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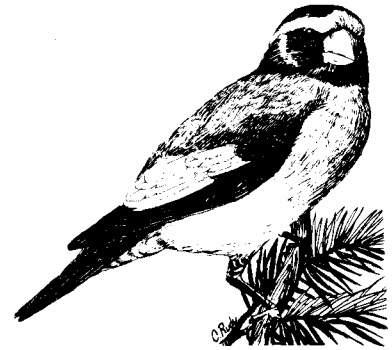
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# Some physical characteristics of Evening Grosbeaks wintering in northern Utah

By Martha Hatch Balph



This paper presents some findings on wing length, body weight, fat deposition, and the incidence of scaly-leg in Evening Grosbeaks (*Hesperiphona vespertina*) wintering in northern Utah. I collected these data in conjunction with a study of this species' winter social behavior.

## Methods

Evening Grosbeaks were observed from mid-February through mid-May, 1976 at Logan, Utah. The research was conducted on a 200-m semi-urban wooded stretch along the Logan River. A feeding station was operated continuously near the center of the study area, and periodically trapping was conducted at this site. An estimated total of 800-900 Evening Grosbeaks frequented the study area during the period of observation; 300 of these birds were banded.

Grosbeaks were captured using Potter traps between 1 March and 13 May. Most were trapped and processed early in the day (42% between 0600 and 0900, 26% between 0900 and 1200, 27% between 1200 and 1500, and 5% between 1500 and 1800). At first capture each bird was banded. The apparent presence or absence of scaly-leg (knemidokoptiasis) was noted. The wing length was measured to the nearest 0.5 mm along the chord of the closed wing using a millimeter rule with a "bend-of-the-wing" fixture. The extent of subcutaneous fat deposition was recorded as "light or none" (furcular cavity less than half filled with fat), "moderate" (furcular cavity at least half but not entirely filled with fat), or "heavy" (furcular cavity entirely filled or convex with fat). These categories corresponded approximately to fat classes 0-2, 2-3, and 4-5, respectively, as defined by Helms and Drury (1960). Lastly, the body weight was calculated to the nearest 0.1 g using a triple-beam balance. Individuals recaptured on subsequent occasions were in most instances examined for the extent of fat deposition and weighed.

## Wing length and body weight of males and females

I banded a total of 124 male and 176 female Evening Grosbeaks. The mean wing length of the males was 109.1 mm (SD = 2.42), whereas that of the females was 106.9 mm (SD = 2.37). Male wing lengths were significantly greater on the average than those of females ( $t = 8.05$ ,  $df = 298$ ,  $P < 0.001$ ).

Mean body weights of grosbeaks showing light subcutaneous fat deposits or none were 55.7 g for males and 54.6 g for females (Table 1). Body weights for males and females exhibiting moderate fat deposits averaged 61.0 g and 58.0 g, respectively; those for males and females in the "heavy" fat class averaged 64.7 g and 62.9 g. Thus within each fat class, males weighed slightly more on the average than females; these differences were statistically significant except within the "heavy" fat class ( $t = 2.30$ ,  $df = 220$ ,  $P < 0.025$  for "light or none";  $t = 3.22$ ,  $df = 67$ ,  $P < 0.01$  for "moderate";  $t = 1.12$ ,  $df = 24$ ,  $P < 0.3$  for "heavy").

Both among males and among females, mean body weights for birds showing moderate fat deposits were significantly greater than for birds in the "light or none" fat class ( $t = 7.24$ ,  $df = 116$ ,  $P < 0.001$  for males;  $t = 5.30$ ,  $df = 171$ ,  $P < 0.001$  for females) and significantly less than for birds in the "heavy" fat class ( $t = 2.57$ ,  $df = 36$ ,  $P < 0.025$  for males;  $t = 4.40$ ,  $df = 55$ ,  $P < 0.001$  for females). Several studies have demonstrated a positive relationship between fat deposition and body weight in birds (Helms and Drury, 1960 and references cited therein).

