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Annotated Bibliography of the Mountain Quail *Oreortyx pictus*

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This bibliography encompasses most of the published scientific literature on mountain quail up to November 1998. References vary from critical scientific studies to those making casual reference to quail. Species lists referring to mountain quail and books on wildlife are the newest editions. Reference to typescript, multilith and mimeograph reports of government and professional agencies is undoubtedly incomplete, however, many of these citations presented may lead one to discover other such reports by the same author if further inquiry is made. A few articles are incompletely cited but are included in the hope that their source may be known or discovered by the interested reader. Articles about hunting mountain quail in outdoor magazines are not included. A plea is made to all readers for submission of corrections regarding incorrect, incomplete, or omitted citations. Notification of future articles on mountain quail will also be appreciated for inclusion in a revised edition of this bibliography.

Most entries in the bibliography are followed by one of three words in bold: **Abstract**, **Excerpt** or **Notes**. These are included to help the reader know the source of the text. "Abstract" is the abstract from the article, "Excerpt" quotes important text from the article, and "Notes" is our summary of information from the article. Following the bibliography, we included an author index, a location index, and a subject index for ease of use. The numbers in the indices correspond to the number preceding each individual citation.

1. Alcorn, J. R. 1988. The birds of Nevada. Fairview West Publ., Fallon, Nev. 418pp. **Excerpt**: Status in Nevada. Sparse resident in western part of the state. Uncommon in northern, central and southwestern part of the state. In good quail years, these birds become abundant in selected areas, often followed by a dramatic drop in the population. Stiver (pers. comm, 1986) reported, "I suspect they are relatively widely distributed, our most widely distributed native quail." He noted they were locally common, but limited populations exist.

2. Aldrich, J. W., and A. J. Duvall. 1955. Distribution of American gallinaceous game birds. U.S. Fish and Wildl. Serv., Circ. 34. U.S. Gov. Printing Office, Wash., D. C. 30pp. **Excerpt**: Range.--Native to mountains of Pacific coastal region of extreme western United States. Established after introduction in mountains of eastern Washington, western Idaho, eastern Oregon, and central Nevada. Habitat.--Brushy clearings in forested areas in mountains. Sprout-grown areas appearing after burns are characteristic habitat. Northwestern Mexican race occurs in pine-oak forest and adjacent chaparral. Individuals that nest at higher altitudes usually migrate to lower mountain levels in winter.

3. Allen, A. S. 1928. Additional notes on the birds of the Gold Lake Region, Northern Sierra Nevada. Condor 30:361-362. **Excerpt**: Mountain Quail were found on the shore of Gold Lake.

4. Allen, G. A., III. 1990. Mountain quail. Game Bird Breeders, Aviculturists, Zool. and Conserv. Gaz. Sept.:40-42. **Notes**: Author includes information on general description, monomorphism, migration, habitat, breeding and nests, captive breeding and care, egg production and storage, egg incubation, and hatching and rearing of captive chicks.

5. American Ornithologists' Union. 1910. Check-list of North American birds. Third ed. Am. Ornithol. Union, Ithaca, N.Y. 430pp. **Notes**: This listing includes *Oreortyx picta*, *O. p. picta*, *O. p. plumifera*, and *O. p. confinis*. Only a general description of range for each subspecies is included.

6. American Ornithologists' Union. 1931. Check-list of North American birds. Fourth ed. Am. Ornithol. Union, Ithaca, N.Y. 691pp. **Notes**: This listing includes *Oreortyx picta*, *O. p. palmeri*, *O. p. picta*, and *O. p. confinis*. Only a general description of range for each subspecies is included.

7. American Ornithologists' Union. 1957. Check-list of North American birds. Fifth ed. Am. Ornithol. Union, Ithaca, N.Y. 691pp. **Notes**: This listing includes *Oreortyx pictus*, *O. p. palmeri*, *O. p. pictus*, *O. p. eremophilus*, *O. p. russelli*, and *O. p. confinis*. A general description of range and introduced or resident status is Given for each subspecies.

8. American Ornithologists' Union. 1983. Check-list of North American birds. Sixth ed. Am. Ornithol. Union, Wash., D.C. 877pp. **Excerpt**: Habitat.--Brushy mountainsides, coniferous forest, forest and meadow edges, dense undergrowth, and in more arid conditions in sagebrush, pinyon and juniper. Distribution.--*Resident* from southwestern British Columbia (on Vancouver Island, where introduced but perhaps also native), western and southern Washington, and central Idaho south through the mountains of California and northern and western Nevada to northern Baja California (Sierra Juárez and Sierra San Pedro Martír).

9. Anderson, M. P., and J. Grinnell. 1903. Birds of the Siskiyou Mountains, California: a problem in distribution. Pages 4-15. Proc. Acad. Nat. Sci. Philadelphia.

10. Anthony, A. W. 1889. New birds from Lower California, Mexico. Proc. Calif. Acad. Sci. 2(2):73-82. **Excerpt**: From an elevation of 6,000 to 10,000 feet above the sea, in the San Pedro Mountains, I found this quail abundant, occurring wherever water and timber afforded it drink and shelter, and only leaving the higher elevations when the frosts of winter make life in the lower valleys desirable. A few pairs bred about my camp at Valladores, 6 miles from the base of the range and 2,500 feet above the sea; but nearly all of the flocks that wintered along the creek at this point were gone in March, leaving only an occasional pair, which sought the shelter of the manzanitas high up on the hill-sides, from whence their clear, mellow notes were heard morning and evening, so suggestive of cool brooks and rustling pines, but so out of place in the hot, barren hills of that region.

11. Anthony, A. W. 1893. Birds of San Pedro Martir, Lower California. Zoe 4:228-247. **Excerpt**: *Oreortyx pictus confinis*. San Pedro Partridge. Since describing this race, I have secured a series of skins from San Diego County, California, that are practically identical with my skins from Lower California, San Pedro and Valladares, thus making it necessary to either ignore the Lower California bird, or to include Southern California in its habitat. I am unable to secure specimens from the type locality at present, and so cannot determine the status of the race beyond a doubt. A single skin from the collection of the California Academy of Sciences, from Monterey, is slightly darker above and shows a conspicuous rusty edging to several of the secondaries, forming a patch on the closed wing not seen in any of my southern birds. During the past season partridges were found in abundance all over San Pedro Martir and fresh eggs were taken from the time of our arrival May 5 to the last day, May 28. In the Gaudaloupe Valley, forty miles south of Ensenada, several *Oreortyx* were seen in the thick chaparral of Ceanothus, almost down to the coast.

12. Anthony, A. W. 1911. Notes on some species from eastern Oregon. Auk 28:274-275. **Excerpt**: The winter of 1909-1910 was perhaps the most severe that has been experienced in eastern Oregon during the past 20 years. The unusual amount of snow, as well as the long continued cold, caused the death of many birds and to some extent forced others to change their normal habits. A flock of a dozen

Oreortyx was several times seen feeding on stable refuse hauled out from the town of Vale, Malheur County. Just where these wanderers came from would be a problem, as the nearest body of timber, the natural home of the species, is about 75 miles to the westward, and so far as I can learn the species is not found there.

13. Anthony, A. W. 1912. Eastern Oregon notes. Auk 29:253. **Excerpt**: In 'The Auk' for April, 1911, was published a note extending the range of *Oreortyx*, to all intents, to the Idaho boundary, the exact limit being 15 miles west of the Snake river, at Vale, Oregon. Since this article appeared further data on this species lead me to think that this partridge is gradually extending its range eastward. They were found rather common and nesting 15 miles above Vale along Bully Creek, a tributary of the Malheur river, also they were reported rather common at Skull Springs some 50 miles southwest of Vale. A flock of young was seen at Willow Creek a few miles above Ironside at the base of the Burnt River Mts. Reports of the presence of the species have been received from several of the tributaries of the Malheur River proving that the bird is more or less generally distributed over a considerable extent of the eastern part of the state. Following a rumor that the "California Quail" had been introduced I made inquiry of several of the settlers but found nothing to confirm such report. The Partridge seems first to have appeared on Upper Willow Creek about 10 or 12 years ago and gradually became somewhat common. The hard winter of 1905-06, drove many flocks to the barnyards for food, where it would seem they met with almost universal destruction at the hands of settlers. For several years they were not seen at all, but are again becoming somewhat common. No specimens have been examined, I am therefore unable to state how the species compares with those from the Cascades and Coast Mts.

14. Anthony, H. E. 1913. Mammals of northern Malheur County, Oregon. Am. Mus. Nat. Hist. Bull. 32(1):1-27. **Notes**: The mountain quail (*Oreortyx pictus plumifera*) was found along Willow Creek, Oregon, in willow/alder habitat and in adjacent meadows during a census completed in May, August, and early September.

15. Arvey, M. D. 1940. A preliminary check-list of the birds of northern Idaho. M.S. Thesis, Univ. Id., Moscow. 42pp. **Excerpt**: *Oreortyx picta*. Mountain quail. -- Two adult males of this species were collected in Idaho County near the Little Salmon River in May, 1939. They seem restricted to a typical transition zone type of plant association.

16. Arvey, M. D. 1947. A check-list of the birds of Idaho. Mus. Nat. Hist. Univ. Kans. Pub. 1(10):193-216.

17. Audubon, J. J. 1839. A synopsis of the birds of North America. Adam & Charles Black, Edinburgh, London. 359pp. **Notes**: The author provides a detailed physical description of *Ortyx plumifera* Gould, and designates it a rather rare migratory bird of the Columbia River area and upper California.

18. Audubon, J. J. 1937. The birds of America. MacMillan Co., New York, N.Y. 513pp.

19. Bach, E. D. 1917. Mountain quail. Calif. Fish and Game 3(1):139. **Excerpt**: Mountain quail are getting very scarce in all parts of the Stanislaus National Forest, and at the rate they are disappearing, it will be a matter of a few years only until they are extinct. Very little hunting is done for this species alone, but quite a number are bagged during a season by hunters in pursuit of other game. Their nests are made on the ground, which would have something to do with their disappearance, since they naturally become a prey to snakes, and small predatory animals during the nesting period, mature birds as well as young and eggs being taken. Mountain quail leave their winter haunts about April, traveling toward the higher altitudes, some stopping along the way to build their nests and rear their young, while others cross the summit and build their nests on the east side. The fall migration begins the latter part of August, and the birds return to altitudes of from two to three thousand feet about October, and here they winter. They feed on grass, seeds, berries and pine nuts.

20. Bade, A. 1932. Artificial methods of propagating game birds. Calif. Fish and Game 18:117-131.

21. Bailey, F. M. 1902. Handbook of birds of the western United States. Houghton, Mifflin & Co., Riverside Press, Cambridge. 514pp. **Excerpt**: In winter when there are heavy snows on the mountains, the quail come down to the foothills, and have even been seen in Pasadena, three miles from the base of the mountains. In summer they are most abundant in the dense chaparral of Transition zone, though they go much higher.

22. Baird, S. F., T. M. Brewer, and R. Ridgway. 1874. A history of North American birds: land birds. Vol. 3. Little, Brown, and Co., Boston. 560pp. **Excerpt**: It [mountain quail] is nowhere very common, but occurs sparingly throughout the entire length of California and Oregon to at least the Columbia, and probably beyond it, having much the same range with the *californicus*, though everywhere a rarer bird, and always confined to the hills and mountains. . . According to Dr. Cooper, this Quail is very rare in Washington Territory, a few small coveys having been met with about Vancouver, as he was informed by the officers in the garrison. He never succeeded in finding any, though he hunted for them several times with a dog. They became quite common south of the Columbia, towards the prairies of the Willamette. He inquired especially for them in other parts of the Territory, but never heard of them. In California, south of San Francisco, this bird is said to be a rare curiosity to the market-hunters, one or two sometimes occurring among flocks of the California Quail. It is known to them as the Mountain Quail. Dr. Suckley states that the birds in the Willamette Valley were introduced there, and that they are now multiplying rapidly upon the prairies back of Fort Vancouver. . .

Mr. Ridgway met with the Mountain Quail on the foot-hills of the Sierra Nevada, in the vicinity of Genoa and Carson City, and also in the mountain ranges lying immediately to the eastward of the Sierra. It was quite rare and very difficult to discover, and when found was generally met with accidentally. . . The settlers in Nevada say that, previous to the settlement of that country by the whites, this Quail was not found east of the Sierra Nevada, and affirm that they followed the wagon-roads over the mountains, in the rear of trains and wagons, for the purpose of picking up the grain scattered along the road. Mr. Ridgway does not give full credit to the truth of these statements, as he was informed by the Indians at Pyramid Lake, that, within the memory of the oldest members of their tribe, it had always been found in that vicinity. **Notes**: Author includes a physical description, distribution, and habits. Noted to occur in mountain ranges of western California and Oregon, and in the eastern Sierra Nevada.

23. Barlow, C. 1899. Another chapter on the nesting of *Dendroica occidentalis*, and other Sierra notes. Condor 1:59-60. **Excerpt**: Three nests of the Plumed Quail were found by us, all built in the tar-weed or "mountain misery" (*Chamaebatia foliolosa*), and all near paths or roads. The one shown in the illustration was built at the foot of a large cedar tree, and was nicely concealed and shaded by the foliage of the weeds. The nesting cavity was about six inches across and three inches deep, lined with feathers from the parent bird. It held ten eggs, in which incubation was well advanced. Several times the bird was flushed in order that we might observe the nest, but she was persistent and always returned. . . Another nest containing 11 incubated eggs was found on the same day, placed amongst the tar-weed in the shade of large cedars. This nesting cavity was about six inches in depth, and composed of dry leaves from the tar-weed and lined with feathers. From the nests observed it seems certain that the Plumed Quail makes a nest of its own, for the one last mentioned was substantial enough to bring home. On June 10 Mr. Carriger took a nest and 10 eggs built beside the road in the tar-weed three miles above Fyffe. The whistle of the Plumed Quail could be heard commonly through the woods, but the birds were seldom seen.

24. Barlow, C. 1900. An outing into the Pyramid Peak region of California. Condor 2:103-110. **Excerpt**: Plumed Quail (*Oreortyx p. plumiferus*). Commonly heard in the meadow at 7,500 feet, but very shy.

25. Barlow, C., and W. W. Price. 1901. A list of the land birds of the Placerville-Lake Tahoe Stage Road. Condor 3(6):151-184. **Notes**: Author includes information on calls, general behavior, breeding season, nesting habitat, and descriptions of nests and eggs. The mountain quail is "found commonly from about 2000 feet upward to the summit and is abundant in Lake Valley." Author notes that mountain quail begin nesting in May or early June, young were seen on Pyramid Peak as late as August 15, and by October the quail abandoned elevations over 5,000 feet.

26. Bateman, A. 1968. Raising mountain quail. Game Bird Breeders, Aviculturalists, Zool. and Conserv. Gaz. 16(2):11-13. **Notes**: Bateman discusses pen design and conditions, pairing, nesting structures, incubation, feed, and care of growing chicks. A range map, provided by the U.S. Fish and Wildlife Service is included along with a brief description of the range and habitat. Several photos of pens and caged birds are included.

27. Belding, L. 1892. Food of the grouse and mountain quail of central California. Zoe 3:232-234. **Excerpt**: The mountain quail (*Oreortyx pictus plumiferus*), which are so plentiful in the high mountains in summer, are only summer residents there. They usually spend the winter below the snow line, but as it is not possible to tell just where that is, or rather where it is going to be, they are sometimes caught in snow storms, but I have been astonished at the correctness of their apparent forecast of different winters. A few birds winter high in the mountains, but I think they are parts of flocks which were nearly annihilated, or young birds which got scattered and lost, and a few that were wounded and survived. They begin their journey on foot from the summit and east slope to the foothills, a little after the first of September, and by the first of October, when the game law allows them to be shot, they have nearly all escaped from the mountain hunters to run the gauntlet of those lower down, on the west slope. In some respects they are very stupid birds, in others, quite the reverse. When they are going from their summer to their winter resorts, birds of a flock can all, or nearly all, be shot if the flock can be turned from its course and scattered. They soon begin to call together and will nearly always respond to a hunter's imitation of their call. The loud pleasing call of the male in breeding season is not easily imitated nor described, though apparently consisting of a single note, which is sometimes varied a little. The service berry is the staple article of their food in fall, but they eat more or less of the different kinds of berries which the grouse eat. I suppose they, as well as the grouse, eat berries of the wild coffee (*Rhanmus californica*), but I have no data for a positive opinion. They also eat the acorn of the dwarf oak and seeds of the snow bush (*Ceanothus cordulatus*), and seeds of many small plants. I do not know that they eat any of the foliage mentioned as the food of the grouse, but they probably eat leaves of clover early in summer, just as valley quail do in winter. The juveniles eat a great many ants. Some seasons, when there are no berries and very few seeds, they live almost entirely upon the bulb of a species of grass, apparently *Melica bulbosa*, which grows at the head of springs and rivulets. The birds get the bulb by scratching. Such seasons they start for the foothills sooner than when food is abundant.

28. Belding, L. 1900. Tape worm in young mountain quail. Condor 2:91. **Excerpt**: About one in ten of the young Plumed Quail (*Oreortyx pictus plumiferus*) in Nevada, Placer, Eldorado and probably other counties in the Sierra Nevadas are infested with tape worms. I have found the worms in the entrails, in the abdominal cavity and frequently under the loose skin of the abdomen, especially between the thighs and body. As I have never found a tape worm in an adult I suppose the

young afflicted quails die before they reach maturity. I can usually distinguish the diseased bird by its sickly appearance. I do not know that these tape worms are dangerous to man but have reasons for thinking they are. Since 1885 I have never eaten a young Mountain Quail without skinning it and examining the bird very carefully. How the bird acquires the worm and what the name of the latter is, --if it has one,-- is unknown to me. I have made three ineffectual attempts to get the species identified through alcoholic specimens, but failed to get a report. Have been informed that tape worms are sometimes, though rarely, found in the young Sooty Grouse of the Sierra Nevadas.

29. Belding, L. 1901. May in the high Sierras. Condor 3:31-32. **Notes**: States that the plumed partridge (*Oreortyx p. plumiferus*) is common.

30. Belding, L. 1903. The fall migration of *Oreortyx pictus plumiferus*. Condor 5:18. **Excerpt**: The fall migration of the mountain quail (*Oreortyx pictus plumiferus*) appears to be influenced but little by the food supply or temperature in its summer habitat in the Sierras which it appears to leave because the proper time has arrived for its annual tramp down the west slope. The first flocks start about the first of September, or sometimes two or three days sooner. At Webber Lake after three cold cloudy days, they began to move westward August 28, 1900. When they are migrating their whistle is frequently heard, and they do not seek cover for protection but follow a wagon road, railroad, travel in snow sheds, pass near dwellings, and seem to care but little for self preservation. Several flocks used to come down to the foot of Stanfield Hill, Yuba County, which for eight years was my favorite shooting grounds, and there spend the winter. They would arrive about the middle of October. One year they did not come at all, and I wondered if they could foretell the mildness or severity of the coming winter, for that winter was a mild one, excepting that October was unusually cold and stormy. Their regularity in leaving the mountains without regard to food, temperature, or size of young has mystified me quite as much as *Anthus pensilvanicus*, and other northern breeding birds which I found in southern Lower California. Why they should remain in the tropical climate of Cape San Lucas until the first of May and then depart for their northern breeding grounds at the same time when they start north from the much more northern central California puzzled me, for there was no perceptible change in climatic conditions about the first of May, and indeed scarcely a change in them, at the Cape, during the two or three preceding months.

31. Bendire, C. 1892. Life histories of North American birds. U.S. Natl. Mus. Spec. Bull. 1(1):1-446. **Notes**: Author presents information on *Oreortyx pictus* (Douglas), *O. p. plumiferus* (Gould), and *O. p. confinis* (Anthony) including geographical range, physical descriptions, introductions, voice, reproduction, egg morphology, habitat, distribution, foods, clutch size, and general behavior.

32. Bent, A. C. 1963. Life histories of North American gallinaceous birds. U.S. Natl. Mus. Bull. 162. Dover Publ., Inc., New York, N.Y. 490pp. **Notes**: Bent

presents the following information about the mountain quail (*Oreortyx picta palmeri* Oberholser), the plumed quail (*O. p. picta* Douglas), and the San Pedro quail (*O. p. confinis* Anthony): habits, nesting, eggs, distribution, range, migration, egg dates, courtship, young, plumages, food, behavior, voice, game (hunting), enemies, fall activities, and winter activities. The majority of the text is composed of direct quotes from the literature.

33. Block, W. M., L. A. Brennan, and R. J. Gutiérrez. 1987. Evaluation of guild-indicator species for use in resource management. Environ. Manage. 11(2):265-269. **Abstract**: We followed selection guidelines commonly used by management agencies to select mountain quail (*Oreortyx pictus*) as an indicator species for an ecological guild of birds. We then evaluated the ability of mountain quail to indicate the presence of other species from the guild and to index the quality of the habitat for other species. The ability of quail to indicate the presence of species from the ecological guild varied widely within and among vegetation types. Species compositions of the ecological guild were more consistent in comparisons of sites within vegetation types than they were in comparisons of sites between vegetation types. Mountain quail habitat was significantly different from the habitats of sympatric species from the guild for 14 of 15 multivariate contrasts. We suggest that managers use indicator species with caution. If indicators are used, they should be applied to guilds composed of species that closely share ecological affinities. The habitat of the indicator species should overlap extensively with those of all other guild members. The use of indicators should be restricted to very similar sites within the same general vegetation type.

34. Boccard, B. 1980. Important fish and wildlife habitats of Idaho: an inventory. U.S. Fish and Wildl. Serv. 165pp. **Notes**: Boccard describes the geology, topography, climate, biological communities, human activities, and common flora and fauna of the following regions in Idaho: northern Rocky Mountains, Columbia intermontane, basin and range, and middle Rocky Mountains. This report also provides information on 49 important fish and wildlife habitat locations throughout the state. Some sites are ranked by priority and detailed information is provided on the following: wildlife species, habitat and significant ecosystem values; threat of destruction and degree of protection; ecosystem description; ownership information; other available information; and additional comments. Information on unranked sites includes a description of the area, ownership, and other general comments.

35. Boccard, B. 1980. Important fish and wildlife habitats of Oregon: an inventory. U.S. Fish and Wildl. Serv. 142pp. **Notes**: Boccard describes the geology, topography, climate, biological communities, human activities, and common flora and fauna of the following regions in Oregon: Coast Range; western interior valleys; Siskiyou Mountains; western and eastern slopes of the Cascades; high lava plains; Ochoco, Blue, and Wallowa Mountains; basin and range; and Owyhee upland. This report also provides information on 31 important fish and wildlife

habitat locations throughout the state. Some sites are ranked by priority and detailed information is provided on the following: wildlife species, habitat and significant ecosystem values; threat of destruction and degree of protection; ecosystem description; ownership information; other available information; and additional comments. Information on unranked sites includes a description of the area, ownership, and other general comments.

36. Bock, C. E., and J. F. Lynch. 1970. Breeding bird populations of burned and unburned conifer forest in the Sierra Nevada. Condor 72:182-189. **Excerpt**: In August 1960 the 39,000-acre Donner Ridge fire passed within several hundred yards of the University of California Sagehen Creek Field Station in Nevada County, California. In 1965 two permanent study plots of 20.9 acres each were established northeast of the station, one in the burn and the other in adjoining unburned forest. Long-term studies were initiated for the purpose of recording floral and faunal changes on the burn as it recovers, using the unburned plot as a control or projection of what the burned area eventually should resemble. This paper presents a comparison between the breeding avifaunas of the two areas based upon censuses taken in 1966, 1967, and 1968, when the burned study plot was still in the early stages of recovery.

37. Booth, E. S. 1950. Birds of the west. Stanford Univ. Press, Calif. **Notes**: Author includes physical description, nest, and distribution for *Oreortyx picta palmeri* and *O. p. picta*.

38. Bowles, J. H. 1911. Notes extending the range of certain birds on the Pacific slope. Auk 28:169-178. **Excerpt**: In the vicinity of Tacoma and throughout most of the Puget Sound country this quail is an abundant resident. Owing to different previous importations of both forms, occasional examples showing traces of *O. p. plumifera* are found, but *picta* is the typical form.

39. Brennan, L. A. 1984. Summer habitat ecology of mountain quail in northern California. M.S. Thesis, Humboldt State Univ., Calif. 71pp. **Abstract**: Mountain quail (*Oreortyx pictus*) habitat ecology was studied at four areas in northern California (Modoc Plateau, northern Sierra Nevada Mountains, Klamath Mountains, and northern California Coast Range) between June and October 1982 and April and October 1983. In an analysis of macrohabitat selection at these four areas, mountain quail used all vegetated cover types in proportion to their availability. A multivariate analysis of microhabitat selection based on a two-group sample (used $n = 190$, available $n = 100$) of habitat data (15 variables measured at 0.02 hectare circular plots) indicated mountain quail were associated with a specific microhabitat structure. The five habitat variables (distance to water, distance to cover, minimum shrub height, maximum shrub height, and percent shrub cover) included in a habitat selection model based on stepwise logistic regression showed a high level of statistical significance between the used and available habitat groups and low intervariable correlation coefficients ($r < 0.4$).

