

## THE SIGNIFICANCE OF COMBAT IN MALE ROSY FINCHES

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In recent ornithological literature a great deal of emphasis has been placed on the territorial behavior of birds. As a result, the "territory conscious" observer is apt to assume that any bird under observation possesses some sort of territory, and to try, in the course of his study, to prove that the territory exists by analyzing certain features of the bird's behavior. In the course of a study of the Sierra Nevada Rosy Finch (*Leucosticte tephrocotis dawsoni*) in Virginia Canyon, near the crest of the Sierra Nevada in Yosemite National Park, California, I found how easy it was to be misled by such a procedure.

In the period when most female rosy finches are engaged in building, the males fly from rock to rock, vigorously chirping, and pursuing other males. It might appear at first that these birds are defending a nesting territory against invaders who might be trying to steal the nest or the nest site, but after many observations it is found that a single male may chirp and pursue other males at different times and in different places. When the pursuits are found to extend to the feeding grounds, it becomes obvious that some stimulus other than the concern for a nesting territory is responsible for this beligerency.

The males seem to commence sexual activity before the females. As the sexual urge develops, the *chew* call of the males is heard more and more, and is most evident on the nesting cliffs. A rough census of the rosy finch population of the cliffs on the west side of Virginia Canyon on June 16, 1936, showed that there were about five males to each female. The males on the cliffs during this period seemed to spend most of their time flying from point to point and chirping.

Any female, regardless of whether she is already mated, or has a nest or eggs, usually is met by some unattached male as soon as she reaches the nesting cliffs. A brooding female which leaves the nest for a few minutes to feed on the seeds of a composite nearby usually will be accompanied by some male which has been chirping from a part of the cliff within sight. He will follow her as she flies back toward the nest, but will leave as soon as she settles on the eggs.

On June 18, 1937, a female that alighted on the lower part of a cliff was immediately surrounded by five males that flew in from all sides. They stayed with her for three or four minutes, without fighting among themselves, then the whole group disappeared over the ridge of the north pinnacle. Similar groups were not infrequently seen in this period.

When a mated pair is present, the scene is different. A female that has not yet started incubation usually is accompanied by her mate while she is in the vicinity of the nesting cliffs. Any male rosy finch that approaches the female is pursued by her mate until he is driven away a hundred feet or more. When not pursuing, the male flies from point to point near the female, always alert, and constantly chirping. The pursuits vary from short sallies to fend off a passing bird, to breast-to-breast battles in which beaks and claws are used by both combatants.

Between 9:30 and 10:30 a.m. on June 19, 1937, a male was averaging one pursuit every five minutes in the vicinity of a nest on the west cliffs of Virginia Canyon. At 9:45 a.m. the female flew to the nest with material, arranged it, then flew to the cliffs opposite, followed by her mate. A second male flew down from above and alighted next to her. The mate drove him down the cliff. A third male flew down and alighted next to the female in the absence of the other two. The returning defender flew back and attacked him, but was followed by the vanquished male. The defending male flew back and forth trying to drive off the two, and finally succeeded.

Most pursuits consist of short twisting flights in which the intruder is routed without bodily contact. A bird swoops toward the female, is met in mid-air by the mate, and the two whirl off into space. A few seconds later the male is back near the female, chirping.

Some pursuits turn into hard fought battles in which it is impossible to tell whether the mate is replaced by another bird. One battle involving the above mentioned pair, consisted of a breast-to-breast fight in the air extending a hundred yards down the cliff face. Near the base of the cliff the birds interlocked and fell onto a snow patch. They rolled into a crack between the snow and rock and did not emerge for about fifteen seconds. Both birds were exhausted when they appeared. The fight continued on the surface of the snow, both birds too weak to fly. After thirty seconds of this fighting, one bird glided off, pursued by the other.

A fight between two males never occurs unless a female is close by. While the female is searching for a nest site or building the nest most of the fights of course occur in the vicinity of the nest; thus often there is a false appearance of defense of nest territory. When the fights continue around the female as she is collecting nest materials at some distance from the nest, and even when the pair is foraging in timberline meadows a half mile away from the nest, it can be seen that the "territory" of the male rosy finch is a certain area around the female. The "territory" moves as the female moves.

The fights indicate that a female may change mates even after the nest is started. They also explain why the male accompanies the female while she is searching for a nest site. However, the fact that a single male acts as the guardian of the female over a period of time shows that there has been established a psychological distinction between the mate and the suitor. The mate defends or attacks, the suitor merely solicits. The suitor usually cannot resist the attacks of the mate and is not inspired to drive off other suitors. There is no indication that the female has anything to do with the creation of this distinction. She seems to be wholly unconcerned with the activities of the males at this time.

The defensive actions of the mated male continue until the female commences incubating. He then takes over the duty of feeding his mate on the nest and evidently becomes entirely unconcerned over the presence of other males. Indeed, he may have difficulty in approaching his own nest if another pair commences building in the vicinity.

These few descriptions show that the Sierra Nevada Rosy Finch has no fixed territory. Defense reactions are evoked from the mated male only when another male approaches his mate. Rosy finches feed peaceably in flocks on the feeding grounds except when a mated pair is present, whereupon other males are driven away. A building female is seldom unaccompanied, and is always defended from all other males by her mate.

*Oakland, California, August 15, 1938.*