Carothers et al. (1974) reported a mean body weight of 59.1 g among 199 Evening Grosbeaks at Flagstaff, Arizona during the spring of 1973. This figure is comparable to the values I obtained for individuals exhibiting moderate fat deposits.

## Timing of vernal fat deposition and spring departure

Evening Grosbeaks examined in March usually exhibited light subcutaneous fat deposits. Almost all of the birds checked in late April fell into the "light or none" category (Table 2); however, by the first week of May, about one fourth of the individuals examined showed moderate or heavy fat deposits. In the second week of May, a majority of the birds examined showed such deposits. The fat class distribution for males did not differ significantly from that for females ( $X^2 = 0.34$ ,  $df = 1$ ,  $P > 0.5$  on 3-6 May;  $X^2 = 0.46$ ,  $df = 2$ ,  $P > 0.5$  on 11-13 May).

Vernal fat increases have been reported to occur prior to migration in some overland migrant passerines although not in others (reviewed by Johnston, 1966). As Johnston (1966) pointed out, almost all of the species that exhibited fat increases did so late in the spring, and the "pre migratory" samples studied probably included intramigrants from farther south. Although I cannot be certain that all of the Evening Grosbeaks I examined in May were premigrants, some of the birds showing moderate or heavy fat deposits at this time were banded as early as March. The Evening Grosbeak is not a permanent resident at Logan, but I do not know how far the birds I studied traveled to breed; *H. v. brooksi* is reported to nest in several western states, including Utah, and in British Columbia (reviewed by Speirs, 1968).

On 12 May, the number of Evening Grosbeaks frequenting the study area appeared to be somewhat smaller than on previous days. Further reductions occurred during the ensuing week, until by 18 May only two individuals remained.

## Incidence of scaly-leg

Eight of the 300 grosbeaks banded (3%) exhibited what appeared to be scaly-leg, or knemidokoptiasis. In most instances the disease was confined to the feet and unfeathered tarsometatarsi, but in one case the upper mandible seemed also to be affected. The actual incidence of scaly-leg in the study population probably was slightly higher than these data indicate, since I captured — but released without banding — two individuals with advanced cases of the disease. Scaly-leg apparently is rare or nonexistent in most wild birds, but it has been observed in almost epidemic proportions among Evening Grosbeaks at Flagstaff, Arizona (Carothers et al., 1974). Similarly to these workers, I found no differences in body weight between diseased and healthy birds.

Table 1. Body weights of male and female Evening Grosbeaks

Fat class	n <sup>1</sup>	Body weight (g)				
		Males		Females		
		$\bar{X}$	SD	$\bar{X}$	SD	
None—light	91	55.7	3.27	131	54.6	3.52
Moderate	27	61.0	3.67	42	58.0	3.88
Heavy	11	64.7	4.71	15	62.9	3.25

<sup>1</sup>Number of individuals weighed within each fat class. If a recaptured bird was in a fat class different from that at previous capture, the two weight values were treated as separate data points. However, if such a bird remained in the same fat class as at previous capture(s), the weights were averaged to produce a single data point.

Table 2. Timing of vernal fat deposition in Evening Grosbeaks

Date(s)	n	Fat class (%)		
		None—light	Moderate	Heavy
28 April 1976	54	96	4	0
3-6 May 1976	150	73	23	4
11-13 May 1976	67	40	30	30

## Summary

Data were collected from 300 Evening Grosbeaks (*Hesperiphona vespertina*) banded at Logan, Utah in the late winter and spring of 1976. Wing lengths and body weights were greater on the average for males than for females. Birds with moderate subcutaneous fat deposits weighed more than those with light or no deposits and less than those with heavy deposits. Increases in fat deposits occurred in early May, shortly before the grosbeaks departed from the study area. A small number of individuals exhibited scaly-leg (knemidokoptiasis).

## Literature cited

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