The stepwise selection process of logistic regression was used to rank the statistically significant and minimally redundant variables in order of their statistical importance and to derive a function which classified over 79 percent of the habitat plots to the correct group. The presence of water in association with a vegetation structure dominated by shrubs were the most important mountain quail habitat components. Mountain quail densities were estimated with a variable-distance line transect method. Densities ranged from 3.7 birds per 40 hectares on the Modoc Plateau to 21.5 birds per 40 hectares in the Klamath Mountains.

40. Brennan, L. A. 1989. Report on a survey of mountain quail habitat in eastern Oregon, southeastern Washington, western Idaho and northern Nevada. Unpubl. Rep. The Chukar Found., Boise, Id. 58pp. **Excerpt**: The recent decline and range contraction of Mountain Quail (*Oreortyx pictus*) populations in Idaho prompted the Chukar Foundation to sponsor a meeting on the biology and current status of this bird during June 1989. One result of this meeting was a decision to support a broad-scale survey of Mountain Quail habitats in areas where populations have declined in Oregon, Washington, Idaho and Nevada. The objective of this survey was to assess the quality of habitats on the eastern part of the geographic range of Mountain Quail using qualitative and quantitative techniques. The overall goal of this study was to determine if a lack of quality habitat might be responsible for the Mountain Quail population declines observed in the eastern part of its range.

41. Brennan, L. A. 1990. What happened to the mountain quail in Idaho? Quail Unlimited 9:42-43, 69. **Notes**: This article includes general information on the life history, habitat preferences, remaining populations, distribution, and causes of habitat loss for mountain quail in Idaho. Brennan discusses how dams and impoundments, agriculture, and grazing have reduced habitat for mountain quail and how the remaining island populations are susceptible to local extinctions. Suggestions for habitat improvement are also presented.

42. Brennan, L. A. 1991. Regional tests of a mountain quail habitat model. Northwest. Nat. 72:100-108. **Abstract**: A mountain quail (*Oreortyx pictus*) habitat model developed with data from northern California was tested using data from 750 plots measured at 16 sites in Idaho, Washington, Oregon, and Nevada. Accuracy of model output was assessed using habitat data from sites known to support mountain quail populations. In 15 out of 16 instances, the model accurately predicted that a test site represented mountain quail habitat. These tests represent one method for habitat model evaluation. Additional strategies for testing this data-based habitat model are discussed.

43. Brennan, L. A. 1993. Strategic plan for quail management and research in the United States: introduction and background. Pages 160-169 in K. E. Church and T. V. Dailey, eds. Quail III: Natl. Quail Symp. Kans. Dept. Wildl. and Parks, Pratt. **Abstract**: I assessed the current, broad-scale status of populations,

research, and management for 6 species of quail in the U.S., and used this information as an introduction, background, and justification for a national strategic planning effort for quail management and research. Long-term (1960-89) trends determined from Christmas Bird Count data indicate that California quail (*Callipepla californica*), northern bobwhite (*Colinus virginianus*), and scaled quail (*Callipepla squamata*) populations have undergone ($P<0.05$) declines. Geographic distribution of mountain quail (*Oreortyx pictus*) has contracted dramatically in the northeastern portion of this quail's range. Neither Gambel's (*C. gambelii*) nor Montezuma quail (*Cyrtonyx montezumae*) showed evidence of long-term increases or decreases. Wildlife professionals have apparently paid scant attention to quail in the U.S. during the past 10 years. A recent survey of *Wildlife Review* indicated <0.2% of the publications pertained to quail. During 1990, <1.0% of Federal Aid in Wildlife Restoration funds were allocated to quail-related projects. Habitat management by the private sector is apparently having little broad-scale impact on bobwhite populations. Contemporary quail management efforts in the U.S. are clearly in the doldrums and in dire need of leadership from professionals with a creative vision for solving problems caused by changing land-use practices. These factors point to a critical need for a national strategic planning effort to develop a comprehensive coordinated program for quail management and research. An outline of the structure of the Strategic Planning Workshop that was held at Quail III is provided. Specific management and research problems and associated strategies for solving them are available in Issues and Strategies, which follows.

44. Brennan, L. A. 1993. Strategic plan for quail management and research in the United States: issues and strategies. Pages 170-171 in K. E. Church and T. V. Dailey, eds. Quail III: Natl. Quail Symp. Kans. Dept. Wildl. and Parks, Pratt. **Excerpt**: This portion of the plan identifies several broad actions that can be implemented immediately. It is followed by 5 sections on specific issues and strategies: (1) agricultural practices and pesticides, (2) forest practices, (3) grazing and range management, (4) releases of pen-raised quail, and (5) population dynamics and hunting.

45. Brennan, L. A. 1994. Broad-scale population declines in four species of North American quail: an examination of possible causes. Pages 44-50 in Sustainable ecological systems: implementing an ecological approach to land management. U.S. For. Serv. Gen. Tech. Rep. RM-247. Rocky Mt. For. Range Exp. Stn., Fort Collins, Colo. 363pp. **Abstract**: Christmas Bird Count (CBC) data from 1960-1989 indicate that California quail (*Callipepla californica*), northern bobwhite (*Colinus virginianus*), and scaled quail (*Callipepla squamata*) populations have experienced significant declines in major portions of their geographic ranges. Additionally, surveys and hunter bag returns during the past 50 years indicate that mountain quail (*Oreortyx pictus*) populations have experienced a series of local extinctions across broad areas (several thousand km^2) in Idaho and Nevada. Although changing land uses can be related to these declines, no single factor can

be linked to all species. For northern bobwhites, clean farming methods in agricultural environments and intensive, high-density pine-dominated silviculture seem to be the two major reasons for broad-scale population declines, especially in the southeastern states. For mountain quail, regional extinctions in Idaho and Nevada are apparently related to two factors: (1) intensive agriculture and associated hydro-power reservoir impoundments along the Snake River corridor, and (2) disruption of key habitat resources along secondary riparian corridors by excessive cattle grazing. Factors responsible for declines in California quail and scaled quail populations are at present unknown, but are apparently related to abuses associated with excessive grazing of western rangelands. Management strategies that can be used to sustain quail populations in wildland environments are summarized in an ecological context.

46. Brennan, L. A., and W. M. Block. 1985. Sex determination of mountain quail reconsidered. J. Wildl. Manage. 49:475-476. **Excerpt**: Pine (J. Wildl. Manage. 45:1056-1057, 1981) demonstrated mountain quail (*Oreortyx pictus*) sexual distinction based on plume lengths from a Monterey County, California, population. Earlier, Van Rossem (Condor 39:20-24, 1937) showed a large degree of plume length overlap between male and female mountain quail. The purpose of this paper is to show that lack of overlap in mountain quail plume length may be unique to mountain quail in the Monterey County area and therefore of little use as a technique for distinguishing the sex of this species. **Notes**: Tables compare six morphometric characteristics (weight, wing, plume, culmen, tarsus, and claw) of mountain quail collected between October and May, 1894-1976, from Washington, Oregon, and California, U.S.A., and Baja California, Mexico. Another table shows the overlap of plume lengths of male and female mountain quail, comparing the authors' study data to sets of data from other studies.

47. Brennan, L. A., and W. M. Block. 1986. Line transect estimates of mountain quail density. J. Wildl. Manage. 50:373-377. **Abstract**: We estimated the density of 4 populations of mountain quail (*Oreortyx pictus*) in northern California during the breeding season (May-June) 1983. Estimates of density (*D*) were obtained from Fourier series analyses of perpendicular distance data. *D* values ranged from 9 to 30 quail/100 ha, with associated coefficients of variation (CV) < 20%. Percent relative density values calculated from the estimates of *D* compared favorably with percent relative number of quail detected/km of transect. In general, mountain quail were behaviorally compatible with line transect sampling.

48. Brennan, L. A., W. M. Block, and R. J. Gutiérrez. 1986. The use of multivariate statistics for developing habitat suitability index models. Pages 177-182 in J. Verner, M. L. Morrison, and C. J. Ralph, eds. Wildlife 2000: modeling habitat relationships of terrestrial vertebrates. Univ. Wis. Press, Madison. 470pp. **Abstract**: We develop Habitat Suitability Index (HSI) models based on linear and nonlinear multivariate statistical analyses. The combination of discriminant function analysis (DFA) and all possible subsets regression (APSR) was used to

develop a linear HSI model, and stepwise logistic regression (SLR) was used to develop a nonlinear HSI model. As examples, we describe the development of mountain quail (*Oreortyx pictus*) HSI models based on a two-group analysis of used (mountain quail present) and available (randomly located) habitat data. We used the linear and nonlinear methods to derive classification functions, and we compared the classification power of both functions. We also compared the error terms, confidence regions, and goodness-of-fit statistics associated with each model. The nonlinear SLR fit our data better than the linear DFA-APSR model and provided better group separation as well. The output of the linear and nonlinear models was tested with habitat data from different areas of mountain quail use. We conclude that HSI models can be developed with either linear or nonlinear regression techniques and that the structure of HSI models should be tested with long-term population data for validity.

49. Brennan, L. A., W. M. Block, and R. J. Gutiérrez. 1987. Habitat use by mountain quail in northern California. Condor 89:66-74. **Abstract**: We studied habitat use by Mountain Quail (*Oreortyx pictus*) at four sites in northern California. Vegetative cover types (macrohabitats) were used in proportion to availability. Significant microhabitat variables which distinguished used from available microhabitat structure included proximity to water and tall, dense shrubs. Mountain Quail population densities ranged from 9 to 30 birds per 100 ha; populations with greater densities used a larger range of the available microhabitat structure.

50. Brennan, L. A., R. J. Gutierrez, and W. Rosene. 1993. Strategic plan for quail management and research in the United States: issues and strategies -- forest practices. Pages 174-175 in K. E. Church and T. V. Dailey, eds. Quail III: Natl. Quail Symp. Kans. Dept. Wildl. and Parks, Pratt. **Excerpt**: Forest management, like agriculture, has a profound influence on distribution and abundance of quail populations. Participants in the Forest Practices section of the workshop identified a broad array of issues and strategies that relate to management of quail in forest environments. There was a general consensus that a severe polarization of views exists between many wildlife and forestry professionals with respect to impacts of forest management actions on quail. A great deal of this polarization is rooted in the different educational philosophies of many contemporary forestry and wildlife programs that provide University training for professionals. Therefore, this section of the Strategic Plan is divided into 2 categories: (1) general issues relating to communication and cooperation between wildlife and forestry professionals and (2) specific problems faced by quail in particular silvicultural systems or regions.

51. Brown, D. E. 1973. Potential of mountain quail to adapt to the montane conifer forest and interior chaparral in Arizona. Pittman-Robertson Spec. Rep. Proj. W-53-R-23. 13pp. **Excerpt**: It is suggested that wild trapped mountain quail of one of the southeastern races, preferably from Joshua Tree National Monument or San Bernardino National Forest, may adapt to suitable habitats in Arizona. If such a

transplant is to be considered and when a sufficient number of birds are obtained, it is recommended that they be released in the Hualapai and/or Three Bar Wildlife Area in the Mazatal Mountains of Mohave and Gila Counties. Biological reconnaissance of these candidate areas for transplants would determine the locations for release sites. Factors to be considered would be the availability of free water, composition and variety of the chaparral community and the presence of absence of seral stages. Should transplants prove successful, birds could be trapped from these areas and introduced into the Bradshaw and other chaparral ranges.

52. Brown, D. E. 1980. Sex ratios, sexual selection and sexual dimorphism in quails. J. Wildl. Manage. 44:198-202. **Excerpt**: Unfortunately, comparable data do not exist for the strikingly colored monomorphic mountain quail (*Oreortyx pictus*), which may have a different evolutionary strategy than other quails. For example, male mountain quail exhibit the greatest parental investment of all quail (e.g., development of brood patch, incubation, defense of young) (Gutiérrez, 1977).

53. Brown, D. E., A. Sands, S. Clubine, and C. E. Braun. 1993. Strategic plan for quail management and research in the United States: issues and strategies -- grazing and range management. Pages 176-177 in K. E. Church and T. V. Dailey, eds. Quail III: Natl. Quail Symp. Kans. Dept. Wildl. and Parks, Pratt. **Excerpt**: Livestock grazing has impacted populations of all species of quail in North America. Issues concerning the effect of grazing on wildlife populations, especially those related to public lands in the West, are among the most contentious and hotly-debated topics in the natural resource arena. There were 4 major topics on which participants in this workshop session reached a consensus: (1) the issue of livestock grazing fees on public lands is more of an economic issue than a wildlife management one, (2) implementation of on the ground grazing improvements should be brought about by increasing public awareness through the media, (3) the need for an ecosystem approach to range management and native quail restoration as opposed to specific livestock management prescriptions, and (4) the need for financial and social incentives for better management of private and public rangelands. Topics 2-4 will provide the basis for structuring the issues and strategies listed below.

54. Browning, M. R. 1977. The types and type-localities of *Oreortyx pictus* (Douglas) and *Oreortyx plumiferus* Gould. Proc. Biol. Soc. Wash. 90(4):808-812. **Excerpt**: There are two northern races of the North American species known as *Oreortyx pictus* (Mountain Quail). According to the fifth edition of the A.O.U. Check-list of North American birds (1957), the dark form on the west side of the Cascade Mountains from northwestern California northward to western Washington is *O. pictus palmeri* Oberholser, 1923. The other, a pale race, is found east of the Cascade Mountains in eastern Washington southward to east-central California, and is called *O. p. pictus* (Douglas, 1829). *Oreortyx plumiferus* (Gould, 1837) was synonymized with *Oreortyx pictus pictus* by Oberholser (1923). A critical appraisal of the pertinent literature and the existing types reveals that the name

plumiferus should be applied to the pale form and *pictus* to the dark form. This is a return to the treatment in the third (1910) and earlier editions of the A.O.U. Check-list. The remainder of this paper documents the evidence supporting this arrangement.

55. Bryan, M. 1901. A study of the birds of Santiago Canyon. Condor 3:103-104. **Excerpt**: I discovered a flock of Plumed Quail dusting in the dry earth below me. One was waiting about, plume erect, keeping guard while the others enjoyed their bath. What beautiful birds, and how seldom we see them so low in the mountains, but here at the foot of Santiago Peak they over-lap the range of the Valley Quail.

56. Bryant, H. C. 1912. The present and future status of the California Valley Quail. Condor 14:131-142. **Excerpt**: Three different species of quail are found within the confines of the State of California, the mountain quail (*Oreortyx picta*), the California valley quail (*Lophortyx californica*), and the Gambel or desert quail (*Lophortyx gambeli*) [sic]. The first is distinctly a high mountain bird and is seldom found below 3000 feet elevation.

57. Bryant, H. C. 1920. Edward Garner, a pioneer naturalist. Condor 22:32-33. **Excerpt**: Two interesting albinos are in the collection, one a Mountain Quail taken in Indian Valley by Kenneth Murray, October 4, 1907.

58. Burleigh, T. D. 1972. Birds of Idaho. Caxton Printers, Ltd., Caldwell, Id. 467pp. **Notes**: Author includes general information on habits, nest, and clutch size. Includes detail of quail sightings in Latah, Idaho, Nampa, Canyon, and Owyhee counties. States that mountain quail are locally common in suitable habitat in the western part of the state as far north as Latah County.

59. Capel, S., J. A. Crawford, R. J. Robel, L. W. Burger Jr., and N. W. Sotherton. 1993. Strategic plan for quail management and research in the United States: issues and strategies -- agricultural practices and pesticides. Pages 171-173 in K. E. Church and T. V. Dailey, eds. Quail III: Natl. Quail Symp. Kans. Dept. Wildl. and Parks, Pratt. **Excerpt**: Agricultural practices have broad-scale influences on quail populations. As time has passed, these once positive influences have now become largely negative. In spite of many problems faced by quail in contemporary, clean farmed agricultural environments, numerous proactive management and research opportunities exist. The participants for the Agricultural Practices and Pesticides portion of the Strategic Planning Workshop identified 3 broad categories of issues that have the greatest potential to impact quail populations in contemporary agricultural environments: (1) general habitat loss and strategies for development and improvement, (2) use and management of agricultural chemicals, and (3) agricultural programs and policies.

60. Cassirer, E. F. 1995. Wildlife Inventory, Craig Mountain, Idaho. Unpubl. Rep. Proj. No. 92-069. U.S. Department of Energy, Bonneville Power Administration,

Portland, Oreg. 183pp. **Notes**: Wildlife distribution and abundance were studied at Craig Mountain, Idaho, during 1993 and 1994. Several major drainages were surveyed for mountain quail using hunting dogs or recorded mountain quail calls. Habitat suitability for winter and breeding range are quantified as poor, fair, or good for most of the drainages surveyed. Mountain quail were heard calling in Eagle Creek drainage in 1993 and 1994 and in a China Creek tributary in 1993. Author concludes that mountain quail are present in low numbers on Craig Mountain but presence of good winter and breeding habitat makes this area a potential release site for future reintroduction efforts.

61. Caughlin, P. H., and E. Caughlin. 1938. Mountain quail at Baldy Messa Game Farm. Modern Game Breeding 8(7):4-5.

62. Church, K. E., J. R. Sauer, and S. Droege. 1993. Population trends of quails in North America. Pages 44-54 in K. E. Church and T. V. Dailey, eds. Quail III: Natl. Quail Symp. Kans. Dept. Wildl. and Parks, Pratt. **Abstract**: We used North American Breeding Bird Survey data (1966-91) to estimate distribution, relative abundance, and population trends of quails. Population trends in grassland/shrub birds sympatric with northern bobwhite (*Colinus virginianus*) were also examined. Northern bobwhite and scaled quail (*Callipepla squamata*) populations have declined since 1966. Rates of decline for these quails have increased during the past decade. California quail (*C. californica*), Gambel's quail (*C. gambelii*), and mountain quail (*Oreortyx pictus*) populations have been stable over the long-term (1966-91). However, the short-term (1982-91) trend for California quail is positive, whereas Gambel's quail appear to be declining. Patterns in tends indicate similar factors may be negatively affecting breeding populations of grassland/shrub birds throughout the bobwhite's range. We discuss plausible hypotheses to explain population trends and recommend future action.

63. Clark, H. W. 1930. Notes on the avifauna of a transition island in Napa County, California. Condor 32:50-52. **Excerpt**: Mountain Quail. Occasionally heard in the wilder parts of the region. One or two flocks have come onto the campus of Pacific Union College.

64. Clark, H. W. 1935. Fire and bird populations. Condor 37:16-18. **Excerpt**: From August 22 to 29, 1931, a severe forest and brush fire swept over Howell Mountain in Napa County, California, spreading eastward to Chiles Valley and northward beyond Middletown, Lake County. On the west side of the mountain, near St. Helena, the fire ran into a mass of chaparral and blue-oak woodland. One fire-fighter reported to me that he saw several Mountain Quail in flight. Sometimes they became confused and circled back into the blaze. Some were seen to burn in the flames.

65. Clark, W. H., and K. I. Giezentanner. 1978. Predation of ants by mountain quail in Nevada (Hymenoptera: Formicidae). Ent. News. 89:133-134. **Abstract**: Four

mountain quail, *Oreortyx pictus* (Douglas) were collected in northwestern Nevada in October 1972. Three of the quail were found to have fed upon worker ants; each contained a different species. *Formica subpolita* Mayr, *F. neogagates* Emery and *Camponotus* sp. were prey of the mountain quail. Ants formed a significant portion of the diet of these quail.

66. Cockrum, E. L. 1952. A check-list and bibliography of hybrid birds in North America north of Mexico. Wilson Bull. 64(3):140-159. **Notes**: Author lists the following crosses: (1) *Lophortyx californica* (Shaw) x *Oreortyx picta* (Douglas) California Quail x Plumed Quail. (2) *Lophortyx californicus californicus* x *Oreortyx pictus plumiferous*, Peck, 1911:149. (3) *Lophortyx californicus* x *Oreortyx* sp., Bailey, 1928:210. (4) *Lophortyx californica* x *Oreortyx picta*, Hachisuka, 1928:83.

67. Conservation Data Center. 1994. Rare, threatened and endangered plants and animals of Idaho. Third ed. Id. Dept. Fish and Game, Boise. 39pp. **Notes**: Mountain quail (*Oreortyx pictus*) is listed by the Idaho Dept. Fish and Game as a Species of Special Concern, Category A - Priority Species. Species of Special Concern are "native species which are either low in numbers, limited in distribution, or have suffered significant habitat losses." Category A species are those "which meet one or more of the criteria above *and* for which Idaho presently contains or formerly constituted a significant portion of their range (i.e., priority species)." U.S. Fish and Wildlife Service lists mountain quail as a C2 Candidate Species meaning "taxa for which information now in possession of the U.S. Fish and Wildlife Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed rules. Further biological research and field study may be needed to ascertain the status of taxa in this category." The Bureau of Land Management considers mountain quail a Sensitive Species that is: "1) under status review by USFWS/NMFS; or 2) whose numbers are declining so rapidly that federal listing may become necessary; or 3) with typically small and widely dispersed populations; or 4) those inhabiting ecological refugia or other specialized or unique habitats." The U.S. Forest Service classifies mountain quail as a Sensitive Species in Regions 1 and 4 National Forests in Idaho: "Those animal species identified by the Regional Forester for which population viability is a concern as evidenced by significant current or predicted downward trends in population numbers or density or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution." Mountain quail's heritage rank is G4/S2: G4=throughout its range is "not rare and apparently secure, but with cause for long-term concern (usually more than 100 occurrences)"; S2=within the state of Idaho is "imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (typically 6 to 20 occurrences)."

68. Coues, E. 1874. Birds of the northwest: A hand-book of the ornithology of the region drained by the Missouri River and its tributaries. U.S. Geol. Surv. Terr.

Misc. Publ. No. 3. 791pp. **Notes**: Author includes a general description, distribution, specific sightings, calls, behavior, foods, and life history.

69. Coues, E. 1903. Key to North American birds. 5th ed. Vol. 2. Dana Estes & Co., Boston. **Notes**: Narrative provides detailed descriptions of *O. pictus* including plumage, range, body measurements, and some distinguishing characteristics of *O. p. plumiferus* and *O. p. confinis*.

70. Crawford, J. A. 1978. An albinistic mountain quail from Oregon. Condor 80:343-344. **Notes**: Author describes a partially albinistic Mountain Quail collected in the Willamette National Forest, Oregon. The bird was a 14 week-old male with approximately 40% of the plumage composed of albinistic feathers.

71. Crawford, J. A. 1980. The quail of Oregon. Oreg. Wildl. 35(6):3-7. **Notes**: Author includes information on habitat, roosting, food habits, migration, and abundance. Also includes a general assessment of the impact on hunting on quail numbers, their niche in the food chain, overall success of management practices such as stocking and habitat improvement, historical bag limits in California and Oregon, and effects of forestry practices.

72. Crawford, J. A. 1989. Mountain quail in Oregon: special report. Dept. Fish. and Wildl., Oreg. State Univ., Corvallis. 9pp. **Notes**: Author summarizes information about mountain quail in Oregon, including information on distribution of subspecies, abundance, ecological difference between subspecies, introductions and transplants, and recommendations for collecting mountain quail.

73. Crawford, J. A. 1994. Habitat use by mountain quail in eastern Oregon. Unpubl. Proposal. Dept. Fish. Wildl., Oreg. State Univ., Corvallis. 11pp. **Notes**: Project goals and objectives are 1) to provide management agencies with the information necessary to evaluate actual and potential mountain quail habitat to facilitate restoration of populations, 2) to clarify the taxonomic relationships between mountain quail populations in southwestern and northeastern Oregon, 3) to determine seasonal habitat selection, 4) to compare habitat selection data with data from mountain quail that have been reintroduced into restored habitat, 5) to determine seasonal diet and food selection, and 6) to describe movements and home ranges on a seasonal basis with emphasis on relation to cover type and water resources. A primary study area will be in northeastern Oregon for the collection of taxonomic, dietary, and habitat use information. A second area will be chosen as a reintroduction site, possibly in Baker or Malheur counties. Birds will also be collected from southwestern Oregon, in the Cascade Range in Douglas county and in the Coast Range in Lincoln county, for taxonomic comparisons.

