

STATUS OF THE BLACK RAIL IN CENTRAL CALIFORNIA

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The California Black Rail (*Laterallus jamaicensis coturniculus*) is classified "Rare" by the California Fish and Game Commission, but this secretive rail's status always has been difficult to assess. Wilbur (1974) and Gill (1977) concluded that records of singing birds in spring and immatures in late summer indicated probable breeding by Black Rails in the San Francisco Bay area. Within recent years, calling Black Rails were located in spring and summer in Solano, Napa and San Joaquin counties (Jurek 1976, Department of Fish and Game files). These findings prompted this study, which began 25 March 1977 and concluded on 14 July 1977. Its purpose was to clarify the status of the species in northern and central California and attempt to identify its habitat requirements.

METHODS

Census sites were selected based on the historical distribution of Black Rails in central California. An attempt was also made to census as wide a variety of different marsh types as possible. Censusing involved walking through or adjacent to suspected Black Rail habitat while playing tape-recorded Black Rail calls in an attempt to elicit responses from birds on territories. Calls were broadcast using a cassette tape recorder connected to a 15 watt power horn. A standard census tape, with alternating "grr" and "kic-kic-kerr" call sequences (Repking and Ohmart 1977) separated by 1 minute pauses, was used most frequently, particularly during the first visit to a site. Information recorded for each site censused included: date, time, weather, habitat description, number and kinds of responses and other relevant data. The locations of calling birds were plotted on photocopies of U.S. Geological Survey topographic maps. A number of visits to representative marshes around San Francisco Bay were made during peak high tide periods in late May and June to view the effects of these tides on the habitat.

DISTRIBUTION

At least 32 Black Rails were heard during this survey in 14 localities in the northern San Francisco Bay area and the delta of the Sacramento-San Joaquin river system. Only one Black Rail was seen. Twenty-two of the birds found in this area were in marshes bordering San Pablo Bay or the river systems (Napa and Petaluma) that empty into San Pablo Bay from the north. No Black Rails were found in marshes bordering the Pacific Ocean, or in San Francisco Bay south of the Richmond-San Rafael Bridge (Figure 1). Seven Black Rails were heard in a census of marshes bordering Morro Bay, San Luis Obispo County, on 14 and 15 April.

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The following area-by-area review of the past and present distribution of Black Rails in northern and central California is based primarily on the results of this study and the following sources: Wilbur (1974); specimens in the Museum of Vertebrate Zoology (MVZ), Berkeley, and

