bolivia;* AND CHARLES A. MUNN, *NYZS the Wildlife Conservation Society, International Wildlife Conservation Park, Bronx, New York 10460.* *Received 2 Nov. 1992, accepted 23 Mar. 1993.*

Wilson Bull., 105(4), 1993, pp. 695–698

A probable bilateral gynandromorphic Black-throated Blue Warbler.—Gynandromorphism is a rare phenomenon which has been reported in butterflies, birds, some small mammals and, at least once, in humans (Hannah-Alava 1960). The majority of documented cases of gynandromorphism in birds have involved captive chickens, pheasants, and finches, but there have been over forty cases in wild birds (Kumerloeve 1987). Interestingly, the vast majority of cases in wild birds have been in the family Fringillidae.

For bird species whose sexual differences in plumage characters are controlled by genes, rather than mediated by hormones, a gynandromorphic individual exhibits male plumage on one half of the body and female plumage on the other half, usually with a sharp line of demarcation separating the halves (Crew and Munro 1938). A bird showing this sharp demarcation between the halves is said to be a bilateral gynandromorph. Male plumage is on the right side of most bilateral gynandromorphs (Kumerloeve 1987), with the male plumage corresponding to a testis on the right and the female plumage to an ovary on the

left (Witschi 1961). Birds showing the female side on the right are "very rare" (Kumerloeve 1954) and occur in only about 15% of the cases.

On 24 October 1987, I discovered an odd-looking Black-throated Blue Warbler (*Dendroica caerulescens*), a rare but regular fall vagrant to California (Roberson 1980, Garrett and Dunn 1981), at Stovepipe Wells in Death Valley National Monument, Inyo County, California. The bird was also studied at length under ideal conditions by Brian E. Daniels, Jon L. Dunn, Shawneen E. Finnegan, Paul E. Lehman, Curtis Marantz, Guy McCaskie, and John C. Wilson. At first it appeared to be a typical male, but upon further inspection I could see yellow on the underparts. We pursued the bird, believing it was perhaps a hybrid of some sort. We eventually realized that the plumage was sexually dimorphic with respect to each lateral half of the bird, with the left side appearing to be a male and the right looking like a female.

The following description has been compiled from the field notes of McCaskie and myself and from four color slides taken by Lehman. In size and shape, the bird looked like a "normal" Black-throated Blue Warbler, but in plumage it was an aberrant individual that showed both male and female characteristics. Its left side looked like a typical male, with a dark blue crown, back, wing, and tail, a black throat, face, and side, and a white belly and undertail coverts. It had a small white square at the base of the folded primaries. From the front, the black throat could be seen to extend downward only on the sides. The center of the throat was white, which "strongly suggests" a first-year male (fide K. C. Parkes). The right side of the bird looked mostly like a female, with a dark olive back and wing, a dark brown cheek with a thin whitish supercilium that widened to form a spot behind the eye, a black wash to the side of the throat, and a buffy-yellow wash to the under parts. The "female side" also had a white patch at the base of the folded primaries, but it was slightly smaller than the patch of the "male side." Viewed from below, the demarcation between the white of the "male side" and the yellow of the "female side" was sharp, forming a straight line along the longitudinal axis of the bird. Similarly, there was a sharp line of demarcation between the dark blue and the dark olive down the center of the crown, nape, and back. The legs were pinkish and looked similar in color, although the leg on the female side appears to be duller and slightly darker in two of the photographs. The bird appeared to be healthy; that is, it did not show any obvious deformities. Duplicates of the color slides have been deposited in the Visual Resources for Ornithology (VIREO) archives, where they have been given catalog numbers V06/12/001–V06/12/004.

Kumerloeve (1987) summarized all reports of gynandromorphs known to him, although he did not mention some published cases, such as Tufted Duck (*Aythya fuligula*; van Winkel 1983), several American Kestrels (*Falco sparverius*; e.g., Brodkorb 1935, Parrish et al. 1987), Barn Swallow (*Hirundo rustica*; Hotyński and Szentendrey 1977), and the seed-finch and seedeater records that I cite below. He also missed at least two (Cadbury 1973, Tordoff 1983) of the roughly ten Evening Grosbeaks (*Coccothraustes vespertinus*) that have been recorded (Schaub 1960, Packard 1962, Laybourne 1967). Since Kumerloeve's paper, a bilateral gynandromorph Pink-browed Rosefinch (*Carpodacus rhodochrous*) has been reported (Alström and Olsson 1988).

