

fourth rectrix is a trifle the longest. The wings of Colombian specimens of *heliodori* average about six percent longer than in *cleavesii*, but Venezuelan birds are practically the same.

The extremely short tail renders *Chaetocercus cleavesii* one of the very smallest of hummingbirds, almost rivaling in this respect *Calypte helenae* (Lembeye) of Cuba. It will require measurements of freshly killed specimens in the field to settle the question.

AVERAGE MEASUREMENTS IN MILLIMETERS OF *Chaetocercus cleavesii* AND *C. heliodori*

	MALES												
	Wing	Exposed culmen	Length of rectrices					Width of rectrices					
			Outer	Second	Third	Fourth	Median	Outer	Second	Third	Fourth	Median	
Seven adult males, northeast Ecuador (<i>cleavesii</i>)	27.2	12.5	10.2	14.5	16.4	10.3	8.0	.5	.7	1.2	2.0	3.2	
One adult male, Ecuador (<i>heliodori</i>)	27.9	12.2	11.1	18.1	18.3	10.3	7.5	.7	1.5	2.2	3.0	3.5	
Twenty-one adult males, Colombia (<i>heliodori</i>)	28.3	12.5	12.1	17.5	18.4	10.8	7.7	1.0	1.8	2.2	3.0	3.7	
		(18)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(18)	(16)	
Fifteen adult males, Venezuela (<i>heliodori</i>)	27.5	12.8	12.0	17.5	18.4	10.4	7.7	.9	1.7	2.3	3.2	3.6	
		(14)										(12)	
FEMALES													
Ten adult females, northeast Ecuador (<i>cleavesii</i>)						Wing	32.4	Exposed culmen	13.5			Tail	14.0
									(9)				
Five adult females, Ecuador (<i>heliodori</i>)							32.1		12.9				13.1
Eight adult females, Colombia (<i>heliodori</i>)							31.5		13.0				13.7
									(7)				
Six adult females, Venezuela (<i>heliodori</i>)							32.8		13.8				14.4

Numbers in parentheses indicate numbers of specimens represented in averages.

Note.—The original painting, from which the color plate of the frontispiece was taken, was larger and revealed a second male specimen in flight with rectrices spread. This figure shows with remarkable faithfulness the characters of the tail feathers. In justice to the artist's excellent composition it is unfortunate that the entire painting could not have been reduced and used; however, had this been done, the birds would have been so small that the characters could not have been discerned.

California Institute of Technology, Pasadena, California, November 12, 1933.

FIELD OBSERVATIONS FROM ECHO LAKE, CALIFORNIA

By DUDLEY S. DEGROOT

For the past two summers I have been charged with the responsibility of conducting nature study in a boys' camp located at the extreme upper end of Upper Echo Lake, Eldorado County, California. In the field almost daily from the middle of June till the middle of August, I have been able to draw upon the combined field observations of some sixty boys, with the net result that many interesting and some unusual records have been made. The most important of these follow.

The Sierra Grouse (*Dendragapus fuliginosus sierrae*), a rather retiring bird, has been observed many times on the steep mountain sides above the lake. This year it seemed to be unusually abundant. In 1932, on July 7, after an hour's strenuous hunt by twelve boys and the writer, a hen was located with seven little ones that evidently had been hatched not more than a few hours; for some of them were still damp and hardly able to move. The hen was covering her brood tightly and when discovered flew at us with great viciousness and abandon. When this failed to frighten

us she went into all sorts of clownish antics, including the old broken wing stunt and many others. All this time the male, who had led us to the family, was lodged some sixty feet up in the top of a tamarack, booming intermittently.

This year, on August 4, one old hen led her more than half-grown family right into the midst of camp and stayed with us all afternoon. The boys frightened her up into the branches of a tamarack but her four youngsters wandered all around camp, paying no heed to the boys except when they attempted to catch them. Then the birds would fly up into the lower branches of the surrounding trees and wait until they felt safe, when they would again come to the ground to feed. Two other families of grouse, of about the same size as the one mentioned above, came into the confines of the camp the following week. Six were counted in one group and seven in the other.