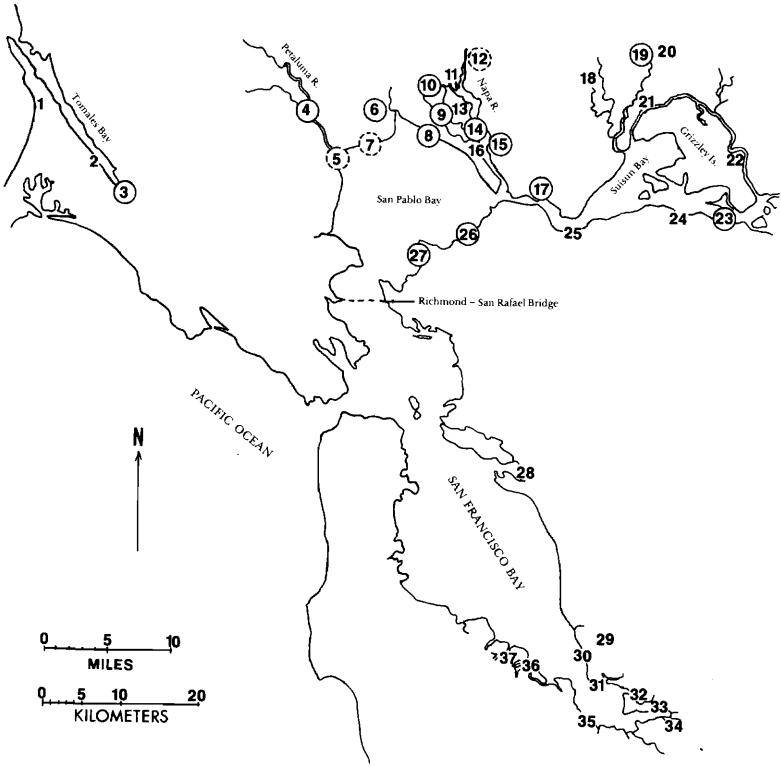


Figure 1. Locations where Black Rails were heard (numbers in solid circles) and searched for but not found (uncircled numbers) in the San Francisco Bay area, California, during spring and summer 1977. Broken circles indicate where birds were heard by others in 1976 and 1977 (see text). Locations are: 1 = Kehoe Marsh; 2 = Inverness; 3 = Olema Marsh; 4 = San Antonio Creek mouth; 5 = Black Point; 6 = Tolay Creek; 7 = Midshipman's Pt., Tubbs I.; 8 = north shore San Pablo Bay; 9 = South Slough; 10 = Napa Slough; 11 = Fly Bay; 12 = Fagan Slough; 13 = China Slough; 14 = South Slough mouth; 15 = White Slough; 16 = Dutchman's Slough; 17 = Southampton Bay; 18 = Cordelia (vicinity); 19 = Peytonia Slough; 20 = Duck Slough; 21 = Joice I.; 22 = Grizzley I.; 23 = Mallard I.; 24 = Port Chicago (vicinity); 25 = Martinez Marina; 26 = Pinole; 27 = Pinole Pt.; 28 = San Leandro Bay; 29 = Coyote Hills Regional Park; 30 = Ideal Cement Marsh; 31 = Dumbarton Pt.; 32 = Mowry Slough; 33 = Albrae Slough; 34 = Triangle Marsh; 35 = Palo Alto Baylands; 36 = Greco I.; 37 = Corkscrew Slough, Bair I..

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the California Academy of Sciences (CAS), San Francisco; *Audubon Field Notes* (AFN) and *American Birds* (AB); and information obtained by Department of Fish and Game personnel and compiled in the Department's California Black Rail file in Sacramento (DFG.)

WESTERN MARIN COUNTY. Black Rails were frequently collected during high flood tides in the fall and winter (September through February) in salt marshes on the edge of Tomales Bay near Marshall and Point Reyes Station from 1897 to at least 1940 (Wilbur 1974, MVZ, CAS), and one was observed during a high tide at the head of the bay on 5 February 1974 (DFG). From 1965 to 1967, one pair inhabited a small, brackish marsh near Inverness and apparently bred, as chicks were reported seen one summer (AFN 21:73, 1967; Gerald Brady pers. comm.). Salt marshes around Tomales Bay, not checked in this study, may yet harbor nesting Black Rails. Black Rails have been found at Kehoe Marsh and Olema Marsh between October and February and have been heard calling at Olema Marsh in April and May in recent years (AB 29:903, 1975; DFG). In this study, one was calling at the upper end of Olema Marsh on 5 April 1977, and it is possible that they breed at this location. A Black Rail collected at Elk Valley on 13 March 1945 (MVZ) was probably a migrant or non-breeding wanderer.

PETALUMA RIVER MARSHES. No records from these marshes existed prior to this study. Six birds were heard at the mouth of San Antonio Creek, Marin and Sonoma counties on 4 May 1977, indicating that a potentially large, previously unsuspected population inhabits these marshes.

NAPA RIVER MARSHES. There appear to be no records for these marshes prior to 1976; two responded to taped calls near Fagan Slough, Napa County, on 14 July of that year (DFG). In this study, Black Rails responded to taped calls at five locations in the Napa Marshes: a minimum of three birds along Tolay Creek, Sonoma County; one along Napa Slough, Napa County; one along South Slough and two to three along the Napa River at the mouth of South Slough, Solano County; and one at the mouth of White Slough, Solano County. A substantial breeding population is indicated.

