Mammals in Western Coniferous Forest Ecosystems: An Annotated Bibliography

Hugh C. Black and Richard D. Taber

Bulletin No. 2 • Coniferous Forest Biome • Ecosystem Analysis Studies • U.S./International Biological Program

MAMMALS IN WESTERN CONIFEROUS FOREST ECOSYSTEMS: AN ANNOTATED BIBLIOGRAPHY

Hugh C. Black and Richard D. Taber

Bulletin No. 2
Coniferous Forest Biome
Ecosystem Analysis Studies
U.S./International Biological Program

The work reported in this publication was supported by the National Science Foundation under grants no. GB-20963, BG-36810X, BMS74-20744, DEB-74-20744A02, and DEB-74-20744A01 to the Coniferous Forest Biome, Ecosystem Analysis Studies (the first three under U.S./International Biological Program). This is contribution 16 of the Coniferous Forest Biome. Copies are available from the Coniferous Forest Biome, University of Washington AR-10, Seattle, Washington 98195.

June 1977

ABSTRACT

This volume results from an experiment in data retrieval. During the initial stage of the Coniferous Forest Biome the authors were asked to provide access to the literature on mammals as it pertained to the interests of the Biome investigation. One constraint was that the total number of entries should not much exceed 1000. Another was that no new items would be added after the project was undertaken (1971).

In order to keep the total number of items within bounds, it was necessary to choose. In choosing, we emphasized the geographic location of the Biome investigation, the Pacific Northwest, and the emphasis of most Biome studies, productivity and effects of forest manipulation. We attempted to include all mammal papers that would be useful both to vertebrate zoologists working within the fields of Biome interest and to their colleagues in other disciplines. Therefore both methodological and substantive papers are included.

Taxonomy is derived from Ingles (1965) and, where necessary, from Walker et al. (1964).

TABLE OF CONTENTS

ANNOTATED BIBLIOGRAPHY

1. ADAMS, L. 1949. The effects of deer on conifer reproduction in northwestern Montana. J. For. 47(11):909-913.

   Suggests management procedures for reproduction of ponderosa pine in winter white-tailed deer range.

   TAXON.: *Odocoileus virginianus*

   KEYWORDS: FOREST REGENERATION, MONTANA, SEEDLING DAMAGE

2. ADAMS, L. 1950. Consumption of ponderosa pine seed by small mammals. USDA For. Serv., North. Rocky Mt. For. Range Exp. Stn. (Missoula) Res. Note No. 80. 4 p.

   Study on amount of seed destroyed by small mammals.

   TAXON.: *Clethrionomys gapperi, Eutamias amoenus, Microtus longicaudus, Peromyscus maniculatus, Sorex cinereus*

   KEYWORDS: FOOD HABITS, FORAGING BEHAVIOR, IDAHO, MONTANA, SEED & CONE DAMAGE

3. ADAMS, L. 1955. A punch-card bibliographic file for vertebrate ecologists. J. Wildl. Manage. 19(4):472-476.

   Suggestions for organizing and maintaining a punch-card bibliographic file, permitting cross-referencing with one card per title.

   KEYWORDS: BIBLIOGRAPHY, LABORATORY METHODS

4. ADAMS, L. 1957. A way to analyze herbivore food habits by fecal examination. Trans. North Am. Wildl. Conf. 22:152-158.

   Application to herbivores of methods used for carnivores, including matching recognition items to reference materials and determining conversion factors.

   TAXON.: *Lepus americanus*

   KEYWORDS: FOOD HABITS, LABORATORY METHODS, MONTANA

5. ADAMS, L. 1959. An analysis of a population of snowshoe hares in northwestern Montana. Ecol. Monogr. 29(2):141-170.

   Techniques for population censusing, analysis of environmental factors affecting abundance and distribution, and general life history of hares compared with similar studies elsewhere. Pellet census techniques used; population dynamics information.

TAXON.: *Lepus americanus*

KEYWORDS: AGE, ANIMAL PRODUCTIVITY, BAITS, CENSUS, FOOD HABITS, GROWTH, HANDLING, MARKING, MONTANA, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, TRAPPING

6. ADAMS, L., M. G. HANAVAN, N. W. HOSLEY, and D. W. JOHNSTON. 1949. The effects on fish, birds and mammals of DDT used in the control of forest insects in Idaho and Wyoming. J. Wildl. Manage. 13(3):245-254.

Application of up to 8.5 kg/ha (7.5 lb/acre) DDT to forest land to control tussock moth had no apparent effect on small mammals, except tremors observed in some chipmunks at higher concentrations.

TAXON.: *Eutamias amoenus, Microtus longicaudus, Peromyscus maniculatus, Tamiasciurus hudsonicus, Thomomys talpoides*

KEYWORDS: IDAHO, INSECTICIDES, MORBIDITY, WYOMING

7. ADAMS, L., W. G. O'REGAN, and D. J. DUNAWAY. 1962. Analysis of forage consumption by fecal examination. J. Wildl. Manage. 26(1):108-111.

Proposed method of estimating weight of food eaten by snowshoe hares by recognition items in feces. Coefficient of variation of estimate and computation method described.

TAXON.: *Lepus americanus*

KEYWORDS: CALIFORNIA, FOOD HABITS, FORAGING BEHAVIOR, LABORATORY METHODS

8. ADAMS, L., and S. G. WATKINS. 1967. Annuli in tooth cementum indicate age in California ground squirrels. J. Wildl. Manage. 31(4):836-839.

Age of California ground squirrels revealed by annual rings in cementum of third molar. Method usually precise enough to permit age determination to nearest year through first four years.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: AGE, CALIFORNIA

9. ALDOUS, C. M. 1945. Pocket gopher food caches in central Utah. J. Wildl. Manage. 9(4):327-328.

Evidence of seed collection (plus expected succulent material).

TAXON.: *Thomomys talpoides*

KEYWORDS: BEHAVIOR, FOOD HABITS, UTAH

10. ALDOUS, C. M. 1951. The feeding habits of pocket gophers (*Thomomys talpoides moorei*) in the high mountain ranges of central Utah. J. Mammal. 32(1):34-87.

Survey of major food requirements.

TAXON.: *Thomomys talpoides moorei*

KEYWORDS: FORAGING BEHAVIOR, NUTRITION, UTAH

11. ALDOUS, S. E. 1938. Beaver food utilization studies. J. Wildl. Manage. 2(4):215-222.

Aspen most important food of beavers; birch, alder, and willow next in rank. Utilization and wastage figures (with tree sizes) given.

TAXON.: *Castor canadensis*

KEYWORDS: BEHAVIOR, FOOD HABITS, MINNESOTA, NUTRITION, TREE DAMAGE

12. ALDOUS, S. E. 1940. A method of marking beavers. J. Wildl. Manage. 4(2):145-148.

Ear tags usually dislodged; tail marking unsatisfactory; recommend 0.5-cm (3/16-in.) holes punched in webbing of hind feet.

TAXON.: *Castor canadensis*

KEYWORDS: MARKING, NORTH AMERICA

13. ALEKSIUK, M. 1968. Scent-mound communication, territoriality, and population regulation in beaver (*Castor canadensis* Kuhl). J. Mammal. 49(4):759-762.

Population about one colony per 2.6 km^2 ($1/mi^2$); piles ca. 60 cm (2 ft) high used as castoreum deposit sites. Colonies so marked not invaded by transients.

TAXON.: *Castor canadensis*

KEYWORDS: BREEDING BEHAVIOR, CENSUS, HOME RANGE, NORTHWEST TERRITORIES, POPULATION DENSITY, POPULATION DYNAMICS

14. ALEKSIUK, M. 1970a. The function of the tail as a fat storage depot in the beaver (*Castor canadensis*). J. Mammal. 51(1):145-148.

Collection of 52 specimens distributed over spring, summer, and fall analyzed for tail volume per gram heart weight, tail fat per tail volume, and change in percentage of fat with age and season.

TAXON.: *Castor canadensis*

KEYWORDS: BODY CONSTITUTION, NORTHWEST TERRITORIES

15. ALEKSIUK, M. 1970b. The seasonal food regime of arctic beavers. Ecology 51(2):264-270.

Northern beavers have adapted to low energy availability of winter by storing food in fall and spring and lowering winter food intake; to seasonal variation in protein availability by eating high-protein willow leaves almost exclusively when available.

TAXON.: *Castor canadensis*

KEYWORDS: BODY CONSTITUTION, FOOD HABITS, METABOLISM, NORTHWEST TERRITORIES, NUTRITION

16. ALEKSIUK, M., and I. M. COWAN. 1969a. Aspects of seasonal energy expenditure in the beaver (*Castor canadensis* Kuhl) at the northern limit of its distribution. Can. J. Zool. 47(4):471-481.

Beaver is subjected to seasonally fluctuating energy regime (abundant summer food supply, winter supply limited to store of cached saplings). In Mackenzie Delta, Northwest Territories, growth rapid in summer, absent in winter. This annual pattern is inherent property of northern beavers; energy expenditure is attuned to environmental energy availability.

TAXON.: *Castor canadensis*

KEYWORDS: GROWTH, METABOLISM, NORTHWEST TERRITORIES, NUTRITION, POPULATION DYNAMICS

17. ALEKSIUK, M., and I. M. COWAN. 1969b. The winter metabolic depression in arctic beavers (*Castor canadensis* Kuhl) with comparisons to California beavers. Can. J. Zool. 47(5):965-979.

No major seasonal changes observed in California beavers kept under Vancouver climatic conditions, with a constant ration made available ad libitum; but arctic beavers kept under same conditions showed growth cessation, 40% reduction in food intake, and depression in the [^{131}P]protein-bound iodine conversion ratio during winter. Findings indicate that changes in arctic form are inherent.

TAXON.: *Castor canadensis*

KEYWORDS: BODY CONSTITUTION, BRITISH COLUMBIA, FOOD HABITS, METABOLISM, NUTRITION

18. ALTMANN, M. 1952. Social behavior of elk, *Cervus canadensis nelsoni*, in the Jackson Hole area of Wyoming. Behavior 4(2):116-143.

Elk tend to break through a disturbance rather than flee from it. Animals divide into groups of bulls and of cows and calves. Dominance organization maintained with little actual combat. Describes seasonal changes in habits, interrelationships, group sizes, and alarm threshold.

TAXON.: *Cervus canadensis nelsoni*

KEYWORDS: BEHAVIOR, WYOMING

19. ALTMANN, M. 1956. Patterns of social behavior in big game. Trans. North Am. Wildl. Conf. 21:538-544.

Compares patterns of social behavior in free-ranging elk and moose of the United States and of chamois and wild boar of Europe. Organization with respect to space, leadership, communication, and reaction to disturbances noted. Seasonal changes of groups contrasted as to size of group and distribution of sexes. Describes role of males, place of young in group, signals between mother and young, reaction to intruders, and activity. Locomotion and flight were leading topics. Social test situations used to reveal social structure of groups.

TAXON.: *Alces alces, Cervus canadensis, Rupicapra rupicapra, Sus scrofa*

KEYWORDS: BEHAVIOR, EUROPE, NORTH AMERICA

20. ALTMANN, M. 1960. The role of juvenile elk and moose in social dynamics of their species. Zoologica 45(1):35-39.

Difficulties in adaptation of juveniles to new situations and relationships to adults are shown. Differences in social structure between moose and elk groups affect roles of juveniles. High mortality of juveniles in winter. Integration of surviving juveniles into adult social status is gradual, with variety of drawbacks, particularly during next rutting season.

TAXON.: *Alces alces americana, Cervus canadensis*

KEYWORDS: BEHAVIOR, BREEDING BEHAVIOR, DISPERSAL, MORTALITY, WYOMING

21. ANDERSON, R. M. 1934. The distribution, abundance, and economic importance of the game and fur-bearing mammals of western North America. Proc. Pac. Sci. Congr. 5:4055-4073. Univ. Toronto Press.

The term fur-bearing mammals should be restricted to species whose pelts are quoted in world fur markets. Lists 26 species of fur bearers and 15 species of big game animals. Range maps.

TAXON.: Multiple

KEYWORDS: ANIMAL PRODUCTIVITY, DISTRIBUTION, HARVEST, WESTERN NORTH AMERICA

22. ANDERSON, R. M. 1947. Catalogue of Canadian Recent mammals. Nat. Mus. Can. Bull. 102, Biol. Ser. no. 31. Canada Department of Mines and Resources, Mines and Geology Branch. v + 238 p.

List of mammals "known to exist, or to have existed within historic time, north of the southern boundaries of . . . Canada, with exception of Alaska." For each is given (1) scientific name; (2) vernacular in English and French; (3) synonymy, including citation to original description and first use of name combination employed here; (4) type locality; and (5) geographic range. Statements of range supported by published information and by specimens, mostly in National Museum of Canada, from previously unrecorded record stations.

TAXON.: Multiple

KEYWORDS: CANADA, DISTRIBUTION

23. ANDERSON, S., J. K. DOUTT, and J. S. FINDLEY. 1963. Collections of mammals in North America. J. Mammal. 44(4):471-500.

Collections classified by states and provinces, and indexed for names of institutions and individuals. Locations given for 307 mammal collections, and approximately 1.6 million specimens.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, NORTH AMERICA

24. ANDREWS, R. V. 1970. Effects of climate and pressure on the adrenal response of lemmings, voles and mice. Acta Endocrinol. 65(4):639-644.

In vitro incubations of adrenals from wild-caught lemmings, voles, and mice reveal secretory activity that reflects adrenal status of populations. Secretory rates higher in animals from natural

"high-density" and laboratory "crowded" groups. All species examined showed higher secretory rates in winter than in summer.

TAXON.: *Clethrionomys* sp., *Microtus* sp., *Peromyscus* sp.

KEYWORDS: CANADA, MORTALITY, POPULATION DYNAMICS

25. ANTHONY, A. W. 1924. Hibernating chipmunks. J. Mammal. 5(1):76.

Nests found under large stumps, hibernating animals one per nest. No food supply found.

TAXON.: *Eutamias townsendii*

KEYWORDS: BEHAVIOR, HABITAT, OREGON, POPULATION DYNAMICS

26. ASDELL, S. A. 1964. Patterns of mammalian reproduction. 2d ed. Cornell University, Ithaca, N.Y. 670 p.

Age at puberty, estrus, gestation period, litter size, and morphology of reproductive system.

TAXON.: Multiple

KEYWORDS: NORTH AMERICA, REPRODUCTION

27. ASHCRAFT, G. C., Jr. 1961. Deer movements of the McCloud Flats herds. Calif. Fish Game 47(2):145-152.

Migration study, 115 deer captured. Belling increased number of observations; neck tabs proved superior to other markings for individual identification. Summer and winter home ranges relatively small (based on observations and retrapping records). Deer that summered in McCloud Flats wintered on seven different winter ranges.

TAXON.: *Odocoileus hemionus hemionus*

KEYWORDS: CALIFORNIA, HOME RANGE, MARKING, TRAPPING

28. ASHFORD, J. R., K. L. Q. READ, and G. G. VICKERS. 1970. A system of stochastic models applicable to studies of animal population dynamics. J. Anim. Ecol. 39(1):29-44.

Sampling data from grasshopper population leading to life history and survivorship models.

KEYWORDS: MODELS, POPULATION DYNAMICS

29. ASKANER, T., and L. HANSSON. 1967. The eye lens as an age indicator in small rodents. Oikos 18(1):151-153.

Method of age determination based upon weight of eye lenses. Results agree with those obtained using length of molar roots as index, but are more accurate.

TAXON.: *Clethrionomys rufocanus, C. rutilus*

KEYWORDS: AGE, EUROPE

30. ATWATER, M. M. 1940. South Fork (Montana) beaver survey: 1939. J. Wildl. Manage. 4(1):100-103.

Description of South Fork beaver survey: parameters, objectives, classifications of waterways, censusing methods.

TAXON.: *Castor canadensis*

KEYWORDS: CENSUS, HABITAT, MONTANA

31. BAILEY, V. 1936. The mammals and life zones of Oregon. USDA Biol. Surv., North American Fauna 55. 416 p.

Observations and collected accounts of occurrence, distribution, and natural history of 254 species and subspecies of mammals. Range maps and description of life zones.

TAXON.: Multiple

KEYWORDS: CENSUS, DISTRIBUTION, FOOD HABITS, HABITAT, OREGON, POPULATION DYNAMICS

32. BAKER, B. E., H. W. COOK, J. R. BIDER, and A. M. PEARSON. 1970. Snowshoe hare (*Lepus americanus*) milk. I. Gross composition, fatty acid, and mineral composition. Can. J. Zool. 48(6):1349-1352.

Two animals.

TAXON.: *Lepus americanus*

KEYWORDS: BODY CONSTITUTION, CANADA

33. BAKER, F. S., C. F. KORSTIAN, and N. J. FETHEROLF. 1921. Snowshoe rabbits and conifers in the Wasatch Mountains of Utah. Ecology 2:304-310.

Poison bait formula; feeding damage to conifers.

TAXON.: *Lepus americanus*

KEYWORDS: BAITS, SEED & CONE DAMAGE, SEEDLING DAMAGE, TREE DAMAGE, UTAH

34. BAKER, R. H. 1967. Distribution of Recent mammals along the Pacific coastal lowlands of the Western Hemisphere. Syst. Zool. 16(1):28-37.

Coastal lowlands on western side of the Americas irregularly narrow and squeezed between shoreline and adjacent mountains; 407 species belonging to 189 genera (marine and insular forms excluded) recorded as living on this coastal strip. Coniferan sector (61° N to 38° N) supports 92 species.

TAXON.: Multiple

KEYWORDS: CENSUS, DISTRIBUTION, HABITAT, PACIFIC COAST

35. BAKER, R. H., and J. S. FINDLEY. 1954. Mammals from southeastern Alaska. Univ. Kans. Publ., Mus. Nat. Hist. 7(5):473-477. Distribution.

TAXON.: Multiple

KEYWORDS: ALASKA, DISTRIBUTION

36. BALSER, D. S. 1965. Tranquilizer tabs for capturing wild carnivores. J. Wildl. Manage. 29(3):438-442.

Tranquilizer trap-tab using "diazepam" reduces injuries and escapes of carnivores caught in steel traps. Tab consists of a cloth-wrapped tablet wired to trap jaw. Upon capture, animals usually chew tab and ingest drug. Ataxia follows in approximately 10-30 min.

TAXON.: Carnivora

KEYWORDS: DRUGS, NORTH AMERICA, TRAPPING

37. BANDY, P. J., W. D. KITTS, A. J. WOOD, and I. M. COWAN. 1957. The effect of age and the plane of nutrition on the blood chemistry of the Columbian black-tailed deer (*Odocoileus hemionus columbianus*). B. Blood glucose, non-protein nitrogen, total plasma protein, plasma albumin, globulin, and fibrinogen. Can. J. Zool. 35(2):283-289.

Substances studied in animals reared on high and low planes of nutrition. Statistical data for each. Only blood sugar and fibrinogen were measurably lower in animals of low nutrition. Some age changes independent of nutritive state but similar to those in domestic ruminants.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BODY CONSTITUTION, BRITISH COLUMBIA, GROWTH, METABOLISM, NUTRITION

38. BANFIELD, A. W. F. 1954. Tularemia in beavers and muskrats, Waterton Lakes National Park, Alberta, 1952-53. Can. J. Zool. 32(3):139-143.

Tularemia epizootic in aquatic mammals in Waterton Lakes National Park, Alberta, winter 1952-1953. *Pasteurella tularensis* isolated from tissues of beaver and muskrat, and two water samples from affected streams. Resembled conditions described in northwestern United States.

TAXON.: *Castor canadensis, Ondrata zibethica*

KEYWORDS: ALBERTA, MORTALITY, PARASITISM & DISEASE

39. BARBOUR, R. W., and M. J. HARVEY. 1968. The effect of radioactive tags on the activity of rodents. Am. Midl. Nat. 79(2):519-522.

Time-lapse photography (5 min) of activity versus nonactivity; ^{60}Co methods.

TAXON.: *Baiomys taylori, Microtus ochrogaster*

KEYWORDS: LABORATORY METHODS, MARKING, MORBIDITY, SOUTHEASTERN UNITED STATES

40. BARNES, V. G., Jr. 1971. Pocket gophers and reforestation: A problem analysis. Ann. Res. Rep. (1971) Denver Wildl. Res. Cent., USDI Fish Wildl. Serv., For.-Anim. Damage Unit. 34 p.

Reviews pocket gopher problems in Northwest; summarizes knowledge of gopher biology. Outlines current research and control, and identifies future research needs. Lists 61 references.

TAXON.: *Thomomys talpoides*

KEYWORDS: DAMAGE, FOOD HABITS, FOREST REGENERATION, PACIFIC NORTHWEST, POPULATION DYNAMICS

41. BARTLETT, I. H. 1956. A brief but quantitative analysis of populations, reproduction, range conditions, and huntable surpluses in the three major regions of Michigan. Mich. Conserv. 25(6):2-7.