74. Crawford, J. A., and M. Pope. 1994. Habitat use by reintroduced mountain quail in eastern Oregon. Unpubl. Sci. Prospectus. Unpubl. Rep., Oreg. State Univ., Corvallis. 9pp. **Notes**: This prospectus gives a statement of the problem, current

status analysis, project objectives, anticipated results, administrative scope, and funding for a mountain quail research project in eastern Oregon. Project objectives are to determine current and historic distribution and to compare taxonomic relationships among existing populations of Oregon mountain quail. Additional objectives are to identify the seasonal habitat selection, seasonal diet and food selection, survival rates, movements, and home ranges (especially in relation to water and cover type) of reintroduced mountain quail. Study results will be used to develop a reintroduction program for mountain quail.

75. Crispens, C. G. 1960. Quails and partridges of North America: a bibliography. Univ. Wash. Press, Seattle. **Notes**: Citations for mountain quail (*Oreortyx picta* Douglas) from Crispens' bibliography are included in this bibliography.

76. Dawson, W. L. 1923. The birds of California. Vol. 4. South Moulton Co., San Francisco, Calif. 513pp. **Notes**: Dawson presents information on *Oreortyx picta picta* and *O. p. confinis* including a detailed description, recognition marks, nesting, range of *O. picta* and *O. p. picta*, distribution in California, and authorities. Text contains a discussion of vocalizations, habitat, nesting, brooding, and roosting habits.

77. Dawson, W. L., and J. H. Bowles. 1909. The birds of Washington. Vol. 2. Occidental Publ. Co., Seattle, Wash. **Notes**: Information given for the mountain quail (*Oreortyx pictus*) and the plumed quail (*O. p. plumiferus*) includes a description, recognition marks, nesting characteristics, general range, range in Washington, authorities, and specimens. Discussion also includes the birds non-native status, behavior, vocalizations, habitat, foods, and differences between these two subspecies.

78. Degroot, D. S. 1934. Field observations from Echo Lake, California. Condor 36:6-9. **Notes**: Mountain quail are noted as nesting near Echo Lake during 1933.

79. Delehanty, D. J. 1995. High-tech advances provide a breakthrough in mountain quail research. Quail Unlimited 14(1):16-21. **Excerpt**: Using captive and wild birds, I have developed a method for identifying the sex of mountain quail from a small blood sample. (This was done in collaboration with Dr. Jon Longmire of the Los Alamos National Laboratory.) Thus, behavior can now be studied in relation to the sex of individuals. An example of the usefulness of this test is that I was able to confirm, for the first time, that wild male mountain quail are able to incubate eggs and rear young unaided by a female. Using the captive flock, I have been able to observe previously undescribed behaviors, vocalizations and social relationships among breeding quail. I am currently examining the survival rate of wild-trapped versus captively-reared mountain quail released to the wild.

80. Delehanty, D. J. 1995. Incubation and brood rearing by a wild male mountain quail.

West. Birds 26:46-48. **Excerpt**: Together, these observations imply that a single yearling male Mountain Quail successfully incubated and reared 13 young. Incubation and brood-rearing by males as a regular feature of Mountain Quail reproduction would have strong implications for our understanding of the reproductive and population dynamics of the species. For example, if female Mountain Quail are also able to incubate and rear young alone, which is likely, then "pairs" might be able to rear two broods during one breeding season by employing uniparental care for each brood. This could occur even where the breeding season is too short for two broods to be raised sequentially. Thus, the frequency of uniparental care by Mountain Quail merits further investigation.

81. Delehanty, D. J. 1997. Mountain quail reproduction and restoration in the Great Basin. Ph.D. Diss., Univ. Nevada, Reno. **Abstract**: I examined three aspects of reproduction and restoration of mountain quail (*Oreortyx pictus*), a poorly known ground bird endemic to montane brush zones of the far western United States and Baja California. I tested ability of mountain quail to use dietary xanthophyll as an environmental cue to gauge reproductive effort; degree of external and behavioral monomorphism, including sex-roles in ritualized display behavior; and release strategies for restoring breeding populations into the Great Basin. Mountain quail responded strongly to diets supplemented with the plant pigment xanthophyll. Supplemented females recrudesced their reproductive tracts more rapidly, laid more eggs, and laid at a greater rate than did controls. Captive females ate more green vegetation during the breeding season then did males. Reproduction of wild mountain quail in the Mojave Desert fluctuated annually, corresponding to availability of green vegetation. Because many vertebrates, including humans, sequester dietary xanthophyll into reproductive tissues, the role of xanthophyll in vertebrate reproduction merits further investigation. Gender of mountain quail could not be determined consistently using single external characters, but was indicated consistently by presence or absence of 48.5 kb [TCC]n microsatellite DNA fragments. Genetic testing of wild quail identified the first confirmed record of incubation and brood-rearing by a male mountain quail. Captive mountain quail exhibited many reproductive behaviors including ritual display behaviors shared between sexes. Two displays not previously described for New World quail (Odontophoridae) were the domination/subordination (d/s) display, and side-ways throwing. Quail used the d/s display to court by ritualistically subordinating themselves to opposite sex adults. Quail subordinated themselves to potential mates with greater frequency when they were housed with an intrasexual competitor than when no competitor was present. Additional behaviors included crowing, duetting, aggression, nest-building, egg-laying, plumage displays, and four phasianid display elements, i. e., lateral displays, tidbitting, high-stepping, and rear approach to copulation. Wild-trapped and captively-reared mountain quail suffered high mortality following experimental release. Increased survivorship, however, was associated with spring rather than autumn or winter release, adult rather than juvenile quail, and wild-reared rather than captively-reared mountain

quail. Spring release of wild-trapped mountain quail may aid population restoration.

82. Delehanty, D. J., R. A. Tybie, M. J. Ditsworth, G. A. Hoelzer, L. W. Oring, and J. L. Longmire. 1995. Genetic and morphological methods for gender identification of mountain quail. J. Wildl. Manage. 59:785-789. **Abstract**: Mountain quail (*Oreortyx pictus*) breeding biology is poorly understood in part because sexes of birds cannot be readily identified. We demonstrated that presence or absence of high-molecular-weight microsatellite DNA of the repeated sequence thymine-cytosine-cytosine (TCC) accurately indicates mountain quail gender. Genetic methods correctly identified the sex of all 18 (12 F, 6 M) mountain quail tested. Additionally, for 30 of 31 captive mountain quail, we evaluated such morphological characteristics as plumage color of the neck, hypothesized to be associated with mountain quail gender. No single morphological characteristic (i.e., wing, tarsus, claw, and head plume length, body mass, and head width) consistently indicated gender. Despite controlling for age, stage of molt, and environmental factors among captive quail, presence or absence of olive feathers on key areas of the neck and upper breast failed to indicate gender for individuals within each sex. Three of 18 females resembled males in lacking olive feathers laterally on the upper neck. Three of 12 males resembled females in exhibiting olive feathers laterally on the lower neck. Using presence of olive feathers at the junction of pectoral and sternal feather tracts as a female-specific characteristic incorrectly indicated the gender of 3 of 30 (10.0%) quail (1 F, 2 M).

83. Dixon, J. S. 1943. Birds of the Kings Canyon National Park area of California. Condor 45:205-219. **Notes**: Author designates mountain quail as a common resident and includes a list of sightings, dates, and specific locations.

84. Douglas, D. 1829. Observations on some species of the Genera *Tetrao* and *Ortyx*, natives of North America; with descriptions of four new species of the former, and two of the latter genus. Trans. Linn. Soc. London 16:133-149. **Notes**: Author includes information on behavior, habitat, migration, food habits, nests and eggs, breeding, and a detailed physical description of the mountain quail.

85. Duszynski, D. W., and R. J. Gutiérrez. 1981. The coccidia of quail in the USA. J. Wildl. Dis. 17:371-380. **Abstract**: Intestinal contents from 12 scaled quail (*Callipepla squamata*), 10 bobwhite quail (*Colinus virginianus*), 20 harlequin quail (*Cyrtonyx montezumae*), 35 California quail (*Lophortyx californicus*), 15 Gambel's quail (*L. gambelii*) and 29 mountain quail (*Oreortyx pictus*) were examined for coccidian oocysts. Only 18 (14.9%) of 121 birds had coccidian oocysts in their feces at the time of collection; these included 9 *L. californicus* and 9 *O. pictus*. Four eimerians and an isosporan were found in the 18 infected birds. *Eimeria lophortygis* and *E. okanaganensis* were described previously from *L. californicus* but were also seen in *O. pictus*. *E. crusti* sp. nov. and *E. oreortygis* sp. nov. are described from *O. pictus*; *E. oreortygis* also was found in *L.*

californicus. Broadly ellipsoid oocysts of *E. crusti* had a rough outer wall, were 26.0 x 21.2 (24-28 x 20-23) mm and contained ovoid sporocysts 15.7 x 7.5 (14-18 x 7-9) mm. Micropyle and oocyst residuum were absent but a polar granule, sporocyst residuum, stieda and substieda bodies were present. Slightly ovoid oocysts of *E. oreortygis* had a smooth outer wall, were 24.4 x 18.7 (21-28 x 17-23) mm and contained ovoid sporocysts 14.1 x 7.2 (13-16 x 6-9) mm. Micropyle and polar granules were absent but a small oocyst residuum, large sporocyst residuum, stieda and substieda bodies were present. Oocysts of an isosporan were found and compared to oocysts of *Isospora lacazei* isolated from sparrows in a previous study.

86. Dwight, J., Jr. 1900. The moult of the North American Tetraonidae (quails, partridges, and grouse). Auk 17:34-51, 143-166. **Notes**: Author provides a highly detailed description of mountain quail in natal down, juvenile plumage, first winter plumage, and first nuptial plumage.

87. Edminster, F. C. 1954. American game birds of field and forest: their habits, ecology and management. Charles Scribner's Sons, New York, N.Y. 490pp. **Notes**: Edminster covers the Gambel's, mountain, and scaled quails by comparing origin and classification; descriptions; geographic range and distribution; habits (courtship, nesting, brood period, fall and winter seasons, voice, adaptability to changing environment); habitat; food habits; effects of weather and climate; predation; diseases and parasites; accidents; relations to man; productivity and populations; and management.

88. Edwards, G. O. 1959. Muscles of the pelvic limb in galliform birds. Am. Mid. Nat. 61:1-67.

89. Ehrlich, P. R., D. S. Dobkin, and D. Wheye. 1988. The birder's handbook: a field guide to the natural history of North American birds. Simon and Schuster, New York, N.Y. 785pp. **Notes**: A brief entry on mountain quail includes information on breeding, displays, nests, eggs, diet, conservation, parental defense, coveys, feeding behavior, and altitudinal migration. The authors also discuss dust bathing, brood patches, and effects of drought on quail reproduction and diet.

90. Einarsen, A. S. 1955. Observations on quail behavior. Murrelet 36:18-21. **Notes**: The author compares bobwhite, California, and mountain quail management and habitat in Oregon and Washington. Notes that mountain quail seem to do well for short periods of time in burned or logged areas in western Oregon and Washington. Discusses behavior of hand-reared birds and wild-caught birds as well as interactions between these two groups of birds when placed in pens together.

91. Elliot, D. G. 1897. North American game birds. Francis P. Harker, New York, N.Y. 220pp.

92. Emerson, W. O. 1887. Ornithological observations in San Diego County. Bull. Calif. Acad. Sci. 2:419-431.

93. Emerson, W. O. 1893. Random bird notes from Merced Big Trees and Yosemite Valley. Zoe 4:176-182. **Excerpt**: The day we entered the valley, June 19th, a bevy of downy young of the plumed partridge (*O. pictus plumiferus*) with the old ones ran across the road and scattered among the leaves.

94. Enderlin, R. W. 1947. The life history and management of mountain quail in California. Pittman-Robertson Q. 7(2):52. **Excerpt**: The fall migration of mountain quail from summer to winter ranges in the areas studied in Nevada and Sierra Counties was practically completed by the end of October. The migrating groups observed, which were mostly family groups, average 8.1 birds. The birds migrate by walking in single file and use roads, exposed ridges, or old flumes. No birds were found at high elevations during November and December. As previously reported, migrating birds frequently die in the manmade lakes. It is believed that this results from birds flushing, while moving along lake margins, and flying across the lake surfaces. Recovery of dead birds indicated that a high percentage of those lost are juveniles. Tests were made by releasing birds six feet above the surface of the lake. The greatest distance flown after release was 955 feet. Birds swam after dropping into the water but were unable to resume flight. Death was apparently caused by chilling and not drowning, as indicated by the reduced body temperature and subsequent death of recovered birds. Records of quail in hunter bags checked were maintained by the wardens. A total of 4,299 quail, checked in 32 of the 58 counties of the state, consisted of 3,577 valley quail, 650 mountain quail, and 72 Gambel quail. Valley quail comprised 83.2 percent of the bags checked and mountain quail represented 15.1 percent of the bags. Mountain quail were represented in the bags in 22 of the 32 counties tabulated. Covey studies during the summers of 1945 and 1946 resulted in counts of 119 adult birds and 755 young for an adult:young ratio of 1:6.51.

95. Evermann, B. W. 1886. A list of the birds observed in Ventura County, California. Auk 3:86-94.

96. Ezra, A. 1938. Successful breeding of the mountain quail (*Oreortyx pictus*). Avicul. Mag. 3(10):275-76. **Notes**: Author documents the successful captive breeding of mountain quail from the Greenhorn Mountains, California. Also presents information on nest building, egg laying, and subsequent care of the brood.

97. Ferry, J. F. 1908. Notes from the diary of a naturalist in Northern California. Condor 10:30-44. **Excerpt**: *Oreortyx pictus plumiferus*. Mountain Partridge. These birds were first met about 500 feet below the summit of South Yallow Bally Mountain on July 28, and were met thereafter almost daily during our stay here.

At this time there were many broods about and the parent birds harsh scolding note (somewhat recalling that of the Guinea-hen) was a characteristic feature of the thick chaparral. At Barney's Ranch this species was found in company with the California Partridge.

98. Fisher, A. K. 1893. Report on the ornithology of the Death Valley expedition of 1891, comprising notes on the birds observed in southern California, southern Nevada, and parts of Arizona and Utah. North Am. Fauna. 7:7-158.

99. Fisher, W. K. 1900. A list of birds observed on Mt. St. Helena, California. Condor 2:135-138. **Excerpt**: *Oreortyx pictus plumiferus*(?). Plumed Quail. This species is found on the upper slopes of the mountains in Transition. Its range overlaps that of *Lophortyx californicus* which is found on the lower slopes. Unfortunately I did not secure a specimen of this quail, but it seems probable from analogy that the form is referable to *plumiferus*, rather than to *pictus* straight which is found in the humid area near the coast.

100. Fisher, W. K. 1902. A trip to Mono Lake, ornithological and otherwise. Condor 4:3-11. **Notes**: *Oreortyx pictus plumiferus* was observed at Mono Lake in September 1901.

101. Fisher, W. K. 1904. Notes on the birds of Hoopa Valley, California. Condor 6:50-51. **Notes**: *Oreortyx pictus* are listed as occurring in or near this valley.

102. Forbush, E. H. 1917. Mountain Quail. Pages 5-8 in T. G. Pearson, ed. Birds of America. Vol. 2. **Notes**: A section on mountain quail includes a general description, nest and eggs, distribution, habitat, taxonomy, voice, reproduction, migration, and food habits.

103. Gabrielson, I. N. 1931. The birds of the Rogue River Valley, Oregon. Condor 33:110-121. **Excerpt**: *Oreortyx picta picta*. Plumed Quail. This is another common bird in the Cascades down to about 3000 feet, below which line it is gradually replaced by the California Quail. It has been seen in various localities along the summit from Snowshoe to the Ashland-Klamath Highway. The year 1926 seems to have been very favorable to these birds, as large coveys of them were numerous in the mountains during the last half of July. One nest containing eight eggs was discovered on Butte Creek, June 10, 1921.

104. Gabrielson, I. N., and S. G. Jewett. 1940. Birds of Oregon. Oreg. State Univ. Press, Corvallis. 650pp. **Notes**: Authors include a description of *Oreortyx picta palmeri* and *O. p. picta* and information on the downy young, nests, eggs, and distribution. A brief discussion of habitat requirements and habits are included.

105. Gambel, W. 1849. Remarks on the birds observed in Upper California, with descriptions of new species. J. Acad. Nat. Sci., Phil. 2(1):215-229.

106. Gifford, D., D. Hinz, P. Hofmann, and T. Roscoe. 1995. Report on the status of the mountain quail (*Oreortyx pictus*) in California. Game Bird Heritage Program, Calif. Dept. Fish and Game, Region II. 35pp. **Abstract**: The mountain quail (*Oreortyx pictus*) is a species of resident bird that has received relatively little attention by researchers. The Department of Fish and Game is interested in increasing it's knowledge of the status of the mountain quail in California. Using information in the scientific literature and in Department of Fish and Game files we developed a map of the species' current range, estimated it's statewide population, estimated the trend in population over the last 20 years, and provided a means to monitor population changes in the future.

107. Gilman, M. F. 1907. The gambel partridge in California. Condor 9:148-149. **Excerpt**: They range upward to at least 4000 feet and at favorable points are found in proximity to the Plumed Partridge (*Oreortyx pictus plumiferus*). At other places the Valley Partridge (*Lophortyx californics vallicola*) joins in and the three species occupy the same territory. At Snow Creek at the north base of San Jacinto Peak I have shot the three species and carried them home in the same bag. Near Banning mixed flocks of *gambeli* and *vallicola* have been seen and the Plumed, or Mountain Quail as it is more commonly called, only a short distance away. In canyons at Palm Springs the three can be found, and on Pinyon Flats, altitude of 4,000 feet, lying about fifteen miles south of Palm Springs, I have seen the three species drink from the same spring in course of half an hour.

108. Godin, A. J. 1960. A compilation of diagnostic characteristics used in aging and sexing game birds and mammals. M.S. Thesis, Univ. Massachusetts, Amherst. 160pp.

109. Gooden, S. K. 1953. A collapsible quail trap. J. Wildl. Manage. 17:389-391. **Notes**: This article gives instructions on how to assemble a light-weight, collapsible quail trap for capturing bob-white quail (*Colinus virginianus*).

110. Gould, J. 1837. On a new species of *Ortyx*. Proc. Zool. Soc. London 5:42-44. **Excerpt**: Mr. Gould then called the attention of the meeting to a new and beautiful species of *Ortyx*, a native of California, from the collection of the late David Douglas, and characterized it under the name of *O. plumifera*. . . He remarked that this genus was first brought before the Society eight or nine years ago by Mr. Vigors, at which time only five species were known, but since that period the number had been doubled; and from the remarkable development of the feathers forming the crest in the species then exhibited Mr. Gould anticipates the discovery of others, which shall connect *Ortyx plumifera* with those species in which this character is less prominently shown.

111. Gould, J. 1850. A monograph of the Odontophorinae or partridges of America. Richard and John E. Taylor, London. 23pp.

112. Grenfell, W. E., B. M. Browning, and W. E. Stienecker. 1980. Food habits of California upland gamebirds. Unpubl. Admin. Rep. 80-1. Calif. Dept. Fish and Game, Sacramento. 130pp. **Notes**: This report contains a mountain quail distribution map and extensive information on principal food items from several collection sites throughout California. Information is given for the Cascade Range, Klamath Range, southern Sierra Nevada, northern Sierra Nevada, Great Basin, south Coast Range, north Coast Range, and Transverse Ranges. Collection dates range from 1939-1976.

113. Grinnell, J. 1898. Birds of the Pacific slope of Los Angeles County. Pasadena Acad. Sci. Publ. No. II. 52pp.

114. Grinnell, J. 1902. Check-list of California birds. Cooper Ornithol. Club, Pacific Coast Avifauna No. 3. 98pp.

115. Grinnell, J. 1905. Summer birds of Mount Pinos, California. Auk 22:378-391. **Excerpt**: Mountain Quail were plentiful from 5500 feet elevation to the summit, and many broods of young were met with, particularly around the cienegas. Almost every one of the grassy pockets in the north slope of Mount Pinos held its family of quail. On the approach of an intruder these would flutter into the adjacent gooseberry thickets, where they would remain completely lost to observation for the time being.

116. Grinnell, J. 1914. An account of the mammals and birds of the lower Colorado Valley. Univ. Calif. Publ. Zool. 12:51-294.

117. Grinnell, J. 1915. A distributional list of the birds of California. Cooper Ornithol. Club., Pacific Coast Avifauna 11. 217pp. **Notes**: Author includes information on status, abundance, habitat, and detailed distribution for *Oreortyx picta picta* and *O. p. plumifera*.

118. Grinnell, J. 1925. The California state bird list at the end of 1924. Condor 27:76-77. **Notes**: Shows *Oreortyx picta confinis* Anthony (San Pedro Mountain Quail) as an addition to the California bird list.

119. Grinnell, J. 1928. A distributional summation of the ornithology of Lower California. Univ. Calif. Publ. Zool. 32:1-300.

120. Grinnell, J. 1932. Type localities of birds described from California. Univ. Calif. Publ. Zool. 38:243-324.

121. Grinnell, J., H. C. Bryant, and T. I. Storer. 1918. The game birds of California. Univ. Calif. Press, Berkeley. 642pp. **Notes**: This text includes a history of game legislation and hunting seasons in California, and refers to mountain quail bag

limits and seasons in a few instances. One section includes the following information for mountain quail (*Oreortyx picta plumifera*, and *O. p. picta*): other names, description of adults and young, marks for field identification, voice, nest, eggs, general distribution, and distribution in California. A narrative includes specific observations on nesting dates, nest sites, mountain and valley quail sympatry, brood sightings, calls, foods and feeding, roosting, and migration. A short discussion on the historical collection of mountain quail for San Francisco markets and on management strategies to increase numbers is also included.

122. Grinnell, J., J. S. Dixon, and J. M. Linsdale. 1930. Vertebrate natural history of a section of northern California through the Lassen Peak region. Univ. Calif. Publ. Zool. 35. 594pp. **Excerpt**: *Oreortyx picta picta* (Douglas) Interior Mountain Quail. This quail in summer frequented the chaparral-covered slopes and ridges in the belt between the altitudes of 4000 and 7000 feet. In addition to thickets of snow-brush and green manzanita, alder and willow thickets sometimes were included within ranges of individuals. Once, birds were heard calling from slopes covered with mountain mahogany. No knowledge has come to us of mountain quail occurring in mid-winter higher than about 3500 feet on the western slope of our section. In other words, it appears that the entire population that summers on the mountains above the 4000-foot level moves westward in the autumn, to winter in just about the same belt as do the black-tailed deer. **Notes**: General range and specific sighting locations are given throughout the study area. The authors include observations on calling, migration, and reproductive behavior as well as nest characteristics, clutch size, predator (human) avoidance, and crop contents. A specific account of one nesting female includes detail on time of egg deposition and collected egg weights is also included.

123. Grinnell, J., and A. H. Miller. 1944. The distribution of the birds of California. Pacific Coast Avifauna 27. Berkeley, California. 608pp. **Notes**: The authors give information on the coast mountain quail (*Oreortyx picta palmeri* Oberholser), the Sierran mountain quail (*O. p. picta* Douglas), and the southern California mountain quail (*O. p. eremophila*). Includes synonyms, status (resident), geographic range, and habitat. Contained within the geographic range section are a multitude of reported sightings at various locations.

124. Grinnell, J., and T. I. Storer. 1924. Animal life in the Yosemite. Univ. Calif. Press, Berkeley. 752pp. **Notes**: This text includes general information on habitat distribution, field characters, occurrence, vocalizations, reproduction, predators, foods, flocking, abundance, and specific sightings in Yosemite.

125. Grinnell, J., and H. S. Swarth. 1913. An account of the birds and mammals of the San Jacinto area of southern California. Univ. Calif. Publ. Zool. 10:197-406. **Notes**: Authors include information on behavior and several sightings throughout the San Jacinto area, noting the number of birds seen, age composition of the covey, and proximity of other quail species. They compare the plumage of

Oreortyx pictus confinis and *O. p. plumifera* and recommend that all mountain quail in southern California be classified as *O. p. plumifera.*

126. Gruhn, R. 1961. The archaeology of Wilson Butte Cave south-central Idaho. No. 6. Occas. Papers Id. State Coll. Mus., Pocatello. **Notes**: The author documents the occurrence of mountain quail bones in the cave in stratum A, dates the stratum at 425 ± 150 years B. P. (A. D. 1535), and estimates the beginning of accumulation for stratum A around A. D. 1300.

127. Guiguet, C. J. 1955. The birds of British Columbia: (4) upland game birds. B.C. Prov. Mus. Handb. 10:38-40. **Excerpt**: The mountain quail, a western race of the plumed quail, originally occupied a range extending along the humid west coast of the United States from north-western Oregon south to Monterey County in California. In the early 1860's introductions were made to Washington, on San Juan and Whidbey Islands and others, and to British Columbia in the Fraser Valley and on Vancouver Island. These early introductions were not successful, but later introductions in the 1870's and 1880's apparently "took" in Washington and on Vancouver Island, and the birds, though not numerous, are still present in the Sooke hills, Highland District, and north sporadically as far as Duncan. There are records of the species from Wedder Mountain on the mainland taken in 1921, but to our knowledge no authentic mainland reports have been received since that time.

