

TABLE 1
NUMBER OF MOBBING CALLS PER MINUTE

Bird	N	Minutes from beginning of mobbing											Maximum calls/bird/ min	
		1	2	3	4	5	6	7	8	9	10	11		12
Gnatcatchers	2	21	24	21	15	17	5	0	0	0	0	0	0	12
Titmice	5-6	34	95	71	41	37	3	0	0	15	1	0	0	16-19
Chickadees	5	21	15	4	0	0	1	0	0	0	0	0	0	4
Warblers	10	0	20	123	123	155	109	87	5	2	0	0	0	15
Towhees	3	0	0	0	5	11	65	70	43	33	25	9	6	23

feet from the original mobbing site. Titmice and chickadees were perched nearby and gave a few mobbing notes over about eight minutes. The short duration and low intensity of this mobbing may have been a result of the bird's horizontal position on the ground. We flushed the bird two more times and each time it flew over 75 feet, landed on the ground, and was not mobbed.

We then observed activities at the original mobbing site. Nine warblers of four species were continuously singing; all were 50 feet or more from the holly. It is doubtful that they avoided the mobbing site.

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Bilateral gynandris in an Evening Grosbeak.—Sexual mosaics or gynanders are individuals which possess a mixture of male and female characteristics. A mosaic may be bilateral; that is, tissue typical of one sex may exist on one side of the mid-line of the individual, and that of the other sex on the other. Since Cabanis (1874) reported a flicker (*Colaptes "mexicanus"*) and a Bullfinch (*Pyrrhula pyrrhula*) with bisexual plumage there have been at least 20 cases of gynandris reported in birds. Lillie (1931) noted only 10 cases and regarded such abnormalities as rare. Benoit (1950) cited 12 cases, 10 of which had been reported previously by Lillie (8 Bullfinches, 1 Chaffinch [*Fringilla coelebs*] and 1 Ring-necked Pheasant [*Phasianus colchicus*]); the remaining 2 were a barred Plymouth Rock domestic fowl (*Gallus domesticus*) and a Gouldian Finch (*Poephila gouldiae*). Heinroth and Heinroth (1958: 69) kept a bisexual Bullfinch in captivity. Other cases of gynandris have been reported in the Orchard Oriole (*Icterus spurius*) by Townsend (1882), and in the Siskin (*Carduelis spinus*) and Green Honeycreeper (*Chlorophanes spiza*) by Harrison (1964).

In reporting on a 10-year study, Shaub (1960) listed 29 aberrantly plumaged Evening Grosbeaks (*Hesperiphona vespertina*) observed in the eastern United States and Canada; of these perhaps 4 were bilateral gynanders. One was observed on 25 November 1955 and during the following week in or near Pittsfield, Massachusetts (Shaub, 1960). The plumage of this bird's left side was that of a female and the right side that of a male except that the entire upper tail coverts were male. A second bird with male plumage on the left and female plumage on the right was banded (A. Duvall, pers. comm.; Shaub, 1960) by Mrs. Donald Radke on 13 January 1959 at East Chatham, New York, and a similarly plumaged bird was observed at Adams, Massachusetts, on 10 May 1959. Other bilateral gynanders were seen in York County, Maine, during the winters of 1958-59 (Shaub, 1960), 1960-61,

and 1961-62 (Packard, 1962). The latter author also reported a bilateral gynander observed at a bird feeder in Warren, Maine, on 26 April 1962.

