

ECOLOGY OF THE CALIFORNIA BLACK RAIL
IN SOUTHWESTERN ARIZONA

BY

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THESIS ABSTRACT

The ecology of California black rails (Laterallus jamaicensis coturniculus) was studied at Mittry Lake Wildlife Management Area, Arizona, from March 1987 through December 1988. The major objectives of the study were to examine habitat use patterns, home range size and movements, residency status and activity patterns, usefulness of call count surveys, and to obtain additional information on black rail vocalization behavior.

A total of 50 black rails were captured with drift fences and drop door traps. Trap success was highest during the nesting season, but birds were captured year-round. Thirty-six individual black rails were fitted with radio transmitters to determine habitat use, movements and activity, and were monitored with a computer-assisted tracking system from fixed tracking stations.

Habitat use was determined from sites used intensively by black rails determined from radio telemetry. Black rails selected habitat dominated by California bulrush (Scirpus Californicus) and three-square bulrush (S. americanus), but used southern cattail (Typha domingensis) less frequently than expected or in proportion to its availability. Preferred habitat sites had shallow water depth <2.5 cm with <25% of the substrate covered with water and were significantly closer to the shoreline than were randomly selected sites. Structural habitat characteristics were more effective in classifying black rail habitat than plant composition characteristics. These results indicate that black rails are

probably more limited by water depth and extent of water coverage than by other habitat factors and may not use areas within wetlands where unsuitable conditions exist.

Black rails had home ranges which averaged ≤ 0.43 ha and did not vary in size between seasons. Most home ranges overlapped considerably with adjacent home ranges indicating that black rails occur in higher densities than were previously reported. Home range centers moved significantly but most birds used sites within 60 m of their previous location indicating that black rails had a high degree of site fidelity and were resident on the study area. Year-round residency of black rails must be considered before practices like dredging, burning, or water level manipulations are conducted. Most birds had core areas which were used more intensively than the rest of the home range and were generally smaller during the nesting season. Long distance movements were mainly attributed to juvenile dispersal in the fall and to males establishing territories during late winter. Black rails were active from 15 min. before sunrise to 20 min. after sunset.

Black rails were most vocal between late March and May, however, birds responded at different times between years and call count routes, indicating that several call count surveys at different times might be more effective than a single survey. Birds were generally more responsive to tapes in the evening, indicating that future call count surveys might be more successful during this time. Black rails used different vocalizations at different times of the year and gave the "Churt" call more during non-nesting seasons than

during nesting. One undescribed vocalization was recorded, which functioned as a scolding vocalization mainly given by females guarding nests.