128. Gullion, G. W. 1951. Birds of the southern Willamette Valley, Oregon. Condor 53:129-149. **Notes**: Information is included on the size, topography, elevation, geology, climate, and watershed characteristics of the study area as well as a detailed map of the southern Willamette Valley, Lane County, Oregon. Author classifies the mountain quail as a rare permanent resident.

129. Gullion, G. W., and G. C. Christensen. 1957. A review of the distribution of gallinaceous game birds in Nevada. Condor 59:128-38. **Excerpt**: *Oreortyx picta.* Mountain Quail. In addition to the records cited by Linsdale (1936:49-50), and the more recent records for the Pine Forest, Virginia and Wassuk ranges, the Jackson, Pine Nut, Silver Peak and White mountains, and the Sierra Nevada of western Nevada, this species was recorded from Mount Moses in central Lander County on June 14, 1951, by Gullion and from the East Fork of the Jarbidge River at Murphy's Hot Springs, two miles north of the Idaho-Nevada state line, on November 20, 1953, by Hoskins.

130. Gutiérrez, R. J. 1975. A literature review and bibliography of the mountain quail, *Oreortyx pictus* (Douglas). USDA For. Serv. Spec. Rep., Calif. Reg. Office, San Francisco. 33pp. **Excerpt**: Since very little biological information is readily available on the mountain quail, the USDA Forest Service, California Region and I felt that there was a need to summarize the present state of knowledge of this bird. The primary purpose of this report, therefore, is to provide a concise review of this

knowledge. An attempt was made to include as much of the published and unpublished literature as possible, particularly of California. The second function of this paper is to provide an outlet for some of the unpublished summary Pittman-Robertson (P-R) research completed in California in the late 1940's. Finally, the extensive bibliography provides an initial route to those interested in further reading or studying the mountain quail.

131. Gutiérrez, R. J. 1977. Comparative ecology of the mountain and California quail in the Carmel Valley, California. Ph.D. Thesis, Univ. Calif., Berkeley. 103pp. **Excerpt**: Mountain Quail, *Oreortyx pictus*, and California Quail, *Lophortyx californicus*, range through all of California's plant communities except the driest deserts and highest spruce-fir, alpine zones. From our limited knowledge of the Mountain Quail, it is difficult to predict its ecological relationship with the California Quail although the United States members of the sub-family of Odontophorinae quails are frequently regarded as a closely related group (Johnsgard 1973). A zone of sympatry occurs annually at the upper limits of the California Quail's range when winter snows drive migratory populations of Mountain Quail from their high mountain homes. In other areas the quail are sympatric year-round, yet their relationships in either sympatric situation is unknown. I have proposed to study the relationship of these quail when they are in constant sympatry and to elucidate the natural history of the Mountain Quail.

132. Gutiérrez, R. J. 1980. Comparative ecology of the mountain and California quail in the Carmel Valley, California. Living Bird 18:71-93. **Excerpt**: Mountain and California Quail range through all of California's plant communities except the driest deserts and highest spruce-fir, alpine zones. A zone of sympatry occurs annually at the upper limits of the California Quail's range when winter snows drive migratory populations of Mountain Quail from their high mountain homes. In other areas the quail are sympatric all year, yet their ecological relationships in either sympatric situation are unknown. North American Odontophorinae quails, however, are regarded as a closely related group (Johnsgard, 1973). In this study I observed and quantified the modes of ecological segregation between the Mountain and California Quail where they are continually sympatric. Additionally, I have tried to elucidate the natural history of the Mountain Quail.

133. Gutiérrez, R. J. 1993. Taxonomy and biogeography of New World quail. Pages 8-15 in K. E. Church and T. V. Dailey, eds. Quail III: Natl. Quail Symp. Kans. Dept. Wild. and Parks, Pratt. **Abstract**: New World quail are a distinct genetic lineage within the avian order Galliformes. The most recent taxonomic treatment classifies the group as a separate family, Odontophoridae, within the order. Approximately 31 species and 128-145 subspecies are recognized from North and South America. Considerable geographic variation occurs within some species which leads to ambiguity when describing species limits. A thorough analysis of the Galliformes is needed to clarify the phylogenetic relationships of these quail. It is apparent that geologic or climatic isolating events led to speciation within New

World quail. Their current distribution suggests that dispersal followed speciation. Because the genetic variation found in this group may reflect local adaption, the effect of translocation and stocking of pen-reared quail on local population genetic structure must be critically examined.

134. Gutiérrez, R. J., R. M. Zink, and S. Y. Yang. 1983. Genic variation, systematic, and biogeographic relationships of some galliform birds. Auk 100:33-47.
Abstract: Starch gel electrophoresis was used to evaluate levels and patterns of genic differentiation among 10 species of galliform birds in the Phasianidae (9) and Tetraonidae (1). The phasianids included an Old World quail, a partridge, a pheasant, and six species of New World quail. Measures of within-species genetic variation included heterozygosity, percentage polymorphic loci, and number of alleles per polymorphic locus. These values were similar to but lower than those reported for other birds. Genetic distances among conspecific populations and among congeneric species were low compared to other avian results. Genetic distances among noncongeners both within and between families were considerably higher, however, than those reported for passerine birds. Thus, more studies of levels of genic differentiation among nonpasserines are required to complement the literature on genic divergence among passerines and to enable us to make general statements about genic evolution in birds. Phenograms and phylogenetic trees suggested that *Phasianus colchicus*, *Tympanuchus pallidicinctus*, *Coturnix coturnix*, *Alectoris chukar*, and the New World quail (Odontophorinae) are genically distinct taxa. The branching sequence among the non-Odontophorinae taxa is unresolved by our data. The branching order among taxa in the Odontophorinae from a common ancestor is: *Cyrtonyx montezumae*, *Oreortyx pictus*, *Colinus virginianus*, *Callipepla squamata*, *Lophortyx gambelii*, and *L. californicus*. The genera *Cyrtonyx*, *Oreortyx*, and *Colinus* are clearly distinct from *Callipepla* and *Lophortyx*, which are quite similar to each other genically. We use a fossil species from the mid-Miocene of Nebraska to calibrate our genetic distances. We estimate dates of divergence of taxa in the Odontophorinae and offer a hypothesis on their historical biogeography. Our analysis suggests that three east-west range disjunctions could account for the origin of *Oreortyx* (12.6 MYBP), *Colinus* (7.0 MYBP), and *Callipepla-Lophortyx* (2.8 MYBP). We suggest that *L. californicus* and *L. gambelii* should be considered distinct species because of an apparent lack of panmixia in zones of sympatry, even though the D between them is typical of that found between subspecies of other birds. *Oreortyx* and *Colinus* should remain as distinct genera, while our data are equivocal on the status of *Callipepla* and *Lophortyx*.

135. Hanna, W. C. 1924. Weights of about three thousand eggs. Condor 26:146-153.
Notes: Table shows *Oreortyx p. plumifera* with 25 eggs weighed, average weight of 10.41 grams, and the tabluated individual weights of all 25 eggs.

136. Hebard, F. V. 1949. Birds of the Fremont National Forest, south-central Oregon. Condor 51:151. **Excerpt**: *Oreortyx picta*. Mountain Quail. Pair in Goose Lake Valley, July 4, 1948.

137. Heekin, P. E. 1991. Movements, habitat use, and population characteristics of mountain quail in west-central Idaho. Unpubl. Res. Proposal, Department of Fish and Wildlife Resources, Univ. Id., Moscow. 64pp. **Abstract**: Mountain quail (*Oreortyx pictus*) numbers in Idaho have been declining over the past several decades. As a result, the species has been classified as a "Species of Special Concern" by the Idaho Department of Fish and Game (IDFG), and the Bureau of Land Management (Idaho BLM) and Region 4 of the U.S. Forest Service (USFS) have designated the mountain quail as a "Sensitive Species" (Moseley and Groves 1990). The mountain quail has also been included on the list of "Wildlife Species of Concern in Idaho" by the Boise Area Office of the U.S. Fish and Wildlife Service (Boccard 1980). Consequently, land and wildlife management agencies, such as the IDFG and the Idaho BLM, have identified the need to collect information on the ecology of mountain quail in Idaho in order to develop management strategies that will prevent further decline in numbers and restore birds in appropriate areas. Various aspects of mountain quail ecology have been studied in California; however, the habitat in California is significantly different than mountain quail habitat in Idaho. No in-depth study has been conducted on the habitat use patterns, movements, and population characteristics of Idaho mountain quail. Such a study is needed before managers can adequately assess the impacts of land use practices on mountain quail habitat and populations. The study area will include several tributaries within the lower Salmon River and Little Salmon River drainages in the southwest corner of Idaho County, Idaho. The objectives of this study are: to document the daily and seasonal movements and home ranges of mountain quail; to collect information on productivity and survival rates; to document habitat use patterns; to determine the physical and vegetal characteristics of nesting and brood-rearing habitats; and to develop recommendations designed to maintain or enhance mountain quail habitat and populations. Field seasons will last from January through August in 1992 and 1993.

138. Heekin, P. E. 1993. Radio-telemetry reveals secrets of mountain quail in Idaho. Quail Unlimited Mag. 12(2):8-11. **Notes**: This article discusses the declining populations of mountain quail in Idaho and includes a synopsis of the author's current study being conducted in the Little Salmon River area, Idaho. A brief description of the study area, trapping efforts, data collection, and some preliminary results are included. The author also includes observations of a mountain quail laying three eggs in a ruffed grouse nest and of a female mountain quail associated with two separate nests.

139. Heekin, P. E., R. Guse, C. Connell, K. P. Reese, and P. Zager. 1993. Mountain quail ecology: mountain quail habitat use, movements, productivity, and survival.

Job Prog. Rep. Proj. W-160-R-20. Id. Dept. Fish and Game, Boise. 15pp. **Excerpt**: Mountain quail (*Oreortyx pictus*) numbers in Idaho have been declining over the past several decades. As a result, the species has been classified as a "Species of Special Concern" by the Idaho Department of Fish and Game; the Bureau of Land Management in Idaho and Region 4 of the U.S. Forest Service have designated the mountain quail as a "Sensitive Species" (Moseley and Groves 1990). The mountain quail has also been included on the list of "Wildlife Species of Concern in Idaho" by the Boise Area Office of the U.S. Fish and Wildlife Service (Boccard 1980). Consequently, land and wildlife management agencies, such as the Idaho Department of Fish and Game and the Bureau of Land Management, have identified the need to collect information on the ecology of mountain quail in Idaho in order to develop management strategies that will prevent further decline in numbers and restore birds in appropriate areas. Various aspects of mountain quail ecology have been studied in California; however, the habitat in California is significantly different than mountain quail habitat in Idaho. No comprehensive study has been conducted on the habitat use patterns, movements, and population characteristics of Idaho mountain quail. Such a study is needed before managers can adequately assess the impacts of land use practices on mountain quail habitat and populations. The study area includes several drainages and draws off the Little Salmon River in the southwest corner of Idaho County, Idaho. The objectives of this study are: to document the daily and seasonal movements and home ranges of mountain quail; to collect information on productivity and survival rates; to document habitat use patterns; to determine the physical and vegetal characteristics of nesting and brood-rearing habitats; and to develop recommendations designed to maintain or enhance mountain quail habitat and populations.

140. Heekin, P. E., and K. P. Reese. 1995. Validation of a mountain quail survey technique. Id. Power Company, Boise. 49pp. **Abstract**: For the past several decades, mountain quail populations throughout the Intermountain Region of the U.S. have been declining. As a consequence, managers have become concerned about the possibility of extirpation of remnant populations. However, because so few studies have been done on the species, information that would enable managers to develop effective management plans is unavailable. As a first step toward collecting more information on the species, managers have expressed a need for an economical and efficient means of surveying mountain quail. Mountain quail are a species of special concern. They exhibit secretive behavior, exist in low densities, and occur in isolated patches of dense cover in steep terrain. Therefore, a species-oriented calling survey, in targeted habitats, would be the most efficient way to begin gathering data on their presence. We determined that a modified calling survey, in which imitated calls are used to stimulate quail vocalizations, might be the most efficient survey method, as presentations designed to elicit responses might increase the likelihood that quail will be detected when present. The purpose of this study was to use the known presence of radio-collared mountain quail to determine the efficacy of such a calling survey, as well as

determine optimum conditions and number of visits for such a survey. During May 1994, we conducted calling surveys in 5 areas in the Little Salmon River Canyon, in west-central Idaho. Surveys were conducted during 4 time periods, using 2 calls, and 2 broadcasting methods. At least 1 radio-collared mountain quail was present in each area throughout the survey period. We found that more vocalizations were detected in the 2 earliest time periods (starting at sunrise or 1000), under mild weather conditions (no precipitation and little or no air movement). When surveys were done under these conditions, and routes were visited at least twice, the presence of mountain quail was detected in 4 of 4 draws. We believe that the survey recommendations presented here will be useful for detecting the presence of mountain quail in targeted areas, and that this type of survey is the most efficient method available in terms of time and labor costs. Results of these surveys may document the presence of mountain quail, establish the location of breeding range, yield information on cover type associations, and provide information on regional distribution. In addition, annual surveys could provide data on population trend and range expansion or contraction. Thus, mountain quail calling surveys can prove a valuable first step toward increasing our knowledge of the species' population dynamics and habitat requirements.

141. Heekin, P. E., K. P. Reese, and P. Zager. 1994. Fall/winter mountain quail ecology: mountain quail fall and winter habitat use, food habits, movements, and population characteristics in north-central Idaho. Job Prog. Rep. Proj. W-160-R-21. Id. Dept. of Fish and Game, Boise. 9pp. **Abstract**: Study plan implementation over the reporting period involved searching for and obtaining permission to set up trapping sites, trapping and radio-collaring birds on winter range, following their daily and seasonal movements, and locating nests. We trapped 28 mountain quail, and radio-collared 27. The birds' movements were monitored from mid-February through the end of the reporting period. As of 8 June 1994, over 110 radio-locations had been completed and 17 nests had been found. Between July and December 1994, we will collect information on nest success, movements, productivity and survival, and habitat use. In August we will trap coveys to collect information on survival and to radio-collar additional birds and renew radio-collars on recaptured birds.

142. Heekin, P. E., K. P. Reese, and P. Zager. 1994. Mountain quail ecology: mountain quail habitat use, movements, productivity, and survival. Completion Rep. Proj. W-160-R-21. Id. Dept. of Fish and Game, Boise. 3pp. **Abstract**: Field work on this project was completed in August 1993. Previous reports (Heekin et al. 1992, Heekin et al. 1993) provided introductory information and summarized results of the 1992 and 1993 field seasons. During this reporting period I completed additional coursework, entered data, and participated in communications activities. I also began field work on the fall/winter ecology of mountain quail (Heekin et al. 1994). During the next several months I will analyze the data and write the thesis, which will serve as the final report, and will be submitted in February 1995.

143. Heekin, P. E., M. Sands, C. Connell, and P. Zager. 1992. Mountain quail ecology: July 1, 1991 to June 30, 1992. Proj. W-160-R-19. Id. Dept. of Fish and Game, Boise. 15pp. **Abstract**: Mountain quail (*Oreortyx pictus*) numbers in Idaho have been declining over the past several decades. As a result, the species has been classified as a "Species of Special Concern" by the Idaho Department of Fish and Game; the Bureau of Land Management in Idaho and Region 4 of the U.S. Forest Service have designated the mountain quail as a "Sensitive Species" (Moseley and Groves 1990). The mountain quail has also been included on the list of "Wildlife Species of Concern in Idaho" by the Boise Area Office of the U.S. Fish and Wildlife Service (Boccard 1980). Consequently, land and wildlife management agencies, such as the Idaho Department of Fish and Game and the Bureau of Land Management, have identified the need to collect information on the ecology of mountain quail in Idaho in order to develop management strategies that will prevent further decline in numbers and restore birds in appropriate areas. Various aspects of mountain quail ecology have been studied in California; however, the habitat in California is significantly different than mountain quail habitat in Idaho. No comprehensive study has been conducted on the habitat use patterns, movements, and population characteristics of Idaho mountain quail. Such a study is needed before managers can adequately assess the impacts of land use practices on mountain quail habitat and populations. The study area includes several drainages and draws off the Little Salmon River in the southwest corner of Idaho County, Idaho. The objectives of this study are: to document the daily and seasonal movements and home ranges of mountain quail; to collect information on productivity and survival rates; to document habitat use patterns; to determine physical and vegetal characteristics of nesting and brood-rearing habitats; and to develop recommendations designed to maintain or enhance mountain quail habitat and populations. The 1992 field season, January through August, included several phases of activity: searching for populations of mountain quail, trapping and measuring birds, radio-tracking, and habitat work. During January and February, over 40 drainages, sub-drainages, draws, and associated slopes in the Little Salmon and lower Salmon River canyons were searched for populations of mountain quail. Thirty-three funnel traps were set up, and between January and April, 1992, 66 mountain quail were trapped, banded, weighed, and measured. Of those, 42 quail were radio-collared. The birds' movements were monitored from March through August, and 11 nests were located. During July and August, physical and vegetal measurements were taken at all nest sites, selected brood sites, random dependent sites associated with used sites, and random independent sites, for a total of 66 habitat plots completed. The availability of given habitats will be compared against the proportion of use they receive. Chi-square goodness of fit, t-tests, linear regression, and nonparametric procedures will be used in analysis of the data.

144. Heekin, P. E., C. A. Vogel, and K. P. Reese. 1994. Uncovering the elusive habits of mountain quail in Idaho. Quail Unlimited Mag. 13(3):14-16. **Notes**: The article provides an update on the Riggins, Idaho, research project since 1993.

Information is provided on trapping, radio-tracking, nest sites, seasonal movements, and how weather conditions can affect mountain quail.

145. Hemker, T., A. Sands, and E. Robertson. 1992. Status of mountain quail in the intermountain west. Unpubl. Rep. 3pp. **Abstract**: Mountain quail (*Oreortyx pictus*) numbers in inland areas of Washington, Oregon, Idaho and Nevada have declined dramatically during the last 20-30 years. In Idaho, distribution of this bird has declined by over 90% and the season closed on this once common species in 1984 after harvest dropped by about 96% from the 1950's to 1970's. As a result, this species has received increased management attention from sportsmen and management agencies and is currently listed as a "Sensitive Species" by the U.S. Forest Service and BLM. Existing data suggest that declines in these mountain quail populations are related to losses of riparian habitat quantity and quality. Current research and management efforts are outlined.

146. Henry, D. P. 1931. Species of coccidia in chickens and quail in California. Univ. Calif. Publ. Zool. 36:156-170.

147. Henshaw, H. W. 1874. Report on the ornithological collections made in portions of Nevada, Utah, California, Colorado, New Mexico, and Arizona, during the years 1871, 1872, 1873, and 1874. Pages 133-507 in Wheeler's Rep. Geogr. and Geol. Expl. and Surv. West 100th Meridian. Vol. 5, Zoology. **Excerpt**: It seems nowhere to be an abundant species. The bevies are very small, and I do not remember to have ever seen more than fifteen together, oftener less. It is a wild, timid bird, haunting the thick chaparral-thickets, and rarely coming into the opening. When a band is surprised they are not easily forced on the wing, but will endeavor to find safety by running and taking refuge in the thickness and impenetrability of their favorite thickets. If forced, however, they rise vigorously and fly swiftly and well, and sometimes to a considerable distance, and then make good their escape by running. During the heat of midday, they will be found reposing under the thick shade of the chaparral, and there they remain till the cooler hours invite them to continue their quest for food.

148. Hoffman, D. M. 1973. Study of mountain quail adaptability. Pages 237-250 in Job Prog. Rep., Fed. Aid Proj. W-37-R-26, WP15, J2. Colo. Div. Game, Fish and Parks, Denver. **Abstract**: A total of 574 mountain quail were released in 2 different areas of Colorado from 1965 through 1973. Of these, 372 were wild-trapped birds received from California and Oregon in wildlife trades and 202 were pen-raised at the Fort Collins Wildlife Research Station. By area, 397 were released in Mesa County on the west side of the Uncompahgre Plateau and 177 were released in Las Animas County on the Spanish Peaks Management Area. One confirmed movement of 25 airline miles distance from a release site was recorded after three mountain quail were confiscated from hunters in Mesa County by Gary Myers. Other reported movements of 15, 7, 3.5, 3 and 1 miles from release sites were recorded during the period 1966 through 1972. The status of

mountain quail in Colorado is very questionable because (1) numbers observed and reported since 1966 have been small relative to numbers released, (2) no instance of reproduction has been recorded, and (3) consistent observations for any one locality are lacking. The probability that the species will become established in Colorado is slim. Game farm propagation of mountain quail was terminated and all remaining stock released on March 20, 1973.

149. Hoffman, R. 1927. Birds of the Pacific states. Houghton Mifflin Co., Boston. **Notes**: Author includes information on habitat, call, behavior, general description, nests, eggs, and distribution of subspecies *Oreortyx pictus confinis, O. p. plumifera,* and *O. p. picta.*

150. Holman, J. A. 1961. Osteology of living and fossil New World quails (Aves, Galliformes). Bull. Fla. State Mus. Biol. Sci. 6(2):131-233.

151. Holman, J. A. 1964. Osteology of gallinaceous birds. Q. J. Fla. Acad. Sci. 27:230-252. **Excerpt**: During a recently published study of postcranial osteology of fossil and living New World quails (Holman, 1961), skeletons of representatives of the families of galliform birds were examined in order to ascertain the status of the New World quails. It then became evident that in many cases the relationships between gallinaceous groups were reflected by the postcranial skeleton. At the present time I feel that it is best to retain the New World quails as a subfamily of the Phasianidae because of the characters that are shared with the grouse, pheasants, junglefowl, peacocks, and Old World quails. The Odontophorinae comprise the phasianid group that departs most radically from the cracid-like skeleton, although some parallel developments have taken place in the Old World quails of the subfamily Phasianinae.

152. Howard, H. 1962. Bird remains from a prehistoric cave deposit in Grant County, New Mexico. Condor 64:241-242. **Notes**: Mountain quail (*Oreortyx picta*) bones were collected from a cave on the north side of Howell's Ridge, Little Hatchet Mountains, Grant County, New Mexico. The bones were in Quaternary deposits.

153. Howard, H., and A. H. Miller. 1933. Bird remains from cave deposits in New Mexico. Condor 35:15-18. **Notes**: Authors identified remains found in cave deposits in the Pyramid Peak range, Organ Mountains of Dona Ana County, New Mexico. Mountain quail bones were found in Conkling Cavern and Shelter Cave from Quaternary deposits. In the accompanying table, *Oreortyx picta*, Plumed Quail, are noted as found in Shelter Cave and Rocky Arroyo.

154. Howell, A. B. 1917. Condition of game birds in east-central California. Condor 19:186-187. **Excerpt**: Most of my time during both years was spent at points between eight and nine thousand feet in altitude, which was an excellent location for both quail (*Oreortyx p. plumifera*) and grouse (*Dendragapus o. sierrae*). In

1914, both species were well represented, and although by no means common, especially the latter, both were apt to be encountered during a walk of a couple of miles through their haunts. In 1917, throughout a greater length of time, and during rambles that were of considerably greater extent, I saw neither quail nor grouse. This present scarcity I believe to be due more to the severe winter than to human agencies, for both birds make decidedly hard hunting. At least in the locality under consideration, their favorite habitat is in the vicinity of dense aspen thickets, and the tangles of manzanita, hazel and other brush on the dry hillsides and benches of the high Transition Zone, from which they flush to the timbered ravines. Such is the favorite haunt of the quail as well.

155. Hudson, G. E., P. J. Lanzillotti, and G. D. Edwards. 1959. Muscles of the pelvic limb in galliform birds. Am. Midl. Nat. 61:1-67. **Excerpt**: Although some of the appendicular muscles have been studied in a few gallinaceous birds by various investigators, no one has made a systematic attempt to work out in detail the similarities and differences between representatives of the various genera and families. Our study of examples of 25 genera is only a short step toward obtaining an over-all picture of the myology of the pelvic limb in this order. One of the most striking observations in regard to this group involves the similarity in sesamoids between the New World quails *Callipepla*, *Colinus*, *Odontophorus*, and *Lophortyx*, and the Old World partridge *Alectoris*. They not only have the number greatly reduced, but the same three are consistently present, although *Odontophorus* and *Alectoris* may have a fourth (Table II). *Oreortyx*, on the other hand, although otherwise fairly similar to other American quails studied, has 21 supernumerary sesamoids in the pelvic limb. It seems unlikely that this amazing similarity between *Callipepla*, *Colinus*, *Odontophorus*, *Lophortyx*, and *Alectoris* could be due to convergence. This throws considerable doubt on the validity of the Subfamily Odontophorinae and makes the examination of additional genera highly desirable.