SAN PABLO BAY MARSHES. Prior to the 1970s, there seem to have been no records of Black Rails around this bay. Five were seen at the mouth of Gallinas Creek, Marin County, on 11 December 1973; one was seen there on 7 January 1974, and one was seen at Pinole, Contra Costa County, on 19 November 1975 (DFG). An abandoned nest, reportedly of this species, was found at Pinole in fall 1976 (AB 31:1184, 1977). A single bird was seen or heard at Midshipman's Point, Tubbs Island, Sonoma County, on 14 and 26 February, 21 July and 10 September 1977 (Gail Scott and Jack Arnold pers. comm.); two birds were found there 19 May 1978 (AB 32:1050, 1978); and a calling bird was at Black Point, Marin County, on 24 May 1977 (Robert M. Stewart pers. comm.). During this study, at least three singing birds were heard in a marsh at Pinole, Contra Costa County; a single bird was heard at Pinole Point, Contra Costa County; and at least three birds were heard in a section of the extensive marsh bordering the northeast shore of San Pablo Bay in Solano County. Much of the remaining marsh fringing San Pablo Bay appears suitable for Black Rails.

SOUTHAMPTON BAY MARSH. Two were observed in this marsh on 2 April 1958 (AFN 12:383, 1958) and there have been numerous sightings during high winter tides since 1973 (AB regional files, DFG). One was heard in the marsh on 22 May 1975 (Roberson 1975) and single calling birds were heard on 2 and 26 June 1976 (DFG). During frequent censusing in summer 1977, as many as three birds were calling at one time, and four pairs were estimated present (Frank Beyer pers. comm.). One found in nearby Benicia, Solano County, on 18 July 1941 (Stoner 1945) was probably a migrant or post-breeding wanderer.

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SUISUN MARSHES and NORTHERN CONTRA COSTA COUNTY. Black Rails were collected in the Suisun Marshes, Solano County, on 11 September 1913, 19 October 1910 and 15 January 1911 (MVZ). Individuals were reported seen on 13 December 1975 and 29 December 1976 near Cutoff Slough, and 28 December 1974 near Suisun Slough, both in Solano County (*vide* Frank Beyer pers. comm.). In Contra Costa County there is an old winter record for Martinez (Grinnell and Wythe 1927) and there are recent (1975-76) winter sightings, probably valid, near Port Chicago (DFG). During this survey, one Black Rail was heard at Peytonia Slough, Solano County, on 5 July 1977 and two or three birds were heard and one was seen on Mallard Island, Contra Costa County, on 2 July 1977. An immature Black Rail was found dead near Peytonia Slough on 11 August 1977 (DFG). Three calling Black Rails were in a marsh bordering the Big Break near Oakley, Contra Costa County, on 18 May 1978 (AB 32:1050, 1978). Black Rails apparently breed in the limited suitable habitat remaining in this area.

SAN FRANCISCO BAY. Black Rails were frequently collected in fall and winter (October through February) at Alameda, Bay Farm Island and Newark, Alameda County; Alviso and Palo Alto, Santa Clara County; and Redwood City, San Mateo County, between 1892 and 1913 (Wilbur 1974, CAS, MVZ). Sight records in the years since have been in approximately the same areas in the same months (AB regional files, DFG). There is one definite specimen (CAS 208), and another possibly mislabeled (bearing two conflicting specimen labels, CAS 207 and 12938), for Palo Alto on 24 May 1930. One was seen along Belmont Slough, San Mateo County, in August 1972 (Barry Sauppe pers. comm.) and another was seen on 7 August 1958 at Dumbarton Point, Alameda County (AB regional files). Wheelock (1916) claimed, without presenting evidence, that Black Rails nested at Alviso. A nest with eggs collected near Newark in 1911 is the first proof of nesting by Black Rails in northern California (Kiff 1978). Black Rails were not found in marshes around San Francisco Bay proper during this study, and the lack of suitable habitat (high marsh) indicates that they may no longer nest around this bay. There are two specimens from north San Francisco Bay, both in Marin County: one found dead near Manzanita on 11 August 1929 (MVZ) and one from Kentfield on 8 February 1932 (CAS). High marsh habitat in this area has been reduced greatly since the time of these records.

Of 12 records of Black Rails away from tidal marshes in the San Francisco Bay region, 6 are from San Francisco, 2 are from upland sites in Alameda County and 4 are from the Farallon Islands (Wilbur 1974, CAS and MVZ). Six of the mainland records are for the period August through October and suggest migration or post-breeding wandering.