The Western Evening Grosbeak (*Hesperiphona vespertina brooksi*) was fairly common about camp this summer but none was noted the preceding year. One nest was found on July 7 which contained two eggs. It was located some fifty feet up in the outer branches of a tamarack and on that date was attended by the male bird which was observed in the tree but not on the nest. The nest was a typical grosbeak structure frilly but firmly made and in many respects much like that of the Cassin Purple Finch (*Carpodacus cassinii*), which nests so commonly in this region. Frequent daily observations from this date on, revealed the male in constant attendance but the female was never seen. On the 14th the nest was again climbed to and found to contain two eggs which were cold and which were quite evidently deserted, although the male was still in the neighborhood.

On August 1 a family of young grosbeaks was seen in a grove of aspens on the camp grounds. They were just learning to fly and were making quite a racket with their typical note, which is unlike that of any of the other birds in this vicinity. On August 8 another family was observed in camp and the next day one lone fellow was heard plaintively calling from the top of a small tamarack. It had evidently lost the rest of the family. A few hours later it was found on the ground and upon being picked up seemed to be a perfectly healthy bird and so was turned loose. I watched it for an hour and a half and it finally tucked its head under its wing and apparently went to sleep. A half hour later it toppled to the ground—dead. Whether it died from starvation or some disease is a question.

In two weeks time, two Western Wood Pewees, one White-crowned Sparrow, one Thurber Junco and two Hermit Warblers were found dead on the camp grounds. Their bodies seemed perfectly intact and free from bruises. Is there some form of food in this region at this time of the year which poisons these birds?

On July 29 a nest of the Sparrow Hawk (*Falco sparverius*) was located in the top of an old Jeffrey pine stub on a small island in the lake. The eggs hatched on July 4 and the young remained in the nest until after the first of August, the last one being observed on the 5th. This is quite a late record, I believe. The parent birds did most of their feeding on the hillside on the east side of the lake; and every time they went on a foraging expedition the chipmunks and several varieties of squirrels that lived in that area set up a great squealing and scurried for their respective holes. Although these mammals played some part in the Sparrow Hawk menu, insects seemed to be a much more stable part of the daily ration. These birds were careful guardians of this end of the lake and the few times that Western Red-tails, Cooper Hawks and Western Goshawks made their appearance they were driven off immediately.

A pair of California Pine Grosbeaks (*Pinicola enucleator californica*) evidently nested on or near the camp grounds and was observed feeding in one spot near the lake shore almost daily from the middle of July until the middle of August. The male was seen much more frequently. They paid little attention to observers so long as the latter made no quick movements, and I often approached within five feet of them. Their characteristic call-note could be heard as they came into their feeding grounds along a regularly traveled route, long before they could be seen. Several other pairs were observed in the camp region during the summer, marking this as a not uncommon bird in this region.

A single Spotted Sandpiper (*Actitis macularia*) was noted feeding at the outlet of Tamarack Creek, which feeds into Upper Echo Lake near the camp, every day from August 8 to 19, after which it disappeared. This is the only time that this species has been observed in this region.

A pair of Golden Eagles (*Aquila chrysaetos canadensis*) has been observed on the rocky mountain side which terminates in Angora Peak, back of camp. They have been seen at fairly close range both summers and undoubtedly nest somewhere in the back-country.

A pair of Western Goshawks (*Astur atricapillus*) has been observed both summers on the wooded ridge on the Desolation-Fallen Leaf trail. Occasionally they stray down as far as the lake, but for the most part they do their feeding in the more timbered area above camp.

Brewer Sparrows (*Spizella breweri*) were found nesting in small numbers on a high, brush-covered area above Haypress Meadow, on the Echo-Desolation trail. Several nests were found in 1932 and one set of eggs collected on July 7 of that year. They were observed in this same area again this year. This spot is at an estimated elevation of approximately 7800 feet.

