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RANGE EXPANSION OF RACCOONS IN WESTERN UTAH AND CENTRAL NEVADA

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Key words: *Procyon lotor*, raccoon, range expansion, Utah, Nevada, Great Basin region.

Raccoons (*Procyon lotor*) are generalist predators that occur throughout much of temperate North America (Hall and Kelson 1959, Kaufmann 1982, Sanderson 1987). Historically, raccoons were limited in their distribution by access to water and thus did not occur in the most arid regions of temperate North America (Hall and Kelson 1959, Kaufmann 1982, Sanderson 1987). However, post-Columbian human activities, such as establishment of cities and towns, agricultural irrigation, and placement of stock tanks for cattle, increased the distribution of water and created potential habitats for raccoons even in the most arid regions. Consequently, during the past 100 years, raccoons have expanded their range into arid and semiarid regions where historically they did not occur, such as the western Great Plains and arid Southwest (Hall and Kelson 1959, Kaufmann 1982, Sanderson 1987). Due to lack of records for and aridity of the Great Basin region, western Utah and central Nevada have been excluded from distribution maps of raccoons, often as the only region in North America where raccoons presently do not occur (Kaufmann 1982, Sanderson 1987, Zeveloff 1988). Because raccoons have recently expanded into other semiarid regions in the western United States (Hoffman et al. 1969, Kaufmann 1982, Sanderson 1987), it became apparent to us that they may have expanded into this region as well.

To determine if raccoons have recently expanded in Utah and Nevada, we reviewed published information concerning the historic range of raccoons in these states based on county records. We then obtained more recent information concerning the reported distribu-

tion of raccoons in Utah and Nevada. Finally, we obtained recent county records of raccoon fur harvests from both state wildlife agencies.

In Utah there were only a few published records of raccoons prior to the 1960s, and only from the mountainous regions of the state (Fig. 1). Presnall (1938) reported raccoon tracks in Zion National Park, Washington County, in the 1930s. Durrant (1952) noted that there was insufficient water for raccoons in most of Utah, and possibly only a few occurred in the state. Durrant (1952) reported observations of raccoons from trappers and local residents in Washington and Box Elder Counties, and in the Uinta Mountains in northeastern Utah (presumably, Daggett, Duchesne, Summit, and Uintah Counties). Hall and Kelson (1959) listed specimens from Washington County and indicated that raccoons occurred along major rivers in eastern Utah, although they listed no records from this region (Fig. 1). More recent major publications also reported raccoons throughout eastern Utah, but not in west central Utah (Kaufmann 1982, Sanderson 1987, Zeveloff 1988). Raccoons had not been reported from Tooele, Juab, Millard, Beaver, and Iron Counties in western Utah (Fig. 1).

Raccoon harvests at the county level have been recorded by Utah Division of Wildlife since 1982. Based on a review of those records, we can state that raccoons recently have been harvested in every county in Utah (Table 1), including counties in which there were no previous records (Table 1). This denotes a range expansion for raccoons into western Utah by the mid-1980s (Fig. 1).

Published records in Nevada prior to the 1960s listed raccoons as occurring in the

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TABLE 1. Summary of county harvest records for raccoons in Nevada and Utah.

County	No. raccoons
NEVADA (1973–1997)	
Carson City	40
Churchill	41
Clark	42
Douglas	139
Elko	588
Esmeralda	3
Eureka	11
Humboldt	82
Lander	13
Lincoln	10
Lyon	686
Mineral	107
Nye	22
Pershing	25
Storey	83
Washoe	506
White Pine	37
UTAH (1982–1997)	
Beaver	323
Box Elder	1287
Cache	1661
Carbon	179
Daggett	74
Davis	2179
Duchesne	2498
Emery	719
Garfield	59
Grand	159
Iron	93
Juab	309
Kane	9
Millard	406
Morgan	3902
Piute	44
Rich	1125
Salt Lake	3534
San Juan	21
Sanpete	2451
Sevier	1034
Summit	3278
Tooele	348
Uintah	1438
Utah	4933
Wasatch	1342
Washington	445
Weber	3555
Unknown	350

mountainous regions of the state but not in arid areas at lower elevations in central and eastern Nevada (Fig. 1). Hall (1946) indicated that there was only a small population of raccoons in Nevada, primarily due to the lack of water. Hall (1946) reported records of raccoons from mountainous areas in northern Nevada (Humboldt and Elko Counties), southeastern