Most of the 90,650 km^2 (350,000 mi^2) of major deer range saturated with deer. Any increase in wintering herd would further damage range and result in waste through starvation. Estimated numbers given.

TAXON.: *Odocoileus virginianus*

KEYWORDS: ANIMAL PRODUCTIVITY, COMPETITION, HARVEST, MICHIGAN, MORTALITY, POPULATION DENSITY

42. BATCHELOR, R. F. 1963. Evidence of yearling pregnancies in the Roosevelt elk. J. Mammal. 44(1):111-112.

Fetus collected from 27-month-old female elk, approximately 200 days after conception. Cow was about 20 months old at time of conception.

TAXON.: *Cervus canadensis roosevelti*

KEYWORDS: ALASKA, GROWTH, REPRODUCTION

43. BATCHELOR, R. F. 1965. The Roosevelt elk in Alaska: Its ecology and management. Alaska Dep. Fish and Game. 37 p.

Attempt to establish Roosevelt elk in Alaska. Five females and three male yearlings introduced to Afognak Island, Kodiak Archipelago, in 1929. Increased to approximately 1200 animals within 35 years. First legally hunted in 1950. Describes hunting requirements and harvests.

TAXON.: *Cervus canadensis roosevelti*

KEYWORDS: ALASKA, DISTRIBUTION, HABITAT, HARVEST, POPULATION GROWTH

44. BAUER, R. D., J. T. LIGHT, Jr., and W. R. THORNTON. 1968. Determination of the winter range of a black-tailed deer herd in the North Coast Range of California. Calif. Fish Game 54(1):27-32.

Winter ranges determined by marking 47 deer in summer. Migration distances ranged from 6 to 19 air kilometers (4 to 12 air miles).

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: CALIFORNIA, HOME RANGE, MARKING

45. BECK, L. R., and R. G. ANTHONY. 1971. Metabolic and behavioral thermoregulation in the long-tailed vole, *Microtus longicaudus*. J. Mammal. 52(2):404-412.

Relationship of oxygen consumption to ambient temperature (0°-40°C) determined for voles in and out of nests. Body temperature independent of ambient temperature between 5° and 25°C, averaging 37.4°C.

TAXON.: *Microtus longicaudus*

KEYWORDS: BODY CONSTITUTION, METABOLISM, WASHINGTON

46. BECKER, E. M. 1940. A three-year record of ground squirrel trapping. Calif. Dep. Agric. Bull. 29(3):153-156.

Compares trapping, poisoning, and gassing to eradicate squirrels. Poisoning recommended as most selective. Several kinds of traps compared; some life history data.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: BAITS, CALIFORNIA, TRAPPING

47. BEER, J. R. 1959. A collection of deer mice from Otter Rock, Oregon. Murrelet 40(3):28-29.

Trapping data indicated high population density. Sex ratio of animals under 85 mm (3.35 in) consistently even; as body length increases to 85-90 mm (3.35-3.54 in), sex ratio shifts to favor females. Thereafter males more abundant. Shift in sex ratios to favor males due to differential mortality.

TAXON.: *Peromyscus maniculatus*

KEYWORDS OREGON, POPULATION DENSITY, REPRODUCTION, SEX RATIO, TRAPPING

48. BEIDLEMAN, R. G. 1954. October breeding of *Peromyscus* in north central Colorado. J. Mammal. 35(1):118.

Nine of 23 females captured in October were lactating, one was pregnant. Two of five males captured on 3 October possessed testes in scrotal position.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BREEDING BEHAVIOR, COLORADO

49. BENDELL, J. F. 1961. Some factors affecting the habitat selection of the white-footed mouse. Can. Field Nat. 75(4):244-255.

In island studies in eastern Ontario, distribution of mice studied in relation to population properties, food (some artificially prepared), and cover.

TAXON.: *Peromyscus leucopus, P. maniculatus*

KEYWORDS: AGE, CANADA, DISTRIBUTION, POPULATION DYNAMICS

50. BERGHOFER, C. B. 1960. A new live trap for beaver. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 40:177-181.

Comparison of construction, weight, and efficiency of steel trap, Bailey live trap, Hancock live trap, Conibear humane trap, and new aluminum invention of author, which is a multiple-catch set suitable for dens as well as lodge or dam locations.

TAXON.: *Castor canadensis*

KEYWORD: TRAPPING

51. BERGHOFER, C. B. 1961. Movement of beaver. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 41:181-184.

New Mexico transplants moved as much as 51 km (32 mi) in 33 months, and one transplant may have exhibited homing tendency. Fifty-five percent moved over land; males tended to move farther than females.

TAXON.: *Castor canadensis*

KEYWORDS: DISPERSAL, HOME RANGE, MARKING, SOUTHWESTERN UNITED STATES

52. BESSER, J. F. 1957. Effectiveness of repellent treatments for protection of trees from animal damage. USDI Fish Wildl. Serv., Denver Wildl. Res. Cent. Spec. Rep. no. 19. 19 p. (Mimeo.)

Tests with ZAC, TMTD, TN-2500, Diamond L deer repellent, Ringwood, and CRAG Experimental Fungicide 5400.

KEYWORDS: DAMAGE, REPELLENTS, WESTERN NORTH AMERICA

53. BIDER, J. R. 1961. An ecological study of the hare *Lepus americanus*. Can. J. Zool. 39(1):81-103.

Heterogeneous vegetation structures described, relation of hares to this environment shown in terms of utilization, movements correlated to physical and climatic factors, and social aspects of individuals studied.

TAXON.: *Lepus americanus*

KEYWORDS: BREEDING BEHAVIOR, CANADA, FORAGING BEHAVIOR, HOME RANGE, TRAPPING

54. BINTZ, G. L. 1969. Tissue catabolism by laboratory rats and *Spermophilus lateralis* during acute negative water balance. J. Mammal. 50(2):355-356.

Measured production of water from body tissue during water deprivation; indicates possible pathway of catabolism for hibernators.

TAXON.: *Callospermophilus lateralis, Rattus rattus*

KEYWORDS: METABOLISM, SOUTHWESTERN UNITED STATES

55. BISCHOFF, A. I. 1948. The breeding season of some California deer herds. Calif. Fish Game 34(1):25-31.

Embryos of 427 does from 12 herds (six black-tailed, six mule deer) aged to determine breeding dates. Black-tailed deer bred late October (more southerly herds) to early January. Mule deer bred mid-September (more northerly herds) to end of January.

TAXON.: *Odocoileus hemionus columbianus, O. h. hemionus*

KEYWORDS: BREEDING BEHAVIOR, CALIFORNIA, REPRODUCTION

56. BISWELL, H. H. 1963. Research in wildland fire ecology in California. Proc. Annu. Tall Timbers Fire Ecol. Conf. 2:63-97.

In ponderosa pine forest, prescribed burning reduces rodent numbers.

TAXON.: *Peromyscus maniculatus, P. truei, Reithrodontomys megalotis*

KEYWORDS: CALIFORNIA, FIRE

57. BLACK, H. C. 1965. An analysis of a population of snowshoe hares, *Lepus americanus washingtonii* Baird, in western Oregon. Ph.D. thesis, Oregon State Univ., Corvallis. 298 p.

Obtained information to control hares, which frequently cause damage to coniferous reproduction, and compared life history of this little-studied subspecies with others.

TAXON.: *Lepus americanus washingtonii*

KEYWORDS: AGE, BAITS, CENSUS, DISPERSAL, DISTRIBUTION, FOOD HABITS, FOREST REGENERATION, GROWTH, HANDLING, MARKING, MORTALITY, OREGON, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, SEED & CONE DAMAGE, SEEDLING DAMAGE, TRACKING, TRAPPING

58. BLACK, H. C., E. J. DIMOCK II, W. E. DODGE, and W. H. LAWRENCE. 1969. Survey of animal damage on forest plantations in Oregon and Washington. Trans. North Am. Wildl. Nat. Resour. Conf. 34:388-408.

Animals damaged seedlings on all plots; browsing by deer most common source of animal damage on all plots, but animals that injured seedlings ranked by frequency of damage in 1968 and listed by species. Browsing and clipping of stems principal causes of seedling injury.

TAXON.: *Aplodontia rufa, Cervus canadensis, Erethizon dorsatum, Lepus americanus, Microtus* sp., *Odocoileus hemionus, Scapanus* sp., *Sylvilagus bachmani*

KEYWORDS: FOOD HABITS, HERB & SHRUB DAMAGE, OREGON, SEEDLING DAMAGE, TREE DAMAGE, WASHINGTON

59. BLOEKER, J. C. Von, Jr. 1937. Mammal remains from detritus of raptorial birds in California. J. Mammal. 18(2):360-361.

Golden eagle and probable barn owl captures analyzed.

TAXON.: *Neurotrichus gibbsii, Otospermophilus beecheyi, Peromyscus maniculatus, Sorex trowbridgii, Sylvilagus bachmani*

KEYWORDS: CALIFORNIA, MORTALITY, PREDATION

60. BOLE, B. P., Jr. 1938. Some altitude records for mammals in the Inyo-White Mountains of California. J. Mammal. 19(2):245-246.

Rain shadow effect of Sierra Nevada Mountains caused arid conditions. Effects on distribution of mammals in White Massif from 3048 to 4340 m (10,000 to 14,240 ft).

TAXON.: *Callospermophilus lateralis, Microtus montanus, Neotoma cinerea, Odccoileus hemionus, Peromyscus maniculatus.*

KEYWORDS: CALIFORNIA, DISTRIBUTION

61. BOOK, S. A. 1969. Fallout cesium-137 accumulation in two subpopulations of black-tailed deer (*Odocoileus hemionus columbianus*). M.A. thesis, Univ. California. vi + 61 p.

No significant seasonal variation in cesium-137 concentrations in rumen contents and muscle, but winter samples contained more cesium-137. Rumen contents contained greater concentrations of cesium-137 than did muscle. Rumen contents and muscle of deer from oak woodland contained significantly higher concentrations of cesium-137 than samples from deer of chaparral. Ingested lichens appear to contribute appreciably to the cesium-137 body burden of oak woodland deer.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BODY CONSTITUTION, CALIFORNIA, FORAGING BEHAVIOR, MORBIDITY

62. BOOTH, E. S. 1942. Observations on the young of *Eutamias*. Murrelet 23(3):84.

Birthweight, measurements.

TAXON.: *Eutamias amoenus*

KEYWORDS: GROWTH, PHYSICAL DESCRIPTION, WASHINGTON

63. BOOTH, E. S. 1968. Mammals of southern California. Univ. California Press, Berkeley. 99 p.

Accounts of occurrence and natural history of 127 species from Monterey south.

TAXON.: Multiple

KEYWORDS: CALIFORNIA, DISTRIBUTION

64. BRAY, O. E., and V. G. BARNES, Jr. 1967. A literature review on black bear populations and activities for National Park Service. USDI Nat. Park Serv. and Colo. Coop. Wildl. Res. Unit. 34 p.

Compilation of information on black bear characteristics, activities, capture methods, and population factors, with bibliography of more than 350 items.

TAXON.: *Euarctos americanus*

KEYWORDS: AGE, BIBLIOGRAPHY, FOOD HABITS, HOME RANGE, MARKING, PHYSICAL DESCRIPTION, POPULATION DENSITY, REPRODUCTION, TRAPPING, WESTERN NORTH AMERICA.

65. BRAZDA, A. R. 1953. Elk migration patterns, and some of the factors affecting movements in the Gallatin River drainage, Montana. J. Wildl. Manage. 17(1):9-23.

Seasonal movements of color-banded elk. Abundance of tabanids in an area appeared to be inverse to numbers of elk, suggesting elk move away from biting fly concentrations. State of development of food plants (listed) did not seem correlated with elk travels.

TAXON.: *Cervus canadensis*

KEYWORDS: DISTRIBUTION, FOOD HABITS, HOME RANGE, MARKING, MONTANA, PARASITISM & DISEASE

66. BRIGHAM, J. H. 1954. Summer mortality of juvenile black-tailed deer in western Washington. Murrelet 35(3):39-42.

Occurrence of deer in coyote diet at peak in June, when fawning also peak, dropped sharply after June. Evidently mortality is greatest soon after birth, when fawns most liable to accident, privation, or predation.

TAXON.: *Aplodontia rufa, Canis latrans, Lepus americanus, Odocoileus hemionus columbianus*

KEYWORDS: MORTALITY, PREDATION, WASHINGTON

67. BROADBROOKS, H. E. 1939. Food habits of the vagrant shrew. Murrelet 20(3):62-66.

Observations on behavior toward and acceptance of various vegetable food and live animals offered captives.

TAXON.: *Sorex vagrans*

KEYWORDS: FOOD HABITS, FORAGING BEHAVIOR, LABORATORY METHODS, WASHINGTON

68. BROADBROOKS, H. E. 1970a. Populations of the yellow-pine chipmunk, *Eutamias amoenus*. Am. Midl. Nat. 83(2):472-488.

A population of about 600 yellow pine chipmunks investigated for approximately 12 months in three years. Although overlapping in their habitats and foods, the three diurnal sciurids (pine squirrels, golden-mantled ground squirrels, and chipmunks) flourished together in considerable numbers. Population density of chipmunks apparently controlled by spacing of individuals and by predation from diurnal carnivores.

TAXON.: *Callospermophilus lateralis, Canis latrans, Eutamias amoenus, Lynx rufus, Mustela frenata, Taxidea taxus*

KEYWORDS: BREEDING BEHAVIOR, DISTRIBUTION, FOOD HABITS, HABITAT, HOME RANGE, MORTALITY, POPULATION DENSITY, POPULATION GROWTH, PREDATION, WASHINGTON

69. BROADBROOKS, H. E. 1970b. Home ranges and territorial behavior of the yellow-pine chipmunk *Eutamias amoenus*. J. Mammal. 51(2)310-326.

About 600 chipmunks live-trapped and observed in a pine forest in central Washington. Observations of dyed chipmunks compared favorably with live-trapping results. Males more active and have considerably larger home ranges than do females. Most chipmunks recaptured in second and fifth years occupied their original home ranges. Homing tests; observations of territoriality.

TAXON.: *Eutamias amoenus*

KEYWORDS: AGE, BREEDING BEHAVIOR, CENSUS, DISPERSAL, HOME RANGE, MARKING, TRAPPING, WASHINGTON

70. BROWN, E. B., III, W. R. SAATELA, and W. D. SCHMID. 1969. A compact, lightweight live trap for small mammals. J. Mammal. 50(1):154-155.

Plastic tubing, stainless steel, wire mesh, bandsaw used to construct more economical trap than usual Sherman or Longworth.

KEYWORD: TRAPPING

71. BROWN, L. N. 1966. Reproduction of *Peromyscus maniculatus* in the Laramie basin of Wyoming. Am. Midl. Nat. 76(1):183-189.

Seasonal reproductive cycle of deer mouse studied for 15 months. One annual breeding season, April through August 1964; peak reproductive activity May and June. Annual reproductive cycle of deer mice coincided rather closely with annual photoperiod cycle in Wyoming.

TAXON.: *Peromyscus maniculatus nebrascensis*

KEYWORDS: ANIMAL PRODUCTIVITY, BEHAVIOR, REPRODUCTION, WYOMING

72. BROWN, L. N. 1967. Ecological distribution of six species of shrews and comparison of sampling methods in the central Rocky Mountains. J. Mammal. 48(4):617-623.

Sunken cans used to trap shrews in 14 montane and intermontane habitats in southern Wyoming. Vagrant and masked shrews cosmopolitan in distribution; Merriam's shrew only in arid portions of plains and foothills. Water shrew only along or near cold mountain streams and ponds. Dwarf and pigmy shrews occupied restricted mountain habitats. Snap traps failed to catch dwarf and pigmy shrews in areas where they were abundant. Densities of vagrant and masked shrews indicated by snap traps considerably below those indicated by sunken cans.

TAXON.: *Microsorex hoyi, Sorex cinereus, S. merriami, S. nanus, S. palustris, S. vagrans*

KEYWORDS: CENSUS, DISTRIBUTION, TRAPPING, WYOMING

73. BROWN, L. N. 1970. Population dynamics of the western jumping mouse (*Zapus princeps*) during a four-year study. J. Mammal. 51(4):651-658.

Four-year live-trapping study of western jumping mouse showed population densities quite stable. Insufficient energy stores

apparently a major source of juvenile mortality during winter hibernation, but over-winter loss of adults much lower. Summer disappearance rates for adults and young adults nearly identical. Home range and longevity data given.

TAXON.: *Zapus princeps*

KEYWORDS: AGE, ANIMAL PRODUCTIVITY, BREEDING BEHAVIOR, DISPERSAL, DISTRIBUTION, METABOLISM, MORTALITY, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, STANDING CROP, WYOMING

74. BROWN, L. N., and C. H. CONOWAY. 1961. Dye excretion as a method for determination of small mammal home ranges. Am. Midl. Nat. 66(1):128-137.

Dyes and stains (120) tested; mixed with beeswax or implanted subcutaneously, colored urine for up to seven days. Home range area calculated by means of filter paper on dropping boards; little or no difference from trapping results.

TAXON.: *Microtus ochrogaster, Mus musculus*

KEYWORDS: HOME RANGE, MARKING, MIDWESTERN UNITED STATES

75. BUCKLEY, J. L., and W. L. LIBBEY. 1955. Growth rates and age determination in Alaskan beaver. Trans. North Am. Wildl. Conf. 20:495-507.

Weight-age and weight--pelt size--age regression curves provided; discussion of age determination from skull characteristics.

TAXON.: *Castor canadensis*

KEYWORDS: AGE, ALASKA, GROWTH, HARVEST, PHYSICAL DESCRIPTION, TRAPPING

76. BUCKNER, C. H. 1964a. Preliminary trials of a camera recording device for the study of small mammals. Can. Field Nat. 78(2):77-79.

Modifications of Pearson (1959) including photoelectric cell, isolation transformer.

KEYWORD: PHOTOGRAPHY

77. BUCKNER, C. H. 1964b. Metabolism, food capacity, and feeding behavior in four species of shrews. Can. J. Zool. 42(2):259-279.

Metabolic rates calculated from oxygen consumption, carbon dioxide production, and urinary nitrogen excretion. Respiratory quotients higher than expected for carnivorous animals, averaging 0.83 for

all species. Protein catabolism accounted for half daily caloric output. Metabolic rate increased with increasing population densities. Larch sawfly was preferred food of masked shrew, "best" predator of larvae or eonymphs.

TAXON.: *Blarina brevicauda, Microsorex hoyi, Sorex arcticus, S. cinereus*

KEYWORDS: CANADA, FORAGING BEHAVIOR, METABOLISM

78. BUECHNER, H. K. 1952. Winter-range utilization by elk and mule deer in southeastern Washington. J. Range Manage. 5(2):76-80.

Comparison of range conditions in elk and mule deer ranges on Wooten Game Range, where livestock are excluded.

TAXON.: *Cervus canadensis, Odocoileus hemionus*

KEYWORDS: COMPETITION, FOOD HABITS, HABITAT, HERB & SHRUB DAMAGE, POPULATION DENSITY, WASHINGTON

79. BURCALOW, D. W., and W. H. MARSHALL. 1958. Deer numbers, kill, and recreational use on an intensively managed forest. J. Wildl. Manage. 22(2):141-148.

Soils, cover types, fire and logging history of Cloquet Experimental Forest, northeastern Minnesota. Information on deer herd, browse condition, and damage to forest reproduction when area was a refuge (1923-1945).

TAXON.: *Odocoileus virginianus*

KEYWORDS: FIRE, HABITAT, HARVEST, HERB & SHRUB DAMAGE, LOGGING, MINNESOTA, POPULATION DENSITY, SEEDLING DAMAGE

80. BURGE, B. L. 1966. Vaginal casts passed by captive porcupine. J. Mammal. 47(4):713-714.

Observations on time of casts, occurrence of copulation, and length of gestation period may indicate polyestrous cycle and extent of uterine sloughing at postestrus.

TAXON.: *Erethizon dorsatum*

KEYWORDS: BREEDING BEHAVIOR, CALIFORNIA, REPRODUCTION

81. BURROUGHS, A. R., R. HOLDENRIED, D. S. LONGANECKER, and K. F. MEYER. 1945. A field study of latent tularemia in rodents with a list of all known naturally infected vertebrates. J. Infect. Dis. 76(2): 115-119.

Reservoir found in rodents but not, in this case, in their parasites.

TAXON.: *Microtus californicus, Mus musculus, Neotoma fuscipes, Peromyscus maniculatus, Rattus norvegicus, Reithrodontomys megalotis, Sorex* sp.

KEYWORDS: CALIFORNIA, MORTALITY, PARASITISM & DISEASE

82. BUTTERY, R. F. 1956. Range conditions and trends resulting from winter concentrations of elk in Rocky Mountain National Park, Colorado. J. Range Manage. 9(3):148.

Concentration areas considerably damaged in past; timbered areas in slightly better condition than open areas. Upward trends in range condition sufficiently apparent to show that elk reduction program has permitted improvement of concentration areas without lowering elk numbers drastically.

