WINTER AGGREGATION ON A SMALL ROCK CLUSTER BY THE TREE LIZARD *UROSAURUS ORNATUS*

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Some southwestern sceloparine lizards have been reported to hibernate in aggregations (Worthington and Sabath, 1966; Weintraub, 1968; Axtell and Axtell, 1970; Burns, 1970; Vitt, 1974; Gray and Stroud, 1980). Most accounts did not indicate whether aggregations were of resident lizards or lizards that had moved to specific aggregation sites. However, two reports suggested that lizards move from summer territories to wintering sites (Weintraub, 1968; Axtell and Axtell, 1970). Here we present evidence that adult and juvenile tree lizards (*Urosaurus ornatus*) move from their summer ranges and hatching sites, respectively, to an aggregation site during the fall, and then move from this site the following spring.

The study was conducted at the Aguirre Spring Recreational Area, 25 km E of Las Cruces, Doña Ana County, New Mexico. The study site, three rock (boulder) clusters, was described by Zucker (1989). During the reproductive season (May into August), Small Cluster typically housed one dominant territorial male, one or two adult females, and occasionally a subordinate male. Main Cluster is located 30 m NE of Small Cluster, and North Cluster is 4 m NW of Main Cluster (Zucker, 1989). Three to four territorial males, an equal number of subordinate adult males, and ten or so adult females inhabited the latter two clusters during the summer (Zucker, 1989).

Observations were made at the study site at least once weekly from 1300–1500 h MST from 7 September 1989 to 10 April 1990. The site was visited twice weekly during periods of increased activity on Small Cluster. During each visit, a census was taken and the location of all lizards on Small Cluster was noted on detailed maps. Most lizards were captured, sexed, measured, and marked. Observations on Main Cluster and North Cluster included recording the numbers, age (juvenile or adult), and sex of all lizards seen, but specific locations within these clusters were not recorded.

Seventeen adults (11 males and six females) and 13 juveniles were marked on Small Cluster, although not all were seen at any one time. However, on the same observation day as many as 11 juveniles (16 March), three adult males (12, 19, 24 Oct. and 12 Mar.), or eight adult females (22 March) were seen on Small Cluster (Fig. 1).

Individuals began to congregate on Small Cluster around 10 October and continued to do so until 9 November. Adult activity generally ceased by 24 October, except for lone individuals seen during visits on 2, 7, and 9 November (Fig. 1). During the winter inactivity period, no adults were seen. Groups of active juveniles were observed until 9 November; lone active juveniles were seen as late as 5 December. Activity of both juveniles and adults was first noted in the spring on 8 March (Fig. 1).

Figure 2 is a photograph and composite drawing illustrating the location of individuals on the south face of Small Cluster. Few lizards were observed on the west, north, or east faces, and they were generally dispersed. Thus, activity was basically confined to the south aspect of the cluster, especially near or in horizontal cracks between the rocks. At the same time that lizard numbers were increasing on Small Cluster, the number of lizards on the other two clusters decreased (Fig. 1). At least two individuals marked on Small Cluster during the fall moved to Main Cluster in the spring. Thus, adult *Urosaurus ornatus* at Aguirre Spring appear to move and aggregate during winter months. Immigration would explain why the number of observed adult lizards on Small Cluster increased from the typical summer activity number of three (Zucker, 1989) to more than the six and eight observed at any one time in late fall and early spring, respectively (Fig. 1). Tree lizards are not active every day (Zucker, 1989). Thus, the actual number of adults on Small Cluster in winter was probably even higher than observed.

Juveniles, hatched during the summer activity season and early fall, also appear to be moving to Small Cluster. Juveniles were not seen on Small Cluster during the summer but many more were...
found there in late fall and early spring than on Main Cluster (Fig. 1). The latter was probably the major hatch site in the area because it housed many more reproductive individuals. This suggests that naive lizards are finding the same hibernation sites as are experienced adults. Weintraub (1968) also observed that lizards (*Sceloporus orcutti*) were moving from their summer home ranges to seek winter shelter. However, he observed that juveniles found shelter within their home ranges and tended to return to that same site year after year. As the lizards mature, their home ranges may shift over time such that some adults have home ranges located outside of their traditional hibernation sites, resulting in winter movement. However, it is unlikely that all juvenile tree lizards found on Small Cluster in late fall were hibernating within their home ranges because this small cluster was probably not the hatch site of all the juveniles found there. The nearest suitable habitat (rock clusters) is about 30 m away, much larger than even adult male home ranges at Aguirre Spring (Zucker, 1989).

Several workers have suggested that aggregations of hibernating lizards may result from limited hibernation sites (Weintraub, 1968; Vitt, 1974; Gray and Stroud, 1980). Aggregation sites for tree lizards are always tight spaces but vary considerably in their composition from horizontal crevices in limestone (Worthington and Sabath, 1966) and rhyolitic boulders (present study) to loosened bark of mesquite trees (Vitt, 1974) to
digger wasp burrows along a river bank (Seely et al., 1989). We believe that hibernation sites per se are plentiful at our site and suggest that temperature considerations may be a contributing factor explaining the observed aggregation. The south-facing crevices where individuals were aggregating were angled such that they received late afternoon sun. Main Cluster and North Cluster contain many tight spaces where lizards could hibernate, but few are south-facing ones.

Juveniles remained active later in the fall than did adults. Weintraub (1968) found that adult *Sceloporus orcutti* remained inactive during the winter and lost weight as a consequence. Their survival depended on fat reserves. First-year lizards, on the other hand, were found to feed during warm winter days, and they gained weight. The longer activity period made possible by warmer temperatures at south-facing crevices may be essential for juvenile tree lizards as well, because they may not have had time to store reserves.

Seely et al. (1989) also noted the possible importance of warmer winter retreats for *Urosaurus ornatus*. The burrows of digger bees, used for winter retreats in their study, had higher temperatures than nearby canyon crevices, which were used during the summer activity period.

Our observations suggest that tree lizards (both adults and juveniles) use different locations for their summer activity areas and winter hibernation sites. The mechanism(s) by which both naive juveniles and experienced adults locate suitable habitat for each of these periods still needs to be explored.

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**Literature Cited**