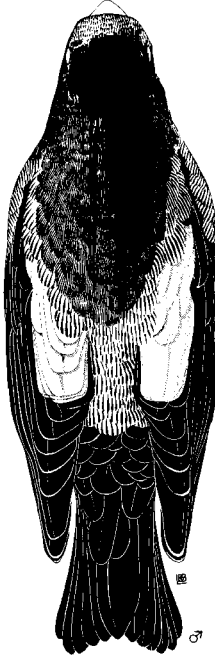
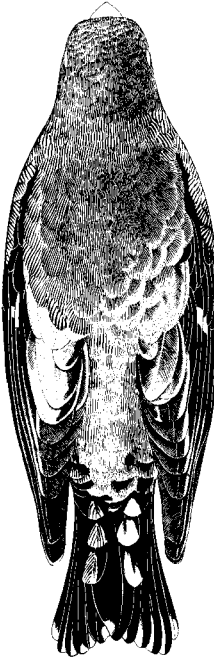
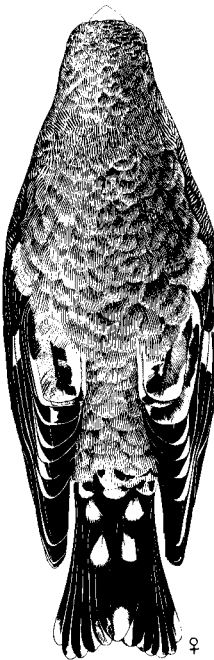
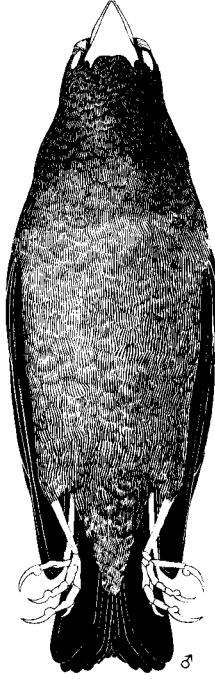
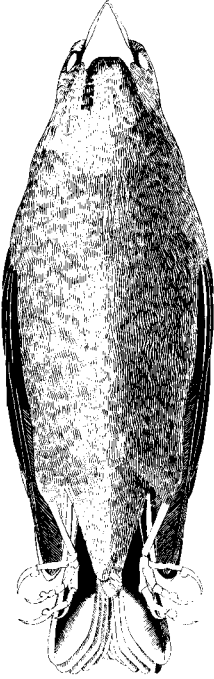
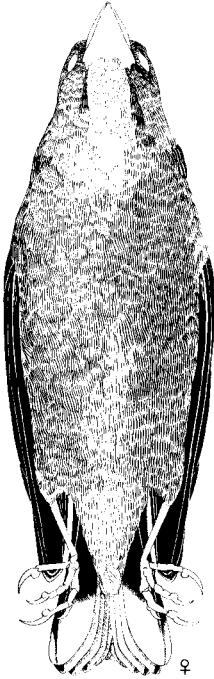
The bird (U. S. National Museum no. 466993) described herein was trapped on 30 March 1962 by A. H. Fast in northern Arlington, Virginia. The plumage of this bird is striking (Figure 1). There is a distinct line of demarcation along the ventral mid-line. The entire left side of the underparts is citron yellow, the same color as the abdomen of a male Evening Grosbeak, but it lacks the darker yellowish olive found on the throat and upper breast of a normal male. The right side of the underparts is the color of a normal female; that is, the throat, lower part of the abdomen and the under tail-coverts are whitish and the remaining underparts on this side are light buffy grayish, tinged with yellow. The throat has the dusky submalar lines typical of a female. Each side of the tail is black, with the inner webs of the rectrices marked with white, as in the female. The left tertiaries are white, and most of the scapulars and a few of the back feathers on the left side are yellow, as they are in the male. The remainder of the back and wings is intermediate, but close to the color of the female. However, the secondaries on both sides show more white than do those of all but 4 of 34 female specimens in the U. S. National Museum. The secondaries of the left wing of the gynander show more white than do those of the right. The primaries of both wings are dull black, edged with white. All except the outer three primaries are white at the base, forming a definite white spot (like that in the primaries of a normal female). The right side and top of the gynander's head are like those of a normal female, while the left side is grayish olive and not the deep olive of a normal male. The right upper tail-coverts are spotted with white as in the female, whereas the spots on the left upper tail-coverts are tinged with yellow (one male specimen [U.S.N.M. 301992] has similarly marked upper tail-coverts). The bill is olive yellow.