TAXON.: *Cervus canadensis*

KEYWORDS: COLORADO, DAMAGE, HABITAT, HERB & SHRUB DAMAGE, POPULATION DENSITY

83. CADE, T. J. 1963. Observations on torpidity in captive chipmunks of the genus *Eutamias*. Ecology 44(2):255-261.

Some chipmunks do not enter deep hibernation during winter, but may be inactive aboveground and lethargic, with slightly depressed body temperatures for weeks at a time.

TAXON.: *Eutamias amoenus*

KEYWORDS: BEHAVIOR, BODY CONSTITUTION, CALIFORNIA, GROWTH, METABOLISM, NUTRITION

84. CAHALANE, V. H. 1947. Mammals of North America. Macmillan, New York. x + 682 p.

Nontechnical accounts of all North American forms, some of the smaller to genus or family only. Includes description, distribution, habitat, reproduction, food habits, and behavior.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, FOOD HABITS, HABITAT, NORTH AMERICA, REPRODUCTION

85. CAHALANE, V. H. 1948. The status of mammals in the U.S. National Park System, 1947. J. Mammal. 29(3):247-259.

Estimates on populations and need for management.

TAXON.: *Alces alces, Castor canadensis, Cervus canadensis, Erethizon dorsatum, Euarctos americanus, Odocoileus hemionus, O. virginianus*

KEYWORDS: DAMAGE, DISTRIBUTION, POPULATION DENSITY, UNITED STATES

86. CALHOUN, J. B., and A. A. ARATA. 1948-1959. North American census of small mammals. Release numbers as follows: (1) Johns Hopkins Univ., 8 p., 1948; (2) Johns Hopkins Univ., 67 p., 1949; (3) Roscoe B. Jackson Lab., 90 p., 1950; (4) Roscoe B. Jackson Lab., 136 p., 1951; (5) USDHEW Nat. Inst. Mental Health, 164 p., 1956; (6) USDHEW, 155 p., 1957; (7) USDHEW, 167 p., 1957; (8) USDHEW, 96 p., 1957; (9) USDHEW, 132 p., 1957; (10) USDHEW, 12 p., 1959.

Three consecutive days of trapping with specified number of traps and lines; sex, measurements, and reproductive status, giving accounts by states, cooperators. Number 10 gives revision of NACSM sampling procedure, outlines 30-day continuous removal trapping, compares results of continuous removal trapping.

TAXON.: Multiple

KEYWORDS: CENSUS, NORTH AMERICA, POPULATION DENSITY, POPULATION DYNAMICS, TRAPPING

87. CALIFORNIA, STATE OF. 1942. Plague infection in California, Idaho, and Oregon. Public Health Rep. 57(27):1006-1007.

Report of detection in tissues of animals and in fleas.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: CALIFORNIA, HUMAN HEALTH, IDAHO, MORTALITY, OREGON, PARASITISM & DISEASE

88. CALIFORNIA, STATE OF, SUBCOMMITTEE ON PUBLIC LANDS. 1954. Bear depredation, Assem. Interim. Comm. Agric. Rep. 17(1):1-58.

Detailed reports and opinions from many individuals and organizations on bear damage to trees, livestock, and crops. Subcommittee recommends that Fish and Game Commission be empowered to declare the bear a predator in any district or part of a district.

TAXON.: *Euarctos americanus*

KEYWORDS: CALIFORNIA, DAMAGE, TREE DAMAGE

89. CALL, M. W. 1966. Beaver pond ecology and beaver-trout relationships in southeastern Wyoming. Univ. Wyoming and Wyoming Game and Fish Commission. viii + 296 p.

Interrelationships of beaver, trout, and aspen forest habitats analysed in detail. Interdependency of pond use by trout in relationship to beaver habitat stressed. Includes limnological study of beaver ponds as related to pond productivity, detailed discussion of management problems and plans.

TAXON.: *Castor canadensis*

KEYWORDS: ANIMAL PRODUCTIVITY, COMPETITION, FOREST MANIPULATION, POPULATION DENSITY, WYOMING

90. CAMERON, A. W. 1958. Canadian mammals. National Museum of Canada, Ottawa. 81 p.

Popular accounts; range maps.

TAXON.: Multiple

KEYWORDS: CANADA, DISTRIBUTION, HABITAT

91. CAMERON, D. M. 1967. Gestation period of the golden-mantled ground squirrel (*Citellus lateralis*). J. Mammal. 48(3):492-493.

One captive; receptive in estrus (late) 24 May, delivered five young 21 June; gestation period is therefore about 27 days.

TAXON.: *Callospermophilus lateralis*

KEYWORDS: CALIFORNIA, REPRODUCTION

92. CANHAM, R. D. 1970. Sex ratios and survival in fluctuating populations of the deer mouse, *Peromyscus maniculatus borealis*. Can. J. Zool. 48(4):809-811.

Significantly greater number of males than females in captive-born litters of deer mouse. Discusses sex ratios as related to postnatal survival.

TAXON.: *Peromyscus maniculatus borealis*

KEYWORDS: AGE, ALBERTA, NORTHWEST TERRITORIES, POPULATION DYNAMICS, REPRODUCTION, SEX RATIO

93. CANUTT, P. R. 1970. Pocket gopher problems and control practices on national forest lands in the Pacific Northwest region. Proc. Vertebr. Pest Control Conf. 4:120-125.

Description of mechanical burrow-builder with poison bait applicator attachment; review of control problems.

TAXON.: *Thomomys talpoides*

KEYWORDS: BAITS, DAMAGE, PACIFIC NORTHWEST

94. CARLETON, W. M. 1966. Food habits of two sympatric Colorado sciurids. J. Mammal. 47(1):91-103.

Golden-mantled ground squirrel and least chipmunk, studied in mountains of west central Colorado, sympatric and display marked similarities in habitat selection, life cycles, and general behavior patterns. Detailed investigation of energy relationships and food habits, including field observations, stomach-content analyses, and food preference tests, demonstrated slight divergence in general food preferences and profound dependence by both species on common dandelion for summer food. Little direct competition for summer energy sources, although foraging territories greatly overlapped.

TAXON.: *Callospermophilus l. lateralis, Eutamias minimus consobrinus*

KEYWORDS: COLORADO, COMPETITION, FORAGING BEHAVIOR, HABITAT, POPULATION DYNAMICS

95. CARTER, B. E. 1963. Relationships between spring and fall populations of confined *Microtus montanus* (Peale). M.S. thesis, Oregon State Univ., Corvallis. 50 p.

Investigation to determine relationship between spring and fall population densities and influence of density on reproduction, survival, and movement. Social behavior investigated under laboratory conditions.

TAXON.: *Microtus montanus*

KEYWORDS: ANIMAL PRODUCTIVITY, BEHAVIOR, DISPERSAL, LABORATORY METHODS, OREGON, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION

96. CATLETT, R. H., and R. Z. BROWN. 1961. Unusual abundance of *Peromyscus* at Gothic, Colorado. J. Mammal. 42(3):415.

Observations and trapping during summer 1956 yielded abundant specimens.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: COLORADO, POPULATION DENSITY, TRAPPING

97. CAUGHLEY, G. 1966. Mortality patterns in mammals. Ecology 47(6):906-918.

Methods of obtaining life table data outlined and assumptions implicit in such treatments defined. Study suggests hypothesis that most mammalian species have life tables of a common form, and pattern of age-specific mortality within species assumes an approximately constant form irrespective of proximate causes of mortality.

KEYWORDS: AGE, MODELS, MORTALITY, POPULATION DYNAMICS

98. CAUGHLEY, G. 1967. Parameters for seasonally breeding populations. Ecology 48(5):834-839.

Modification of others' methods to describe populations with restricted annual seasons of birth. New definitions of birth rate and death rate proposed whereby relationships between crude, finite, and exponential rates are simplified.

KEYWORDS: AGE, MODELS, MORTALITY, POPULATION DYNAMICS, POPULATION GROWTH, REPRODUCTION

99. CHATELAIN, E. F. 1953. Winter range problems of moose in the Susitna Valley. Sci. Alaska 2:343-347 (Proc. 2d Alaskan Sci. Conf., Alaska Div. AAAS, 1951).

Discussion of moose productivity, food requirements, and mortality.

TAXON.: *Alces alces*

KEYWORDS: ALASKA, FOOD HABITS, HABITAT, HERB & SHRUB DAMAGE, MORTALITY, REPRODUCTION

100. CHEATUM, E. L., and J. E. GAAB. 1953. Productivity of North Yellowstone elk as indicated by ovary analysis. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 32:174-177.

Lower jaws and pairs of ovaries collected from 224 cows. Age determined from jaws; reproductive condition determined from embryos and macroscopic study of sections of ovaries.

TAXON.: *Cervus canadensis*

KEYWORDS: MONTANA, REPRODUCTION

101. CHITTY, D. 1959. A note on shock disease. Ecology 40(4):728-731.

Hypothesis that shock disease (and ensuing high death rate) in snowshoe hares may be entirely a result of trapping or confinement leading to liver lesions.

TAXON.: *Lepus americanus*

KEYWORDS: BEHAVIOR, DENSITY-RELATED BEHAVIOR, MORTALITY, NORTH AMERICA, PARASITISM & DISEASE, POPULATION DYNAMICS, TRAPPING

102. CHITTY, D. 1960. Population processes in the vole and their relevance to general theory. Can. J. Zool. 38(1):99-113.

Hypothesis states that, under appropriate circumstances, indefinite increase in population density is prevented by deterioration in quality of population.

TAXON.: *Microtus* spp.

KEYWORDS: EUROPE, MODELS, MORTALITY, POPULATION DENSITY, REPRODUCTION, STANDING CROP

103. CHITTY, D., and E. PHIPPS. 1966. Seasonal changes in survival in mixed populations of two species of vole. J. Anim. Ecol. 35(2):313-331.

Last of a series of field trials designed to discover factors preventing unlimited increase in numbers.

TAXON.: *Clethrionomys glareolus, Microtus agrestis*

KEYWORDS: AGE, CENSUS, EUROPE, MODELS, MORTALITY, POPULATION DENSITY, POPULATION DYNAMICS

104. CHITTY, D., D. PIMENTEL, and C. J. KREBS. 1968. Food supply of overwintered voles. J. Anim. Ecol. 37(1):113-120.

Survival of a marked vole population remained high until 20 April 1961, when green vegetation was in surplus. Recaptures then fell from more than 80%/month to 20%. Attempts to relate population size to food supply.

TAXON.: *Clethrionomys glareolus, Microtus agrestis*

KEYWORDS: AGE, EUROPE, MARKING, MORTALITY, POPULATION DENSITY, REPRODUCTION, STANDING CROP

105. CLARK, T. W., and D. D. SKRYJA. 1969. Postnatal development and growth of the golden-mantled ground squirrel, *Spermophilus lateralis lateralis*. J. Mammal. 50(3):627-629.

Weights, measurements, instantaneous growth rate, and characteristic behavioral data on young.

TAXON.: *Callospermophilus l. lateralis*

KEYWORDS: BEHAVIOR, GROWTH, POPULATION DYNAMICS, REPRODUCTION, WYOMING

106. CLOTHIER, R. R. 1955. Contribution to the life history of *Sorex vagrans* in Montana. J. Mammal. 36(2):214-221.

Life history data collected on 306 specimens of vagrant shrew.

TAXON.: *Microtus longicaudus, Peromyscus maniculatus, Sorex cinereus, S. vagrans*

KEYWORDS: AGE, FOOD HABITS, GROWTH, HABITAT, MONTANA, REPRODUCTION

107. COLVIN, M. A., and D. V. COLVIN. 1970. Breeding and fecundity of six species of voles (*Microtus*). J. Mammal. 51(2):417-419.

Live-trapped, summer 1968; 185 days of laboratory rearing; litters per period, mean litter size.

TAXON.: *Microtus californicus, M. longicaudus, M. montanus, M. ochrogaster, M. oregoni, M. pennsylvanicus*

KEYWORDS: ANIMAL PRODUCTIVITY, LABORATORY METHODS, OREGON, REPRODUCTION, TRAPPING

108. CONNELL, J. H. 1954. Home range and mobility of brush rabbits in California chaparral. J. Mammal. 35(3):392-405.

Home ranges estimated, breeding season defined.

TAXON.: *Sylvilagus bachmani*

KEYWORDS: CALIFORNIA, DISPERSAL, HOME RANGE, REPRODUCTION, TRAPPING

109. COOK, S. F., and J. P. HANNON. 1954. Metabolic differences between three strains of *Peromyscus maniculatus*. J. Mammal. 35(4):553-560.

Deer mice taken from sea level, 1200 m (4000 ft), and 3800 m (12,500 ft). Mice native to high altitude, when measured at sea level, had lower standard metabolism than both groups native to low altitude. Possible genetic difference, which might be manifested in insulation capacity of pelage, or alternatively, might be ascribed to influence of hypoxia on tissue metabolism of high-altitude mice.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: CALIFORNIA, METABOLISM

110. COOK, S. F., Jr. 1959. The effects of fire on a population of small rodents. Ecology 40(1):102-108.

Wildfire in mixed brush and grassland essentially annihilated all species of mice, directly or by removal of food or cover. Change from a grassland of many dominants to one preempted by seed-producing annuals beneficial to seed-eating mice. Harvest mice irrupted.

TAXON.: *Microtus californicus, Mus musculus, Perognathus californicus, Peromyscus californicus, P. maniculatus, P. truei, Reithrodontomys megalotis, Sorex ornatus*

KEYWORDS: CALIFORNIA, FIRE, HABITAT

111. COSTELLO, D. F. 1966. The world of the porcupine. Lippincott, Philadelphia. 157 p.

References extensive, text informative; semipopular.

TAXON.: *Erethizon dorsatum*

KEYWORDS: BEHAVIOR, DISTRIBUTION, HOME RANGE, NORTH AMERICA, POPULATION DYNAMICS, REPRODUCTION

112. COUCH, L. K. 1924a. Mice and moles. J. Mammal. 5(4):264.

Burrows of mole used by meadow mice, which may be responsible for bulb and tuber damage; mole pushes up bulbs but does not eat them.

TAXON.: *Microtus oregoni, Scapanus orarius, S. townsendii*

KEYWORDS: FORAGING BEHAVIOR, WASHINGTON

113. COUCH, L. K. 1924b. Food caches of the pocket gopher. Murrelet 5(1):12.

Three caches in burrows 10 cm (4 in) under surface, containing 1420 cm^3 (3 pt) roots each, 2.5 cm (1 in) lengths of false dandelion, and bracken fern.

TAXON.: *Thomomys talpoides*

KEYWORDS: FORAGING BEHAVIOR, WASHINGTON

114. COUCH, L. K. 1925. Rodent damage to young forests. Murrelet 6(2):39.

Damage observations included clipping, girdling, barking, cutting, and burying.

TAXON.: *Aplodontia rufa, Castor canadensis, Erethizon dorsatum, Lepus americanus bairdii, Peromyscus* sp., *Thomomys mazama*

KEYWORDS: BEHAVIOR, FOOD HABITS, SEEDLING DAMAGE, TREE DAMAGE, WASHINGTON

115. COUCH, L. K. 1926. Nesting habits of Richardson pine squirrel. Murrelet 7(1):12.

Examined 28 moss-lichen nests 60 cm (2 ft) in diameter in alder leaning over Lake Pierre. No young found. High elevation and presence of many snowbanks led to assumption of late breeding season.

TAXON.: *Tamiasciurus hudsonicus richardsoni*

KEYWORDS: BEHAVIOR, WASHINGTON

116. COUCH, L. K. 1932. Breeding notes on a few Washington mammals. Murrelet 13(1):25.

Comparison of embryos per female.

TAXON.: *Lepus americanus, Sorex vagrans*

KEYWORDS: BEHAVIOR, REPRODUCTION, WASHINGTON

117. COWAN, I. M. 1942. Food habits of the barn owl in British Columbia. Murrelet 23(2):48-53.

Pellet analysis for skulls and/or mandibles.

TAXON.: *Microtus oregoni, M. townsendii, Neurotrichus gibbsii, Peromyscus maniculatus, Rattus norvegicus, Sorex cinereus, S. vagrans*

KEYWORDS: BRITISH COLUMBIA, LABORATORY METHODS, PREDATION

118. COWAN, I. M. 1946. Parasites, diseases, injuries, and anomalies of the Columbian black-tailed deer, *Odocoileus hemionus columbianus* (Richardson), in British Columbia. Can. J. Res., Sec. D, 24(3):71-103.

Comparison of parasitism in young and adult deer; differences in species of parasites present, but both age groups almost equally susceptible to arthropods and to helminths; 35 species of parasites, eight arthropods, and 17 helminths recovered; five species of parasites found to induce disease that was often fatal. Ten anomalous conditions from nonparasitic disease, injury, or congenital deformity also described.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BRITISH COLUMBIA, PARASITISM & DISEASE

119. COWAN, I. M., and M. G. ARSENAULT. 1954. Reproduction and growth in the creeping vole, *Microtus oregoni serpens* Merriam. Can. J. Zool. 32(3):198-208.

Gestation 23.5-25 days, mean litter size 2.95, postparturient estrus usual but frequently does not occur, puberty at 22-24 days in females and 34-38 days in males, sterile period of 5-14 days between first estrus and first conception. Longevity in captivity exceeded 320 days but in wild a complete turnover. Instantaneous relative growth rates determined for four distinguishable phases of growth.

TAXON.: *Microtus oregoni serpens*

KEYWORDS: AGE, BEHAVIOR, BRITISH COLUMBIA, GROWTH, REPRODUCTION

120. COWAN, I. M., and C. J. GUIGUET. 1956. The mammals of British Columbia. B.C. Prov. Mus., Victoria, Handb. No. 11. 413 p.

Survey of mammals of British Columbia.

TAXON.: Multiple

KEYWORDS: BRITISH COLUMBIA, DISTRIBUTION, HABITAT

121. COWAN, I. M., and A. J. WOOD. 1955a. The normal temperature of the Columbian black-tailed deer. J. Wildl. Manage. 19(1):154-155.

Fluctuations of uterine or rectal temperatures of four captives, two adult females and two 4-month-old males. Mean for adults 38.28°C, for juveniles 38.83°C; ranges were 37.78°-39.22°C and 38.33°-39.79°C, respectively. Comparative figures given for domestic mammals.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BRITISH COLUMBIA, METABOLISM, PHYSICAL DESCRIPTION

122. COWAN, I. M., and A. J. WOOD. 1955b. The growth rate of the black-tailed deer (*Odocoileus hemionus columbianus*). J. Wildl. Manage. 19(3):331-336.

Individual growth histories for 11 fawns born in captivity and raised under conditions of theoretically ideal diet. Growth, expressed as instantaneous growth rate, falls into three phases. Third phase, beginning at approximate age of 100 days and weight of 25 kg (55 lb), believed to mark onset of puberty.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BRITISH COLUMBIA, GROWTH

123. COWAN, I. M., A. J. WOOD, and W. D. KITTS. 1957. Feed requirements of deer, beaver, bear and mink for growth and maintenance. Trans. North Am. Wildl. Conf. 22:179-188.

Possible definitions of "plane of nutrition" include: (1) total intake; (2) proximate principles, protein, fat, fiber, nitrogen-free extract, calcium, phosphorus, (3) amino acid micronutrients. Winter and summer food requirements given.

TAXON.: *Castor canadensis, Euarctos americanus, Mustela vison, Odocoileus hemionus*

KEYWORDS: BRITISH COLUMBIA, NUTRITION

124. CRAMBLET, H. M., and R. L. RIDENHOUR. 1956. Parturition in *Aplodontia*. J. Mammal. 37(1):87-90.

Description of birth weights and measurements of newborn.

TAXON.: *Aplodontia rufa*

KEYWORDS: CALIFORNIA, REPRODUCTION

125. CRIDDLE, S. 1950. The *Peromyscus maniculatus bairdii* complex in Manitoba. Can. Field Nat. 64(5):169-177.

Summary of measurements, sex ratio, reproduction of >6000 specimens. No references.

TAXON.: *Peromyscus maniculatus bairdii*

KEYWORDS: AGE, CANADA, POPULATION DYNAMICS, REPRODUCTION, SEX RATIO

126. CROUCH, G. L. 1966. Preferences of black-tailed deer for native forage and Douglas-fir seedlings. J. Wildl. Manage. 30(3):471-475.

Two black-tailed deer allowed to forage on native vegetation and planted Douglas-fir seedlings. Preferred blackberry leaves and Douglas-fir over most common woody plants. Douglas-fir and woody plant browsing appeared closely related to weather during winter.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: FOOD HABITS, FORAGING BEHAVIOR, OREGON

127. CROUCH, G. L. 1968. Clipping of woody plants by mountain beaver. J. Mammal. 49(1):151-152.

Preference for plants clipped ranged from vine maple, red huckleberry, and red alder to ocean spray; wild rose and several other species not eaten.

TAXON.: *Aplodontia rufa*

KEYWORDS: FOOD HABITS, FORAGING BEHAVIOR, OREGON

128. CRUZAN, J. 1968. Ecological distributions and interactions of four species of *Microtus* in Colorado. Ph.D. thesis, Univ. Colorado, Boulder. 126 p.