CENTRAL VALLEY. Belding (1879) vaguely recollected possibly collecting a Black Rail near Stockton, San Joaquin County, in the mid 19th century. One was found dead near there on 26 August 1959 (Arnold 1960). Department of Fish and Game personnel discovered Black Rails calling in summer 1974 in a marsh near Lodi, San Joaquin County, and three were heard there during this study. Although suitable habitat is fairly limited there now, Black Rails should be expected elsewhere in the Sacramento-San Joaquin Delta where high, tidal marsh occurs. One other definite record exists for the Central Valley; a bird, most likely a vagrant, was found dead at Gray Lodge Wildlife Management Area, Butte County, in March 1962 (AFN 23:516, 1969). Sightings have been reported from Colusa (AB regional files) and Yolo (Kimball 1974) counties, but breeding season surveys at Sacramento National Wildlife Refuge, Glenn County, at Gray Lodge, and at Los Banos Wildlife Area, Merced County, have yielded negative results in recent years (DFG).

MONTEREY BAY. Black Rails were collected at Santa Cruz, Santa Cruz County, on 19 July 1930 and 25 August 1941 (MVZ), and one was found dead there in September 1903 (Emerson 1904). One was found dead in Pacific Grove, Monterey

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County, on 29 September 1967 (Vernal Yadon pers. comm.). These are probably records of post-breeding wanderers or migrants.

MORRO BAY. A Black Rail was collected in Morro Bay, San Luis Obispo County, on 22 April 1961 (AFN 15:439, 1961); one was found dead there on 18 December 1972 (Aryan Roest pers. comm.); and singles were seen there 30 November 1968 (AFN 23:107, 1969) and 2 January 1969 (AFN 23:521, 1969). Seven Black Rails were heard in marshes around Morro Bay during this study, and the evidence points to a resident population.

HABITAT

Grinnell and Miller (1944) described the habitat preferred by Black Rails as "chiefly tidal salt marshes, where associated characteristically with heavy growths of pickleweed (*Salicornia*). But also occurs in brackish and freshwater marshes . . ." This study confirmed their description. Thirty-seven of the 39 Black Rails found were in marshes dominated by either *Salicornia virginica* or bulrush (*Scirpus* spp.), and 7 of the 13 birds in *Scirpus*-dominated marshes were in or near parts of the marsh where *Salicornia virginica* was present and fairly abundant. The types of *Scirpus* frequented by Black Rails are low-growing forms (e.g., *S. americanus* at the Big Break, Contra Costa County; David Gaines pers. comm.) found in the higher parts of marshes. The bird at Peytonia Slough was in an area where matted salt grass (*Distichlis spicata*) merged with a stand of cattails (*Typha* sp.) and *Scirpus*, and the bird in Olema Marsh was calling from a stand of *Typha*. The frequent association of Black Rails with pickleweed is probably a reflection of their preference for high marshes, but the importance of pickleweed, and possibly salt grass, as sources of nesting materials and substrates remains to be examined.

Except for the bird at Olema Marsh, all Black Rails found in this study were in tidal marshes. Areas within these marshes where Black Rails were heard are near the upper limits of tidal flooding. No Black Rails responded in salt or brackish marshes that are no longer under tidal influence (e.g., Figure 1: sites 18, 20, 21 in part, 22, 29), or in low marshes that are dominated by *Scirpus* spp. (sites 11, 21 in part, 34) or *Salicornia virginica* and/or *Spartina foliosa* (sites 28, 30, 31, 32, 33, 35, 36, 37) but are frequently covered by high tides.

Post and Enders (1969) hypothesized that Black Rails find tidal marshes more attractive than diked marshes with similar vegetation possibly because of higher food resource levels in tidal marshes. Little is known about Black Rail food habits (Wilbur 1974) but apparently they feed on arthropods (Huey 1916). The variety and abundance of arthropods in a marsh are probably affected considerably by the frequency and magnitude of water level fluctuations in the marsh. Black Rails found in this study were often in the immediate vicinity of tidal sloughs, indicating a concentration of activity in this part of the marsh. These sloughs teem with invertebrates, a feature noticeably lacking in diked marshes.