Measurements.—The measurements (in mm) vary and are as follows. Left side: wing, 108.2; tail, 64.5; tarsus, 21.2; middle toe, 19.0; right side: wing, 104.0; tail, 63.0; tarsus, 20.5; middle toe, 18.0. Of 13 comparably plumaged, normal, adult male eastern Evening Grosbeaks that I measured, the right wing averaged 111.7 mm (range 106.8-114.2) and the left wing averaged 111.3 mm (107.2-114.6). The wings of 12 normal adult females of this subspecies averaged 107.8 mm on the right (103.5-111.7) and, on the left side, 107.7 mm (104.1-111.5). The lengths of left and right wings of the gynander fall short of the averages for male left wing and female right wing, but the difference in their lengths approximates the average difference in wing length between the sexes of normal birds. The tarsi of 13 normal adult males averaged 21.7 mm (20.3-23.0); those of 12 normal adult females averaged 21.2 mm (19.9-22.0). The tarsal measurements of the gynander are well within the range of both normal male and female, and the difference between the tarsi is slightly greater than the average difference between the tarsal measurements of the two sexes.

Although I did not measure skeletal elements of the gynander, the tarsal and middle toe measurements indicate the presence of bilateral asymmetry in the skeleton. In the pheasant described by Bond (1913), the male half of the bird was larger than the female half. Crew and Munro (1938) found that the bones on the male-plumaged

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Figure 1. Ventral (upper) and dorsal (lower) views of Evening Grosbeaks. Left to right, a normal female, the gynandromorph, and a normal male.



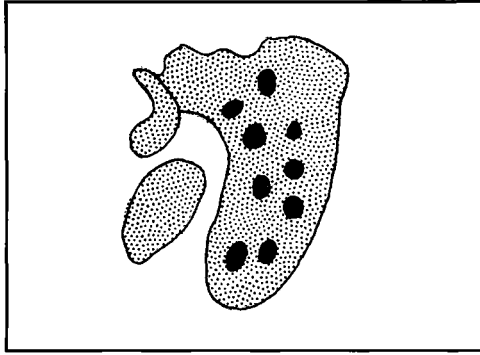


Figure 2. Ovary (right) and testis (left) of gynandromorph (3 \times).

right side of a Gouldian Finch gynander were 3 to 4 per cent larger than those of the female-plumaged left side.

Description of gonads.—Figure 2 shows the gross appearance of the gonads. The left gonad measured 10 \times 7 mm and had the granular appearance of a normal ovary; a slightly enlarged oviduct was present. The right gonad, 5 \times 2.5 mm, lacked the characteristic coarse granulation of the ovary; however, it did show very fine granulation. It superficially appeared intermediate between a testis and an ovary; a vas deferens was present.

Dr. Charles C. T. Chow kindly conducted an histological examination of the gonadal tissue and found that a section from the right gonad showed numerous close aggregates of tubular structures, surrounded by germ cells (Figure 3). In the intervening stroma there were numerous red blood cells. The tubular structures were round and somewhat irregular, with a low columnar type of epithelium. The structure of this organ was consistent with that of a testis. A section from the left gonad (Figure 4) showed ovarian tissue with numerous, often vacuolated, follicles. The ovarian stroma was dense and fibrous, and many vascular channels were filled with red blood cells.

Dr. Chow found no evidence of a tumor. He stated (pers. comm.) that one of the sex organs was a testis, and the other an ovary, i.e., this specimen was a true hermaphrodite.

It should be recalled that this grosbeak had the ovary on the left and the testis on the right, but that the male plumage appeared on the left and female coloring on the right. Heinroth and Heinroth (1958) refer to such occurrences in birds, but name no particular species. To date there appear to be only a few recorded cases of bilateral gynandrim in which the plumages of the two sexes occurred on the same sides of the body as in the gynander described herein. These include: a flicker (Cabanis, 1874), that had a strongly developed red malar stripe (typical of male Red-shafted Flickers, *Colaptes cafer*) on the left side, but which was absent on the right side; a Bullfinch (Benoit, 1950); and one or possibly two Evening Grosbeaks (Shaub, 1960). Kumerloeve (1954) considered this type of gynander very rare, and it is interesting that there have occurred two, and possibly three, cases of this type in the Evening Grosbeak.