Meadow mouse found only on plains, and more abundant in wet habitats than dry. Prairie vole found primarily in the grasslands-montane ecotone of lower foothills. Montane meadow mouse throughout mountains, from meadows, wet bogs to dry hillsides. Long-tailed meadow mouse appears to be confined to relatively wet habitats that have open growth of trees or bushes.

TAXON.: *Microtus longicaudus, M. montanus, M. ochrogaster, M. pennsylvanicus*

KEYWORDS: COLORADO, DISTRIBUTION, HABITAT

129. CUMMINGS, M. W. (chairman). 1967. Proceedings, Third Vertebrate Pest Control Conference, San Francisco, 7-9 March 1967. Univ. California Press, Davis. 177 p.

Among technical papers presented: The current status of plague in California; The current status of wild animal rabies in California, Good practice in vertebrate pest control; Review of animal repellents; The status and use of Gophacide; Biotelemetry--Its use in vertebrate control studies; Rodent problems on private forest lands in northwestern California; Biological control of vertebrate pests.

TAXON.: Multiple

KEYWORDS: BAITS, DAMAGE, FIELD METHODS, INSECTICIDES

130. CURRIER, A., W. D. KITTS, and I. M. COWAN. 1960. Cellulose digestion in the beaver (*Castor canadensis*). Can. J. Zool. 38(6):1109-1116.

Digestion of cellulose by beaver studied by addition of indigestible markers to food, and artificial ceca. Ability of experimental animals to digest cellulose ranged from 32% to 33%. Rabbits used for comparison. Beaver only mammal ingesting large quantities of woody tissue; has no special mechanisms for digesting cellulose.

TAXON.: *Castor canadensis*

KEYWORDS: BAITS, BRITISH COLUMBIA, FOOD HABITS, MARKING, METABOLISM, NUTRITION, TRAPPING

131. CURTIS, J. D. 1944. Appraisal of porcupine damage. J. Wildl. Manage. 8(1):88-91.

Work on red spruce areas; up to 2.4% loss but only 0.89/ha (0.36/ acre); methods of assessing damage.

TAXON.: *Erethizon dorsatum*

KEYWORDS: FOOD HABITS, NORTHEASTERN UNITED STATES, TREE DAMAGE

132. CURTIS, J. D. 1948. Animals that eat ponderosa pine seed. J. Wildl. Manage. 12(3):327-328.

From 10 September to early November most activity; bird and mammal list given.

TAXON.: *Eutamias* sp., *Peromyscus maniculatus sonoriensis*, *Sciurus* sp., *Tamiasciurus hudsonicus*

KEYWORDS: BEHAVIOR, FOOD HABITS, IDAHO, SEED & CONE DAMAGE, UTAH

133. DALKE, P. D. 1968. Bibliography of the elk in North America. Idaho Coop. Wildl. Res. Unit., Moscow. 87 p.

Arranged by subject and author; covers elk literature through 1965.

TAXON.: *Cervus canadensis*

KEYWORDS: BIBLIOGRAPHY, NORTH AMERICA

134. DALKE, P. D., R. D. BEEMAN, F. J. KINDEL, R. J. ROBEL, and T. R. WILLIAMS. 1965a. Use of salt by elk in Idaho. J. Wildl. Manage. 29(2):319-332.

Use of salt in management of elk, timing of salt hunger, chemical analysis of spring water (natural licks). Salt grounds established for cattle used considerably by elk when cattle not present. No significant differences in rate of elk movements to higher elevations from winter range between salted and unsalted portions of study area.

TAXON.: *Bos taurus*, *Cervus canadensis nelsoni*

KEYWORDS: COMPETITION, FOOD HABITS, HOME RANGE, IDAHO, NUTRITION

135. DALKE, P. D., R. D. BEEMAN, F. J. KINDEL, R. J. ROBEL, and T. R. WILLIAMS. 1965b. Seasonal movements of elk in the Selway River drainage, Idaho. J. Wildl. Manage. 29(2):333-338.

Four-year survey of seasonal movements by pellet-group counts and aerial surveys. Elk followed retreating snowline but descended to lower slopes with first appearance of new growth of grasses, sedges, and forbs; then gradually worked upward to summer range. Advent of herbaceous spring vegetation had greater effect on elk movements than did artificial salt during April and May. Fall movements not only from higher to lower elevations, but laterally along lower slopes, causing elk concentrations up to 0.22/ha (0.09/acre) on some winter ranges.

TAXON.: *Cervus canadensis*

KEYWORDS: FORAGING BEHAVIOR, HOME RANGE, IDAHO, POPULATION DENSITY

136. DALQUEST, W. W. 1941. Ecologic relationships of four small mammals in western Washington. J. Mammal. 22(2):170-173.

Ravine flora and fauna within coniferous forest zones often differ from those of forest. Results of trapping may show extent of interdependence of small-mammal populations in such habitats, and sources of migrants into or out of the forest.

TAXON.: *Neurotrichus gibbsii, Peromyscus maniculatus, Sorex trowbridgii, S. vagrans*

KEYWORDS: POPULATION DENSITY, POPULATION DYNAMICS, TRAPPING, WASHINGTON

137. DALQUEST, W. W. 1944. The molting of the wandering shrew. J. Mammal. 25(2):146-148.

Description of molt from specimens taken throughout the year.

TAXON.: *Sorex vagrans*

KEYWORDS: AGE, GROWTH, WASHINGTON

138. DALQUEST, W. W. 1948. Mammals of Washington. Univ. Kans. Publ., Mus. Nat. Hist. 2:1-144.

First comprehensive work on mammals of Washington. Introductory chapters on physiographic provinces, distributional areas, climate and vegetation, life zones and ecology, geologic history, faunal affinities, and checklist. Follows Merriam life zone system. Species accounts and brief notes on habits. No identification keys.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HABITAT, WASHINGTON

139. DALQUEST, W. W., and R. L. BURGNER. 1941. The shrew-mole of western Washington. Murrelet 22(1):12-14.

Description of new subspecies (*minor*) and its habitat. Competition with shrews and deer mice discussed.

TAXON.: *Neurotrichus gibbsii minor*, *Peromyscus* sp., *Sorex* sp.

KEYWORDS: COMPETITION, WASHINGTON

140. DALQUEST, W. W., and D. R. ORCUTT. 1942. The biology of the least shrew-mole, *Neurotrichus gibbsii minor*. Am. Midl. Nat. 27(2):387-401.

Covers, habitat, activity cycle, climbing activity, swimming, food habits, reproduction and behavior, parasites, and predators.

TAXON.: *Neurotrichus gibbsii minor*

KEYWORDS: BEHAVIOR, DISTRIBUTION, FOOD HABITS, HABITAT, MORTALITY, PARASITISM & DISEASE, PREDATION, REPRODUCTION, WASHINGTON

141. DALQUEST, W. W., and V. B. SCHEFFER. 1944. Distribution and variation in pocket gophers, *Thomomys talpoides*, in the state of Washington. Am. Nat. 78(777):308-333.

Examination of 710 specimens; division into *douglasii* and *fuscus* groups on basis of distribution and habitat. Numerous *fuscus* subspecies isolated in openings of Puget Sound forest doomed by loss of habitat to trees.

TAXON.: *Thomomys talpoides douglasii*, *T. t. fuscus*

KEYWORDS: DISTRIBUTION, HABITAT, MORTALITY, WASHINGTON

142. DANA, R. H. (chairman). 1970. Proceedings, Fourth Vertebrate Pest Control Conference, West Sacramento, Calif., 3-5 March 1970. Univ. California Press, Davis. 204 p.

Among papers presented: The year of ecology; Outlook for rodenticides and avicides registration; Toxicant review; New factors controlling populations of land vertebrates in Great Britain; The pharmacology of rodenticides; The role of the coyote in an infection of man and animals; The importance of wildlife in rabies control; Current status of plague and plague control in the United States; Chemosterilants as an approach to rodent control; Olfaction in rodent control; Mole control; Destruction of conifer seed and

methods of protection; Studies in microencapsulation of rodenticides; A permanent type poison station for porcupine control; Trapping--The oldest profession; Methods of controlling jackrabbits; Pocket gopher problems and control practices on national forest lands in the Pacific Northwest region; Rodenticides--Problems and current research; Standardization of procedures for developing vertebrate control agents; The outlook for vertebrate pest control.

TAXON.: Multiple

KEYWORDS: BAITS, DAMAGE, FIELD METHODS, REPELLENTS, RODENTICIDES, TRAPPING

143. DASMANN, R. F. 1954. Ecology and social behavior of a population of the Columbian black-tailed deer in California. Ph.D. thesis, Univ. California, Berkeley.

Populations high in 1951, lower in 1953. Mortality removed 44% of summer population in 1951-1952, but was low in 1953. Natality minimal in 1953. Deer occurred in small groups, and occupied small home ranges throughout year. Movement and social behavior described.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BEHAVIOR, CALIFORNIA, DENSITY-RELATED BEHAVIOR, FIRE, HABITAT, HOME RANGE, MORTALITY, POPULATION DENSITY, POPULATION GROWTH

144. DASMANN, R. F. 1956. Fluctuations in a deer population in California chaparral. Trans. North Am. Wildl. Conf. 21:487-499.

In seven-year study, black-tailed deer population inhabiting fire-modified chaparral exhibited rapid increase following fire. After two years a sharp decline, followed by leveling-off period. During time of increase there was excellent survival of fawns and old deer, and influx of yearlings. In period of decline fawn survival was poor, older deer died, and yearlings and other deer moved out. Stabilized shrubland will support a relatively stable deer population two or three times higher than will dense, unmodified chaparral.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: AGE, CALIFORNIA, DISPERSAL, FIRE, HABITAT, HOME RANGE, MORTALITY, NUTRITION, POPULATION DENSITY, POPULATION GROWTH

145. DASMANN, R. F., and W. P. DASMANN. 1963. Mule deer in relations to a climatic gradient. J. Wildl. Manage. 27(2):196-202.

Comparison of mule deer populations; habitats along a climatic gradient from humid coastal forest through chaparral to sagebrush

differ in soils, quality of forage, plant successional rate, and animal numbers. Differences determine usefulness of fire, mechanical treatment, or other disturbance of climax vegetation for improving deer habitat, and affect degree of control that must be exercised over big game numbers.

TAXON.: *Odocoileus hemionus*

KEYWORDS: ANIMAL PRODUCTIVITY, CALIFORNIA, DISTRIBUTION, FIRE, HARVEST, HERB & SHRUB DAMAGE, HERBICIDES, MORTALITY, NUTRITION, POPULATION DENSITY

146. DASMANN, R. F., and R. D. TABER. 1955. A comparison of four deer census methods. Calif. Fish Game 41(3):225-228.

Sample-area count requires least time and effort and produces good results, but has limited application as it requires relatively open areas of hill or mountain country and a sedentary deer population. Total deer count and Lincoln index are equally accurate, but neither has widespread usefulness, requiring prolonged study of a small area or a number of marked deer in population. Pellet-group census would have widest application if its results were reliable.

TAXON.: *Odocoileus hemionus*

KEYWORDS: CALIFORNIA, CENSUS

147. DASMANN, R. F., and R. D. TABER. 1956a. Behavior of Columbian black-tailed deer with reference to population ecology. J. Mammal. 37(2):143-164.

Population and behavior study of marked California deer, which were nonmigratory and tended to occupy restricted home ranges throughout year. Infrequent movements beyond home range boundaries consisted of rutting season travels, wandering, and dispersal. Home range observations favored concept of definite boundary limitations. Stable social aggregations were family and buck groups; feeding bands formed temporarily. Individual ranges, aggression, alarm behavior, and play all related to population density.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BEHAVIOR, BREEDING BEHAVIOR, CALIFORNIA, DISPERSAL, FORAGING BEHAVIOR, HOME RANGE, POPULATION DENSITY

148. DASMANN, R. F., and R. D. TABER. 1956b. Determining structure in Columbian black-tailed deer populations. J. Wildl. Manage. 20(1):78-83.

For visual classification of natural populations of deer, gives criteria for distinguishing among five categories, best seasons, and times of day. Determination of current year's natality, previous year's fawn survival, and sex differences in fawn mortality.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: AGE, CALIFORNIA, FIELD METHODS, POPULATION DYNAMICS

149. DASMANN, W. P., and R. F. DASMANN. 1963. Abundance and scarcity in California deer. Calif. Fish Game 49(1):4-15.

Fluctuation is feature of natural rather than managed populations, and waste is associated with this fluctuation. If deer populations were managed by removal of enough animals of either sex to hold them at optimum levels, some waste could be averted.

TAXON.: *Odocoileus hemionus columbianus, O. h. hemionus*

KEYWORDS: CALIFORNIA, HARVEST, POPULATION DYNAMICS

150. DAVIS, D. E. 1960. A chart for estimation of life expectancy. J. Wildl. Manage. 24(3):344-348.

Recommended statistical treatment of life expectancy, birth rate, death rate, and partitioning of mortality.

KEYWORDS: AGE, MODELS, MORTALITY, POPULATION DYNAMICS, REPRODUCTION

151. DAVIS, D. E., and J. T. EMLEN, Jr. 1948. The placental scar as a measure of fertility in rats. J. Wildl. Manage. 12(2):162-166.

Reliability of placental scars as indicators of reproductive history tested on a series of laboratory rats and wild brown rats. Although scars did not occur in virgin rats and persisted in all parous rats, number was only a crude indicator of number of young produced. Discrepancy between two counts varied several hundred percent.

TAXON.: *Rattus norvegicus, R. rattus*

KEYWORDS: REPRODUCTION, SOUTHEASTERN UNITED STATES, SOUTHWESTERN UNITED STATES

152. DAVIS, D. H. S. 1933. Rhythmic activity in the short-tailed vole, *Microtus*. J. Anim. Ecol. 2(2):232-238.

Experiments on activity rhythms of voles show they have a short (2- to 4-hr) rhythm of feeding activity and longer (24-hr) rhythm with its peak following sunset and higher average of activity at night. Voles kept in total darkness for 24 days maintained both rhythms.

TAXON.: *Microtus agrestis, M. hirtus*

KEYWORDS: BEHAVIOR, EUROPE

153. DAVIS, W. B. 1936. Young of the brush rabbit, *Sylvilagus bachmani*. Murrelet 17(2-3):36-40.

Weights, measurements.

TAXON.: *Sylvilagus bachmani*

KEYWORDS: CALIFORNIA, GROWTH, REPRODUCTION

154. DAVIS, W. B. 1939. The Recent mammals of Idaho. Contrib. Mus. Vertebr. Zool., Univ. Calif. Berkeley. 400 p.

Geography and geological history of Idaho briefly discussed. In considering mammalian distribution biotic areas used instead of life zones.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HABITAT, IDAHO

155. DEACON, J. E., W. G. BRADLEY, and K. M. LARSEN. 1964. Ecological distribution of the mammals of Clark Canyon, Charleston Mountains, Nevada. J. Mammal. 45(3):397-409.

Study of distribution of small mammals in stated area during June 1961 and 1962 encompassed 8660 trap nights and 23 mist net hours.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HABITAT, NEVADA

156. DENNISTON, R. H. 1956. Ecology, behavior and population dynamics of the Wyoming Rocky Mountain moose, *Alces alces shirasi*. Zoologica 41(3):105-111.

Discusses various aspects of behavior, Rocky Mountain moose almost extinct about 1900; under protection it increased strongly and is doing well under controlled hunting. Most observations made near Jackson Hole, Wyoming.

TAXON.: *Alces alces shirasi*

KEYWORDS: BEHAVIOR, CENSUS, COMPETITION, FOOD HABITS, GROWTH, HABITAT, HARVEST, PARASITISM & DISEASE, POPULATION GROWTH, REPRODUCTION, WYOMING

157. DEPNER, C. W. 1969. Colorimetric determination of ingested food dyes passed in feces of domestic rabbits. J. Mammal. 50(2):382-383.

Calculations of amount of dye eliminated versus amount fed for various dyes, and discussion of standardization of spectrophotometric methods. Assessment of findings in field pellets for estimation of home range size.

TAXON.: *Oryctolagus cuniculus*

KEYWORDS: HOME RANGE, NORTHEASTERN UNITED STATES

158. DERMID, J. F. 1956. Techniques useful in photographing wild birds and mammals. M.S. thesis, Oregon State Univ., Corvallis. 157 p.

Detailed description of methods and equipment, with numerous photos. Emphasis on black-and-white still photography: remote control, stalking, backlighting, camera traps, set cameras, and blinds. Photo kit for wildlife photography discussed.

TAXON. Multiple

KEYWORD: PHOTOGRAPHY

159. DICE, L. R. 1922. Notes on a few mammals at Missoula, Montana, 1916-1918. J. Mammal. 3(4):262-263.

Observations on occurrence on ponderosa pine habitat.

TAXON.: *Castor canadensis, Eutamias* sp., *Lepus americanus, Tamiasciurus hudsonicus, Thomomys* sp.

KEYWORDS: DISTRIBUTION, MONTANA

160. DICE, L. R. 1941. Methods for estimating populations of mammals. J. wildl. Manage. 5(4):398-407.

Useful as a review.

TAXON.: Multiple

KEYWORD: CENSUS

161. DICE, L. R. 1943. The biotic provinces of North America. Univ. Michigan Press, Ann Arbor. viii + 78 p.

A new "system" based largely on vegetation. Divisions, in descending order: (1) biotic province, (2) biotic district, (3) life belt (vertical subdivision of a biotic province), and (4) ecologic association (ecologically uniform and stable community below rank of life belt and biotic district).

TAXON.: Multiple.

KEYWORDS: DISTRIBUTION, HABITAT, NORTH AMERICA

162. DICE, L. R., and R. M. BRADLEY. 1942. Growth in the deer-mouse, *Peromyscus maniculatus*. J. Mammal. 23(4):416-427.

Growth curve using several measurements including weight.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: CALIFORNIA, GROWTH

163. DICK, J., J. M. FINNIS, L. O. HUNT, and N. B. KVERNO. 1958. Treatment of Douglas-fir seed to reduce loss to rodents. J. For. 56(9):660-661.

Cooperative factorial experiment in British Columbia, Washington, and Oregon on direct seeding of Douglas-fir. Plots broadcast with endrin-coated seed. Addition of fungicide Arasan 75 to endrin coating unnecessary. Substitution of Dow Latex 512R for Methocelrhoplex as binder satisfactory. Outcome, measured by first-season stocking, indicated satisfactory rodent control by endrin coating and, with reasonable survival, should provide adequate reproduction.

TAXON.: Rodentia

KEYWORDS: BRITISH COLUMBIA, FOREST REGENERATION, INSECTICIDES, OREGON, SEED & CONE DAMAGE, WASHINGTON

164. DICK, J., and W. H. LAWRENCE. 1957. Protective seeding with Tetramine-coated Douglas-fir seed. Weyerhaeuser Timber Co. For. Res. Notes. 10 p.

Experiment in seeding of tetramine-coated Douglas-fir to protect natural seedfall against rodent depredation conducted in winter of 1956-1957 on three tree farms of Douglas-fir region. Results indicated that protective seeding had no influence on first-season stocking of plots. No rodent aversion to Douglas-fir seed as a result of prior exposure to Tetramine-coated seed.

TAXON.: Rodentia

KEYWORDS: FOREST REGENERATION, INSECTICIDES, PACIFIC NORTHWEST, RODENTICIDES, SEED & CONE DAMAGE

165. DICKS, F. 1938. Occurrence of porcupines in western Washington. Murrelet 19(1-2):19.

Prediction that as logging operations reduce forest cover on west slope of Cascades, porcupines will increase.

TAXON.: *Erethizon dorsatum*

KEYWORDS: LOGGING, WASHINGTON

166. DIETZ, D. R. 1965. Deer nutrition research in range management. Trans. North Am. Wildl. Conf. 30:274-285.

Advantages and disadvantages of several nutritional measurement techniques as related to game-range management; nutritional values and digestibility of various browse species; management recommendations.

TAXON.: *Odocoileus hemionus*

KEYWORDS: COLORADO, FOOD HABITS, NUTRITION, WESTERN NORTH AMERICA

167. DIETZ, D. R., R. H. UDALL, and L. E. YEAGER. 1962. Chemical composition and digestibility by mule deer of selected forage species, Cache la Poudre Range, Colorado. Colo. Game Fish Dep. Tech. Bull. No. 14. 89 p.

Aspen and willow best sources of protein, fat, nitrogen-free extract, ash, calcium, and phosphorus; seasonal percentages given. On basis of amount consumed, feeds ranked as follows: alfalfa, bitterbrush, mountain mahogany, big sagebrush. Penned deer lost weight on alfalfa-sagebrush diet; gained on alfalfa, alfalfa-mahogany, and bitterbrush. Did not change weight on mahogany and alfalfa-bitterbrush diets. Discussion of digestibility; palatability and weight gain on mixed versus undiversified diet.