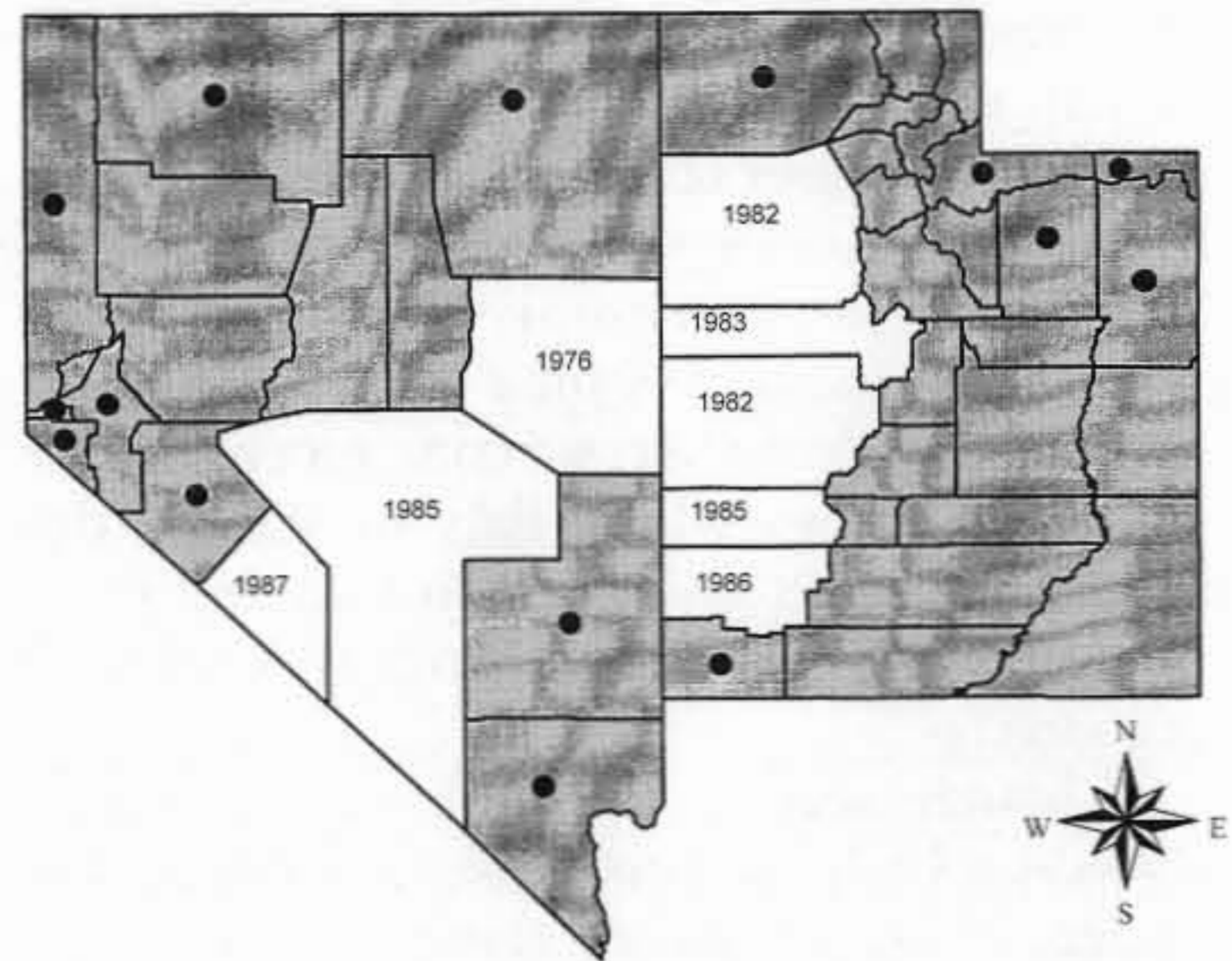


Fig. 1. Summary of known range of raccoons in Nevada and Utah. Dots represent counties with raccoon records prior to the 1960s (Presnall 1938, Hall 1946, Durrant 1952, Hall and Kelson 1959). Dark-shaded counties represent the known range of raccoons in more recent publications (Kaufmann 1982, Sanderson 1987, Zeveloff 1988). Light-shaded counties with years represent the first appearance of raccoons in county harvest records.

Nevada (Clark and Lincoln Counties), and western Nevada (Carson City, Douglas, Lyon, Mineral, and Washoe Counties) and additionally asserted that raccoons likely occurred in Lander and Eureka Counties. Hall and Kelson (1959) stated that raccoons also likely occurred in Pershing and Churchill Counties, although neither Hall (1946) nor Hall and Kelson (1959) indicated that raccoons occurred in central Nevada (Fig. 1). More recent publications also specified that raccoons did not occur in central Nevada (Kaufmann 1982, Sanderson 1987, Zeveloff 1988). Raccoons had not been reported from White Pine, Nye, and Esmeralda Counties in central Nevada (Fig. 1).

The Nevada Division of Wildlife has recorded raccoon harvests at the county level since 1973. Based on a review of those records, we report that raccoons recently have been harvested in every county in Nevada (Table 1), including counties in which there were no previous records (Table 1). This demonstrates that raccoons expanded their range into central Nevada by the mid-1980s (Fig. 1).

Overall raccoon harvests in Utah and Nevada increased steadily from 853 raccoons in 1982 to 5051 raccoons in 1997. These data suggest that in addition to range expansions, raccoon numbers have increased more than 5-fold during the 1980s and 1990s. Although harvest

data should be used with caution because of positive relationships to pelt prices, both pelt prices and number of trappers declined during the last 20 years (Armstrong and Rossi 2000), denoting a true increase in raccoon numbers and not intensified trapping efforts. Additionally, based on these harvest data, raccoons now occur in counties where they previously did not, a fact that is unrelated to trapping pressure and verifies an actual range expansion of raccoons.

Although raccoons did not historically occur in western Utah and central Nevada, our review confirms their occurrence there after an apparent range expansion during the past 20–30 years. Similar to other arid and semiarid regions in temperate North America, raccoons likely expanded in this region due to human activities related to the increased distribution of water. The recent expansion of raccoons in the Great Basin should be a concern to biologists because raccoons have been documented as major nest predators throughout their range (Sargeant et al. 1993, Heske et al. 2001, Rollins and Carroll 2001) and thus potentially could have negative impacts on many bird species in the region.

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