156. Hudson, G. E., R. A. Parker, J. Vanden Berge, and P. J. Lanzillotti. 1966. A numerical analysis of the modifications of the appendicular muscles in various genera of gallinaceous birds. Am. Midl. Nat. 76:1-73. **Abstract**: Gross morphology of the wing and leg muscles was studied in representatives of 35 genera, including all families, subfamilies and *Opisthocomus*. A total of 175 items are considered, 82 in the wing and 93 in the pelvic limb. Each genus is compared with all other genera by two methods of numerical analysis, one using conventional correlation coefficients based on equal weighting, and a scoring system based on differential weighting of characters. Results are interpreted as justifying recognition of the Cracoidea for the Megapodiidae and Cracidae. Grouse are placed in the Tetraonidae, and the Phasianidae is considered to include the Odontophorinae, Phasianinae, Meleagridinae, Numidinae, and Pavoninae. *Opisthocomus* appears unrelated to the Galliformes and is separated in the Opisthocomiformes.

157. Hudson, G. E., and C. F. Yocom. 1954. A distribution list of the birds of southeastern Washington. Res. Stud. State Coll. Wash. 22(1):1-56.

158. Huntington, D. W. 1911. Our feathered game: a handbook of North American game birds. Charles Scribner's Sons, New York, N.Y. 396pp.

159. Hurley, J. B. 1926. Birds observed in Idaho, Washington, and Oregon. Murrelet 7(2):35-36.

160. Hurst, G. A., W. R. Davidson, T. DeVos, E. L. Kozicky, and A. D. Peoples. 1993. Strategic plan for quail management and research in the United States: issues and strategies -- releases of pen-raised quail. Pages 178-179 in K. E. Church and T. V. Dailey, eds. Quail III: Natl. Quail Symp. Kans. Dept. Wildl. and Parks, Pratt. **Excerpt**: As northern bobwhite populations declined over the past 3 decades, increasing numbers of quail enthusiasts have resorted to releasing pen-raised quail. Most state game agencies are no longer directly involved with release programs. Nevertheless, many private landowners continue to make releases of pen-raised quail the center of their game-bird management efforts, rather than focus on habitat improvement and limit their quail hunting to what the carrying capacity of the land will provide. The impact of releasing pen-raised quail in the midst of remnant wild quail populations is not understood. Therefore, managers and biologists should strive to err on the conservative side when considering use of pen-raised quail to provide recreational opportunities. The northern bobwhite is a game-bird resource that is treasured by a diverse user group, and should not be put in jeopardy by massive annual releases of pen-raised stock.

161. Idaho Department of Fish and Game. 1978. A plan for the future management of Idaho's fish and wildlife resources. Vol. 1: goals, objectives and policies 1975 - 1990. Id. Dept. Fish and Game, Boise. 170pp. **Notes**: This publication includes information on current mountain quail range and possible impacts of quail harvests. It highlights problems in mountain quail management including riparian habitat destruction and rehabilitation; limited knowledge of distribution, status, and ecological relationships of mountain quail populations; and lack of research into interspecific competition among upland game birds. This plan also includes a table comparing available quail habitat by land ownership, 1975, for each species of quail. Mountain quail have a total of 31,455 acres available under various ownership.

162. Idaho Department of Fish and Game. 1980. Upland Game Species Management Plan: 1981-1985. Boise, Id. 67pp. **Notes**: This report addresses the management problems and possible solutions of Idaho's four quail species as a group. General information is given on the present population status, future objectives, hunting seasons, bag limits, and season length. A possession limit of no more than 2 mountain quail is included within the recommended season framework.

163. Idaho Fish and Game Commission. 1951. Upland game birds of Idaho. 31pp. **Notes**: Includes a physical description, range, nest and young, food and cover, and enemies of the plumed quail.

164. Ingersoll, A. M. 1913. Great destruction of bird's eggs and nestlings in the Sierra Nevada. Condor 15:81-86. **Excerpt**: One nest of Plumed Quail (*Oreortyx p. plumifera*). The nest was evidently destroyed by an animal having sharp claws and long black hair -- presumably a skunk. Sticky pieces of egg-shell were scattered around the nesting hollow.

165. Islam, K. 1989. Taxonomic relationships of mountain quail populations in the Pacific Northwest and bordering states. Unpubl. Rep., Dept. Fish. and Wildl., Oreg. State Univ., Corvallis. 16pp. **Excerpt**: Mountain quail (*Oreortyx pictus*) have decreased in abundance, and contracted in portions of their range in eastern and northern parts of their distribution during the past two decades. It is unclear as to how much of this part of the range the birds were native. Discussions at a meeting held in Boise, Idaho (22-24 June, 1989) included the suggestion that mountain quail may be reintroduced to certain parts of their range from where they have been extirpated. Presumably, chances of successful reintroduction may be enhanced with the use of birds that are taxonomically and ecologically similar to the original inhabitants of a site. Dr. R. Gutiérrez and Mr. L. Brennan will be involved in an ecological assessment of mountain quail habitat. My interest is to address the taxonomic relationship of mountain quail in the northern and eastern parts of its range. Therefore, the purpose of this proposal is to identify locations and methodology for the collection of mountain quail in Oregon, Washington, Idaho, Nevada, and northern California.

166. Jenkins, H. O. 1906. A list of birds collected between Monterey and San Simeon in the Coast Range of California. Condor 8:122-130. **Excerpt**: *Oreortyx p. pictus*. Painted Quail. Most abundant in the Ceanothus thickets at higher altitudes (above 2000 feet). We saw a good many at the head of Big Creek and above camp in Partington canyon. They seldom flew but when hunted the flocks of six or a dozen birds seemed to depend upon escaping among the dark shadows of the underbrush for which they were so well colored. Once I passed within ten feet of a male that was calling softly to a brood of very young chicks. The chicks disappeared among the grass and leaves but the old bird remained motionless until I had gone away. The following morning another male was found leading a brood of young along the trail. In neither case was the female parent seen.

167. Jewett, S. G., and I. N. Gabrielson. 1929. Birds of the Portland Area, Oregon. Pac. Coast Avifauna No. 19. Cooper Ornithol. Club, Berkeley, Calif. 54pp. **Excerpt**: *Oreortyx picta palmeri* Oberholser. Coast Mountain Quail. This species was quite abundant during the period from December, 1904, to January 1907. Jewett collected a representative series in the area now included within the

city limits of Portland. On April 5, 1908, he saw a large covey of newly hatched young in south Portland. During recent years, the species has become much scarcer, and only a remnant of the large number once seen now remains within this district. The creation by the State Game Commission of an upland game preserve bordering the city of Portland on the south will help preserve the species, although most of this area is well settled and over-run with stray cats and dogs. The Mountain Quail is a permanent resident.

168. Jewett, S. G., W. P. Taylor, W. T. Shaw, and J. W. Aldrich. 1953. Birds of Washington State. Univ. Wash. Press, Seattle. 767pp. **Notes**: This text includes a physical description, status, historical and current distribution, and discussion of whether the mountain quail is indigenous to Washington.

169. Johnsgard, P. A. 1970. A summary of intergeneric new world quail hybrids and a new intergeneric hybrid combination. Condor 72:85-88. **Excerpt**: Lophortyx X Oreortyx. The area of geographic overlap between the Mountain Quail (*O. picta*) and the California Quail is considerable and includes much of California, Oregon, and western Washington . . . The earliest record of a hybrid between these species is that of Peck (1911), who described a specimen taken in 1911 in Harney County, Oregon. Hachisuka (1928) provided an illustration of this hybrid specimen. Peterle (1951) published a reproduction of a painting by L. A. Fuertes of a presumable wild hybrid in the collection of L. M. Loomis, the skin of which is no longer extant. There do not appear to be any hybrids between *Oreortyx* and *Lophortyx* produced in captivity, nor are there any naturally occurring or captive-bred hybrids known that involve the Mountain Quail and *Callipepla* or *Colinus*. With the possible exception of the introduced Bobwhite in northern Oregon . . . the current range of the Mountain Quail would preclude any natural hybridization with these species. Interestingly, Holman (1961) suggests that *Oreortyx* may actually be more closely related to *Callipepla* than to *Lophortyx*, which points out the fallacy of distinguishing genera primarily on the basis of crest condition.

170. Johnsgard, P. A. 1971. Experimental hybridization of the New World quail (*Odontophorinae*). Auk 88:264-275.

171. Johnsgard, P. A. 1973. Grouse and quails of North America. Univ. Nebr. Press, Lincoln. 553pp. **Notes**: This text includes information on ecological distribution, adult weights, egg characteristics and incubation periods, relationship of adult female weight to estimated egg and clutch weights, fertility and hatchability of hybrid quail eggs, reported clutch sized under natural conditions, egg hatchability and hatching success under natural conditions, estimates of early brood mortality under natural conditions, population densities in favorable habitats, covey sizes, home ranges, fall and winter age ratios, summary of major male social signals, states and provinces where grouse and quail were legal game in 1970, some estimated recent state and province harvests, relative hunting importance of grouse and quail species, and grouse and quails reported on Audubon Christmas counts,

1957-1968. There is also a paragraph addressing *Callipepla* x *Oreortyx* hybrids. The chapter on mountain quail includes the following sections: other vernacular names, range, subspecies, measurements, identification, field marks, age and sex criteria, distribution and habitat, population density, habitat requirements, food and foraging behavior, mobility and movements, vocal signals, evolutionary relationships.

172. Johnsgard, P. A. 1975. North American game birds of upland and shoreline. Univ. Nebr. Press, Lincoln. 183pp. **Notes**: This text includes information on habitat, food habits, altitudinal migration, nesting habits, water requirements, fall habitat requirements, social behavior, mate selection, nests, breeding, clutch sizes, nest and brood defense, male incubation, and brood tending. Also included are other vernacular names, range, identification, field marks, and age and sex criteria.

173. Johnsgard, P. A. 1988. The quails, partridges, and francolins of the world. Oxford Univ. Press, New York, N.Y. 264pp. **Notes**: The author provides a summary of the taxonomy, distribution, measurements, identification, general biology and ecology, social behavior, reproductive biology, and evolutionary relationships of mountain quail.

174. Johnson, C. A. 1990. Mountain quail habitat use and management in north-central Idaho: research proposal. Bur. Land Manage., Boise, Id. 5pp. **Notes**: This proposal provides rational for the Riggins, Idaho, mountain quail research project. Includes areas of concern, problem analysis, specific goals or objectives, administrative scope, and anticipated funding needs.

175. Johnson, C. A. 1992. Mountain quail fall and winter habitat use and management in north-central Idaho: research proposal. Bur. Land Manage., Boise, Id. 5pp. **Notes**: This proposal provides rational for continuation of the Riggins, Idaho, mountain quail research project. Includes areas of concern, problem analysis, specific goals or objectives, administrative scope, and anticipated funding needs.

176. Johnston, D. W. 1949. Populations and distribution of summer birds of Latah County, Idaho. Condor 51:140-149. **Excerpt**: *Oreortyx picta*. Mountain Quail. Near the county line just below Julietta an adult and approximately fifteen young were observed by Adams and the writer in a road cut on July 4. The adult and an undetermined number of young had double head plumes.

177. Jotter, E. V. 1918. Mountain quail scarce in Trinity County. Calif. Fish and Game 4(1):99. **Excerpt**: A general scarcity of mountain quail is reported in the Trinity National Forest, except at the lower elevations along the Trinity River. This condition is attributed mainly to the heavy snows of the past season, which prevented them from securing the usual amount of food. After the storm numbers of dead birds were found along the trails and roads in our region. The coyote is

also responsible for a heavy annual loss, as it is a well-established fact that great destruction, especially to the young, is due to these animals.

178. Judd, S. C. 1905. The bobwhite and other quail of the U.S. in their economic relations. U.S. Dept. Agric. Bur. Biol. Survey, Bull. 21. 66pp. **Excerpt**: Their [mountain quail] feeding hours are early in the morning and just before sundown in the evening, when they go to roost in the thick tops of the scrub live oaks. Their feeding habits are similar to those of the domestic hen. They are vigorous scratchers. This bird is especially fond of the leaves of clover and other leguminous plants. It feeds also on flowers, being known to select those of Compositae and blue-eyed grass (*Sisyrinchium*). Flowers, leaves, buds, and other kinds of vegetable matter form the 24.08 per cent marked miscellaneous. The food of the mountain quail of the arid regions has been studied in the laboratory of the Biological Survey. The stomachs examined, 23 in number, were collected in California. The food consisted of animal matter, 3 per cent, and vegetable matter, 97 per cent.

179. Kaeding, H. B. 1899. The genus *Junco* in California. Condor 1:79-81. **Notes**: Brief reference is made to *O. pictus* and *O. p. plumiferus* in a discussion of the regions of California together with many other bird species.

180. Kellogg, L. 1911. A collection of winter birds from Trinity and Shasta Counties, California. Condor 13:118-121. **Excerpt**: *Oreortyx picta picta*. Mountain Quail. Quite numerous at Helena on dry, brushy south slopes. Specimens taken, nos. 17299-17302, are distinctly of the coast form.

181. Kellogg, L. 1916. Report upon mammals and birds found in portions of Trinity, Siskiyou, and Shasta Counties, California, with descriptions of a new *Dipodomys*. Univ. Calif. Publ. Zool. 12(13):335-398. **Excerpt**: On July 8, on north fork of Coffee Creek, the writer caught sight of a weasel in pursuit of a mountain quail. The bird was clucking in a distressed manner and evidently leading the enemy away from where her chicks were. When the weasel got her to a safe distance he ran back, jumped over a log, and was seen to make off with a small victim in his mouth. The whole episode did not occupy two minutes and occurred in a clearing in broad daylight.

182. Keyes, C. R. 1905. Some bird notes from the central Sierras. Condor 7:13-17, 42-43. **Notes**: Observations on behavior, egg characteristics, clutch size, laying schedule, and nest location and characteristics. Author notes that more than one egg per day appears in some nests.

183. Kimball, H. H. 1922. Bird records from California, Arizona, and Guadalupe Island. Condor 24:96-97. **Excerpt**: *Oreortyx picta picta*. Mountain Quail. A small flock flushed near Adams, California, in October 1915.

184. Kitchin, E. A. 1922. Nesting notes at Tacoma in 1922. Murrelet 2:13-18. **Excerpt**: On May 23 a Mountain Quail was seen and heard in a bit of brushy land, evidently standing guard over a female on eggs.

185. Kitchin, E. A. 1934. Distributional check-list of the birds of the State of Washington. Northwest Fauna Series, No. 1. Pacific Northwest Bird and Mammal Soc., Seattle. 28pp. **Excerpt**: Mountain Quail (*Oreortyx picta palmeri*). Introduced in western Washington, where they became more than common. Now, as the forests are cut their districts are becoming restricted and their numbers diminishing.

186. Kotok, E. J. 1917. The automobile a factor in game decrease in El Dorado National Forest. Calif. Fish and Game 3:90-91.

187. Kuvlesky, W. P., Jr., B. D. Leopold, P. D. Curtis, J. L. Roseberry, and T. Hutton. 1993. Strategic plan for quail management and research in the United States: issues and strategies -- population dynamics and effects of hunting. Pages 180-181 in K. E. Church and T. V. Dailey, eds. Quail III: Natl. quail Symp. Kans. Dept. Wildl. and Parks, Pratt. **Excerpt**: Despite nearly 70 years of research on quail in North America, we have only a meager understanding of the mechanisms that regulate abundance and productivity of quail populations. Many state agencies and private landowners continue to use guidelines developed by Stoddard (1931) and Rosene (1969). However, many of these recommendations were developed during an era when land-use practices in agriculture and forestry were drastically different from what they are today. The workshop group on Hunting and Population Dynamics reached a consensus that 4 broad areas need to be addressed: (1) standardization of census and population monitoring methods, (2) issues related to maintaining a sustainable harvest of wild quail through hunting, (3) assessment of population response to management actions and fragmentation, and (4) adoption of a proactive philosophy for quail population and habitat management on both public and private lands. Additionally, some issues related to releases of pen-raised quail have a bearing on this workshop session.

188. Lahnum, W. W. 1944. A study of the mountain quail with suggestions for management in Oregon. Ph.D. Thesis, Oreg. State Univ., Corvalis. 127pp. **Note**: Repeated attempts to locate this document have failed. Library personnel at Oregon State University state that this document does not exist. Other sources (M. Pope, pers. comm.) state that Lahnum wrote the thesis, but it was never accepted or finalized. Lahnum never completed the requirements for the degree and the department's only copy of the draft thesis was destroyed in a fire.

189. Larrison, E. J. 1981. Birds of the Pacific Northwest: Washington, Oregon, Idaho and British Columbia. Univ. Press of Id., Id. Res. Found. 337pp. **Excerpt**: Irregular local resident in reduced numbers from northern Washington and northern Idaho (south from the Clearwater River) southward. Introduced into

Vancouver Island. Most numerous in Oregon. Scattered in the Puget Sound region; uncommon, but regular, resident in Kitsap and Mason Counties, Washington.

190. Larrison, E. J., and K. G. Sonnenberg. 1968. Washington birds: Their location and identification. Seattle Audubon Soc. 258pp. **Notes**: Authors include information about mountain quail in Steptoe Canyon along the breaks of the Snake River, Whitman Co., such as habitat requirements, range, native status, and abundance. Also include a summary of the life zones within the state, common species found within each zone, and maps showing the location and extent of each zone.

191. Larrison, E. J., J. L. Tucker, and M. T. Jollie. 1967. Guide to Idaho birds. Vol. 5. J. Id. Acad. Sci. 220pp. **Notes**: Authors discuss native status and historic introductions of the mountain quail in Idaho. Also include information on habitat, eggs, status (extremely local, uncommon to rare), mating and breeding, and food habits. Populations are said to exist from Kendrick to Lewiston, near Lake Waha, along the breaks of the Snake and lower Salmon Rivers, northeast of Boise, near Salmon City, and along the Owyhee Plateau from the Oregon line southeast to Bruneau Canyon.

192. Lawren, B. 1993. The case of the disappearing quail. Natl. Wildlife 31(6):40-43. **Excerpt**: In Idaho, where mountain quail are in serious trouble, new dams and cattle grazing have destroyed river and creekside brush. Now for the good news: Mountain quail in the forests of the Northwest, except in Idaho, appear to be holding their own. . . In the case of the mountain quail, logging activity in some areas is actually creating new habitat in the form of succession brush.

193. Leopold, A. S. 1939. Age determination in quail. J. Wildl. Manage. 3:261-265. **Excerpt**: 1. In most, and probably all, American quail the outer two primaries and the greater upper primary coverts of the juvenal plumage are normally retained through the postjuvenal molt, and are carried through the first year of life. 2. The presence of at least some of these juvenal coverts, which are either buff-tipped or mottled, is the best means of identifying a quail as a young bird. The plain gray adult coverts are acquired during the first postnuptial molt when the bird is a little more than a year old. 3. Juvenal primaries 9 and 10, also carried through the first year, tend to have pointed tips, whereas the adult primaries tend to have rounded tips. Due to intergradation of shape and obliteration of the difference by wear, this character is a less accurate index of age than the coloration of the coverts. 4. In a small percentage of cases, one or several of the juvenal coverts may be prematurely replaced by adult coverts during the postjuvenal molt. This tendency is most marked in the California and Gambel's quails. 5. Rarely, the distal two juvenal coverts and even the outer primaries may be retained through the first postnuptial molt and into the second year of life. This was observed in only two specimens of the California quail, but conceivable may occur in other species.

194. Leopold, A. S. 1953. Intestinal morphology of gallinaceous birds in relation to food habits. J. Wildl. Manage. 17:197-203.

195. Leopold, A. S. 1972. Wildlife of Mexico: the game birds and mammals. Univ. Calif. Press, Berkeley. 568pp. **Notes**: Text includes a detailed physical description, range, migration, habitat preferences, reproduction, and foods.

196. Leopold, A. S. 1977. The California quail. Univ. Calif. Press, Berkeley. 281pp. **Excerpt**: The Mountain Quail, *Oreortyx pictus*, occurs widely through California, from northern Baja California into Oregon. Its range, like that of the California Quail, has been extended to the north and east by transplant. Several species whose ranges overlap are separated on ecologic rather than geographic grounds. That is to say, they occupy different habitats in the same general area. This situation is well illustrated by the relationship between the California Quail and the Mountain Quail. The ranges of these two species overlap substantially. But on the ground there is actually a fairly clear differentiation of habitat with much less overlap than the map would indicate. The Mountain Quail occurs largely in conifer or oak timber, or in dense chaparral. The California Quail utilizes these cover types but usually frequents openings or edge situations rather than continuous dense cover. In some areas, Mountain Quail make substantial vertical migrations, moving well up into mountain forests in summer, dropping down to lower snowless zones in winter. On the west slope of the Sierra Nevada, for example, these seasonal movements may extend over distances of 50 miles or more. In winter the two species often are associated on the same ranges, and at times may even occur in mixed flocks. Yet it is clear that the Mountain and California quails are differently adapted and have evolved to utilize different habitats in close proximity to one another with a minimum of overlap or competition.

197. Leopold, A. S., R. J. Gutiérrez, and M. T. Bronson. 1981. North American game birds and mammals. Charles Scribner's Sons, New York, N.Y. 198pp. **Excerpt**: Mountain quail are unique among United States quail in that some populations undertake annual altitudinal migrations of considerable distance on foot between winter and summer ranges. Sierra Nevada populations breed in coniferous communities and winter in the lower chaparral zone. They may be locally abundant in the Sierra and Coast ranges, but they frequent such dense brush and steep slopes that they are hunted much less than California quail. The birds are very secretive and when pursued tend to run rather than fly, thus further compounding hunting difficulties. The California quail and mountain quail are sometimes sympatric, but competition between the species is avoided through habitat selection and differences in diet. The mountain quail is a "sequential specialist," hulling acorns in the fall; eating mushrooms, flowers, and greens in winter; and digging for bulbs (*Lithophragma*) in spring and summer (Gutiérrez 1980). Although the mountain quail does consume some seeds and greens of annual plants, it is not dependent on them, as is the California quail. Daily drinking

water is necessary during hot weather. The clutch size of the mountain quail is the smallest of all the species of United States quail, averaging 7 to 9. Fall coveys are also small (6 to 12) and generally represent family groups or aggregations of adults that were unsuccessful the previous breeding season. Pairing is monogamous and males, unlike those of other Unites States quail, presumably share incubation duties with their mates, as indicated by well-developed brood patches found on most mountain quail males during the breeding season.

198. Lewin, V. 1971. Exotic game birds of the Puu Waawaa Ranch, Hawaii. J. Wildl. Manage. 35:141-155. **Abstract**: During the past decade a unique bird importation program has been undertaken on the Puu Waawaa Ranch of Leeward Hawaii Island. Thirty-five kinds (representing 33 species) of upland game birds, together with one species of waterfowl, natives of four continents, have been liberated. The origin, release data, site, and subsequent history are described for each of the exotic game birds released by the Puu Waawaa Ranch owners and by the State Division of Fish and Game on the island. Five game birds are still undergoing rapid range extension, 12 are maintaining their present population levels, and 18 are apparently unsuited to this area. The avifauna of Hawaii has been increase by the importation program but an immediate problem, with regard to possible deleterious effects on native birds, arises from the practice of liberating mainland-type mallards. The mainland mallard (*Anas platyrhynchos*) is closely related to the koloa or Hawaiian duck (*A. p. wyvilliana*) and poses a distinct genetic threat to the endemic form through hybridization. **Excerpt**: Mountain quail (*Oreortyx pictus*): This species was encountered on one occasion. On June 28, 1966, a male in near-breeding condition (testis 10.1 X 3.6 mm) was collected from a covey of six, within 0.5 mile of one of the original release sites. A small population thus survives around this mountain sanctuary (M7), where 52 birds were released in 1960, at 4,225 feet elevation, and where pukeawe bushes (*Styphelia temeiameiae*) form a predominant understory between widely scattered ohia trees. Two additional releases, totaling 36 birds, were made on two other sanctuaries in 1961 and 1963. All birds were of California game-farm origin.

199. Linsdale, J. M. 1936. The birds of Nevada. Pacific Coast Avifauna 23:1-145. **Notes**: Historical sightings or collections are documented from northwest of Reno; Incline on Lake Tahoe; Virginia Mountains near Pyramid Lake; Carson City; Big Creek Ranch, and Big and Alder creeks of the Pine Forest Mountains; Cat and Cottonwood creeks on Mount Grant; Birch and Kingston creeks of the Toyabe Mountains; White Mountains, Trail Canyon, Mount Magruder, and Little Log Spring in Esmeralda County; Granite Creek in Washoe County; and Jackson Mountain in Humboldt County.