TAXON.: *Odocoileus hemionus*

KEYWORDS: COLORADO, FOOD HABITS, NUTRITION

168. DIMOCK, E. J., II. 1970. Ten-year height growth of Douglas-fir damaged by hare and deer. J. For. 68(5):285-288.

Varying amounts of damage to all seedlings, planted under dense bracken in an old cutover, caused through clipping by snowshoe hare and browsing by black-tailed deer.

TAXON.: *Lepus americanus, Odocoileus hemionus*

KEYWORDS: SEEDLING DAMAGE, WASHINGTON

169. DODGE, W. E., and D. L. CAMPBELL. 1965. Two techniques to reduce capture mortality. J. Mammal. 46(4):707.

Use of 50% dextrose-water solution oral or rectal gavage on snowshoe hares, mountain beavers, and Douglas squirrel, and of oxygen to black-tailed deer.

TAXON.: *Aplodontia rufa, Lepus americanus, Odocoileus hemionus columbianus, Tamiasciurus douglasii*

KEYWORDS: HANDLING, WASHINGTON

170. DODGE, W. E., and P. R. CANUTT. 1969. A review of the status of the porcupine (*Erethizon dorsatum epixanthum*) in western Oregon. USDI Bur. Sport Fish. Wildl. and USDA For. Serv. 25 p.

Porcupine damage to conifer stands highest in Josephine, Jackson, Washington, and Douglas Counties. Forests in Lane, Linn, and Clackamas Counties also showed significant damage. Ponderosa pine received greatest amount of damage, Douglas-fir second.

TAXON.: *Erethizon dorsatum epixanthum*

KEYWORDS: OREGON, TREE DAMAGE

171. DODGE, W. E., and M. B. CHURCH. 1965. Construction of transmitters for radio-tracking hares and mountain beavers. Northwest Sci. 39(3):118-122.

Describes circuitry, fabrication, and attachment of transmitters. Life 23 weeks or more, weight up to 38 g (1.3 oz), and transmission to 16 km (10 mi).

TAXON.: *Aplodontia rufa, Lepus americanus*

KEYWORDS: PACIFIC NORTHWEST, TRACKING

172. DOUGLAS, C. L. 1969. Comparative ecology of pinyon mice and deer mice in Mesa Verde National Park, Colorado. Univ. Kans. Publ., Mus. Nat. Hist. 18(5):421-504.

Home range, habitat characteristics, nesting and nest construction, reproduction, growth, parental behavior, changes due to increase in age, anomalies and injuries, food habits, water consumption, parasitism, and predation in relation to deer mice and pinyon mice.

TAXON.: *Peromyscus maniculatus, P. truei*

KEYWORDS: AGE, COLORADO, DISTRIBUTION, FOOD HABITS, HOME RANGE, MORTALITY, PARASITISM & DISEASE, POPULATION DYNAMICS, PREDATION, REPRODUCTION

173. DUFFIELD, J. W., and R. P. EIDE. 1962. Application of rabbit repellent to coniferous planting stock in the Pacific Northwest. J. For. 60(2):109-111.

Formulations of repellent spray, equipment, procedure, costs, and effects on nursery soil are given for ZAC (zinc dimethyl dithiocarbamate cyclohexamine complex) and TMTD (tetramethyl thiuram disulfide).

TAXON.: *Lepus americanus, Sylvilagus bachmani*

KEYWORDS: PACIFIC NORTHWEST, REPELLENTS, TREE DAMAGE

174. DUNMIRE, W. W. 1960. An altitudinal survey of reproduction in *Peromyscus maniculatus*. Ecology 41(1):174-182.

Reproduction of four wild populations of deer mice living at 1370, 2160, 2990, and 3780 m (4500, 7100, 9800, and 12,400 ft) elevation on White Mountain, California, studied from October 1956 through July 1957. Larger production rate at low elevations but much higher survival rate at high elevations. Aggregate sex ratio did not vary significantly with area or age. Population density greatest at 2160 m (7100 ft), least at elevational extremes. Intrauterine mortality inversely proportional to observed population density.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: AGE, CALIFORNIA, DISTRIBUTION, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION

175. DURRANT, S. D. 1952. Mammals of Utah. Taxonomy and distribution. Univ. Kans. Publ., Mus. Nat. Hist. 6:1-549.

Survey of mammals of Utah, taxonomic work, faunal areas, physiography, speciation.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HABITAT, UTAH

176. EDGE, E. R. 1931. Seasonal activity and growth in the Douglas ground squirrel. J. Mammal. 12(3):194-200.

Growth curve (straight).

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: BEHAVIOR, GROWTH, OREGON

177. EDGE, E. R. 1934. Burrows and burrowing habits of the Douglas ground squirrel. J. Mammal. 15(3):189-193.

Data from excavation of 14 complete burrow systems: greatest depth over 1.2 m (4 ft), number of entrances usually one, diameter 10 cm (4 in). Nests, food, drain, refuse and fecal pellet chambers, and activity in burrow.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: BEHAVIOR, DISTRIBUTION, HABITAT, OREGON

178. EDGE, E. R. 1935. A study of the relation of the Douglas ground squirrel to the vegetation and other ecological factors in western Oregon. Am. Midl. Nat. 16(4):949-959.

Competition for food by mice, other rodents, rabbits, and seed-eating birds. Domestic stock may reduce food supply making food competition critical for squirrel. Man, by poisoning and habitat modification, most important single factor affecting squirrels.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: COMPETITION, DISTRIBUTION, FOOD HABITS, HABITAT, OREGON, POPULATION DENSITY

179. EDSON, J. M. 1930. Wild animal population of the Mount Baker National Forest, Washington. Murrelet 11(2):14-15.

Occurrence and estimates of population density or abundance for elk, black-tailed deer, black bear, beaver, and porcupine.

TAXON.: *Castor canadensis, Cervus canadensis, Erethizon dorsatum, Euarctos americanus, Odocoileus hemionus columbianus*

KEYWORDS: DISTRIBUTION, POPULATION DENSITY, WASHINGTON

180. EDSON, J. M. 1932. Hibernation of the northwest jumping mouse. Murrelet 13(2):55-56.

Observations on nest and conditions of torpor.

TAXON.: *Zapus trinotatus*

KEYWORDS: BEHAVIOR, METABOLISM, WASHINGTON

181. EDWARDS, R. Y. 1958. Land form and caribou distribution in British Columbia. J. Mammal. 39(3):408-412.

Mountain caribou of British Columbia does not inhabit precipitous mountain masses, but rather rolling mountains and tablelands with arctic-alpine meadows and open subalpine forests.

TAXON.: *Rangifer tarandus arcticus*

KEYWORDS: BRITISH COLUMBIA, DISTRIBUTION, HABITAT

182. EDWARDS, R. Y., and R. W. RITCEY. 1958. Reproduction in a moose population. J. Wildl. Manage. 22(3):261-268.

Uteri from 218 moose from Wells Gray Park, B.C., collected in fall and winter over five years; 20% from yearlings, a year class that does not reproduce in this area. Older females 76% pregnant; 22% of pregnancies involved twins, no detectable variations due to age of females. Incidence of twins may be related to summer range quality. Most females conceive in same 10-day period each year, suggesting regulation by photoperiod.

TAXON.: *Alces alces*

KEYWORDS: BRITISH COLUMBIA, NUTRITION, REPRODUCTION

183. EDWARDS, R. Y., and R. W. RITCEY. 1960. Foods of caribou in Wells Gray Park, British Columbia. Can. Field Nat. 74(1):3-7.

Observations (93) of feeding and examination of 13 caribou stomachs showed variety of foods eaten in summer; main winter food is arboreal lichens (*Alectoria*). In Wells Gray Park five species of these lichens are present, and appear essential for survival of caribou in winter.

TAXON.: *Rangifer tarandus caribou*

KEYWORDS: BRITISH COLUMBIA, FOOD HABITS

184. EGOSCUE, H. J. 1965. Records of shrews, voles, chipmunks, cottontails and mountain sheep from Utah. J. Mammal. 46(4): 685-687.

Notes on reproduction, extensions of geographic ranges, and additional specimens of little-known species from Utah.

TAXON.: *Eutamias u. umbrinus, Microtus longicaudus latus, M. montanus nanus, M. pennsylvanicus pullatus, M. richardsoni myllodontus, Ovis canadensis, Sorex palustris navigator, S. vagrans obscurus, Sylvilagus audubonii arizonae*

KEYWORDS: DISTRIBUTION, REPRODUCTION, UTAH

185. ELLISON, L. 1946. The pocket gopher in relation to soil erosion on mountain range. Ecology 27(2):101-114.

Intensive trapping site in subalpine location and soil displacement by pocket gopher; 3.5% of area covered or affected. Tendency for pocket gopher to displace soil consistently downhill is factor in normal erosional creep, magnitude abnormally increased in proportion to absence of protective vegetation.

TAXON.: *Thomomys talpoides*

KEYWORDS: BEHAVIOR, DAMAGE, DISTRIBUTION, POPULATION DENSITY, UTAH

186. ELLISON, L., and C. M. ALDOUS. 1952. Influence of pocket gophers on vegetation of subalpine grassland in central Utah. Ecology 33(2):177-186.

Gophers controlled on one-half of plot fenced against livestock. Total vegetative production increased slightly in presence of gophers; annuals and ephemerals decreased on both halves, presumably because of exclusion of sheep. Conclusion: Gophers improve soil and probably increase vegetal production over forage they consume. Sex ratios; reproductive rates.

TAXON.: *Thomomys talpoides*

KEYWORDS: BEHAVIOR, DISTRIBUTION, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, SEX RATIO, UTAH

187. EMLEN, J. T., Jr., R. L. HINE, W. A. FULLER, and P. ALFONSO. 1957. Dropping boards for population studies of small mammals. J. Wildl. Manage. 21(3):300-314.

Small squares of wood, metal, or composition board set out in field as defecating stations provided means of measuring populations of small mammals; less selective, less disturbing, and more efficient than usual trapping techniques; more precise and objective than direct-sign surveys.

TAXON.: *Blarina brevicauda, Microtus pennsylvanicus, Peromyscus leucopus, Sorex cinereus*

KEYWORDS: FIELD METHODS, MIDWESTERN UNITED STATES POPULATION DENSITY

188. ERICKSON, A. B. 1944. Helminth infections in relation to population fluctuations in snowshoe hares. J. Wildl. Manage. 8(2): 134-153.

Summary of trematode, cestode, and nematode parasites found by month of year in sample of approximately 1000. Infections precede crashes.

TAXON.: *Lepus americanus*

KEYWORDS: MINNESOTA, MORTALITY, PARASITISM & DISEASE, POPULATION DYNAMICS

189. ERICKSON, A. W. 1965. The black bear in Alaska: Its ecology and management. Alaska Dep. Fish Game. 19 p.

Description; distribution and abundance; population dynamics; food, predatory habits and cannibalism; parasites, diseases, and pathological conditions; behavior; hibernation; physiological conditions; management. Bibliography of 84 titles.

TAXON.: *Euarctos americanus*

KEYWORDS: ALASKA, BEHAVIOR, CENSUS, DISTRIBUTION, FOOD HABITS, PARASITISM & DISEASE, POPULATION DYNAMICS

190. EVANS, F. C., and R. HOLDENRIED. 1941. Field study of ground squirrel (*Citellus beecheyi*) in relation to sylvatic plague. Proc. Soc. Exp. Biol. Med. 47(1):63-64.

Because of sedentary characters of squirrels, spread of plague probably has been by contact between individuals in a continuous population.

TAXON: *Otospermophilus beecheyi*

KEYWORDS: CALIFORNIA, GROWTH, HOME RANGE, MORTALITY, PARASITISM & DISEASE, POPULATION DYNAMICS

191. EVANS, F. C., and R. HOLDENRIED. 1943. A population study of the Beechey ground squirrel in central California. J. Mammal. 24(2): 231-260.

Population dynamics information. Reports on three years of investigation, during which 1154 squirrels were caught.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: AGE, CALIFORNIA, DISTRIBUTION, GROWTH, HOME RANGE, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, TRAPPING

192. EVANS, F. C., C. M. WHEELER, and J. R. DOUGLAS. 1943. Sylvatic plague studies. III. An epizootic of plague among ground squirrels (*Citellus beecheyi*) in Kern County, California. J. Infect. Dis. 72(1):68-76.

Description of foci of foci of infection found in 1941, upper Sonoran zone, Investigation of burrows, nests, fleas.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: CALIFORNIA, MORTALITY, PARASITISM & DISEASE

193. EVANS, H. F. 1964. An investigation of woodland caribou in northwestern United States. Trans. North Am. Wildl. Conf. 29: 445-453.

Prediction that caribou will continue to wander widely in small bands and occasionally be reported. Stable population of caribou could become established in Glacier National Park. Further prediction that man will continue to erode caribou numbers as wandering animals intersect human activities.

TAXON.: *Rangifer tarandus caribou*

KEYWORDS: DISTRIBUTION, FIRE, HOME RANGE, IDAHO, WESTERN NORTH AMERICA

194. FERGUSON, J. H., and G. E. FOLK, Jr. 1971. Effect of temperature and acclimation upon FFA levels in three species of rodents. Can. J. Zool. 49(3):303-305.

Free fatty acid (FFA) levels determined in warm- and cold-acclimated white rats, mice, and red squirrels. Concentrations of FFA in genetically cold-adapted species (red squirrel) highest and reflect its ability to maintain high metabolic rates reported by others. In red squirrels, FFA concentrations elevated after cold acclimation; acclimation of white rats and mice had no effect on FFA levels. Indicates greater capacity of red squirrel to respond to acclimating conditions.

TAXON.: *Mus musculus, Rattus rattus, Tamiasciurus hudsonicus*

KEYWORDS: BODY CONSTITUTION, DISTRIBUTION, METABOLISM

195. FINDLEY, J. S. 1951. Habitat preferences of four species of *Microtus* in Jackson Hole, Wyoming. J. Mammal. 32(1):118-120.

Comparison of habitat among four species of meadow mice.

TAXON.: *Microtus longicaudus, M. montanus, M. pennsylvanicus, M. richardsoni*

KEYWORDS: DISTRIBUTION, HABITAT, WYOMING

196. FINDLEY, J. S. 1955. Speciation of the wandering shrew. Univ. Kans. Publ., Mus. Nat. Hist. 9(1):1-68.

Attempts to clarify the vagrant shrew/dusky shrew relationship; descriptions, range maps, habitats.

TAXON.: *Sorex obscurus, S. vagrans*

KEYWORDS: DISTRIBUTION, HABITAT, HOME RANGE, WESTERN NORTH AMERICA

197. FINDLEY, J. S., and S. ANDERSON. 1956. Zoogeography of the montane mammals of Colorado. J. Mammal. 37(1):80-82.

Ranges of montane species correlated with dependence upon special habitats. More dependent and relatively restricted species show more differentiation on opposite sides of Wyoming basin than less restricted species. Discontinuity in boreal forest produced by erosion of Green River Canyon became important as a barrier to montane mammals later than discontinuity caused by desiccation of Wyoming basin.

TAXON.: *Callospermophilus lateralis, Erethizon dorsatum, Eutamias amoenus, Lepus americanus, Microtus longicaudus, Sorex cinereus, S. vagrans, Tamiasciurus hudsonicus*

KEYWORDS: COLORADO, DISTRIBUTION, HABITAT

198. FINDLEY, J. S., and N. C. NEGUS. 1953. Notes on the mammals of the Gothic region, Gunnison County, Colorado. J. Mammal. 34(2):235-239.

Survey of mammals in the area.

TAXON.: *Callospermophilus lateralis, Castor canadensis, Erethizon dorsatum, Lepus americanus, Microtus longicaudus, Neotoma cinerea, Peromyscus maniculatus, Tamiasciurus hudsonicus, Thomomys talpoides*

KEYWORDS: CENSUS, COLORADO, DISTRIBUTION

199. FINDLEY, R. B., Jr. 1960. Direct and indirect effects of some insecticides on western wildlife. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 40:121-129.

Preliminary results of investigations on DDT residues in big game, aldrin pollution of Lakes, toxaphene test, and Sevin test.

TAXON.: *Cervus canadensis, Odocoileus hemionus*

KEYWORDS: INSECTICIDES, MONTANA, MORBIDITY

200. FINLEY, R. B., Jr. 1969. Cone caches and middens of *Tamiasciurus* in the Rocky Mountain region. Univ. Kans. Mus. Nat. Hist. Misc. Publ. 51:233-273.

Conifer seed used for food, although not absolutely essential in case of cone failure. Often entire cone crop harvested and stored.

TAXON.: *Tamiasciurus hudsonicus*

KEYWORDS: BEHAVIOR, FOOD HABITS, FOREST REGENERATION, SEED & CONE DAMAGE, STANDING CROP

201. FINLEY, W. L. 1937. The beaver--Conserver of soil and water. Trans. North Am. Wildl. Conf. 2:295-297.

Catastrophic effect of removing beavers from a valley in Ochoco National Forest, Oregon, particularly in reduction of pasturage.

TAXON.: *Castor canadensis*

KEYWORDS: FOREST MANIPULATION, OREGON

202. FITCH, H. S. 1948. Ecology of the California ground squirrel on grazing lands. Am. Midl. Nat. 39(3):513-596.

Food habits, behavior, sex ratio, estrus, age distribution.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: AGE, BEHAVIOR, CALIFORNIA, DISTRIBUTION, FOOD HABITS, POPULATION DYNAMICS, REPRODUCTION

203. FITCH, H. S. 1958. Home ranges, territories, and seasonal movements of vertebrates of the Natural History Reservation. Univ. Kans. Publ., Mus. Nat. Hist. 11(3):63-326.

Data organized by species under status, habitat, movements. Checklist and summary of knowledge of local species. List of most common animals annotated to include specific data concerning numbers, special population studies on selected animals, types of behavior related to range and territory; travel behavior emphasized.

TAXON.: Multiple

KEYWORDS: CENSUS, DISPERSAL, DISTRIBUTION, HOME RANGE, MIDWESTERN UNITED STATES, POPULATION DYNAMICS

204. FITZWATER, W. D. 1943. Color marking of mammals, with special reference to squirrels. J. Wildl. Manage. 7(2):190-192.

Dye or stain applied to fur of captive animals to aid in full identification of wild mammals. Nyanzol A, a commercial fur dye, found to be most effective. Describes aids for handling animals.

TAXON.: *Marmota* sp., *Peromyscus* sp., *Sciurus* sp., *Sylvilagus* sp., *Tamias* sp.

KEYWORDS: HANDLING, MARKING, NORTHEASTERN UNITED STATES

205. FITZWATER, W. D. 1970. Trapping--The oldest profession. Vertebr. Pest Control Conf. 4:101-108.

Arbitrary classification of traps (improvised traps, snares and nets, cage traps, spring traps, and glues) discussed and examples of each group given. Principles applicable to most situations regardless of widely differing physical or behavioral characteristics of animals.

KEYWORDS: BAITS, TRAPPING

206. FLAHAUT, M. R. 1939. Unusual location of hibernating jumping mice. Murrelet 20(1):17-18.

Nest cavities of two hibernating jumping mice found in basement of a house under excavation. Nesting materials (shredded newspaper from supplies in basement.

TAXON.: *Zapus trinotatus*

KEYWORDS: BEHAVIOR, HABITAT, WASHINGTON

207. FLINN, P. 1959. The caribou of northern Idaho. Idaho Wildl. Rev. 11(5):10-11.

From hundreds of caribou in northern Idaho as recently as the 1890's, herds have dwindled to precariously small numbers. Discusses habitats, range, reproductive data.

TAXON.: *Rangifer tarandus caribou*

KEYWORDS: CENSUS, FOOD HABITS, HABITAT, IDAHO, REPRODUCTION

208. FORBES, R. B. 1966. Fall accumulation of fat in chipmunks. J. Mammal. 47(4):715-716.

Whole-body ether extraction on specimens collected from summer to fall did not confirm annual weight change cycle or prewinter fat deposition.

TAXON.: *Eutamias minimus, Tamias striatus*

KEYWORDS: BODY CONSTITUTION, METABOLISM, MINNESOTA

209. FOWLE, C. D., and R. Y. EDWARDS. 1954. The utility of break-back traps in population studies of small mammals. J. Wildl. Manage. 18(4):503-508.

Sunken can with several inches of water in bottom (water trap) 10% more efficient than snap traps. Baits for snap (break-back) traps

(cheese, bacon fat, oats) compared; rather ineffective, but nothing better offered.

TAXON.: *Blarina brevicauda, Clethrionomys gapperi, Condylura cristata, Eutamias minimus, Microsorex hoyi, Microtus pennsylvanicus, Napaeozapus insignis, Parascalops breweri, Peromyscus maniculatus, Sorex cinereus, S. fumeus, S. palustris, Synaptomys cooperi, Tamias striatus, Zapus hudsonius*

KEYWORDS: BAITS, TRAPPING

210. FRENCH, N. R., and H. W. KAAZ. 1968. The intrinsic rate of natural increase of irradiated *Peromyscus* in the laboratory. Ecology 49(6):1172-1179.