I wish to thank Theodore S. Bober for help during preparation of this paper, Dr. Charles C. T. Chow for the diagnosis of the gonadal tissues, Mrs. Caroline Lutz



Figure 3. Section of testis (150X).

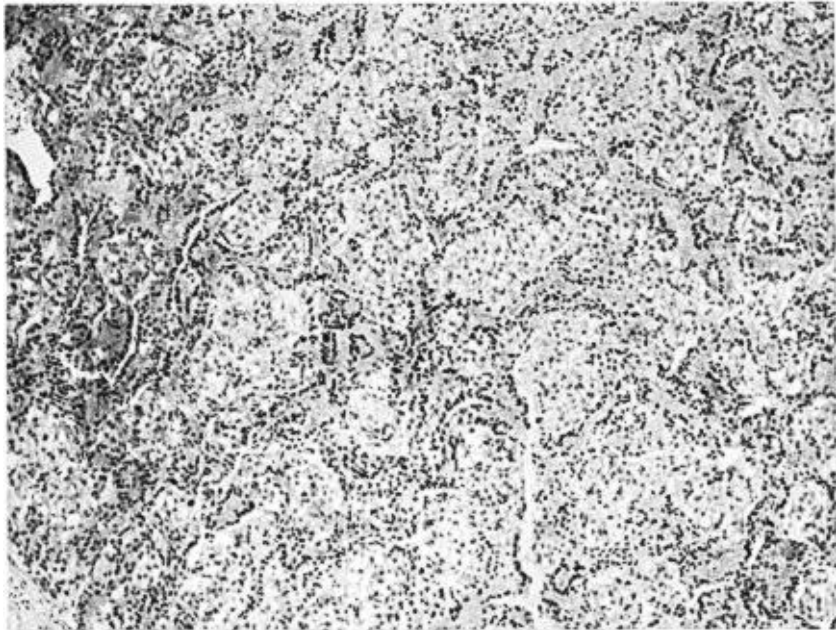


Figure 4. Section of ovary (150X).

for preparing the illustrations, and Dr. Richard L. Zusi for critically reading the manuscript.

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The distribution of the Cerulean Warbler in the Province of Quebec, Canada.

—The A.O.U. Check-list (fifth edit., pp. 496-497, 1957) and several authors state that the Cerulean Warbler (*Dendroica cerulea*) breeds north to southeastern Nebraska, southeastern Minnesota, southern Wisconsin, southern Michigan, southern Ontario, western and southeastern New York, and northern New Jersey. In recent years, however, this species seems to have extended its range northward and eastward. E. H. Forbush (*Birds of Massachusetts and other New England states*, vol. 3, Boston, Massachusetts Dept. Agric., 1929; see p. 247) states that it is rare or accidental in New England and that it is "extremely rare east of the Appalachian ranges." Members of the species have been known to breed in the state of New York for some time (A. C. Bent, "Life histories of North American wood warblers," *U. S. Natl. Mus., Bull.* 203, 1953; see p. 330), and have been recorded recently as far north as Syracuse (*Aud. Field Notes*, 15: 454, 1961). There are also breeding records from southern Ontario (Bent, *op. cit.*: 330-331).

There has now been a considerable incidence of sight records in the Province of Quebec (see Figure 1). (All references herein to published reports cited by date alone refer to the *Annual Reports of the Province of Quebec Society for the Protection of Birds*.) The species was first reported in the province in 1950, when Brother Victor Gaboriault heard and saw a male on 26 and 27 May on St. Helen's Island, near the city of Montreal (1950, p. 43). L. M. Terrill saw an adult male at Senneville on 5 August 1951 (1951, p. 38). On 24 and 31 May 1952, one individual was observed