In a survey of marshes along the lower Colorado River, Repking and Ohmart (1977) found a definite relationship, similar to that observed in this study, between Black Rail distribution and marsh elevation. They found Black Rails in high, shallow water marshes with little annual and/or daily fluctuations in water level, but not in low, deep water marshes or marshes with considerable fluctuations in water level. Ingersoll (1909), Huey (1916) and Stephens (1919) found evidence of profound effects by high tides on Black Rail populations, and Grinnell and Miller (1944) felt that the "most important hazards to existence [of Black Rails] on salt marshes appear to be extra high tides."

The fact that Black Rails were not found around San Francisco Bay proper in this study may reflect the lack of high marsh habitat around this bay. Many areas of salt marsh in south San Francisco Bay have subsided in the past quarter-century because of human removal of ground water (Conradson 1966) and large tracts of low-lying marsh in this area abut abruptly against salt pond dikes and other human-made structures, instead of gradually merging into upland habitats as they formerly did. Nearly all the remaining salt marsh in the south bay is completely covered by peak high tides, and often extensively flooded by even moderately high tides (*vide* San Francisco Bay National Wildlife Refuge personnel, pers. obs.). Similarly, in areas such as the Suisun Marshes and the Sacramento-San Joaquin Delta, where dikes have reclaimed much tidal marshland and left only narrow borders of deep water tidal marsh, Black Rails were probably much more common in the past than at present. Suitable high marsh vegetation for nesting, then, appears to be the most limiting factor in determining the current distribution of breeding Black Rails in the San Francisco Bay area.

This study was conducted during a severe drought in northern California. A major effect of the drought was an increase in salinity levels throughout the Sacramento-San Joaquin Delta and San Francisco Bay area. The salinity of marshes in which Black Rails were heard was not measured, but it no doubt varied considerably from very low (Olema Marsh and the marsh near Lodi) to rather high (San Pablo Bay) levels. Salinity did not appear to be a factor affecting the distribution of Black Rails in the area.

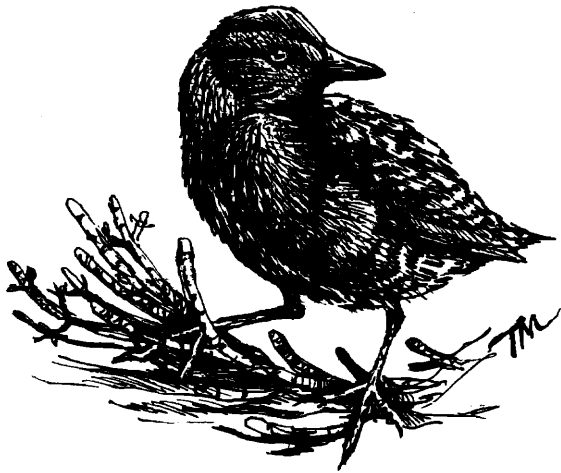
This survey found Black Rails in a number of marshes in the San Francisco Bay area, but many bay marshes that may have summer populations of Black Rails have yet to be checked for this species. Effective management programs to preserve suitable nesting habitat for California Black Rails require more survey work and a better understanding of the interrelationships between this species and other elements, living and non-living, of the marsh ecosystem.

ACKNOWLEDGMENTS

This study was supported by the U. S. Fish and Wildlife Service through the Endangered Wildlife Program, Nongame Wildlife Investigations, California Department of Fish and Game. Ron Jurek provided the groundwork and assisted in programming the study; Charles Repking provided the taped calls used; and Laurence Binford, Frank Beyer, Jack Booth, Jerry Cawthon, Dick Erickson, Kent Fickett, Don Grider, Susanne Luther, Jim Michaels, Cathy Osugi, Bob Personius, Aryan Roest, Glen Rollins and R. M. Wineman were of indispensable help. Jeanne Conry and Alan Craig provided helpful comments on drafts of this paper. My special thanks to those I failed to mention but who helped in any way, and to Howard Leach, California Fish and Game Nongame Wildlife Investigations, for allowing me to work on such an enjoyable project.

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Sketch by Tim Manolis