In the Emberizidae, there are at least six published cases of bilateral gynandromorphism: Green Honeycreeper (*Chlorophanes spiza*; Neunzig 1924), Northern Cardinal (*Cardinalis cardinalis*; Laskey 1969), Rufous-sided Towhee (*Pipilo erythrophthalmus*; Laskey 1969), Large-billed Seed-Finch (*Oryzoborus crassirostris*; Filho and Teixeira 1982), Double-collared Seedeater (*Sporophila caerulescens*; Sick 1967), and Orchard Oriole (*Icterus spurius*; Townsend 1882). In addition, a Great-tailed Grackle (*Quiscalus mexicanus*) showing bilateral gynander characters in both plumage and skeletal structure was collected on Cozumel Island, Mexico, in the 1960s (K. C. Parkes in litt.). The record presented in this note is thus the

first case of a bilateral gynandromorph in the subfamily Parulinae, and one of only eight ever recorded in the Emberizidae.

Acknowledgments.—I foremost thank Kenneth C. Parkes, who kindly reviewed and commented on my field notes and offered insight into gynandromorphic birds. I thank Kurt Radamaker, who made me aware of gynandromorphism in butterflies and led me to wonder about this condition in vertebrates, Paul E. Lehman for use of his photographs and unpublished information, and Guy McCaskie for use of his field notes. Curtis Marantz provided me with a photocopy of the van Winkel note. I am grateful to Kurt F. Campbell, Richard A. Erickson, and Kimball L. Garrett, H. Kumerloeve, Kenneth C. Parkes, Harrison B. Tordoff, and an anonymous reviewer for providing valuable comments on a draft of this note.

LITERATURE CITED

ALSTRÖM, P. AND U. OLSSON. 1988. Gynandromorphism in the Pink-browed Rosefinch *Carpodacus rhodochrous*. Bull. Brit. Ornithol. Club 108:12.

BRODKORB, P. 1935. A Sparrow Hawk gynandromorph. Auk 52:183–184.

CADBURY, J. W., III. 1973. A gynandromorphic Evening Grosbeak in Burlington County, N.J. Cassinia 54:15–17.

CREW, F. A. E. AND S. S. MUNRO. 1938. Gynandromorphism and lateral asymmetry in birds. Proc. Royal Soc. Edinburgh 58:114–135.

FILHO, A. F. C. AND D. M. TEIXEIRA. 1982. Sobre um caso de ginandromorfismo bilateral em *Oryzoborus crassirostris* (Gmelin, 1789) (Fringillidae, Aves). Rev. Brasileira Biol. 42:377–379.

GARRETT, K. AND J. DUNN. 1981. Birds of southern California: status and distribution. Los Angeles Audubon Soc., Los Angeles, California.

HANNAH-ALAVA, A. 1960. Genetic mosaics. Sci. Amer. 202(5):118–130.

HOTYŃSKI, R. AND G. SZENTENDREY. 1977. Gynandromorficzna Dymówka (*Hirundo rustica*). Notatki ornitol. 18:130.

KUMERLOEVE, H. 1954. On gynandromorphism in birds. Emu 54:71–72.

———. 1987. Le gynandromorphisme chez les oiseaux—recapitulation des données connues. Alauda 55:1–9.

LASKEY, A. R. 1969. Bilateral gynandrism in a Cardinal and a Rufous-sided Towhee. Auk 86:760.

LAYBOURNE, R. C. 1967. Bilateral gynandrism in an Evening Grosbeak. Auk 84:267–272.

NEUNZIG, R. 1924. Ein neuer Fall von bilaterlem Hermaphroditismus beim Gimpel. Gefiederte Welt 53:93–94.

PACKARD, C. M. 1962. Maine bird reports. Maine Field Nat. 18:78.

PARRISH, J. R., J. STODDARD, AND C. M. WHITE. 1987. Sexually mosaic plumage in a female American Kestrel. Condor 89:911–913.