Life span of deer mice shortened by exposure to slightly more than 1 roentgen per day of gamma radiation.

TAXON.: *Peromyscus maniculatus sonoriensis*

KEYWORDS: AGE, CALIFORNIA, MORBIDITY, NEVADA

211. FRIEND, M. 1968. The lens technique. Trans. North Am. Wildl. Nat. Resour. Conf. 33:279-298.

Use of lens weights for aging animals: Review of work with 100 species; fixation methods, sources of variation such as nutrition.

TAXON.: *Alces alces, Castor canadensis, Lepus americanus, Odocoileus hemionus, O. virginianus, Tamiasciurus hudsonicus*

KEYWORDS: AGE, LABORATORY METHODS

212. FRITZ, R. E. 1951. Bear and squirrel damage to young redwood. J. For. 49(9):651-652.

Bear damage by clawing has been long known, but complete stripping of trees is new. May be pathological condition in bear, indicating they need some medication found in juicy spring wood under bark. Condition widespread.

TAXON.: *Euarctos americanus*

KEYWORDS: CALIFORNIA, TREE DAMAGE

213. FUJITA, H., and S. UTIDA. 1953. The effect of population density on the growth of an animal population. Ecology 34(3):488-498.

Discussion of experimental data on density effect on reproduction; mathematical analysis developed from logistic growth equation.

KEYWORDS: MODELS, POPULATION DENSITY, POPULATION DYNAMICS, POPULATION GROWTH

214. FULLER, W. A. 1969. An unusual winter movement of *Peromyscus maniculatus*. Can. Field Nat. 83(3):275-276.

Travel over snow in round trip of 490 m (1620 ft) for food, apparently without difficulty.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BEHAVIOR, HOME RANGE, NORTHWEST TERRITORIES

215. GABRIELSON, I. N. 1928. Notes on the habits and behavior of the porcupine in Oregon. J. Mammal. 9(1):33-38.

Increased damage noted in areas of incidence; observations on dens, food habits, dragging of food to dens, kinds of damage done, and movement in response to weather. Wet weather invariably causes denning.

TAXON.: *Erethizon dorsatum*

KEYWORDS: BEHAVIOR, DAMAGE, DISPERSAL, FOOD HABITS, OREGON

216. GABRIELSON, I. N. 1944. Controlling rodents and other small animal pests in Oregon. Oreg. Ext. Bull. No. 629. Corvallis. 23 p.

Discussion of damage observation, baits.

TAXON.: *Aplodontia rufa, Citellus* spp., *Dipodomys ordii columbianus, Erethizon dorsatum, Lepus californicus, Marmota flaviventris, Microtus* spp., *Otospermophilus beecheyi, Rattus norvegicus, Scapanus townsendii, Thomomys* spp.

KEYWORDS: BAITS, DAMAGE, FIELD METHODS, OREGON

217. GARD, R. 1961. Effects of beaver on trout in Sagehen Creek, California. J. Wildl. Manage. 25(3):221-242.

Substrate changed from gravel and rubble to silt. Beavers increased trout populations by providing more substrate for food; some trout crossed dams at all seasons.

TAXON.: *Castor canadensis*

KEYWORDS: CALIFORNIA, FOREST MANIPULATION

218. GASHWILER, J. S. 1959. Small mammal study in west-central Oregon. J. Mammal. 40(1):128-139.

Small-mammal populations change following such manipulations as logging and fire. Range, productivity.

TAXON.: *Clethrionomys occidentalis, Eutamias townsendii, Peromyscus maniculatus rubidus*

KEYWORDS: FIRE, FOREST MANIPULATION, LOGGING, OREGON, POPULATION DENSITY, POPULATION DYNAMICS

219. GASHWILER, J. S. 1960. Longevity of a wild deer mouse. Murrelet 41(2):27.

Capture and release data on a male deer mouse show that animal was about 32 months old when last captured. Animal was in good health and presumably in breeding condition when released. Captive record, Michigan, eight years four months.

TAXON.: *Peromyscus maniculatus rubidus*

KEYWORDS: AGE, OREGON

220. GASHWILER, J. S. 1965. Longevity and home range of a Townsend chipmunk. J. Mammal. 46(4):693.

Longevity of at least seven years for wild male Townsend chipmunk. Home range encompassed 0.6-0.7 ha (1.5-1.7 acres).

TAXON.: *Eutamias townsendii cooperi*

KEYWORDS: AGE, HOME RANGE, OREGON

221. GASHWILER, J. S. 1969. Deer mouse repopulation of a poisoned Douglas-fir clearcut. J. For. 67(7):494-497.

Although poisoned bait effective at least 38 days, animals infiltrated area 15 to 19 days after baiting. Within five to seven months population had reached same relative levels.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BAITS, MORBIDITY, OREGON, POPULATION DENSITY

222. GASHWILER, J. S. 1970a. Further study of conifer survival in a western Oregon clearcut. Ecology 51(5):849-854.

In seven-year study, survival of naturally disseminated, filled seed of Douglas-fir (10%), western hemlock (22%), and western

red-cedar too small for reliability. Large percentage of loss caused by mice, shrews, chipmunks, and birds.

TAXON.: *Clethrionomys occidentalis, Eutamias townsendii, Microtus oregoni, Neotoma cinerea, Otospermophilus beecheyi, Peromyscus maniculatus, Sorex trowbridgii, S. vagrans, Zapus trinotatus*

KEYWORDS: FOREST REGENERATION, LOGGING, OREGON, SEED & CONE DAMAGE

223. GASHWILER, J. S. 1970b. Plants and mammal changes on a clearcut in west-central Oregon. Ecology 51(6):1018-1026.

Plant composition and coverage and small-mammal populations compared in virgin forest (control) and clearcut (experimental) areas, April 1954 to October 1965. Changes in ground cover vegetation modest on control area but marked on experimental area. Animal populations fluctuated widely and irregularly.

TAXON.: *Clethrionomys occidentalis, Eutamias townsendii, Lepus americanus, Microtus oregoni, Neotoma cinerea, Otospermophilus beecheyi, Peromyscus maniculatus, Sorex trowbridgii, S. vagrans, Tamiasciurus douglasii, Zapus trinotatus*

KEYWORDS: COMPETITION, DAMAGE, FIRE, FOREST REGENERATION, OREGON, POPULATION DENSITY, POPULATION DYNAMICS

224. GASHWILER, J. S., W. L. ROBINETTE, and O. W. MORRIS. 1960. Foods of bobcats in Utah and eastern Nevada. J. Wildl. Manage. 24(2):226-229.

From stomach contents, analysis of animals obtained as hunter kills.

TAXON.: *Citellus* sp., *Cynomys leucurus, Dipodomys* sp., *Erethizon dorsatum, Lepus californicus, L. townsendii, Lynx rufus, Microtus* sp., *Neotoma* sp., *Odocoileus hemionus, Ondrata zibethica, Ovis aries, Peromyscus* sp., *Sylvilagus idahoensis, S. nuttallii*

KEYWORDS: FOOD HABITS, MORTALITY, NEVADA, UTAH

225. GAST, J. A. 1963. Rhodamine-B dye for studying movements of animals. Ecology 44(3):611-612.

Fluorescing dye; detectable 0.1 ppb; unaffected by metabolic processes.

TAXON.: *Microtus californicus*

KEYWORDS: CALIFORNIA, MARKING

226. GENTRY, J. B., F. B. GOLLEY, and J. T. McGINNIS. 1966. Effects of weather on captures of small mammals. Am. Midl. Nat. 75(2):526-530.

Influence of weather and weather change from preceding night, night of trapping, type of trapline, habitat, season, and day of trapping considered. Effect of weather on number of captures significant for total species.

TAXON.: *Peromyscus polionotus, Sigmodon hispidus*

KEYWORDS: CENSUS, POPULATION DENSITY, SOUTHEASTERN UNITED STATES, TRAPPING

227. GESSEL, S. P., and G. H. ORIANS. 1967. Rodent damage to fertilized Pacific silver fir in western Washington. Ecology 48(4):694-697.

Terminal shoots and buds, which had responded to nitrogen fertilization, significantly damaged by rodents, in contrast to adjacent unfertilized trees. Trapping studies showed no general rodent population increase: apparently changes in feeding behavior of red-backed mouse resulted from fertilization and related increase of nutrients in silver fir.

TAXON.: *Clethrionomys gapperi*

KEYWORDS: FOREST MANIPULATION, SEEDLING DAMAGE, TREE DAMAGE, WASHINGTON

228. GETZ, L. W. 1961. Factors affecting the local distribution of shrews. Am. Midl. Nat. 65(1):67-88.

Masked shrew prefers moist situations.

TAXON.: *Sorex cinereus*

KEYWORDS: DISTRIBUTION, HABITAT, MICHIGAN

229. GIGER, R. D. 1965. Home range, dispersal, homing and density of the Townsend mole, *Scapanus townsendii* (Bachman), near Tillamook, Oregon. M.S. thesis, Oregon State Univ., Corvallis. 63 p.

Information on density, home range, homing ability, and dispersal obtained from marked individuals.

TAXON.: *Scapanus townsendii*

KEYWORDS: DISPERSAL, DISTRIBUTION, HOME RANGE, MARKING, OREGON, POPULATION DENSITY, POPULATION DYNAMICS

230. GILBERT, P. F., O. C. WALLMO, and R. B. GILL. 1970. Effect of snow depth on mule deer in Middle Park, Colorado. J. Wildl. Manage. 34(1):15-23.

Distribution of mule deer governed largely by snow depth. In two of three winters of study, over 90% of winter range excluded from use because of snow. Fluctuations in winter deer counts negatively correlated with November-February precipitation.

TAXON.: *Odocoileus hemionus*

KEYWORDS: COLORADO, HABITAT, HOME RANGE

231. GLADFELTER, H. L. 1966. Nocturnal behavior of white-tailed deer in the Hatter Creek enclosure. Idaho Dep. Fish Game and Univ. Idaho Coop. Wildl. Res. Unit. vii + 46 p.

Sheep bells, observation perches, electronic devices used for observing and counting deer, July 1965 to April 1966. Nocturnal activity related to changes in light intensity, temperature, and humidity.

TAXON.: *Odocoileus virginianus*

KEYWORDS: FORAGING BEHAVIOR, HOME RANGE, IDAHO, MARKING

232. GLASS, B. P. 1951. Key to the skulls of North American mammals. Burgess Publ. Co., Minneapolis. 116 p.

Identification key to the skulls of all Recent North American mammals.

TAXON.: Multiple

KEYWORDS: LABORATORY METHODS, NORTH AMERICA

233. GLOVER, F. A. 1955. Black bear damage to redwood reproduction. J. Wildl. Manage. 19(4):437-443.

Black bear found to be responsible for most bark and cambium damage to redwood reproduction in Humboldt County, California. Second-growth timber 10-30 years old injured most, but 5- to 10-year class damage increased. Annual tree-damage period, during spring and summer, varied from 75 to 120 days.

TAXON.: *Euarctos americanus*

KEYWORDS: CALIFORNIA, FORAGING BEHAVIOR, TREE DAMAGE

234. GODFREY, G. K. 1954. Tracing field voles (*Microtus agrestis*) with a Geiger-Muller counter. Ecology 35(1):5-10.

Capsules containing 5-10 mg cobalt-60, emitting 100 μCi gamma radiation, soldered to Monel rings attached as leg bands. Detection possible up to 2-3 m (8-10 ft), but best at 0.6-1.2 m (2-4 ft).

TAXON.: *Microtus agrestis*

KEYWORDS: EUROPE, TRACKING

235. GODIN, A. J. 1964. A review of the literature on the mountain beaver. USDI Fish Wildl. Serv., Spec. Sci. Rep. Wildl. No. 78. 52 p.

Summarizes available knowledge about mountain beaver and lists 260 literature references.

TAXON.: *Aplodontia rufa*

KEYWORDS: AGE, BEHAVIOR, BIBLIOGRAPHY, DISTRIBUTION, FOOD HABITS, HOME RANGE, MORTALITY, PACIFIC NORTHWEST, POPULATION DYNAMICS, REPRODUCTION

236. GOERTZ, J. W. 1964. Habitats of three Oregon voles. Ecology 45(4):846-848.

Oregon vole found in all Coast Range Douglas-fir habitats but prefers grassy cutover areas. Townsend vole most closely associated with Coast Range and valley riparian habitats. Gray-tailed vole, found in all agricultural lands, always potential agricultural pest.

TAXON.: *Microtus montanus, M. oregoni, M. townsendii*

KEYWORDS: DISTRIBUTION, HABITAT, OREGON

237. GORDON, K. 1943. The natural history and behavior of the western chipmunk and the mantled ground squirrel. Oregon State Monogr., Stud. Zool. No. 5. Corvallis. 104 p.

Accounts of behavior including learning, discrimination, communication, social dominance, activity cycle. Population dynamics observations: density, sex ratio, reproduction, food relations.

TAXON.: *Callospermophilus lateralis, Eutamias amoenus, E. townsendii*

KEYWORDS: AGE, BEHAVIOR, COLORADO, FOOD HABITS, OREGON, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION

238. GRAF, W. 1955. The Roosevelt elk. Port Angeles Evening News, Port Angeles, Washington. 105 p.

Life history, behavior, and management of Roosevelt (or Olympic) elk, based principally on observational fieldwork. Roosevelt elk well adapted to region of dense vegetation and windfalls; does well in logged areas and areas of little value to livestock. Elk do some damage to crops, but many damage complaints are excuses for shooting elk.

TAXON.: *Cervus canadensis roosevelti*

KEYWORDS: BEHAVIOR, DAMAGE, DISTRIBUTION, FOOD HABITS, HARVEST, HOME RANGE, LOGGING, MORTALITY, OREGON, REPRODUCTION, WASHINGTON

239. GRAF, W. 1956. Territorialism in deer. J. Mammal. 37(20):165-170.

Description of signpost marking by Roosevelt elk, its significance, and similar behavior by other deer. Antler rubbing for sole purpose of removing velvet does not occur.

TAXON.: *Cervus canadensis roosevelti, Odocoileus hemionus*

KEYWORDS: BEHAVIOR, CALIFORNIA, HOME RANGE, OREGON, WASHINGTON

240. GRANGE, W. 1965. Fire and tree growth relationships to snowshoe rabbits. Ann. Tall Timbers Fire Ecol. Conf. 4:111-125.

Cycles in snowshoe populations due to fire. Because of food limitations, author estimates maximum population much lower than do others.

TAXON.: *Lepus americanus*

KEYWORDS: ALBERTA, BRITISH COLUMBIA, FIRE, FOREST REGENERATION, POPULATION DENSITY, POPULATION DYNAMICS, STANDING CROP

241. GRASSE, J. E. 1948. Wyoming beaver survey. Wyo. Wildl. 12(9):4-14.

Population census.

TAXON.: *Castor canadensis*

KEYWORDS: CENSUS, DISTRIBUTION, POPULATION DENSITY, WYOMING

242. GRASSE, J. E., and E. F. PUTNAM. 1955. Beaver management and ecology in Wyoming. Bull. Wyo. Game Fish Comm. No. 6. 74 p.

Wyoming became focus of trapping during fur exploitation period of early 1800s. Steel trap invented in 1823; beaver almost extinct by 1860. Life history, trapping, pelting, management achievements.

TAXON.: *Castor canadensis*

KEYWORDS: ANIMAL PRODUCTIVITY, CENSUS, TRAPPING, WYOMING

243. GREEN, R. G., and C. A. EVANS. 1940a. Studies on a population cycle of snowshoe hares on the Lake Alexander area. I. Gross annual censuses, 1932-1939. J. Wildl. Manage. 4(2):220-238.

Data obtained by systematic trapping and banding show population fluctuations of snowshoe hares.

TAXON.: *Lepus americanus*

KEYWORDS: CENSUS, MARKING, MINNESOTA, POPULATION DENSITY, POPULATION DYNAMICS, TRAPPING

244. GREEN, R. G., and C. A. EVANS. 1940b. Studies on a population cycle of snowshoe hares on the Lake Alexander area. II. Mortality according to age groups and seasons. J. Wildl. Manage. 4(3)267-278.

Age ratios 1934-1939; annual mortality.

TAXON.: *Lepus americanus*

KEYWORDS: AGE, MINNESOTA, MORTALITY, POPULATION DYNAMICS, POPULATION GROWTH, REPRODUCTION

245. GREEN, R. G., and C. A. EVANS. 1940c. Studies on a population cycle of snoeshoe hares on the Lake Alexander area. III. Effect of reproduction and mortality of young hares on the cycle. J. Wildl. Manage. 4(4):347-358.

Mortality among adult snowshoe hares relatively constant throughout years of decrease from maximum abundance to scarcity, then increase. Relatively constant reproductive rate maintained throughout cycle. Mortality among young hares showed pronounced variations synchronous with the cycle.

TAXON.: *Lepus americanus*

KEYWORDS: MINNESOTA, MORTALITY, POPULATION DENSITY, POPULATION DYNAMICS, SEX RATIO

246. GREER, K. R. 1966. Fertility rates of the northern Yellowstone elk populations. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 46:123-128.

Females have high incidence of prenatal fertility but differences apparent in postnatal survival. Maximum efficiency of survival expected from these age structures, 75%-85%. For many years before population stimulated it was about 20%-25%, and survival, after population reduction, increased to 40%-50%.

TAXON.: *Cervus canadensis*

KEYWORDS: AGE, MONTANA, REPRODUCTION, WYOMING

247. GREER, K. R., W. W. HAWKINS, Jr., and J. E. CATLIN. 1968. Experimental studies of controlled reproduction in elk (wapiti). J. Wildl. Manage. 32(2):368-376.

Chemical, mechanical, and surgical methods explored for controlling elk populations. Under some conditions herd regulation accomplished more effectively, precisely, and economically by ovariectomizing a number of cows at intervals of several years.

TAXON.: *Cervus canadensis*

KEYWORDS: DRUGS, MONTANA, REPRODUCTION, WYOMING

248. GREER, K. R., and H. W. YEAGER. 1967. Sex and age indications from upper canine teeth of elk (wapiti). J. Wildl. Manage. 31(3):408-417.

Comparison of ages assigned by canine teeth and by jaws; 96% agreement. Method tested with students.

TAXON.: *Cervus canadensis*

KEYWORDS: AGE, MONTANA, WYOMING

249. GRINNELL, J. 1923. The burrowing rodents of California as agents in soil formation. J. Mammal. 4(3):137-149.

Of 410 mammal species known in California, 227 rodents, 109 burrowers, mean population of which for entire state is 25/ha (10/acre). Observations on significance of burrowing.

TAXON.: Multiple

KEYWORDS: BEHAVIOR, CALIFORNIA, CENSUS, POPULATION DENSITY, POPULATION DYNAMICS

250. GRINNELL, J. 1939. Effects of a wet year on mammalian populations. J. Mammal. 20(1):62-64.

Very low populations, summer 1937, after unusually wet season; such fluctuations unpredictable.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: CALIFORNIA, POPULATION DENSITY, POPULATION DYNAMICS

251. GRINNELL, J., J. DIXON, and J. M. LINSDALE. 1930. Vertebrate natural history of a section of northern California through the Lassen Peak region. Univ. Calif. (Berkeley) Publ. Zool. No. 35. v + 594 p.

Survey of 39- by 300-km (24- by 124-mile) strip from Red Bluff east; account of life zones and vertebrate fauna.

TAXON.: Multiple

KEYWORDS: CALIFORNIA, DISTRIBUTION, HABITAT

252. GRINNELL, J., and T. I. STORER. 1924. Animal life in the Yosemite. An account of the mammals, birds, reptiles, and amphibians in a cross section of the Sierra Nevada. Univ. California Press, Berkeley. 752 p.

Occurrence, distribution, natural history.

TAXON.: *Aplodontia rufa, Callospermiphilus lateralis, Erethizon dorsatum, Euarctos americanus, Eutamias amoenus, E. townsendii, Microtus longicaudus, Neotoma cinerea, Odocoileus hemionus, Otospermophilus beecheyi, Peromyscus maniculatus, Sorex vagrans, Sylvilagus bachmani, Tamiasciurus douglasii, Thomomys talpoides*

KEYWORDS: CALIFORNIA, CENSUS, DISTRIBUTION, POPULATION DYNAMICS

253. GRODZINSKI, W., and K. SAWICKA-KAPUSTA. 1970. Energy values of tree seeds eaten by small mammals. Oikos 21(1):52-58.

Caloric values determined for 19 tree seeds (5 conifers and 14 deciduous). Nutritive content (seed minus coats) varied from 24% to 85% of whole seed to dry weight; no correlation between seed size and nutritive content. Caloric value of whole seeds ranged from 4.4 to 6.8 kcal/g dry wt, with highest values for conifers.

KEYWORDS: EUROPE, METABOLISM, NUTRITION, SEED & CONE DAMAGE

254. GRUELL, G. E., and N. J. PAPEZ. 1963. Movements of mule deer in northeastern Nevada. J. Wildl. Manage. 27(3):414-422.