200. Linsdale, J. M. 1951. A list of the birds of Nevada. Condor 53:228-249. **Excerpt**: Mountain Quail. *O. p. picta* is a sparse resident in the mountains of western part of the state; possibly not native at every place it now occurs.

201. Mailliard, J. 1921. Notes on the birds and mammals of Siskiyou County, California. Proc. Calif. Acad. Sci. Ser. 4(11):73-94.

202. Mailliard, J. 1923. Fall field work in Plumas and Yuba Counties, California, in 1922. Proc. Calif. Acad. Sci. Ser. 4(13):29-41.

203. Mailliard, J. 1923. Further notes on the birds and mammals of Siskiyou County, California. Proc. Calif. Acad. Sci. Ser. 4(13):7-28.

204. Mailliard, J. 1928. The birds and mammals of Modoc County, California. Proc. Calif. Acad. Sci. Ser. 4(6):261-359.

205. Malcomson, R. O. 1960. Mallophaga from birds of North America. Wilson Bull. 72:182-197.

206. Mallette, R. D. Date Unknown. Upland game of California. Second ed. California Dept. Fish and Game, Sacramento. **Excerpt**: The mountain quail is the largest of the native quail in North America. It is widely distributed over approximately 45 percent of the state in suitable habitat in the mountainous areas from the Mexican to the Oregon borders. Population densities do not reach those of the smaller quail. Approximately 5 percent of the quail taken by hunters in California are mountain quail. In 1968 this was estimated at 110,000 to 120,000 birds. **Notes**: The author also provides general information on physical description, migration behavior, covey size and content, reproduction and parental care, diet, voice, and consumptive values.

207. Marshall, J. T. 1988. Birds lost from a giant sequoia forest during fifty years. Condor 90(2):359-372. **Abstract**: Not all forest birds species breeding on Redwood Mountain, Tulare County, California in the 1930s are still there in the 1980s. Over the 50 years virgin giant sequoia forest of the saddle and east slope (within Kings Canyon National Park) remains unchanged but has lost the Olive-sided Flycatcher (*Contopus borealis*). The mixture of old and second-growth sequoias of Whitaker's Forest, where pines and undergrowth were removed and snags eliminated, is missing the Mountain Quail (*Oreortyx pictus*), Flammulated Owl (*Otus flammeolus*), North Pygmy-Owl (*Glaucidium gnoma*), Spotted Owl (*Strix occidentalis*), Hairy Woodpecker (*Picoides villosus*), and Olive-sided Flycatcher. Though unchanged today, the riparian alders of Eshom Creek on the west slope have lost Swainson's Thrush (*Catharus ustulatus*). Drastic logging by Sequoia National Forest has driven all of the above from the west slope ponderosa pine forest that surrounds Whitaker's Forest. New birds established at Whitaker's Forest by 1986 are the Common Raven (*Corvus corax*), House Wren (*Troglodytes aedon*), and Lincoln's Sparrow (*Melospiza lincolnii*). Intrusion of Brown-headed Cowbirds (*Molothrus ater*) has begun without yet affecting two abundant species of vireos. The Pileated Woodpecker (*Dryocopus pileatus*) is reduced; the Winter Wren (*Troglodytes troglodytes*) has greatly increased. I attempt to explain

avifaunal changes by comparing habitats over the 50-year interval. Disappearance of the flycatcher and thrush from unchanged, prime habitat must be caused by destruction of corresponding forests in Central America, where these birds maintain their winter territories.

208. Mason, L. 1984. Habitat use by female mountain quail in western Oregon. Unpubl. Res. Proposal. Dept. Fish. and Wildl., Oreg. State Univ. 10pp. **Notes**: Proposal objectives are to 1) describe components of foraging and nesting habitats used by female mountain quail during pre-nesting, incubation, and early brooding season, and 2) describe home range of mountain quail during nesting and brooding periods. Research was never conducted, no data was gathered, and no subsequent reports were written (M. Pope, Pers. Comm.).

209. Masson, W. V., and R. U. Mace. 1970. Upland game birds. Oreg. State Game Comm., Portland. Bull. No. 5. 44pp. **Excerpt:** Mountain quail are found in nearly every county of the state with the best populations located in the Coast and Cascade ranges and Malheur, Baker, and Wallowa Counties in eastern Oregon. Elsewhere, only scattered coveys are present. Brushy foothills, cut-over areas, edges of clearings, and burns are preferred in western Oregon, while the brushy draws and creek bottoms along foothills are favorite haunts east of the Cascades. Agricultural areas are not generally inhabited. **Notes**: Authors also include the following information on the subspecies *Oreortyx picta palmeri* and *O. p. picta*: physical description, mating and nesting habits, nests, clutch size, incubation, chick development, brood rearing, food habits, covey formation, roosting, migration, and escape behavior.

210. Mattocks, P. W. 1986. Northern Pacific Coast region: osprey through quail. Am. Birds 40(5):1245.

211. Mayr, E., and L. L. Short. 1970. Species taxa of North American birds. Publ. Nuttall Ornithol. Club 9:1-127.

212. McGregor, R. C. 1899. Some summer birds of Palamar Mountains, from the notes of J. Maurice Hatch. Condor 1:67-68. **Excerpt**: This list of birds, observed by Mr. Hatch on the Palamar Mountains, between June 16 and 21, 1897, . . . *Oreortyx pictus plumiferus*.-- Fairly common. A nest found June 19, contained 5 well incubated eggs.

213. McGregor, R. C. 1901. A list of the land birds of Santa Cruz County, California. Cooper Ornithol. Club, Pacific Coast Avifauna. 2:1-22.

214. McLean, D. D. 1930. The quail of California. California Div. Fish and Game Bull. 2. 47pp. **Notes**: The author includes the painted quail (*Oreortyx picta picta* Douglas) and the mountain quail (*O. p. plumifera* Gould) and provides information on other names, physical description, general distribution, association (habitat),

habits (voice, traveling, breeding, migration, nesting, nest parasitism by valley quail, feeding, home range, proximity to water, roosting, flushing during hunting, flavor, captive breeding, and predators), and foods. There is also a short section on the introduction of mountain quail and plumed quail into other states and countries.

215. Mead, R. 1962. A method of distinguishing mountain and valley quail by skeletal analysis. Calif. Fish and Game 48(2):117-121. **Excerpt**: The geographic ranges of the mountain quail (*Oreortyx picta*) and the valley quail (*Lophortyx californica*) frequently overlap. For this reason, an ecologist working on a population study, a naturalist or a paleontologist might wish to distinguish these species on the basis of skeletal remains. This paper proposes a method of identifying a single specimen without the use of other known skeletons for comparison.

216. Merriam, C. H. 1899. Results of a biological survey on Mount Shasta. USDA Div. Biol. Surv. North Am. Fauna. No. 16. 179pp.

217. Merrill, J. C. 1898. Notes on the birds of Fort Sherman, Idaho. Auk 15:14-22. **Excerpt**: I may say that early in 1897 about ten pairs of *Oreortyx pictus*, captured near Puget Sound, were liberated near the northern base of Mica Peak, and it was proposed to introduce the Bob white.

218. Messing, H. J. 1986. A late Pleistocene-Holocene fauna from Chihuahua Mexico. Southwest. Nat. 31:277-288. **Abstract**: Analysis of matrix from a small cave near Ciudad Jimenez, Chihuahua, Mexico, has revealed some fossils of probable Late Pleistocene-Holocene age. Extinct taxa include *Capromeryx* and *Coragyps occidentalis*. Extralimital finds include *Microtus pennsylvanicus*, *Cryptotis parva*, *Meotoma lepida*, *Cynomys* sp., and *Mustela nigripes*. Other possible extralimital forms are *Neotoma ? micropus*, *Meotoma cf. floridana*, *Neotoma ? cinerea*, and ? *Oreortyx pictus*. A new genus of rabbit is being described by Russel and Harris. Aquatic forms comprise the majority of the avian remains. Shells of the mollusk *Humboldtiana cf. torrei* were recovered. Lack of provenience data and accurate dates on the remains prevents any certain paleoreconstruction of the environment. However, speculation from the forms recovered indicates that the Late Pleistocene-Holocene of southwest Chihuahua probably was more mesic than today.

219. Michael, C. W. 1936. New nesting records for the Yosemite Valley. Condor 38:85-86. **Excerpt**: Mountain Quail (*O. picta*). For the first time in fifteen years these birds were noted on the valley floor during the month of July.

220. Michael, E. 1939. High lights in Yosemite bird reports for the summer of 1939. Yosemite Nat. Notes 18:126-127.

221. Miller, A. H. 1941. A review of centers of differentiation for birds in the western Great Basin Region. Condor 43:257-267. **Excerpt**: The race of Mountain Quail (*O. picta eremophila*), a bird of the mountains but not of the highest levels, is inseparable from populations in the southern Sierra Nevada and the mountains of southern California.

222. Miller, A. H. 1946. Endemic birds of the Little San Bernardino Mountains, California. Condor 48:75-79. **Notes**: The author identifies *Oreortyx picta russelli* as a new subspecies of mountain quail and includes a highly detailed physical description. Range of this subspecies includes the chaparral and pinon-juniper woodland of Little San Bernardino Mountains, from vicinity of Morongo Valley eastward, and suitable habitat near Twentynine Palms and Eagle Mountain, Riverside and San Bernardino counties, California. Text includes specific collection sites for specimens, compares the coloring of *russelli* with other subspecies, and discusses the general geographic range for each subspecies.

223. Miller, A. H. 1951. An analysis of the distribution of the birds of California. Univ. Calif. Publ. Zool. 50:531-624.

224. Miller, A. H., and R. C. Stebbins. 1964. The lives of desert animals in Joshua Tree National Monument. Univ. Calif. Press, Berkeley. 452pp. **Notes**: Includes information on the physical description, range, and occurrence of mountain quail in the monument. The authors included more extensive information on abundance, water use, habitat, voice, behavior, covey sizes, flight, foods, foraging methods, dusting sights, predation, reproduction, brood patches, age ratios, productivity, weights, plumage, taxonomy, and other general observations.

225. Miller, E. V. 1950. The life history and management of mountain quail in California. Final Prog. Rep., Proj. W-19-R. Calif. Dept. Fish and Game, Sacremento. 38pp. **Notes**: This report contains detailed information on social behavior, accidents, predation, censusing, migration and movement, reproduction, population characteristics, cover, water use and requirements, hunting, statewide surveys, and management recommendations. Charts and tables provide information on nest success, nest characteristics, nest predation, cover types, percent cover, distance from water, rainfall vs. nesting success, hunting mortality, covey sizes, and average weight. Graphs compare percent use vs. slope, herbaceous cover, interspersion of cover, clumping of cover, distance from cover, tree density, shrub height, and others.

226. Miller, L. H. 1911. Avifauna of the Pleistocene cave deposits of California. Univ. Calif. Publ. Geol. 6:386-400.

227. Miller, L. H. 1912. Contributions to avian paleontology from the Pacific Coast of North America. Univ. Calif. Publ. Geol. 7:61-115.

228. Mitchell, H. M. 1878. California mountain quail. For. and Stream 9:413.

229. Moore, J., M. Freehling, R. Platenberg, L. Measures, and J. A. Crawford. 1989. Helminths of California Quail (*Callipepla californica*) and Mountain Quail (*Oreortyx pictus*) in Western Oregon. J. Wildl. Diseases 25:422-424. **Abstract**: Eighty California Quail (*Callipepla californica*), collected from the E. E. Wilson Wildlife Area near Monmouth, Oregon (USA) during a 22 mo. period, were examined for gastrointestinal helminths. Eight birds were infected with three species of nematodes, *Heterakis isolonche*, *Dispharynx nasuta*, and *Capillaria* sp., and two species of cestodes, *Rhabdometra odiosa* and *Davainea* sp. Except for *D. nasuta*, prevalence did not exceed 5% despite mesic conditions in the collection area. Two mountain quail (*Oreortyx pictus*) were collected from Lane County, Oregon (USA), near Blue River Reservoir; both were infected with the nematode *Trichostrongylus tenuis*.

230. Morache, M., C. Chaffin, J. Naderman, and W. Melquist. 1985. Nongame Management Plan: 1986 to 1990. Species Management Plan, Id. Dept. Fish and Game, Boise. 26pp. **Excerpt**: Several species have restricted ranges, specific habitat requirements, or low numbers which may make them vulnerable to elimination from the state. Some species may be included in this category because our knowledge of them is limited and not because they are actually threatened. This classification may be used as a basis for preparing, in conjunction with other state and federal wildlife agencies, a state list of Threatened and Endangered species. Specifics on these species are provided in the appropriate section of this plan or other plans as indicated. These species are listed here to emphasize the Department's concern regarding their status in Idaho. Mountain quail: Upland game plan.

231. Moseley, R., and C. Groves. 1990. Rare, threatened and endangered plants and animals of Idaho. Nongame and Endangered Wildl. Prog., Id. Dept. Fish and Game, Boise. 33pp. **Notes**: Mountain quail (*Oreortyx pictus*) is listed by the Idaho Dept. Fish and Game as a Species of Special Concern, Category A - Priority Species. Species of Special Concern are "native species which are either low in numbers, limited in distribution, or have suffered significant habitat losses." Category A species are those "which meet one or more of the criteria above *and* for which Idaho presently contains or formerly constituted a significant portion of their range (i.e., priority species)." The Bureau of Land Management considers mountain quail a Sensitive Species: "those species that are 1) under status review by USFWS/NMFS; or 2) whose numbers are declining so rapidly that federal listing may become necessary; or 3) with typically small and widely dispersed populations; or 4) those inhabiting ecological refugia or other specialized or unique habitats." The U.S. Forest Service classifies mountain quail as a Sensitive Species in Region 4 National Forests in Idaho: "species identified by the Regional Forester for which population viability is a concern as evidenced by significant current or predicted downward trends in population numbers or density or significant current

or predicted downward trends in habitat capability that would reduce a species' existing distribution. Mountain quail's heritage rank is G5/SE?: G5=demonstrably secure throughout its range, though it may be quite rare in parts of its range, especially at the periphery; SE?=possibly exotic or introduced to the state of Idaho.

232. Moseley, R., and C. Groves. 1992. Rare, threatened and endangered plants and animals of Idaho. Nongame and Endangered Wildl. Prog., Id. Dept. Fish and Game, Boise. 38pp. **Notes**: Mountain quail (*Oreortyx pictus*) is listed by the Idaho Dept. Fish and Game as a Species of Special Concern, Category A - Priority Species. Species of Special Concern are "native species which are either low in numbers, limited in distribution, or have suffered significant habitat losses." Category A species "meet one or more of the criteria above *and* for which Idaho presently contains or formerly constituted a significant portion of their range (i.e., priority species)." U.S. Fish and Wildlife Service classifies this species as a C2 Candidate Species: "Taxa for which information now in possession of the U.S. Fish and Wildlife Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed rules. Further biological research and field study may be needed to ascertain the status of taxa in this category." The Bureau of Land Management considers mountain quail a Sensitive Species: "those species that are 1) under status review by USFWS/NMFS; or 2) whose numbers are declining so rapidly that federal listing may become necessary; or 3) with typically small and widely dispersed populations; or 4) those inhabiting ecological refugia or other specialized or unique habitats." The U.S. Forest Service classifies mountain quail as a Sensitive Species in Regions 1 and 4 National Forests in Idaho: "Those animal species identified by the Regional Forester for which population viability is a concern as evidenced by significant current or predicted downward trends in population numbers or density or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution." Mountain quail's heritage rank is G5/SE: G5=demonstrably secure throughout its range, though it may be quite rare in parts of its range, especially at the periphery; SE=exotic or introduced to the state of Idaho.

233. Murphey, K. A. 1991. The Jarbidge rock art site: pictographs in the high desert country of southwestern Idaho. Id. Archaeol. 14(2):17-32. **Notes**: A figure representing a pictograph found at the Jarbidge rock site includes a sketch of an upland bird with distinct side bars and a single head plume. This pictograph may provide evident that mountain quail existed in Owyhee county prior to historic transplants and is therefore native to Idaho.

234. Murray, T. B. 1938. Upland game birds in Idaho and their future. Univ. Id. Bull. 33:55-60. **Excerpt**: Enormous coveys of California mountain quail were once found along the main course of the Salmon River in the vicinity of Whitebird and

extending south to the vicinity of Shoshone Falls in the Snake River canyon to the vicinity of the present town of Twin Falls and extending well back into the mountainous ranges adjacent to the open valleys and plains. It is reported that this bird was at one time comparatively numerous along the Clearwater River drainage extending from Lewiston to Stites. California mountain quail have been reduced more than 50 per cent in western Idaho by drouth and drastic changes in vegetative ground cover. Suitable food and cover have also been reduced more than 50 per cent in volume and extent during the past 30 years.

235. Neale, G. 1915. The California valley quail and introduced game birds. Vol 1. Calif. Fish and Game, San Francisco, Calif.

236. Nelson, A. L., and A. C. Martin. 1953. Game bird weights. J. Wildl. Manage. 17:36-37.

237. Nelson, E. W. 1875. Notes on birds observed in portions of Utah, Nevada, and California. Proc. Boston Soc. Nat. Hist. 17:338-365.

238. Nethaway, G. 1933. About the mountain quail. Game Breeder 37:151, 153. **Notes**: This article provides information on the habits of captive mountain quail and observations of wild birds. The author distinguishes between two varieties of mountain quail; the "brown-backed variety of Washington" and the "blue-backed variety of California." Information is provided on sex determining behavior, voice, and comparisons to Gambel's quail. Data indicates that the following 10 measurements are useful in distinguishing between mountain and valley quail: length of the ulna, humerus, tarsometatarsus, keel, and tibiotarsus; depth of the keel, clavicle keel, and ventral manubrial spine; width of the coracoid and ischium.

239. Nutall, T. 1832. A manual of the ornithology of the U.S. and of Canada land birds. Cambridge, Mass. 683pp.

240. Nuttall, T. 1840. Manual of the ornithology of the United States and Canada: the land birds. Hilliar, Gray & Co., Boston. 832pp.

241. O'Renick, J. 1993. Coast Range quail. Outdoor Life Oct.:75. **Excerpt**: We were hunting mountain quail in western Oregon's Tioga Game Management Area, west of Roseburg. Although Oregon has lots of quail, their distribution is spotty. Here, on the eastern slope of the Coast Range from the Umpqua River south is the state's hotspot. . . Although you have to fight your way through those Scotch boom thickets and five-year-old, grown-over former clearcuts, that is where you'll find coveys of quail. The birds also like downed logging waste and other thickly vegetated areas often covered with poison oak or blackberry briers. . . Most western Oregon mountain quail are found on U.S. Forest Service, Bureau of Land Management or timber company land that is open to the public.

242. Oates, E. W. 1901. Catalogue of the collection of birds' eggs in the British Museum (Natural History). Vol. 1. Taylor and Francis, London. 245pp. **Excerpt**: The single egg of the Plumed Partridge, or Mountain Quail, in the Collection is of a regular oval shape, smooth, with little gloss and a pale creamy-buff colour. It measures 1·31 by 1.

243. Oberholser, H. C. 1923. Notes on the forms of the genus *Oreortyx* Baird. Auk 40:80-84. **Notes**: Author includes physical descriptions, history of the nomenclature, general range, and geographical variations of coastal and interior forms of mountain quail.

244. Ogden, A. 1991. Drainages inventoried by Idaho Department of Fish and Game. Unpubl. Rep. Id. Dept. of Fish and Game, Boise. 35pp. **Notes**: This report details efforts to inventory historic mountain quail habitats in southwest Idaho during the spring of 1991. Drainages inventoried included Duncan, Cottonwood, Shoofly, Babbington/Alkali, Custer, Indian, Wildhorse, Bennett, Little Canyon, King Hill, and Sturgill creeks as well as Halfway Gulch. No mountain quail were heard or observed during the inventory, but mountain quail were found on U.S. Forest Service lands in the Middle Fork Boise drainage.

245. Ogilvie-Grant, W. R. 1893. Catalogue of the game birds in the collection of the British Museum. British Mus. Nat. Hist., London. 581pp.

246. Ogilvie-Grant, W. R. 1897. A hand-book to the game-birds. Vol. 2. Edward Lloyd, Ltd., London. **Notes**: Author includes information on nests, nesting habitat, clutch size, and eggs. Text also includes a general description of physical characteristics, range, and habits. The narrative on habits is composed of quotes from C. A. Alen and Captain Bendire.

247. Olson, A. C., Jr. 1942. A preliminary annotated check-list of the birds of northern Idaho. M.S. Thesis, Univ. Id., Moscow. 68pp. **Excerpt**: *Oreortyx picta*. Mountain Quail. -- Two adult males were collected by Arvey ten miles southwest of Riggins, Idaho County, in May, 1939. I observed two males one mile north of Kendrick, Latah County, on April 12, 1942. They seem restricted to a typical transition type of plant association.

248. Ormiston, J. H. 1966. The food habits, habitat and movements of mountain quail in Idaho. M.S. Thesis, Univ. Id., Moscow. 39pp. **Notes**: Objectives of the study were to evaluate food habits, habitats used, and plumage differences between the sexes. Data was collected from the Julietta area and from Big Canyon Creek, Idaho. Ormiston includes a general description, distribution, food habits, evaluation of plumage differences, and both seasonal and daily movements of mountain quail in these two study areas. Food habits information results from the analysis of 60 mountain quail crops. The author concludes that mountain quail in Idaho occur in brushy draws along the breaks of the Snake, Salmon, and

Clearwater Rivers; that seasonal movements are limited; that movements were related to availability of preferred foods; and that free water is essential. Emphasizes the need for greater knowledge of population dynamics and description of ideal habitats.

249. Orr, R. W. 1979. Raising mountain quail. Game Bird Breeders, Aviculturists, and Conserv. Gaz. 28(8):7-8. **Notes**: This article includes information on hatching eggs, substitute brooding hens, parasites, age of reproduction, breeding combinations (single pair, trios, multiple pairs), and the effect of a mild winter on laying success.

250. Pearson, T. G., ed. 1917. Birds of America. Doubleday & Co., Inc., Garden City, N.Y. **Notes**: Author includes information on other names, general description, nest and eggs, distribution, and general comments on life history and behavior.

251. Peck, M. E. 1911. A hybrid quail. Condor 13:149-151. **Excerpt**: An interesting hybrid quail, evidently *Oreortyx pictus plumiferus* X *Lophortyx californicus californicus*, was secured by Mr. Geo. D. Peck, April 1, 1911, on Silves River, Harney Co., Oregon, about two miles above the town of Burns. The specimen is a male in high plumage, and was one of a small flock of quail that a man had been feeding about his place during the winter. Whether there were any other hybrids in the flock, or whether the rest were all *O. p. plumiferus*, was not made out.

252. Peckham, M. C. 1971. Quail disease (ulcerative enteritis). Pages 185-233 in J. W. Davis, R. C. Anderson, L. Karstad, and D. O. Trainer, eds. Infectious and parasitic diseases of wild birds. Ia. Sate Univ. Press, Ames.

253. Pemberton, J. R., and H. W. Carriger. 1915. A partial list of the summer resident land birds of Monterey County, California. Condor 17:189-201. **Excerpt**: *Oreortyx picta plumifera*. Mountain Quail. Noted on the upper slopes of Santa Lucia Peak above 4000 feet, at the head of the Jolon valley, and in the coniferous forests near Cone Peak. It was not a common bird, but its loud whistling note was frequently heard.

254. Peterle, T. J. 1951. Intergeneric galliform hybrids: a review. Wilson Bull. 63:219-224.

255. Peters, J. L. 1934. Check-list of birds of the world. Vol. 2. Harvard Univ. Press, Cambridge, Mass. 401pp. **Notes**: Includes a brief description of the geographic distribution and reference to a few citations that refer to *Oreortyx picta palmeri*, *O. p. picta*, and *O. p. confinis*.

256. Peterson, R. T. 1961. A field guide to western birds. Houghton & Mifflin Co., Boston. 309pp.

257. Phillips, J. C. 1928. Wild birds introduced or transplanted in North America. U.S. Dept. Agric. Tech. Bull. 61. 63pp. **Notes**: This report summarizes introduction efforts of mountain quail (*Oreortyx pictus pictus* and *O. p. palmeri*) into Alabama, Nebraska, North Carolina, Washington, Idaho, Montana, Vancouver Island, and New Zealand. Information is provided, where available, on the subspecies introduced and on subsequent success of introduced birds.

258. Pierce, W. M. 1916. More bird notes from Big Bear Valley, San Bernardino Mountains. Condor 18:177-182. **Excerpt**: *Oreortyx picta plumifera*. Plumbed Partridge. Abundant near Baldwin Lake, June 19; several flocks of young of various sizes seen, from small birds to some nearly half-grown. I saw a flock of very small young, eight or ten of them, at Bluff Lake on June 20, and on June 29, two broods of small young in the same locality. In an open field near the I. S. Ranch Store I saw an old bird on June 24, with three small young not over a day old.