ROBERSON, D. 1980. Rare birds of the west coast. Woodcock Publ., Pacific Grove, California.

SHAUB, M. S. 1960. Unusual plumage variations of the eastern Evening Grosbeak. Passenger Pigeon 22:18–21.

SICK, H. 1967. "Bico de Ferro"—overlooked seedeaters from Rio de Janeiro (*Sporophila*, Fringillidae, Aves). Anais Acad. Brasileira de Ciencias 39:307–314.

TORDOFF, H. B. 1983. An Evening Grosbeak gynandromorph. Loon 55:22–24.

TOWNSEND, C. H. 1882. Remarkable plumage of the Orchard Oriole. Bull. Nuttall Ornithol. Club 7:181.

VAN WINKEL, J. 1983. Bilaterale gynandromorfie bij Kuifeend *Aythya fuligula*. Wielewaal 49:393.

WITSCHI, E. 1961. Sex and secondary sexual characters. Pp. 115–168 *in* Biology and comparative physiology of birds, Vol. II (A. J. Marshall, ed.). Academic Press, New York, New York.

MICHAEL A. PATTEN, *P.O. Box 8561, Riverside, California 92515-8561.*

Wilson Bull., 105(4), 1993, pp. 698–699

Opportunistic predation by a Great Blue Heron on an American Dipper.—Although most wading birds feed primarily on fish, their diets frequently include other prey, including aquatic and terrestrial invertebrates, amphibians, reptiles, small mammals, and other birds (Cogswell 1977, Kushlan 1978). There are accounts of Great Blue Herons (*Ardea herodias*) capturing and eating birds, including Black Rails (*Laterallus jamaicensis*) (Evans and Page 1986), phalaropes (genus *Phalaropus*) (Packard 1943, Merrifield 1992), and hatchling Black Terns (*Chlidonias niger*) (Chapman and Forbes 1984). Most observations were made in marsh or estuarine habitats where densities of other birds is relatively high. Here I describe an observation of a Great Blue Heron preying on a solitary American Dipper (*Cinclus mexicanus*) along a mid-size river in northern California.

This observation took place at approximately 12:00 h (PDT) on 27 August 1992 at the South Fork Eel River where it flows through the Northern California Coast Range Preserve in northern Mendocino County, California (39°44′N, 123°39′W). I first observed an adult heron standing near the river margin in an area upstream of a large, shallow pool where a portion of the river flows among several large, emergent boulders. The heron was partially obscured by a thick clump of sedges. While observing the heron through binoculars (8×) from a distance of approximately 50–60 m, a dipper landed on an emergent boulder 2–3 m from it. The heron immediately turned its head in the direction of the dipper. After "dipping" several times while walking around the top of the boulder, the dipper slipped into the river in an area where the flow was approximately 30–50 $cm \cdot sec^{-1}$ and the depth was 12–15 cm. Within a period of approximately 5 sec the heron took two rapid steps in the direction of where the dipper entered the river, extending its neck and lowering its head close to the water surface. Shortly thereafter it made a powerful lunge, submerging its head and the upper half of its neck into the river, and emerged with the struggling dipper grasped in its beak. Over a period of 2–3 min the heron manipulated the dipper in an attempt to swallow it. Several times while holding the dipper in its beak the heron shook its head violently up and down and from side to side, each time readjusting its grasp on the dipper. Three times during this period the heron completely submerged the dipper in the river. Shortly after the dipper stopped struggling (approximately 1.5–2 min), it was ingested head first, a process that took approximately 10 sec. Approximately 4–5 min after ingesting the dipper, the heron flew out of sight downstream. There was a noticeable bulge in the heron's neck during this time.

To my knowledge, this is the first reported observation of Great Blue Heron predation on a dipper. Moreover, this observation illustrates the highly opportunistic nature of predation by Great Blue Herons in general: as stated by Kushlan (1978) "Somewhere, sometime, individual wading birds have probably eaten just about any item that they could swallow."

Acknowledgments.—I thank the National Science Foundation (BSR 91-06881) for support of ongoing research at the NCCRP, which allowed me to make this observation.