Migratory habits of mule deer in typical basin-and-range country of northeastern Nevada studied for six years, 1955-1960. Total of 789 deer marked, on 12 different winter ranges. Sightings and kill returns indicated individual deer returned each year to same winter and summer ranges; deer wintering together did not necessarily summer together. Management implications of scattered, crisscross migrations discussed.

TAXON.: *Odocoileus hemionus*

KEYWORDS: HOME RANGE, MARKING, NEVADA

255. GUENTHER, S. F. 1948. Young beavers. J. Mammal. 29(4):419-420.

Weight and measurement data on kits born in captivity.

TAXON.: *Castor canadensis*

KEYWORDS: AGE, REPRODUCTION, WASHINGTON

256. GUTHRIE, J. E. 1965. The occurrence of sodium-22 in some species of Canadian biota. Can. J. Zool. 43(5):889-890.

Sodium-22 measured in samples of muscle tissue taken from red squirrel and hare, but not in flesh of short-tailed weasel.

TAXON.: *Lepus americanus, Mustela erminea, Tamiasciurus hudsonicus*

KEYWORDS: BODY CONSTITUTION, CANADA, MORBIDITY

257. GYSEL, L. W. 1960. An ecological study of the winter range of elk and mule deer in Rocky Mountain National Park. J. For. 58(9):696-703.

Analyses of plant growth in exclosures erected 25 years previous to measurements and observations in 1958, and on numerous observations by park technicians. Cover of shrubs or trees generally much greater inside exclosures than on open range; grasses and forbs decreased in exclosures.

TAXON.: *Cervus canadensis, Odocoileus hemionus*

KEYWORDS: COLORADO, COMPETITION, FENCING, HERB & SHRUB DAMAGE, SEEDLING DAMAGE

258. HAGMEIER, E. M., and C. D. STULTS. 1964. A numerical analysis of the distributional patterns of North American mammals. Syst. Zool. 13(3):125-155.

Suggests that natural areas used as biogeographic units be termed biogeographic provinces, or named according to taxonomic group on which they are based. Suggested grouping: Nearctic region; Coniferan subregion; Hudson, Mountain, and Oregon superprovinces; Hudsonian, Sitkan, Coloradan, Artemesian, Paulusian, Mountainian, and Oregonian provinces.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HABITAT, NORTH AMERICA

259. HAKALA, J. B. 1953. Productivity and growth rates of beaver in interior Alaska. Sci. Alaska 2:327-330 (Proc. 2d Alaskan Sci. Conf., Alaska Div. AAAS, 1951).

Beaver, interior Alaska; growth and productivity.

TAXON.: *Castor canadensis*

KEYWORDS: ALASKA, ANIMAL PRODUCTIVITY, GROWTH, POPULATION DYNAMICS, REPRODUCTION

260. HALAZON, G. C., and H. K. BUECHNER. 1956. Post-conception ovulation in elk. Trans. North Am. Wildl. Conf. 21:545-554.

Analysis of 289 elk ovaries indicated 66% of all pregnant animals examined had two corpora lutea; in some populations this figure may approach 90%.

TAXON.: *Cervus canadensis*

KEYWORDS: REPRODUCTION, WASHINGTON

261. HALL, E. R. 1946. Mammals of Nevada. Univ. California Press, Berkeley. 710 p.

Topography of Nevada, climate, floral belts, life zones, faunal areas, factors responsible for geographic distribution and speciation, checklist, illustrated key to species; accounts of species and subspecies, and of the 68 type localities of mammals in Nevada; gazetteer, glossary, bibliography, index. For each of the 232 kinds of Nevada mammals, belonging to 111 species, are given (1) currently accepted scientific name; (2) vernacular name; (3) synonymy, including citation to the original description; (4) known distribution in Nevada; (5) measurements, weights, systematic comments, and natural history notes when available; and (6) specific records of occurrence in Nevada by county and precise locality. Distribution maps and drawings of skulls provided for most species.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HABITAT, NEVADA

262. HALL, E. R. 1965. Names of species of North American mammals north of Mexico. Univ. Kans. Mus. Nat. Hist. Misc. Publ. 43:1-16.

A revision of Misc. Publ. 14 (Vernacular names for North American mammals north of Mexico).

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, NORTH AMERICA

263. HALL, E. R., and K. R. KELSON. 1959. The mammals of North America. Ronald Press, New York. 2 vol. xxiii + 1083 + 79 p.

Summation of systematic American mammalogy, treating 1003 species.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, NORTH AMERICA

264. HALL, H. M., and J. GRINNELL. 1919. Life-zone indicators in California. Proc. Calif. Acad. Sci., Ser. 4, 9:37-67.

Lists plants and vertebrate animals used in determining various life zones of the state.

TAXON.: *Aplodontia rufa, Cervus canadensis, Erethizon dorsatum, Euarctos americanus, Eutamias amoenus, E. townsendii, Lepus americanus, Neurotrichus gibbsii, Scapanus townsendii, Sorex vagrans, Sylvilagus bachmani, Zapus trinotatus*

KEYWORDS: CALIFORNIA, DISTRIBUTION

265. HALL, J. G. 1960. Willow and aspen in the ecology of beaver on Sagehen Creek, California. Ecology 41(3):484-494.

Analysis and interpretation of willow and aspen use patterns by three beaver colonies in northern Sierra Nevadas. Rate at which beaver cut aspen correlated directly with supply. Rate of willow use showed no correlation with supply but was related inversely to aspen supply.

TAXON.: *Castor canadensis*

KEYWORDS: CALIFORNIA, FOOD HABITS, STANDING CROP, TREE DAMAGE

266. HAMMEL, H. T., T. J. DAWSON, R. M. ABRAMS, and H. T. ANDERSON. 1968. Total calorimetric measurements of *Citellus lateralis* in hibernation. Physiol. Zool. 41(3):341-357.

Direct and indirect rapid-response calorimetry performed on golden-mantled ground squirrels in euthermic state, in hibernation over a range of air temperatures from 3° to 13°C, and during arousal from hibernation. In deep hibernation, regulator of internal body temperature appears inactive; arousal starts with activation of intense oxidative source of heat.

TAXON.: *Callospermophilus lateralis*

KEYWORDS: BEHAVIOR, BODY CONSTITUTION, IDAHO, METABOLISM, NORTHEASTERN UNITED STATES

267. HANCOCK, N. V. 1957. A preliminary report of elk reproduction in Utah with special reference to precociousness in the yearling female. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 37:195-197.

Yearling elk found to ovulate and bear young, especially after mild or moderate winter. Incidence of ovulation by yearlings varied by herd and year from 0% to about 67%.

TAXON.: *Cervus canadensis*

KEYWORDS: REPRODUCTION, UTAH

268. HANDLEY, C. O. 1969. Fire and mammals. Proc. Annu. Tall Timbers Fire Ecol. Conf. 9:151-159.

Burrowing protects grassland mammal from fire, but fire may occur only occasionally in its lifetime. The same burrow protects it every day against predators and the vagaries of climate, maintaining a more uniform temperature, higher relative humidity, and lower evaporation rate than at surface of ground. Is burrowing habit adaptation to fire or other environmental factors?

TAXON.: Multiple

KEYWORDS: FIRE, HABITAT

269. HANSEN, D. G. 1956. An ecological survey of the vertebrate animals on Steen's Mountain, Harney County, Oregon. Ph.D. thesis, Oregon State Univ., Corvallis. 199 p.

Although two conifers (juniper and white fir) grow here, this is not typical coniferous forest habitat. Observations on occurrence and distribution of vertebrates in this montane island.

TAXON.: *Callospermophilus lateralis, Castor canadensis, Cervus canadensis, Erethizon dorsatum, Eutamias amoenus, Microtus longicaudus, Neotoma cinerea, Odocoileus hemionus, Peromyscus maniculatus, Sorex vagrans, Thomomys talpoides*

KEYWORDS: CENSUS, DISTRIBUTION, OREGON, POPULATION DENSITY

270. HANSEN, R. M. 1960. Age and reproductive characteristics of mountain pocket gophers in Colorado. J. Mammal. 41(3):323-335.

Qualitative and biometric analysis of data collected on 1738 specimens.

TAXON.: *Thomomys talpoides*

KEYWORDS: AGE, BEHAVIOR, COLORADO, GROWTH, REPRODUCTION

271. HANSEN, R. M. 1962. Movements and survival of *Thomomys talpoides* in a mima-mound habitat. Ecology 43(3):151-154.

Capture and banding to assess life span and movement. Maximum known age about four years. Average distances between successive captures greater for young than adults. High relative rate of survival of adults to young. Strong territorial habits of pocket gophers in association with mima-mound microrelief favor adult survival and resulted in comparatively lower survival of young.

TAXON.: *Thomomys talpoides*

KEYWORDS: AGE, BEHAVIOR, COLORADO, HABITAT, MARKING, MORTALITY, POPULATION DYNAMICS, TRAPPING

272. HANSEN, R. M. 1965. Pocket gopher density in an enclosure of native habitat. J. Mammal. 46(3):508-509.

Carrying capacity of enclosure cannot be used to predict density on nearby habitats. Apparently potentially more gophers than are usually observed could survive on rangelands on Black Mesa.

TAXON.: *Thomomys talpoides*

KEYWORDS: COLORADO, POPULATION DENSITY

273. HANSEN, R. M., and G. D. BEAR. 1964. Comparison of pocket gophers from alpine, subalpine, and shrub-grassland habitats. J. Mammal. 45(4):638-640.

Weights and measurements.

TAXON.: *Thomomys talpoides*

KEYWORDS: COLORADO, GROWTH, REPRODUCTION

274. HANSEN, R. M., and R. F. BECK. 1968. Habitat of pocket gophers in Cochetopa Creek drainage, Colorado. Am. Midl. Nat. 79(1):103-117.

Description of habitat; methods of censusing.

TAXON.: *Thomomys talpoides*

KEYWORDS: CENSUS, COLORADO, DISTRIBUTION, HABITAT, POPULATION DENSITY

275. HANSEN, R. M., and R. S. MILLER. 1959. Observations on the plural occupancy of pocket gopher burrow systems. J. Mammal. 40(4):577-584.

Plural captures of 133 individuals in 10 age-sex combinations in sample of 881 pocket gophers analyzed and compared with similar data from previous studies.

TAXON.: *Thomomys talpoides*

KEYWORDS: BREEDING BEHAVIOR, COLORADO, DISPERSAL

276. HANSEN, R. M., and M. J. MORRIS. 1968. Movement of rocks by northern pocket gophers. J. Mammal. 49(3):391-399.

Rocks larger than 2.5 cm (1 in) diameter avoided. "Sorting" behavior; fecal pellets in special chambers or old galleries; more rock moving in wet than dry soil.

TAXON.: *Thomomys talpoides*

KEYWORDS: BEHAVIOR, COLORADO

277. HARN, J. H. 1960. Natality and mortality of Roosevelt elk in northern California. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 40:220-223.

Malnutrition (19.6%) and poaching (17.8%) two most important factors in elk loss. Habitat improvement and reduction of elk on overstocked areas essential to ensure perpetuation of healthy elk population in northern California.

TAXON.: *Cervus canadensis roosevelti*

KEYWORDS: CALIFORNIA, HARVEST, MORTALITY, NUTRITION, POPULATION DENSITY, REPRODUCTION

278. HARPER, J. A. 1962. Daytime feeding habits of Roosevelt elk on Boyes Prairie, California. J. Wildl. Manage. 26(1):97-100.

In general, grasses dominated herd's diet, browse plants second, forbs third in importance. Species not necessarily consumed in relation to their availability in plant cover.

TAXON.: *Cervus canadensis roosevelti*

KEYWORDS: CALIFORNIA, FOOD HABITS

279. HARPER, J. A. 1964. Movement and associated behavior of Roosevelt elk in southwestern Oregon. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 44:139-143.

Movement of elk affected by food availability, topography, weather. Movements vary from daily wandering of feeding animals through

interchange of animals between herds, to far-reaching wanderings of bulls in fall and spring. Of tagged animals observed, 63% less than 1.6 km (1 mi) from point of tagging; only 1% had moved more than 8 km (5 mi).

TAXON.: *Cervus canadensis roosevelti*

KEYWORDS: DISPERSAL, HABITAT, HOME RANGE, MARKING, OREGON

280. HARPER, J. A., J. H. HARN, W. W. BENTLEY, and C. F. YOCUM. 1967. The status and ecology of the Roosevelt elk in California. Wildl. Monogr. no. 16.

Distribution and abundance of Roosevelt elk past and present, physical characteristics, food habits, social behavior, natality, mortality. Description of Prairie Creek study area.

TAXON.: *Cervus canadensis roosevelti*

KEYWORDS: BEHAVIOR, CALIFORNIA, CENSUS, DISTRIBUTION, FOOD HABITS, HOME RANGE, MORTALITY, REPRODUCTION

281. HARRIS, J. T. 1959. Total mule deer population estimates from pellet counts. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 39:237-247.

Total population estimates using pellet-count technique generally conservative. Variables associated with pellet-group population estimates.

TAXON.: *Odocoileus hemionus*

KEYWORDS: CENSUS, COLORADO

282. HARRIS, J. T. 1964. Population dynamics of the White River elk herd, Colorado. Ph.D. thesis, Univ. Michigan, Ann Arbor. 200 p.

Classification of 15,871 animals during five-year period showed rapidly increasing elk population, apparently still below carrying capacity of its range; able to increase in spite of relatively heavy annual harvests (over 30%) because sex ratio distorted in favor of reproductive segment, high level of nutrition, minimum natural mortality, and significant number of yearlings breeding.

TAXON.: *Cervus canadensis*

KEYWORDS: AGE, COLORADO, HARVEST, POPULATION DENSITY, POPULATION DYNAMICS, POPULATION GROWTH, SEX RATIO

283. HATFIELD, D. M. 1939. Rate of metabolism in *Microtus* and *Peromyscus*. Murrelet 20(3):54-56.

Metabolic rate measured by carbon dioxide output. In animals of comparable weight, meadow mice averaged higher rate.

TAXON.: *Microtus* spp., *Peromyscus* spp.

KEYWORDS: LABORATORY METHODS, METABOLISM, MINNESOTA

284. HAWBECKER, A. C. 1955. Occurrence of *Peromyscus*. J. Mammal. 36(4):569-571.

List of small mammals observed, and observations on travels of deer mice during eight nights of livetrapping.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: CALIFORNIA, DISPERSAL, TRAPPING

285. HAY, K. G. 1957. Record beaver litter for Colorado. J. Mammal. 38(2):268-269.

Litter of eight fetuses.

TAXON.: *Castor canadensis*

KEYWORDS: COLORADO, REPRODUCTION

286. HAY, K. G. 1958. Beaver census methods in the Rocky Mountain region. J. Wildl. Manage. 22(4):395-402.

Livetrapping unreliable as intensive census method; dead-trapping used to determine average number of beavers per wintering colony. Observations, pond draining, and dislodging with smoke cartridges grossly inadequate for census purposes. Dams, scent mounds, size of main lodge, and number of lodges likewise invalid as population indexes. Aerial coverage of drainages, using food cache as index, accurate and practical census method.

TAXON.: *Castor canadensis*

KEYWORDS: BEHAVIOR, CENSUS, COLORADO, FOOD HABITS, POPULATION DENSITY, TRAPPING

287. HAYWARD, C. L. 1940. Feeding habits of the red squirrel. J. Mammal. 21(2):220.

Observations on number of Douglas-fir seeds consumed at one time and of cone-cutting activity.

TAXON.: *Tamiasciurus hudsonicus*

KEYWORDS: FOOD HABITS, SEED & CONE DAMAGE, UTAH

288. HAYWARD, J. S. 1965. Metabolic rate and its temperature-adaptive significance in six geographic races of *Peromyscus*. Can. J. Zool. 43(2):309-323.

Metabolic rate characteristics of six races of deer mice from wide range of habitats, determined over temperature range 0°-35°C. Conclusion: Basal metabolic rate is nonadaptive to climate in these races of deer mice and consequently has played no important part in their distribution and speciation.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BODY CONSTITUTION, BRITISH COLUMBIA, DISTRIBUTION, METABOLISM, POPULATION DYNAMICS

289. HEACOX, F. F., and W. H. LAWRENCE. 1962. Industrial forestry and wildlife--The Northwest. J. For. 60(1):10-13.

Brief review of forest wildlife damage problems in the Northwest. Economic loss figures, expenditures by industrial forest owners for control and prevention of wildlife damage to forest crops during 1959; efforts to control damage by game and nongame species.

TAXON.: Multiple

KEYWORDS: DAMAGE, FOREST MANIPULATION, PACIFIC NORTHWEST

290. HEADY, H. F. 1954. Viable seed recovered from fecal pellets of sheep and deer. J. Range Manage. 7(6):259-261.

Sheep and deer may carry seeds of noxious plants to cultivated fields; might be used to spread desirable forage species. Much variation found between individuals and between rumen and pellets.

TAXON.: *Odocoileus hemionus, Ovis aries*

KEYWORDS: CALIFORNIA, FOOD HABITS

291. HEALEY, M. C. 1967. Aggression and self-regulation of population size in deer mice. Ecology 48(3):377-391.

Seasonal changes in growth and survival of juvenile deer mice determined by seasonal changes in aggressiveness of adult population.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: AGE, BEHAVIOR, BRITISH COLUMBIA, DISPERSAL, HOME RANGE, MORTALITY, POPULATION DYNAMICS, REPRODUCTION

292. HENSLEY, A. L. 1946. A progress report on beaver management in California. Calif. Fish Game 32(2):87-99.

Account of beavers in California, history of fur era and protective legislation; transplanting operations (with tabulated summary), management problems.

TAXON.: *Castor canadensiss*

KEYWORDS: ANIMAL PRODUCTIVITY, CALIFORNIA, DAMAGE, FOREST MANIPULATION, HANDLING

293. HENSLEY, A. L., and B. C. FOX. 1948. Experiments on the management of Colorado River beaver. Calif. Fish Game 34(3):115-131.

Experimental management practices.

TAXON.: *Castor canadensis*

KEYWORDS: ANIMAL PRODUCTIVITY, CALIFORNIA, FOREST MANIPULATION

294. HICKIE, P. 1957. The application of ecology to wildlife management. Ecology 38(1):53-56.

Aerial direct seeding of Douglas-fir necessary in Pacific Northwest; successful regeneration nearly impossible without rodent control. Rodent populations increase in weedy, shrubby habitat following logging; futile to keep rodent population poisoned long enough to let seed germinate. Tests of repellents, poisons, color coatings.

TAXON.: Rodentia

KEYWORDS: CENSUS, FOREST REGENERATION, PACIFIC NORTHWEST, REPELLENTS, RODENTICIDES, SEED & CONE DAMAGE, SEEDLING DAMAGE

295. HOCK, R. J., and J. C. ROBERTS. 1966. Effect of altitude on oxygen consumption of deer mice: Relation of temperature and season. Can. J. Zool. 44(3):365-376.

Metabolic rates of deer mice measured at several elevations and ambient temperatures. Seasonal changes in metabolic rates differ markedly with altitude, but no clear-cut relationship between body temperature and altitude; factors other than hypoxia may influence body temperature and thermoregulation.

TAXON.: *Peromyscus maniculatus sonoriensis*

KEYWORDS: CALIFORNIA, DISTRIBUTION, METABOLISM

296. HODGDON, K. W. 1949. Productivity data from placental scars in beavers. J. Wildl. Manage. 13(4):412-414.

Methods of locating and counting placental scars. Study of 155 beaver carcasses showed 39 adult females, 20 of which had placental scars. Placental scars may persist for only one year.

TAXON.: *Castor canadensis*

KEYWORDS: ANIMAL PRODUCTIVITY, MICHIGAN, NORTHEASTERN UNITED STATES, REPRODUCTION

297. HOFFER, M. C., P. C. PASSOF, and R. KROHN. 1969. Field evaluation of DRC-714 for deer-mouse control in a redwood habitat. J. For. 67(3):158-159.

Wheat bait treated with DRC-714 at one-seed-lethal concentration distributed by helicopter on three plots and a buffer zone. Reduction in number of deer mice on treated plots; little change on control plot.

TAXON.: *Peromyscus maniculatus rubidus*

KEYWORDS: BAITS, CALIFORNIA, MORTALITY, SEED & CONE DAMAGE

298. HOFFMAN, G. R. 1960. The small mammal components of six climax plant associations in eastern Washington and northern Idaho. Ecology 41(3):571-572.

Extension of Rickard's 1960 work; 2700 trap days, 110 specimens, 11 species small mammals from 6 plant associations.

TAXON.: *Eutamias amoenus, Microtus montanus, Peromyscus maniculatus, Sorex cinereus, S. vagrans*

KEYWORDS: DISTRIBUTION, IDAHO, POPULATION DYNAMICS, TRAPPING, WASHINGTON

299. HOFFMAN, R. S. 1955. A population-high for *Peromyscus maniculatus*. J. Mammal. 36(4):571-572.

Mice caught in nearly equal numbers in several different habitats; 30% adult; more females than males. Populations of other small mammals relatively low. Table compares size of catch, and age and sex ratios with those from same area when medium-low population.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: CALIFORNIA, CENSUS, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION

300. HOFFMAN, R. S. 1958. The role of reproduction and mortality in population fluctuations of voles (*Microtus*). Ecol. Monogr. 28(1):79-109.