259. Pierce, W. M. 1916. Notes from the San Bernardino Mountains, California. Condor 18:34. **Excerpt**: *Ortyx picta plumifera*. Plumed Quail. I saw a pair of these birds on June 27 in the buckthorn along the lake shore near the I. S. Ranch. Their actions showed that they had a family of young. These are the only ones that I have ever seen in Bear Valley during several collecting trips there.

260. Pierce, W. M. 1925. Nesting of Leconte thrasher, blue-fronted jay, plumed quail, and black-chinned sparrow. Oologists' Rec. 5:80-84.

261. Pierce, W. M. 1933. Rattlesnake and plumed quail. Calif. Fish and Game 19:62.

262. Pine, D. S. 1981. Identifying sex of mountain quail by length of crest plume. J. Wildl. Manage. 45:1056-1057. **Excerpt**: Between 1972 and 1979 I measured the head plumes of 105 mountain quail (*Oreortyx pictus*) that I shot in fall in Monterey County, California. My purpose was to test the hypothesis that plume length is a valid external indicator of sex for this species, as they otherwise are similar in appearance. The sex of each bird was determined by internal examination of gonads. Birds of the year were differentiated from adults by examination of the greater upper primary coverts, which are buff-tipped in young and steel-gray in adults (Godin 1960). The mean plume length of males including both young and adults ($N = 53$) was 89.6 mm ($SD = 4.5$ mm). Females of all ages ($N = 52$) had a mean plume length of 73.0 mm ($SD = 4.7$ mm). The probability that the greater plume length for males is due to chance is less than 1 in 1,000 (*t* test). There was a narrow region of overlap in plume lengths from 81.0 to 82.5 mm, involving 3 females with exceptionally long plumes and 5 males with exceptionally short plumes. Plume lengths were distinctive in the other 97 birds. By October, there were no differences ($P > 0.05$) in plume lengths between adults and birds of the year. Plume lengths of adult and young males were essentially equal, as were those of adult and young females (Table 1).

263. Pope, M. S., and J. Crawford. 1998. Annual report: mountain quail research 1997-98. Game Bird Research Program, Oregon State Univ., Corvallis, OR. 35pp. **Excerpt**: In response to the lack of information on mountain quail in Oregon, the Game Bird Research Program initiated a research project in 1994 to: 1) validate and increase the precision of current mountain quail habitat models, 2) determine the life history attributes (movements, survival, habitat use, reproductive rate and diet selection) of mounatin quail in an area where populations are decloning (NE Oregon), 3) determine the same life history attributes of mountain quail in an area where populations are stable to increasing (SW Oregon), 4) reintroduce mountain quail on the basis of life-history attributes in areas where they were extirpated (NE Oregon), and 5) evaluate the landscape structures that may influence dispersal, recolonization, and intra-species interactions of mountain quail in northeastern Oregon. **Notes**: Report presents results of 1997 and 1998 field work including number of birds captured and released with radio transmitters, survival, movements, reproductive behavior and nest success of translocated and resident birds, and food habits of quail in western Oregon.

264. Rahm, R. 1938. Quail range extension in the San Bernardino National Forest. Calif. Fish and Game 24(2):133-158. **Excerpt**: The studies made during 1936 and 1937 on a quail range extension project in and adjacent to the San Bernardino National Forest in southern California are presented in this report. The project, initiated in the summer of 1936, was prompted by the development of a watering device perfected by James Moffit and used successfully by the California Division of Fish and Game within its established quail refuges. The U.S. Forest Service became interested in this device because of the 3,000,000 acres of foothill and woodland areas within the national forests that are either actual or potential quail range and which could perhaps be made more suitable for quail by their use. Many thousands of acres of this area are waterless during the summer and the present studies are aimed at securing and building the factual and biological foundation on which the actual field work of quail range extension, particularly through water development on these waterless areas, might proceed. It was expected that the installation of water on our desert range would attract valley quail; instead, about 75 per cent of the birds using the water troughs were mountain quail. In any area where the brush cover is such that the hunters consider it "good hunting country," it is believed that the mountain quail will not stand up under even medium shooting. They are large, slow moving targets and have such strong terrestrial instincts that they are difficult to flush. They will stand stupidly around and be shot on the ground. On this forest, it is believed, they owe their present survival to the exceptionally heavy brush stands where they are to be found during the hunting season. If valley quail cannot be attracted to the area, an experiment in artificial planting is recommended. If and when the area is opened to hunting, the brunt of the shooting should not be borne by the mountain quail. The extension of mountain quail range is not recommended.

265. Ray, M. S. 1903. A list of the land birds of Lake Valley, central Sierra Nevada Mountains, California. Auk 20:180-193.

266. Ray, M. S. 1905. A third trip to the high Sierras. Auk 22:363-371.

267. Ray, M. S. 1913. Some further notes on Sierran field-work. Condor 15:198-203. **Notes**: Mountain quail, *O. picta plumifera*, was seen at Phillips' station (6500-7600 feet), Forni's (6000-9000 feet), and at Desolation Valley (8000-8500 feet) between June 9-14, 1910.

268. Ray, M. S. 1914. Some discoveries in the forest at Fyffe. Condor 16:57-70. **Excerpt**: I noted four rich buffy eggs of the Mountain Partridge (*Oreortyx picta plumifera*) lying in a grass and leaf-lined hollow which a dead pine branch and surrounding weeds partially concealed.

269. Reed, C. A. 1912. American game birds. Doubleday, Page & Co., Garden City. 64pp.

270. Reed, C. A. 1965. North American birds' eggs. Dover Publ., New York, N.Y. 372pp. **Notes**: The author includes information on the distribution, physical description, habitat, nests, clutch size, eggs, and plumage comparisons of *Oreortyx pictus*.

271. Rhoads, S. N. 1893. The birds observed in British Columbia and Washington during spring and summer, 1892. Proc. Acad. Nat. Sci. Philadelphia. 1893:21-65. **Excerpt**: *Oreortyx pictus*. Mountain Partridge. A few seen at Nisqually. Tacoma, Edward Bros. The vicinity of Puget Sound at present is debatable ground between the introduced and indigenous birds of this species. The northern limit of *Oreortyx pictus* in Washington, prior to the introduction of California and Oregon birds probably reached the southern shores of Puget Sound. At present they reside in suitable places over eastern Washington, southern Vancouver Island and the southern Cascade region of British Columbia.

272. Richards, E. B. 1924. A list of the land birds of the Grass Valley District, California. Condor 26:98-104. **Excerpt**: *Oreortyx picta plumifera*. Mountain Quail. Fairly common resident of the northeastern part of the district. Some years numerous as fall migrant.

273. Richardson, C. H. 1904. A list of summer birds of the Piute Mountains, California. Condor 6:134-137. **Excerpt**: *Oreortyx p. plumiferus*. Plumed Quail. Common in the higher mountains and often seen in the foothills.

274. Richardson, F. 1941. Results of the southern California quail banding program. Calif. Fish and Game 27:234-249.

275. Ridgway, R. 1887. A manual of North American birds. Lippincott Co., Philadelphia. **Notes**: The text includes a taxonomic key and detailed description of the genus *Oreortyx* Baird.

276. Ridgway, R. 1894. Geographical, versus sexual, variation in *Oreortyx pictus*. Auk 11:193-197. **Excerpt**: Although confident that no mistake had been made in the diagnoses of the two forms [*O. pictus* and *Oreortyx pictus plumiferus*] and equally certain that the differences were not sexual, I have taken the trouble to again carefully examine all the specimens accessible to me with the view of testing the single character of the color of the hind neck -- a character never claimed by me to be of more than secondary importance -- and have tabulated the results, which are given below. Only specimens whose sex was determined by the collector are used, and the series was divided, previous to examination as to color of neck, into two series according to the geographical area represented. It will be seen by examination of these tables that the character is *not* sexual, and that it is, as claimed by me, to a large extent geographical. When the character in question fails as an index of locality, other characters do not; gray-napped birds from the Pacific coast being altogether more saturated in their coloration than brown-napped examples from the interior and southern coast districts.

277. Ridgway, R. 1900. A manual of North American birds. Lippincott Co., Philadelphia. **Notes**: The text includes a highly detailed description for members of the genus *Oreortyx* Baird which is followed by a brief key to the two species: *O. pictus* (Dougl.) mountain partridge and *O. pictus plumiferus* (Gould) plumed partridge.

278. Ridgway, R. 1916. The birds of North and Middle America. U.S. Nat. Mus. Bull. 50, Pt. 7. U.S. Gov. Printing Office, Wash., D.C. 543pp.

279. Ridgway, R., and H. Friedmann. 1946. The birds of North and Middle America. U.S. Nat. Mus., Bull. 50 Part 10. U.S. Gov. Printing Off., Wash., D.C. 484pp. **Notes**: A detailed description of physical characteristics, body measurements, range, plumage, and coloration is given for each subspecies along with a key and list of references for each subspecies.

280. Robertson, M. D. 1989. Statewide survey of mountain quail, 1989: a report on the status of mountain quail in Idaho. Unpubl. Rep. Id. Dept. Fish and Game, Boise. 27pp. **Excerpt**: The current status of Mountain Quail in Idaho does not appear promising. Although this project may have coincided with a time of year when Mountain Quail are less conspicuous (late breeding-incubation period), and was of a short duration, all the data seems to indicate that the population in Idaho is at a very low level. Brood sightings, checked harvest (including recent illegal kills) and reports of sightings by reliable agency personnel have all decreased. A comprehensive study is necessary in order to ascertain if the information contained herein would concur with a more quantitative, long-term study. Two areas in the

state have been recommended as possible study areas for a graduate project should funding become available. The northern area is situated along the Salmon River and includes drainages south of Cottonwood near Rock Cr. The southern area is situated along the Little Salmon River at Pollock. These two areas appear to have current and historic populations of Mountain Quail, and are close enough to one another to avoid any logistical problems.

281. Robertson, M. D. 1990. Mountain quail survey in the lower Salmon River of west-central Idaho, 1990: Addendum to 1989 statewide survey of mountain quail in Idaho. Unpubl. Rep. Id. Dept. Fish and Game, Boise. 19pp. **Excerpt**: This survey centered in west-central Idaho along the lower Salmon River and the lower Little Salmon River, and occurred from mid-April through mid-May. The objectives of this study were to intensively survey this area of the state to determine the current distribution and relative abundance of Mountain Quail, and to identify drainages or areas where sufficient numbers of quail still exist to be used for a graduate student project. **Notes**: Sites currently containing mountain quail include Lockwood, Big Canyon, Cow, Gregory, Howard, John Day, Kessler, Poe, Rattlesnake, Rice, Shingle, and Sotin creeks and Rapid River. Probable locations include Big Canyon, Deer, Denny, Elfers, Elkhorn, Grave, Hammer, Hat, Papoose, Race, and Squaw creeks and the Cross-O Ranch. Doubtful locations include Allison, Chair, Deer, Fiddle, Johnson, Lightning, Otto, Partridge, China, Eagle, and Little Canyon creeks, and Burdock Gulch.

282. Rogers, G. E. 1965. Appraisal of mountain quail habitat. Pages 217-225 in Job Compl. Rep., Federal Aid Proj. W-37-R-18, WP 15, J1. Colo. Dept. Game, Fish and Parks, Denver.

283. Rogers, G. E. 1966. Appraisal of mountain quail habitat. Pages 125-133 in Job Compl. Rep., Federal Aid Proj. W-37-R-19, WP 15, J2. Colo. Dept. Game, Fish and Parks, Denver.

284. Rogers, G. E. 1967. Appraisal of mountain quail habitat. Pages 215-218 in Job Compl. Rep., Federal Aid Proj. W-37-R-20, WP 15, J2. Colo. Dept. Game, Fish and Parks, Denver.

285. Rogers, G. E. 1968. Appraisal of mountain quail habitat. Pages 113-116 in Job Compl. Rep., Federal Aid Proj. W-37-R-21, WP 15, J2. Colo. Dept. Game, Fish and Parks, Denver.

286. Root, T. 1988. Atlas of wintering North American birds. Univ. Chicago Press, Ill. 312pp. **Excerpt**: The Mountain Quail is somewhat more secretive than other North American quail. It occupies mountain habitats in the Pacific states and provinces. Introductions into Washington and British Columbia in the 1800s artificially extended its range north, and releases were still occurring in 1965, when several pairs were introduced on the Uncompahgre Plateau in Colorado

(Johnsgard 1973). The Christmas count data do not reflect this recent introduction; all thirty of the counts recording this species were in the Cascades and the Sierra Nevada. The densest population of Mountain Quail (2.04 I/Hr) was in the Trinity Mountains at the northern end of the Sacramento Valley.

287. Rowley, J. S. 1935. Notes on some birds of Lower California, Mexico. Condor 37:163-168. **Excerpt**: *O. picta confinis*. San Pedro Martir Mountain Quail. Quite by accident, on June 11, a pack burro flushed a female from a nest containing ten eggs, incubation commenced, near La Grulla in the Sierra San Pedro Martir.

288. Rue, L. L., III. 1973. Game birds of North America. Harper and Row, New York, N.Y. 490pp. **Notes**: A general account of the life history of the mountain quail. Includes description, distribution, communication, breeding and nesting, eggs and young, flight, migration, habits, food, life span, enemies, and table fare.

289. Rybarczyk, W. B., J. Connelly, D. Aslett, T. Chu, J. A. Hayden, A. Ogden, and R. B. Smith. 1985. Upland Management Plan: 1986-1990. Id. Dept. Fish and Game, Boise. 37pp. **Excerpt**: Mountain Quail -- It is not certain whether this species was native or introduced in Idaho. Mountain quail are native to eastern Oregon, and their historical distribution may have included central and southwestern Idaho. Habitat requirements of mountain quail are similar to Gambel's and California quail, in that they are dependent on riparian habitats. This species has declined throughout its range in Idaho, but the reasons for this decline are unknown. Because of population declines and lack of understanding of these declines, the Department will not allow harvest of mountain quail until we obtain more information on its status, distribution and habitat requirements. **Notes**: Information is included on the natural history, ecology, status, and distribution of each of the four species of quail in Idaho, with the primary emphasis on California quail. Lists of problems and strategies are also included.

290. Sandys, E., and T. S. Van Dyke. 1904. Upland game birds. London. 429pp. **Excerpt**: This comparatively large and exceedingly handsome species is not highly esteemed by sportsmen in general, owing to its true value not being well understood. In certain portions of California, and notably in the Willamette Valley, Oregon, when abundant it affords capital sport, while upon the table it is a delicacy not to be forgotten. As a rule, one, or at most two, broods are found on a favorite ground, the birds seldom, if ever, flocking like some of their relatives. *O. pictus* prefers moist districts and a generous rainfall. It is a runner, and in comparison with Bob-white, by no means so satisfactory a bird for dogs to work on. After the first flush the covey is apt to scatter widely and the beating up of single birds is a slow and frequently a wearying task. On the wing, its size and moderate speed render it a rather easy mark.

291. Sauer, J., S. Droege, and K. E. Church. 1993. Trends in North American quail populations (1966-1991) with special emphasis on evaluating changes in northern bobwhite populations. K. E. Church and T. V. Dailey, eds. Quail III: Natl. Quail Symp. Missouri Dept. Conserv., Jefferson City.

292. Schlotthauer, P. H. 1967. All about quail and grouse. Game Bird Breeders, Conserv., and Aviculturalistis' Gaz. 16(3):9-11.

293. Schultz, V. 1950. A modified Stoddard quail trap. J. Wildl. Manage. 14:243. **Notes**: Article includes the materials needed and general instructions for constructing traps for bobwhite quail, *Colinus virginianus*. Several advantages of the collapsible trap are discussed.

294. Sclater, P. L. 1857. List of birds collected by Mr. Thomas Bridges, corresponding member of the Society, in the Valley of San Jose, in the State of California. Proc. Zool. Soc. London 25:125-127.

295. Sheldon, H. H. 1907. A collecting trip by wagon to Eagle Lake, Sierra Nevada Mountains. Condor 9:185-191. **Excerpt**: *Oreortyx pictus plumiferus*. Mountain Partridge. Seen only in Big Meadows, on Feather river, where they breed rather plentifully. Three large broods seen August 11.

296. Sheldon, H. H. 1909. Notes on some birds of Kern County. Condor 11:168-172. **Excerpt**: *Oreortyx pictus plumiferus*. Mountain Quail. One was flusht on Pine Mountain three miles north of Long Tom. The species is very rarely seen as low as this but is plentiful in the Greenhorn Range.

297. Shepardson, D. I. 1917. Notes from the southern Sierras. Condor 19:168-169. **Excerpt**: *Oreortyx picta plumifera*. Plumed Quail. We noted this species in numbers between Clark's and Seven Oaks, elevation about 5000 feet. No eggs were found, but coveys of young were frequently met in the brush. The old birds called the chicks with a note remarkably like the snarling of a wildcat, which somewhat disconcerted us at first.

298. Shillinger, J. E., and L. C. Morley. 1942. Diseases of upland game birds. Conserv. Bull. 21, U.S. Dept. Interior, Fish and Wildl. Serv. U.S. Gov. Printing Office, Wash., D.C. 32pp. **Notes**: This publication provides an excellent summary to pathogens of wild and pen-raised game birds. Bacterial and filtrable-virus, fungous, and nutritional diseases as well as internal and external parasites are discussed.

299. Shufeldt, R. W. 1899. Notes on the mountain partridge (*Oreortyx pictus*) in captivity. Ornis 6:71-76. **Notes**: The author provides general information on the plumage, behavior, and photography of a captive mountain quail.

300. Skirm, J. 1884. List of birds of Santa Cruz, California. Ornithol. Oologist 9:149-150.

301. Smith, H. D., F. A. Stormer, and R. D. Godfrey Jr. 1981. A collapsible quail trap. U.S. Dept. Agric. For. Serv., Rocky Mt. For. and Range Exp. Stn. Res. Note RM-400. 3pp.

302. Smith, R., and J. Klott. 1994. Survey of mountain quail in the Jarbidge Resource Area. Unpubl. Rep. Bur. Land Manage., Boise District, Boise, Id. 8pp. **Excerpt**: During 1992 and 1993, surveys were conducted by IDFG to determine if mountain quail populations exist in the Jarbidge Resource Area. The need for surveys was apparent so that appropriate management actions could be undertaken, if necessary, to benefit the species. Surveys in 1993 were conducted as part of a Challenge Cost-Share Agreement between IDFG and BLM. This report provides the results of those surveys. . . Surveys in 1992 included portions of Cougar Creek (Arch Canyon), Columbet Creek, Dorsey Creek, the West Fork Jarbidge River, the Jarbidge River and the Bruneau River. In 1993, portions of Cougar Creek, Buck Creek, Deer Creek, the Bruneau River and the East Fork Bruneau Canyon were surveyed (Figs. 1, 2, 3, 4). Mountain quail were not confirmed in any areas, however, a possible calling quail was heard in both 1992 and 1993 at Black Rock Crossing on the Bruneau River. No attempts were made later in the summer either year to verify the existence of mountain quail in this area.

303. Sowls, L. K., and L. A. Greenwalt. 1956. Large traps for catching quail. J. Wildl. Manage. 20:215-216. **Excerpt**: In reviewing the literature on quail research it is noticeable that almost all quail banding studies have used the standard quail trap as first described by Stoddard (1931) or some modification of it. This "old reliable" trap has been indispensable because of its low cost and portability. The purpose of this paper is to describe results obtained from the use of larger traps in locations where concentrations of western quail occur. Their usefulness in low quail densities where birds are not concentrated is not known.

304. Spaulding, E. S. 1949. The quails. MacMillan Co., New York, N.Y. 123pp. **Notes**: The author discusses general range, behavior, flock size, altitudinal range, description of habitat, flushing habits, habitat preferences, proximity to water, physical characteristics, voice, hunting, predators, effects of fire, and many anecdotal observations of mountain quail.

305. Stabler, R. M., and N. J. Kitzmiller. 1976. Plasmodium-pedioecetii from Gallinaceous birds of Colorado. J. Parasit. 62:539-544. **Abstract**: Colorado birds (49) of 6 galliform species (blue grouse (*Dendragapus obscurus*), sharp-tailed grouse (*Pedioecetes phasianellus*), mountain quail (*Oreortyx pictus*), bobwhite quail (*Colinus virginianus*), Gambel's quail (*Lophortyx gambelii*), and the gray partridge (*Perdix perdix*)) were positive for P. (G.) pedioecetii. It is

probably the same parasite described by Wetmore (1939) from a sharp-tailed grouse from North Dakota. Except for its presence in Darwin's tinamou (*Nothura darwinii*) from Colorado, it has been reported only from gallinaceous birds. Most stages were predominantly subpolar to polar. There was a daily 8 a.m. to noon peak of merozoite production, but no synchronicity. Merozoite number ranged from 8-22, with a mean of 10.9. Gametocytes were long and slender, some curving around one end of the host nucleus.

306. Stabler, R. M., N. J. Kitzmiller, and C. E. Braun. 1974. Hematozoa from Colorado birds. IV. Galliformes. J. Parasit. 60:536-537.

307. Stephens, F. 1919. An annotated list of the birds of San Diego County, California. Trans. San Diego Soc. Nat. Hist. 3:142-180.

308. Stiver, S. J. Date Unknown. Declining mountain quail populations and prospects for restoration. Natl. Quail Semin. 9pp. **Excerpt**: Historical records indicate that mountain quail were distributed across a broad area east of the Sierra/Cascade mountain ranges and west of the Rocky Mountains. Quail populations began to disappear in the driest environments soon after the permanent occupation of European settlers. Major declines in Nevada most likely began to occur during the Comstock deforestation of the great basin in the 1870s. Populations in more mesic sites persisted in Idaho, Oregon, Washington and parts of Nevada until the mid-1900s. During the 1950s through the 1980s, a combination of factors caused mountain quail to nearly disappear from all their remnant habitats. Biologists believe that the factors that caused the population declines can be identified by the loss of overstory vegetation. The loss of vegetation was caused by the increase of fire and the cheatgrass/fire disclimax, reservoir construction, and excessive livestock grazing on riparian systems. Mountain quail restoration in the drier environments of the intermountain West can be accomplished with intensive management of quail habitat blocks that include all components of their habitat. Restoration of quail to historical population levels and distribution levels is unlikely.

309. Stivers, C. G. 1920. Forest fires destroy game. Calif. Fish and Game 6:36-37.

310. Stone, W. 1904. On a collection of birds and mammals from Mount Sanhedrin, California. Proc. Acad. Nat. Sci. Phil. 56:576-585.

311. Storer, T. I. 1927. Three notable colonies of the cliff swallow in California. Condor 29:104-108. **Notes**: Noted that mountain quail were seen near Round Lake in July.

312. Streator, C. P. 1886. List of birds in the vicinity of Santa Barbara, California, during the year 1885. Ornithol. Oologist 11:66-67.

313. Sumner, L, and J. S. Dixon. 1953. Birds and mammals of the Sierra Nevada. Univ. Calif. Press, Berkeley. 484pp. **Notes**: Authors include information on physical description, habitat, distribution, historical range, native status, altitudinal migration, movements, food habits, nests, and several location records. Considered a common resident in Sequoia and Kings Canyon National Parks, inhabiting areas above the California quail.

314. Swarth, H. S. 1912. Report on a collection of birds and mammals from Vancouver Island. Univ. Calif. Publ. Zool. 10(1):1-124.

315. Taylor, W. P. 1912. Field notes on amphibians, reptiles and birds of northern Humboldt County, Nevada. Univ. Calif. Publ. Zool. 7:319-436.

316. Taylor, W. P. 1923. Upland game birds in the state of Washington with a discussion of some general principles of game importation. Murrelet 4(3):3-15. **Excerpt**: Mountain Quail, *Oreortyx picta* subspecies. Repeatedly introduced in various localities over the State, perhaps also indigenous in western Washington south of Puget Sound; now resident, principally in the humid Transition zone west of the Cascade Mountains north to San Juan Island and Bellingham; reported from Yakima, Klickitat and Asotin Counties in eastern Washington, and doubtless occurring in others. The origin of the various shipments of Mountain and California Quails is unknown. It is currently believed, not without reason, that the present quail stocks in Washington are mixtures, the Mountain of *Oreortyx picta picta* and *O. p. palmeri*. . . The earliest note, so far as known, on the importation of a game species into Washington is that of Cooper and Suckley (Pac. Railroad Repts., Vol. XII, Bk. 2, 1860, p. 225), and pertains to the Mountain Quail. Suckley writes that a few of these birds had been introduced from the Willamette Valley on the prairies back of Fort Vancouver, where they were increasing rapidly. . . There seems to be little evidence to support the view that this species was native in southwestern Washington. Peale (Mammalia and Ornithology, U.S. Expl. Exp., Vol. VIII, 1848, p. 183) says the Columbia River appears to be its northern limit. Reference has already been made to Cooper and Suckley's note on the introduction of the Mountain Quail prior to 1860. Bowles (in Dawson, The Birds of Washington, 1909, p. 564) is of the opinion that the species is not native. Whether or not it ever was indigenous, the Mountain Quail has been repeatedly introduced, its present geographic range having been given already. A few correspondents of the Biological Survey report the Mountain Quail increasing, but most of them tell of decreases ranging as high as 75 percent in three years. The Mountain Quail, probably an introduced species, is found over a considerable area, though its numbers are not great, and its status somewhat precarious.