The following birds were found nesting on or within a few hundred yards of the camp property during the 1933 season: Mountain Quail, Sierra Grouse, Sparrow Hawk, White-headed Woodpecker, Red-breasted Sapsucker, Williamson Sapsucker, Red-shafted Flicker, Calliope Hummingbird, Western Wood Pewee, Western Evening Grosbeak, Cassin Purple Finch, Pine Siskin, White-crowned Sparrow, Western Chipping Sparrow, Fox Sparrow, Green-tailed Towhee, Thurber Junco, Western Tanager, Tree Swallow, Cassin Vireo, Audubon Warbler, Pileolated Warbler, Lutescent Warbler, Sierra Creeper, Red-breasted Nuthatch, Pigmy Nuthatch, Mountain Chickadee, Townsend Solitaire, Sierra Hermit Thrush, Western Robin, Mountain Bluebird. In addition, although nests were not located, the Golden-crowned Kinglet, California Pine Grosbeak, Hermit Warbler, Calaveras Warbler, Western Red-tailed Hawk, and Western Goshawk undoubtedly nest near the camp.

Although I have suspected for some time that certain of the high Sierran birds reared two broods each season it was not until the present summer that I have been able to secure positive evidence. Two pairs of Western Robins and a similar number of Thurber Juncos, nesting within a few hundred yards of my summer abode, made it possible for me to gather positive evidence that this is not an unusual phenomenon.

Early in July a pair of Juncos (*Junco oreganus thurberi*) was located feeding four half-grown young in a beautifully hidden nest in a crevice in a rock. These birds were watched daily and the parents quite definitely identified by certain peculiar markings and actions. On July 15 the young of this nest were out learning to fly and three days later they had disappeared in so far as I could ascertain. Two days later the female was seen carrying nesting material and on July 29 she was flushed from her new nest which at that time contained two fresh eggs. This nest was

located not twenty-five feet from the first one and was similar in many respects although it was placed in a patch of skunk cabbage instead of a rock crevice, as in the first case. On August 3, the nest contained four eggs and the female was sitting. On the 16th the eggs had hatched and at this writing the young are about ready to fly. Another nest of this species was located in the same area at about the same time and similar observations were made, thus confirming my suspicion that this species is one which nests rather commonly twice each season.

A Western Robin (*Turdus migratorius propinquus*) was located with half-grown young on June 25; the nest was placed twelve feet up in a small tamarack. On July 4 the young were flying and they were being cared for by one parent while the other one, evidently the female, was already packing material for a new nest which she had started in a small aspen sapling less than fifty feet from the first nest. This second nest was not the elaborate structure that the first one was; when finished, it was especially short on grass and paper, which was so abundant in the first. On July 14 this nest contained three eggs and the female was sitting. On the 29th it contained three featherless infants which at this writing are rapidly nearing flying age.

Another robin reared her first brood some twenty feet up on the limb of a tamarack right near a boat-house. This brood flew on July 1, but remained about camp for several days longer. Then the old birds started a new nest some thirty feet from the first one, placing it this time thirty-odd feet up in the crotch of a small aspen sapling. This tree was too slender to be climbed, but the female had started sitting by July 20 and, at this writing, the new brood is making such a racket as to suggest that it will be a matter of but a few days before they are on the wing.

These four positive records, abetted by others which have not been followed so accurately, are convincing proof that certainly these two species frequently raise two broods in one season.

Two other records are worthy of note. On June 23, I collected a set of five eggs of the Audubon Warbler (*Dendroica auduboni*) from the same tree in which the second robin nested. On June 28 this same pair of birds (identification beyond question) had completed another nest in a tree not twenty feet distant, and on July 4 this nest contained a set of four eggs upon which the female was sitting. This same pair of birds, in all probability, had raised young in a tree mid-way between these two nests, in 1932.

On June 28 a set of three eggs was collected from the nest of a Western Wood Pewee (*Myiochanes richardsonii*) above the baseball diamond at camp. For several years past this spot had been the location of a nest of this pair of birds and young have always been raised safely. After the eggs were collected the nest was left undisturbed but was carefully watched. The very next day the female started tearing down the old nest, transporting the material to a new location some fifty feet distant. In three days the new nest was complete and two days later, upon investigation, it was found to contain one egg. The next morning a Wood Pewee was found in a dying condition on the parade ground. Careful attention failed to bring it around and it died several hours later. Examination indicated that it was "our" female and, because the nest was no longer tenanted, our conclusions were evidently right. One bird continued to frequent this area as in the past, but the little experiment which we had so carefully observed came to an end. I believe this constitutes a record and in addition answers the question which I have so often asked: What becomes of Pewees' nests which have been disturbed?

San Jose State College, San Jose, California, August 26, 1933.