317. Todd, K. S., and D. M. Hammond. 1971. Coccidia of Anseriformes, Galliformes, and Passeriformes. Pages 234-281 in J. W. Davis, R. C. Anderson, L. Karstad, and D. O. Trainer, eds. Infectious and parasitic diseases of wild birds. Ia. State Univ. Press, Ames.

318. Townsend, C. H. 1887. Field notes on the mammals, birds and reptiles of northern California. Proc. U.S. Natl. Mus. 10:159-241.

319. U.S. Department of Agriculture, U.S. Forest Service. 1991. Threatened, endangered, and sensitive species of the Intermountain Region. Intermountain Reg., Ogden, Ut. 560pp. **Notes**: This report summarizes the status of mountain quail at the federal and state levels as follows: USFWS Status, None; USFS Region 4 Status, Sensitive; State List; ID; and Heritage Global/State Status, G5/ID-SE?, NV-S?. General information on distribution, description, reproduction, foods, habitat, and management implications is also provided.

320. U.S. Department of the Interior, U.S. Bureau of Land Management. 1981. Sun Valley grazing, Butte, Blaine, Camas, and Elmore counties, State of Idaho. Bur. Land Manage., Boise, Id. 349pp. **Abstract**: Implementation of a livestock-grazing management program on 245,000 acres of public land within the Sun Valley Planning Area of the Shoshone District of Idaho is proposed. Present livestock grazing management on the 97 grazing allotments in the planning area, which includes Butte, Blaine, Camas, and Elmore counties, would be continued or modified. The proposed stocking rate of 29,877 animals unit months (AUMs) would represent a 30 percent increase over the present average use. The management program would involve adjustment of livestock grazing levels to the inventoried carrying capacity; implementation of 34 new grazing systems; alteration of the seasons of use on 74 allotments; and implementation of land-treatment measures on 23,985 acres of public land. Range facilities to be constructed or installed as part of the program would include 31 reservoirs, 99 spring developments, 2 wells, 2.5 miles of pipelines, 22.8 miles of fence, and 9 cattleguards. Along streams on public lands where the wood river sculpin, a species designated as sensitive, is known to occur, measures would be taken to improve riparian areas to at least good condition. All poor riparian areas would be subject to measures to improve their condition to at least fair. Estimated cost of range improvements is $426,960. The plan would allow livestock grazing in the area to increase from 23,067 AUMs to 32,230 AUMs within 20 years, increase usable forage by eight percent, and provide adequate habitat and forage on public land to support the projected deer, antelope, and elk populations. A majority of the areas within the planning zone that are currently in poor condition would be improved. Animals and plant species listed as sensitive, threatened, or endangered, including the wood river sculpin and mountain quail, would be protected. Overall watershed conditions would improve on three allotments. Hunting and fishing resource levels would increase by 135 percent over current levels.

321. U.S. Department of the Interior, U.S. Bureau of Land Management. 1982. Bruneau-Kuna grazing area, Idaho and Nevada. Bur. Land Manage., Boise, Id. 189pp. **Abstract**: Implementation of an improved rangeland management program on 2.4 million acres of public land in Ada, Elmore, and Owyhee counties

in southwest Idaho and 8, 219 acres of public land in northcentral Elko county, Nevada, is proposed. The land lies within a 3.1-million-acre area that includes the Bruneau Resource Area and the southern portion of the Owyhee Resource Area. The area contains 49 allotments. The preferred management scheme would involve implementation of intensive management on 25 allotments and less intensive management on 24 allotments. Initial vegetation allocations would provide 202,275 animal unit months (AUMs) of forage to livestock and 2,333 AUMs to wildlife; the livestock allocation would be 7 percent above the past five-year licensed use but 15 percent below the current active grazing preference. Allotments to be intensively managed would be operated using allotment management plans incorporating specific grazing systems and multiple-use objectives. The management regimen would include measures to improve or protect fishery habitat, wildlife habitat, cultural resources, and other resource values. Approximately 153 miles of fishery habitat would be managed with the primary objective of improvement of riparian and fishery habitat. An additional 125 miles of canyonland would be reserved for bighorn sheep, river otter, mountain quail, and other wildlife associated with riparian habitat. Range improvements to be constructed or installed in association with the management plan would include 250 miles of fence, 125 spring developments, 235 reservoirs, 6 wells, 8 water catchments, 75 cattleguards, 105 miles of pipeline, 234,000 acres of brush control, and 42,300 acres of brush control followed by seeding. The project would include development of 19 miles of pipeline on the plateau between Little Jacks and Big Jacks Creeks. Federal and local rancher costs for the project are estimated at $2.9 million and $1.3 million, respectively.

322. U.S. Department of the Interior, U.S. Fish and Wildlife Service. 1991. Federal Register Part VIII. 50 CFR Part 17: Endangered and threatened wildlife and plants; animal candidate review for listing as endangered or threatened species, proposed rule. 225pp. **Notes**: Mountain quail are listed as a category 2 species in Region 1; population trend is "declining" which indicates decreasing numbers and/or increasing threats for the species. Category 2 species are those "for which information now in the possession of the Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed rules. The Service emphasizes that these taxa are not being proposed for listing by this notice, and that there are no current plans for such proposals unless additional supporting information becomes available. Further biological research and field study usually will be necessary to ascertain the status of taxa in this category."

323. U.S. Department of the Interior, U.S. Fish and Wildlife Service. 1994. Federal Register Part IV. 50 CFR Part 17: Endangered and threatened wildlife and plants; animal candidate review for listing as endangered or threatened species; proposed rule. 219pp. **Notes**: Mountain quail are listed as a category 3C species in Region 1; population trend is "not applicable." Category 3 species are those that were once considered for listing as threatened or endangered but are no longer under

such consideration and that are not current candidates for listing. Category 3C species "have proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat. If further research or changes in habitat conditions indicate a significant decline in any of these taxa, they may be reevaluated for possible inclusion in categories 1 or 2."

324. Van Dyke, T. S. 1890. The quails of California. Outing 15:460-464.

325. Van Dyke, T. S. 1895. Game birds at home. Fords, Howard & Hurlbert, New York, N.Y. 219pp.

326. Van Rossem, A. J. 1914. Notes from the San Bernardino Mountains. Condor 16:145-146. **Excerpt**: Few quail were met with between 3000 and 5000 feet. At the later altitude Plumed Quail (*Oreortyx picta plumifera*) were rather abundant.

327. Van Rossem, A. J. 1937. A review of the races of mountain quail. Condor 39:20-24. **Notes**: Discusses range reduction, nomenclature, sex differentiation, fall plumage, and geographic variations in plumage color and crest length. Recognizes four geographic races or subspecies including the Northwestern Mountain Quail (*Oreortyx picta palmeri*), Sierra Nevada Mountain Quail (*O. p. picta*), Desert Mountain Quail (*O. p. eremophila*), and Lower California Mountain Quail (*O. p. confinis*). Includes a distribution map of each subspecies within California and a brief comparison of plum lengths for all four subspecies.

328. Van Rossem, A. J., and W. M. Pierce. 1915. Further notes from the San Bernardino Mountains. Condor 17:163-165. **Excerpt**: *Oreortyx picta plumifera*. Plumed Quail. Unexpectedly rare, in fact apparently absent from the region under consideration. The only evidence of the species found were some feathers in the trail at Clark's Ranch (elevation 5000 feet), in the Santa Ana Canyon.

329. Vandenburgh, J. 1898. Birds observed in central California in the summer of 1893. Proc. Acad. Nat. Sci. Phil. 50:206-218.

330. Vogel, C. A. 1994. Mountain quail habitat suitability study: Brownlee Wildlife Management Area. Unpubl. Rep. Treasure Valley Chap. Pheasants Forever and Id. Dept. Fish and Game, Nampa, Id. 34pp. **Excerpt**: Mountain quail were historically found in the Brownlee Wildlife Management Area but populations have declined during the past several decades. A primary concern is that Brownlee Reservoir, an impoundment of the Snake River, eliminated critical low-elevation winter habitat. The purpose of this study was to assess remaining habitat within the management area for suitability for mountain quail. Habitat data was collected from two drainages and analyzed using a habitat suitability index (HSI) model. Resulting index values indicate that the habitat is suitable for mountain quail in both study areas. In low-elevation winter range, Grade Creek contains more suitable habitat for mountain quail as shown by the higher HSI values and the

higher percent cover of food shrubs. This drainage also supports a wider, more continuous riparian corridor with more extensive stringers and patches of shrubs on adjacent slopes. In Duke's Creek, HSI values for lower elevations are comparable to Grade Creek; however, percent cover of food shrubs is lower and the riparian corridor is more narrow and fragmented. Habitat suitability of Duke's Creek could be improved by planting food shrubs in open areas to widen the already existing vegetation corridor and reduce habitat fragmentation.

331. Vogel, C. A., and K. P. Reese. 1995. Habitat Conservation Assessment for mountain quail (*Oreortyx pictus*). Unpubl. Rep. Id. Dept. Fish and Game, Boise, Id. 61pp. **Abstract**: In the early 1900s, mountain quail (*Oreortyx pictus*) were found throughout California, Idaho, Nevada, Oregon, Washington, and Baja Norte, Mexico. During the past several decades, mountain quail numbers have declined and their distribution has been shrinking throughout the United States (U.S.) except in California and western Oregon. This Habitat Conservation Assessment (HCA) summarizes literature and unpublished reports on mountain quail status, biology, ecology, and management throughout their range. A Conservation Strategy (CS) for Mountain Quail has been produced separately and contains conservation actions for mountain quail populations in Idaho and northern Nevada. Although the CS is specific to Idaho and Nevada, the conservation actions could be applied to mountain quail populations in California, Oregon, and Washington. In the future, the HCA and CS may be used to develop cooperative Conservation Agreements between the U.S. Fish and Wildlife Service, state wildlife management authorities, and other public and private entities to improve mountain quail habitat, and increase population sizes and distribution.

332. Vogel, C. A., and K. P. Reese. 1995. Habitat Conservation Strategy for mountain quail in Idaho and Northern Nevada. Unpubl. Rep. Id. Dept. Fish and Game, Boise, Id. 59pp. **Abstract**: Vogel and Reese (1995) completed a mountain quail (*Oreortyx pictus*) Habitat Conservation Assessment (HCA) that is a companion document to this Conservation Strategy. The HCA contains detailed information on the status, habitat, population parameters, ecological requirements, and other aspects of mountain quail ecology not repeated in this document. A comprehensive list of known and potential threats is included in the HCA and will be a useful reference in considering the following conservation actions. This report presents general and site-specific conservation actions that will benefit mountain quail populations in Idaho and northern Nevada. The Conservation Strategy is designed to remove threats, increase numbers, and expand the distribution of populations that have experienced marked declines in numbers and distribution. The HCA and Conservation Strategy for mountain quail are technical documents that will support development of cooperative Conservation Agreements and eliminate the need for duplicate efforts by various agencies. The ultimate goals of the mountain quail Conservation Strategy are to: 1) Increase the abundance and distribution of mountain quail to ensure population viability and species persistence throughout their range, thereby reducing the priority of federal

listing as threatened or endangered. 2) Remove or lessen existing threats to population recovery and quantify potential threats to mountain quail populations throughout their range. 3) Identify and protect existing habitat, enhance degraded habitat, and increase the distribution of habitat to enhance population viability throughout their range. 4) Identify, protect, and enhance habitats that link existing and future populations at the landscape level.

333. Vogel, C. A., and K. P. Reese. 1995. Mountain quail status report: a document preliminary to a Habitat Conservation Assessment for mountain quail. Unpubl. Rep. U. S. Forest Service, Eastside Ecosystem Management Project, Walla Walla, Washington. 33pp. **Excerpt**: Mountain quail (*Oreortyx pictus*) were historically found throughout the western United States (U.S.) in Washington, Oregon, western and central Idaho, through the mountains of California, and throughout northern and western Nevada. During the past several decades, mountain quail populations have been declining and their distribution has been shrinking throughout their range except in California and western Oregon. The purpose of this report is to present current knowledge on mountain quail natural history within the Columbia River Basin (Idaho, Nevada, Oregon, and Washington). This report addresses the current status, habitat, population parameters, and known and potential threats to the species and is a preliminary report designed to meet the immediate needs of the Eastside Ecosystem Strategy Project. This report will be further developed into a Habitat Conservation Assessment for mountain quail.

334. Voght, J. 1941. Bird notes from Lassen Volcanic National Park. Condor 43:161-162. **Excerpt**: *Oreortyx picta picta*. Interior Mountain Quail. Seen at Manzanita Lake, 6000 feet, as late as November 7, 1940, after several snow storms.

335. Walker, R. L. 1967. A brief history of exotic game bird and mammal introduction into Hawaii with a look to the future. Trans. West. Assoc. State Game and Fish Commissioners Conf., Honolulu. 13pp.

336. Wall, E. 1893. The plumed partridge. Oologist 10:232. **Notes**: Author includes information on altitudinal migration, food habits, breeding habitat, nests, eggs, clutch size, calls, behavior, roosting, and physical description. In 1892 the author found mountain quail in Strawberry Valley, San Bernardino Mountains.

337. Washington Department of Wildlife. 1993. Distribution status of the Mountain Quail. 322pp. **Excerpt**: Knowledge of habitat use, population density and distribution are essential to adequately manage mountain quail in Washington. The purpose of this project is to document the distribution of mountain quail in Washington. Objective: 1. Identify the current distribution of the mountain quail in Washington state. 2. Compile a data base and verify recent mountain quail sightings reported on the telephone "hotline." 3. Survey portions of Asotin county in eastern Washington. 4. Conduct a literature review to determine

historic distribution of mountain quail. 5. Develop management recommendations and prioritize research.

338. Wauer, R. H. 1964. Ecological distribution of the birds of the Panamint Mountains, California. Condor 66:287-301. **Notes**: Wauer divides the study area into habitat zones and notes mountain quail (breeding) associated with the pinon-juniper woodlands and limber pine. The species frequents mountain springs but can also be found far from water. Juveniles were sighted at Throndike Spring in June 1960 and a female and her brood were sighted on Bennett Peak at 9500 feet elevation in June 1961.

339. Weathers, W. W. 1983. Birds of southern California's Deep Canyon. Univ. Calif. Press, Berkeley. 266pp. **Notes**: Author includes general information on the male brood patch, male incubation, distribution, range, voice, coveys, brood size, mortality, breeding, water requirements, and habitat preferences of mountain quail in Deep Canyon.

340. Wetmore, A. 1932. Additional records of birds from cavern deposits in New Mexico. Condor 34:141-142. **Excerpt**: The Plumed Quail (*Oreortyx picta*) is represented by one entire, and one broken, metatarsus, a coracoid, and a tibio-tarsus, all in excellent condition. This is another species not known previously from New Mexico, as it ranges now from Washington and western Nevada through California into Lower California. The cave material does not differ from modern skeletons as shown in two in the U.S. National Museum, and five loaned for comparison by Dr. J. Grinnell from the Museum of Vertebrate Zoology. The occurrence of this quail in New Mexico is as remarkable as the presence of the California Condor in the same deposits.

341. Wetmore, A. 1965. Water, prey, and game birds of North America. Natl. Geogr. Book Serv., Wash., D. C. 287pp.

342. Wheelock, I. G. 1904. Birds of California. Chicago, Il.. 578pp. **Notes**: Author includes a general description of adult plumage, young and downy young, geographical distribution, breeding range, breeding season, nest, eggs, food, voice, and altitudinal migration for *Oreortyx pictus* and *O. p. plumiferus*.

343. White, P. J. 1931. Rattlesnake leads to discovery of quail nest. Yosemite Nature Notes 10:80.

344. Willett, G. 1912. Birds of the Pacific slope of southern California. Pacific Coast Avifauna No. 7. Cooper Ornithol. Club, Eagle Rock, Calif. 122pp.

345. Willett, G. 1919. Bird notes from southeastern Oregon and northeastern California. Condor 21:194-207. **Excerpt**: *Oreortyx picta plumifera*. Plumed Quail. Seen along streams in mountains west of Warner Valley.

346. Willett, G. 1933. A revised list of the birds of southwestern California. Pac. Coast Avifauna 21. 204pp.

347. Williams, J. J. 1902. A study of bird songs. Condor 4:65-68. **Excerpt**: With our mountain quail, (*Oreortyx p. plumiferus*) it is different. Instinctively he looks for some shelter to run to or if necessary to fly to, at the same time uttering his creaking, warning note, a rapid and nervous "cree-auk, cree-auk, cree-aukh" and some other inimitable chatterings, and quickly the flock gets ready for flight, or strikes out on the dead run for the high timber, as is the usual case. If you follow close after them through the brush, they can be heard calling to each other with their call-note "kow, kow, kow, kow" to keep the flock fairly united in its rapid march, but oftentimes as soon as you stop to listen to locate them they are silent, save for the retreating scurry of their feet in the dead leaves and only when they are sure of their safety, will they make any real effort to gather themselves together by the use of the call note.

348. Williams, J. J. 1903. On the use of sentinels by valley quail. Condor 5:146-148. **Excerpt**: Although I have studied our mountain quail (*Oreortyx p. plumiferus*) a great deal, I have never come across anything that would indicate the occurrence of this habit in the species.

349. Wilson, L. O. 1979. Distribution, season of use, and habitat of the mammals, birds, reptiles, amphibians, and fishes of Idaho. Bur. Land Manage., Boise, Id. 133pp. **Notes**: This report notes that mountain quail (*Oreortyx pictus*) are not common but occur in northern and southwestern Idaho. It is classified as a sensitive species by the BLM but considered a game bird by IDFG.

350. Wilson, R. C. 1965. Movements and other life history aspects of mountain quail, *Oreortyx pictus* Douglas. M.S. Thesis, Sacramento State Coll., Calif. 64pp. **Abstract**: Little is known about the movements and life history of Mountain Quail. Observations on movements, Barlow and Price (1901), Belding (1903), Dawson (1923) McLean (1930) Miller (1950), and Leopold (1959), do not follow the movements of a particular quail population. Analysis of other life history aspects of Mountain Quail is fragmentary and has received little attention. Major life history accounts include Grinnell et al. (1918), Bent (1932), McLean (1930) and Miller (1950). The initial purpose of this study was to trace the migration patterns of Mountain Quail on the eastern slope of the Sierra Nevada Range. Three weeks in June, 1966, were spent in the upper basin of Sagehen Creek, Nevada County in an attempt to trap and band Mountain Quail. However, several factors prevented this study. First, quail were scarce in the area during the early summer. Second, the abundance of water in the area increased the mobility and range of the birds; hence, traps had to be distributed over a wide area. Finally, the most prohibitive factor was that due to the abundance of water, only bait traps could be used in the trapping program. The present study emphasizes the

movements of several populations of Mountain Quail from July, 1966 to May, 1967. Other life history aspects are discussed and compared with past observations when possible. **Notes**: Author includes information on racial distribution, observations, traps, banding, call recordings, food samples, age and sex determination, movements (migration, local movements, range, inter-area movements), roosting, sentinels, secretiveness, predators, family groups, adult coveys, loafing, water requirements, single file behavior, calls, interspecific relationships with California Quail, food habits, populations, nesting, and hunting.

351. Wood, S. F., and C. M. Herman. 1943. The occurrence of blood parasites in birds from the southwestern United States. J. Parasit. 29:187-196.

352. Woodcock, A. R. 1902. Annotated list of the birds of Oregon. Oreg. Agric. Exp. Stn. Bull. 68. 117pp.

353. Wright, G. M. 1928. Mountain quail. Yosemite Nat. Notes 7:8.

354. Wright, G. M. 1929. Notes of a mid-winter wanderer in Yosemite Valley. Yosemite Nat. Notes 8:16-17.

355. Wyman, L. E. 1912. *Oreortyx* in Idaho. Auk 29:538-539. **Excerpt**: Notes appearing in 'The Auk' of April, 1911 and 1912, refer to the range of *Oreortyx* being extended eastward to near the Idaho-Oregon line, -- specifically, Vale, Oregon. My observation is that not only has it been long established in southwest Idaho, but that its range extends at least 125 miles beyond the Oregon line. Four years ago a covey of eight along Indian Creek several miles northwest of Nampa was wiped out by hunters. Two years ago a number were taken in the Boise bottoms eight miles north of this place. For ten years more they have been common in the Owyhee foothills some forty miles south of Nampa; in fact, so numerous are they that hunters from here regularly visit that section at the opening of the shooting season, two guns on one occasion killing 44 Quail in two hours. A rancher from Twin Falls, 100 miles south and 145 miles east of Vale, Ore., tells me the 'Blue Quail' appeared there several years ago, while a report from Shoshone, 75 m. south and 150 east of Vale, says they are becoming plentiful near that place. I am unable to verify by personal observation either of these last reports, but have no reason to doubt them. It is a fair supposition that the birds taken near Nampa were 'explorers,' merely crossing the valley to the hills beyond, where they will doubtless be found soon if indeed they are not already established there. I have examined numerous birds in the flesh from the Owyhee section and would pronounce them typical *plumifera*, though I have not the material in my collection for a comparison. Hunters insist that they find another variety, similar in coloring but smaller and with shorter plumes.

356. Wythe, M. W. 1927. Some birds of the Gold Lake district of the Sierra Nevada, California. Condor 29:61-66. **Excerpt**: Mountain Quail (*Oreortyx picta*

plumifera) were sure to be heard at sunset on the fir-covered ridge which separated Gray Eagle canyon from Frazier Creek canyon.

357. Xantus, J. 1859. Catalogue of birds collected in the vicinity of Fort Tejon, California, with a description of a new species of Syrnium. Proc. Acad. Nat. Sci. Phil. 11:189-193.

358. Yocom, C. F., and S. W. Harris. 1953. Food habits of mountain quail (*Oreortyx picta*) in eastern Washington. J. Wildl. Manage. 17:204-207. **Excerpt**: Little is known about the status, either at present or in the past, of mountain quail (*Oreortyx picta*) in eastern Washington. Some ornithologists believe that mountain quail were indigenous in the Blue Mountains of southeastern Washington; others state that this species was introduced. Actually both situations may have been true. Taylor (1923) stated that mountain quail were repeatedly introduced in various parts of Washington and these birds were reported from Yakima, Klickitat, and Asotin counties east of the Cascades at the time of this writing. Records of the authors indicate that mountain quail are to be found in the Blue Mountain region as follows: Asotin Creek drainage, Asotin County; Rattlesnake Canyon which is located on the north side of the Grande Ronde River, Asotin County; and the Tucannon River drainage, Columbia County. Also there is a small population in Steptoe Canyon, Whitman County (Fig. 1). According to Carl Reisenauer, these birds were planted on the Stewart Ranch at the head of Steptoe Canyon by the Lewiston Sportsmen's Club in 1926. This canyon runs into the Snake River in the vicinity south of Indian; the headwaters of this drainage border typical Palouse country (Yocom, 1943). Within recent years mountain quail populations have fluctuated considerably in eastern Washington. In 1941 and 1948, populations were notable high and supported considerable hunting in Asotin Creek, Asotin County, and along the Snake River, Whitman County. Severe winters apparently decreased populations considerably. For example, there was a large population of mountain quail along the Snake River between Wawawai, Whitman County, and Clarkston, Asotin County in the fall of 1948. An unusually severe winter followed and no quail were seen in that area the next fall. A few mountain quail were reported there during the winter of 1951-1952. **Notes**: The authors include a rough map of Washington noting the collection sites and a table of commonly found plant species identified from crop and gizzard analysis of 33 mountain quail. The text also includes a listing of plant and animal species composing less than 2% of total volume of the samples.

359. Zeiner, D. C., W. F. Laudenslayer Jr., K. E. Mayer, and M. White, eds. 1990. California's wildlife. Volume II: Birds. Calif. Dept. Fish and Game, Sacramento. 732pp. **Notes**: A brief entry for mountain quail includes general information on classification; distribution, abundance, and seasonality; specific habitat requirements; and species life history. Specific habitat requirements includes comments on feeding, cover, reproduction, water, and pattern of vegetation required.

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