Fluctuations in two populations of voles, one at high elevation in the Sierras, one at low elevation on the coast. Natality varied inversely as density; lowered mortality caused increases, raised mortality declines.

TAXON.: *Microtus californicus, M. montanus*

KEYWORDS: CALIFORNIA, MORTALITY, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION

301. HOFFMANN, R. S., P. L. WRIGHT, and F. E. NEWBY. 1969. The distribution of some mammals in Montana. I. Mammals other than bats. J. Mammal. 50(3):579-604.

Distribution of 40 species; range maps.

TAXON.: Multiple

KEYWORDS: CENSUS, DISTRIBUTION, MONTANA

302. HOLLING, C. S. 1955. The selection by certain small mammals of dead, parasitized and healthy prepupae of the European pine sawfly, *Neodiprion sertifer* (Geoff.). Can. J. Zool. 33(6):404-419.

Eaten by shrews and deer mice. Good on methods.

TAXON.: *Blarina brevicauda, Peromyscus maniculatus, Sorex cinereus*

KEYWORDS: CANADA, FORAGING BEHAVIOR

303. HOOVEN, E. F. 1957. Field test of endrin-treated Douglas-fir seed. Oreg. For. Lands Res. Cent. Res. Note 28.

Two test plots planted with seed treated with endrin and adhesive, one plot with untreated seed. Small mammals of Endrin plots dropped to zero or nearly zero; apparently both residents and invaders were killed.

TAXON.: *Microtus townsendii, Peromyscus maniculatus*

KEYWORDS: CENSUS, FOREST MANIPULATION, INSECTICIDES, MARKING, OREGON, SEED & CONE DAMAGE

304. HOOVEN, E. F. 1958a. The relationship of the white-footed deer mouse to reforestation by direct seeding in the Tillamook Burn. M.S. thesis, Oregon State Univ., Corvallis.

White-footed deer mouse has enormous capacity for coniferous tree seed, which it eats immediately or stores for future use; presents serious problem in rehabilitation of nonstocked forest lands.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: FOOD HABITS, FOREST REGENERATION, OREGON, SEED & CONE DAMAGE

305. HOOVEN, E. F. 1958b. Deer mouse and reforestation in the Tillamook Burn. Oreg. For. Lands Res. Cent. (Corvallis) Res. Note 37. 31 p.

Deer mice studied by livetrapping in four different plots seeded aerially with Douglas-fir seed. Tetramine-treated seed used on two plots, untreated seed on two. No evidence that either type of seed affected mouse populations. No data concerning seedling success.

TAXON.: *Peromyscus maniculatus rubidus*

KEYWORDS: AGE, BEHAVIOR, FOREST REGENERATION, OREGON, POPULATION DENSITY, POPULATION DYNAMICS, REPELLENTS, REPRODUCTION, SEED & CONE DAMAGE

306. HOOVEN, E. F. 1971. Pocket gopher damage on ponderosa pine plantations in southwestern Oregon. J. Wildl. Manage. 35(2): 346-353.

After logging, pocket gophers increase in substantial numbers; can nullify efforts to reforest with ponderosa pine. Seedling survival of 87% in areas free of pocket gophers, in contrast to 12% in areas occupied by them.

TAXON.: *Thomomys monticola*

KEYWORDS: FOREST REGENERATION, LOGGING, OREGON, SEEDLING DAMAGE

307. HOPKINS, T. L. 1956. The toxicity of several chlorinated hydrocarbon and organic phosphorus insecticides to field mice belonging to the genera *Peromyscus* and *Microtus*. M.S. thesis, Oregon State Univ., Corvallis. 52 p.

Analysis of toxicity of DDT, dieldrin, chlordane, malathion, toxaphene, parathion, EPN, and several other selected compounds when applied dermally or orally at various stated concentrations.

TAXON.: *Microtus montanus, Peromyscus maniculatus*

KEYWORDS: DAMAGE, INSECTICIDES, MORBIDITY, OREGON

308. HORN, E. E. 1923. Some notes concerning the breeding habits of *Thomomys townsendii* observed near Vale, Malheur County, Oregon, during the spring of 1921. J. Mammal. 4(1):37-39.

Females produce at least two litters per year, average about seven young per litter.

TAXON.: *Thomomys townsendii*

KEYWORDS: BREEDING BEHAVIOR, OREGON

309. HORN, E. E., and H. S. FITCH. 1946. Trapping the California ground squirrel. J. Mammal. 27(3):220-224.

Design of a wire live-trap, more successful than any other trap used; illustrated.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: CALIFORNIA, TRAPPING

310. HORNING, W. H. 1962. Wildlife and federal lands--The Bureau of Land Management in western Oregon. J. For. 60(1):24-25.

Forest openings created by cutting quickly invaded by natural vegetation, causing virtual irruption of deer, elk, other animals. Attempts to regenete cutover areas seriously handicapped by increased wildlife population. Efforts to develop deer repellents, rodenticides. Control of damage by black bears and porcupines discussed. Estimated annual damage chargeable to wildlife, $1.5 million.

TAXON.: *Cervus canadensis, Erethizon dorsatum, Euarctos americanus, Odocoileus hemionus*

KEYWORDS: BAITS, DAMAGE, FENCING, FOREST REGENERATION, LOGGING, OREGON, REPELLENTS

311. HORTON, J. 1930. Birds and animals killed by forest fires. Murrelet 11(1):22.

Reports of animals injured or killed by a fire in southwestern Washington and of some that escaped.

TAXON.: *Eutamias townsendii, Lepus americanus, Odocoileus hemionus columbianus, Peromyscus* spp.

KEYWORDS: FIRE, FOREST MANIPULATION, WASHINGTON

312. HOSKINS, L. W., and P. D. DALKE. 1955. Winter browse on the Pocatello big game range in southeastern Idaho. J. Wildl. Manage. 19(2):215-225.

Range generally in good condition; competition between game and cattle slight. Discussion of preferences for different plant species under varying conditions.

TAXON.: *Bos taurus, Cervus canadensis, Odocoileus hemionus, Ovis aries*

KEYWORDS: COMPETITION, FOOD HABITS, IDAHO

313. HOWARD, W. E. 1961. A pocket gopher population crash. J. Mammal. 42(2):258-260.

Sudden population decline noted, fall 1959. From estimates made of activity (not from trapping data), density dropped from high of 153/ha (62 acre) to low of 5/ha (2/acre), but averaged 84% over two years; reasons unknown.

TAXON.: *Thomomys bottae*

KEYWORDS: CALIFORNIA, POPULATION DENSITY, POPULATION DYNAMICS

314. HOWARD, W. E. 1967. Biological control of vertebrate pests. Proc. Vetebr. Pest Control Conf. 3:137-157.

Historical and practical treatment of use of biological agents in controlling population density for a variety of damaging animals.

TAXON.: *Canis familiaris, Canis latrans, Euarctos americanus, Mephitis mephitis, Mustela vison, Procyon lotor, Urocyon cinereoargenteus, Vulpes fulva*

KEYWORDS: CALIFORNIA, DAMAGE, POPULATION DENSITY, POPULATION DYNAMICS

315. HOWARD, W. E., and R. E. COLE. 1967. Olfaction in seed selection by deer mice. J. Mammal. 48(1):147-150.

Deer mice are most common forest rodent species hindering regeneration of cutover forests in the western United States. Experiments using peat moss over concrete, buried petri dishes containing seeds of ponderosa pine, Douglas-fir, and others.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BEHAVIOR, CALIFORNIA, FOOD HABITS, FOREST MANIPULATION, SEED & CONE DAMAGE

316. HOWARD, W. E., and L. G. INGLES. 1951. Outline for an ecological life history of pocket gophers and other fossorial mammals. Ecology 32(3):537-544.

Life history data lacking on the three North American genera of pocket gophers, western, eastern, and southern. Suggests methods of investigation, problems needing investigation.

TAXON.: *Cratogeomys* spp., *Geomys* spp., *Thomomys* spp.

KEYWORDS: AGE, GROWTH, NORTH AMERICA, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION

317. HOWARD, W. E., and R. E. MARSH. 1968. Food detection by deer mice using olfactory rather than visual cues. Anim. Behav. 16(1):13-17.

Percentage of buried conifer and agricultural grain seeds either detected or removed by ten deer mice in a subdued-light environment did not differ significantly from percentage detected or removed in total darkness.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BEHAVIOR, CALIFORNIA, FOOD HABITS, SEED & CONE DAMAGE

318. HOWARD, W. E., R. E. MARSH, and R. E. COLE. 1970. A Diphacinone bait for deer mouse control. J. For. 69(4):220-222.

Deer mice found susceptible to Diphacinone, an anticoagulant rodenticide. Laboratory tests. When 0.01% Diphacinone bait broadcast in two field tests, no deer mice tagged prior to treatment were recaptured.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BAITS, CALIFORNIA, MORBIDITY, SEED & CONE DAMAGE

319. HOWARD, W. E., S. D. PALMATEER, and R. E. MARSH. 1969. A body capacitor-olfactometer for squirrels and rats. J. Mammal. 50(4):771-776.

Developed for quantitative measurement of number and duration of odor-seeking (primarily food-seeking) responses of ground squirrels and rats to various olfactory cues presented free of influence of taste, without reward of food, and without training to the instrument. Olfactometer could be adapted for mouse-size rodents if ultrasonic, infrared, or some other type of sensor were employed in place of body capacitor.

TAXON.: *Otospermophilus beecheyi, Rattus norvegicus*

KEYWORDS: BEHAVIOR, LABORATORY METHODS, SOUTHEASTERN UNITED STATES

320. HOWELL, A. B. 1923. Periodic fluctuations in the numbers of small mammals. J. Mammal. 4(3):149-155.

Fluctuations more marked in cold than in hot or desert areas.

TAXON.: *Microtus montanus, M. richardsoni, Peromyscus maniculatus*

KEYWORDS: DISTRIBUTION, POPULATION DYNAMICS, WASHINGTON

321. HUBBARD, C. A. 1922. Some data upon the rodent *Aplodontia*. Murrelet 3(1):14-18.

Account of burrow system; food; reproduction.

TAXON.: *Aplodontia rufa*

KEYWORDS: BEHAVIOR, DISTRIBUTION, FOOD HABITS, REPRODUCTION, WASHINGTON

322. HUDSON, G. E., and J. D. SOLF. 1959. Control of small mammals with sunken-can pitfalls. J. Mammal. 40(3):455-457.

Sunken fruit juice cans effective in capturing small mammals. In seven-week test, 193 individuals of four species taken in 48 sunken cans. Baited cans only slightly more effective than unbaited ones.

TAXON.: *Microtus montanus, Peromyscus maniculatus, Sorex vagrans, Thomomys talpoides*

KEYWORDS: BAITS, TRAPPING, WASHINGTON

323. INGLES, L. G. 1949a. Ground water and snow as factors affecting the seasonal distribution of pocket gophers, *Thomomys monticola*. J. Mammal. 30(4):343-350.

Where water table is deeper than 1.3 m (4.3 ft), pocket gophers live in burrows; in winter move to higher ground beneath trees. As surface water disappears in late spring, move onto open meadow. Ecological barriers, very narrow strips of wet, soggy soil, frequently prevent attainment of suitable home range sites.

TAXON.: *Thomomys monticola*

KEYWORDS: BEHAVIOR, CALIFORNIA, DISTRIBUTION, HABITAT, HOME RANGE, POPULATION DENSITY

324. INGLES, L. G. 1949b. An improved live trap for pocket gophers. Murrelet 30(3):55-56.

Description of live-trap; no bait necessary.

TAXON.: *Thomomys monticola*

KEYWORDS: CALIFORNIA, TRAPPING

325. INGLES, L. G. 1952. The ecology of the mountain pocket gopher, *Thomomys monticola*. Ecology 33(1):87-95.

Habitat, density, home range, food, reproduction, parasites, predators, age structure, behavior.

TAXON.: *Thomomys monticola*

KEYWORDS: AGE, BEHAVIOR, CALIFORNIA, HABITAT, HOME RANGE, MORTALITY, PARASITISM & DISEASE, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION

326. INGLES, L. G. 1959. A quantitative study of mountain beaver activity. Am. Midl. Nat. 61(2):419-423.

Contrary to general opinion, mountain beavers may be active outside burrows at any hour of day or night, but 50%-60% more activity at night.

TAXON.: *Aplodontia rufa*

KEYWORDS: CALIFORNIA, FORAGING BEHAVIOR

327. INGLES, L. G. 1960. A quantitative study on the activity of the dusky shrew (*Sorex vagrans obscurus*). Ecology 41(4):656-660.

Light is factor regulating changes in 24-hr activity rhythm of dusky shrew, but availability of food and presence or absence of enemies may also be factors. Eight months' captivity, no discernible changes in basic daily activity patterns of two dusky shrews compared with recently captured shrews or unrestrained wild shrews.

TAXON.: *Sorex obscurus*

KEYWORDS: BEHAVIOR, CALIFORNIA, FOOD HABITS

328. INGLES, L. G. 1961. Home range and habitats of the wandering shrew. J. Mammal. 42(4):455-462.

Minimal home range varied from 24 to 628 m^2 (260 to 6758 ft^2). Mature shrews have larger home ranges than do immature shrews. Evidence that size, shape, and part of home range used varies with age and season.

TAXON.: *Sorex vagrans*

KEYWORDS: CALIFORNIA, HABITAT, HOME RANGE

329. INGLES, L. G. 1965. Mammals of the Pacific States: California Oregon, and Washington. Stanford Univ. Press, Stanford, Calif. xii + 506 p.

Morphology, classification, ecology, and geology; brief descriptions of various species, dichotomous and pictorial keys, range maps, drawings, photographs. Accounts of recent research in physiological and behavioral adaptations. Appendixes deal with collection and preparation of skins, skulls, and bacula; identification of setae; pronunciation of generic names; principles of zoological classification. Nomenclature follows Walker, or Miller and Kellogg, not Hall and Kelson.

TAXON.: Multiple

KEYWORDS: BODY CONSTITUTION, CALIFORNIA, CENSUS, DISTRIBUTION, HABITAT, LABORATORY METHODS, OREGON, WASHINGTON

330. INGLES, L. G., R. CLOTHIER, and L. A. CRAWFORD. 1949. Methods of estimating pocket gopher populations. J. Wildl. Manage. 13(3):311-312.

New method of censusing: circular plots, two kinds of traps. "Strip-counting" method inapplicable because of close proximity of sets of runs. Each study plot divided into quadrants, set with nine live-traps, continuously trapped for two 9-hr days or 162 trap hours; after two weeks, trapped again same time interval and same number of traps; then with a saturation number of Macabee traps until all gophers removed from plot.

TAXON.: *Thomomys bottae*

KEYWORDS: CALIFORNIA, CENSUS, POPULATION DENSITY, TRAPPING

331. INTERSTATE DEER HERD COMMITTEE. 1949. Third progress report on the cooperative study of the interstate deer herd and its range. Calif. Fish Game 35(2):115-134.

Deals mostly with winter range in northern California.

TAXON.: *Odocoileus hemionus*

KEYWORDS: CALIFORNIA, DISTRIBUTION, HOME RANGE

332. IRELAND, P. H., and H. A. HAYS. 1969. A new method for determining the home range of woodrats. J. Mammal. 50(2):378-379.

Distribution of numbered foil balls in grid, later examination of nests for recovery methods.

TAXON.: *Neotoma floridana*

KEYWORDS: CENSUS, HOME RANGE, SOUTHEASTERN UNITED STATES

333. IRVING, L., J. KROG, H. KROG, and M. MONSON. 1957. Metabolism of varying hare in winter. J. Mammal. 38(4):527-529.

Respiratory quotients and basal metabolic rates plotted against ambient temperature; critical temperature about -8°C.

TAXON.: *Lepus americanus*

KEYWORDS: ALASKA, METABOLISM

334. JACKSON, H. H. T. 1928. A taxonomic review of the American long-tailed shrews (genera *Sorex* and *Microsorex*). USDA Biol. Surv., North American Fauna 51. vi + 238 p.

Intensive study of 10,431 specimens: 89 forms belonging to 39 species of two genera of shrews recognized. Distribution, habitat, habits, food, economic status, and other points in life history; bibliography of 139 titles.

TAXON.: *Microsorex* spp., *Sorex* spp.

KEYWORDS: BEHAVIOR, BIBLIOGRAPHY, BODY CONSTITUTION, DISTRIBUTION, FOOD HABITS, HABITAT, REPRODUCTION, UNITED STATES

335. JACOBSEN, W. C. 1923. Rate of reproduction in *Citellus beecheyi*. J. Mammal. 4(1):58.

In collection of 86 females, total of 846 embryos, with evidence of higher fertility in previously poisoned areas with low population than in others.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: CALIFORNIA, DAMAGE, REPRODUCTION

336. JAMESON, E. W., Jr. 1951. Local distribution of white-footed mice, *Peromyscus maniculatus* and *P. boylei*, in the northern Sierra Nevada, California. J. Mammal. 32(2):197-203.

Deer mouse essentially a woodland species, brush mouse a brushland species.

TAXON.: *Peromyscus boylii, P. maniculatus*

KEYWORDS: CALIFORNIA, DISTRIBUTION, HABITAT

337. JAMESON, E. W., Jr. 1952. Food of deer mice, *Peromyscus maniculatus* and *P. boylei*, in the northern Sierra Nevada, California. J. Mammal. 33(1):50-60.

Deer mice eat large numbers of insects, including many descructive to tree seedlings, far outweighing their destructive capacity. May be more useful than insectivorous birds.

TAXON.: *Peromyscus boylii, P. maniculatus*

KEYWORDS: BEHAVIOR, CALIFORNIA, FOOD HABITS, SEED & CONE DAMAGE

338. JAMESON, E. W., Jr. 1953. Reproduction of deer mice (*Peromyscus maniculatus* and *P. boylei* in the Sierra Nevada, California. J. Mammal. 34(1):44-58.

Sexual maturity, perforation of vulva, ovulation and litter size, postpartum pregnancies, breeding season, population changes.

TAXON.: *Peromyscus boylii, P. maniculatus*

KEYWORDS: CALIFORNIA, POPULATION DYNAMICS, POPULATION GROWTH, REPRODUCTION

339. JAMESON, E. W., Jr. 1955a. Some factors affecting fluctuations of *Microtus* and *Peromyscus*. J. Mammal. 36(2):206-209.

Fluctuations studies on three populations of mice: deer mice living in coniferous forest and in brushfield, brush mice in brushfield, and meadow mice. Cycles related to food habits.

TAXON.: *Microtus* spp., *Peromyscus boylii, P. maniculatus*

KEYWORDS: CALIFORNIA, DISTRIBUTION, FOOD HABITS, HABITAT, POPULATION DYNAMICS

340. JAMESON, E. W., Jr. 1955b. Observations on the biology of *Sorex trowbridgii* in the Sierra Nevada, California. J. Mammal. 36(3):339-345.

Trowbridge shrew is a common forest-dwelling shrew. Arthropods compose bulk of its food. Breeding extends from February to early June. Mean number of young, five; extremes, one and six. Post-partum pregnancies rather frequent.

TAXON.: *Sorex trowbridgii*

KEYWORDS: BREEDING BEHAVIOR, CALIFORNIA, FOOD HABITS, POPULATION DYNAMICS

341. JAMESON, E. W., Jr. 1958. The cost and effectiveness of controlling *Microtus* by zinc phosphide. J. Wildl. Manage. 22(1):100-103.

Six trials of poisoning field mice with 1% zinc phosphide on rolled barley. Mice censused immediately before and after poisoning; populations estimated from data obtained by livetrapping for five days in each instance. Mean reduction 95.5% ± 1.3% in four trials.

TAXON.: *Microtus californicus*

KEYWORDS: CALIFORNIA, CENSUS, MORBIDITY, SEED & CONE DAMAGE

342. JAMESON, E. W., Jr. 1964. Patterns of hibernation of captive *Citellus lateralis* and *Eutamias speciosus*. J. Mammal. 45(3):455-460.

Observations on patterns of dormancy of golden-mantled ground squirrels and lodgepole chipmunks. Effort to determine differences and similarities in dates of initial torpidity, durations between periodic arousals, percentage of time dormant, and resumption of activity in spring.

TAXON.: *Callospermophilus lateralis, Eutamias speciosus*

KEYWORDS: BEHAVIOR, CALIFORNIA, METABOLISM

343. JAMESON, E. W., Jr. 1965. Food consumption of hibernating and nonhibernating *Citellus lateralis*. J. Mammal. 46(4):634-640.

Captive golden-mantled ground squirrels maintained at 4° and 20°C during natural hibernation period. Food intake determined by recovery and analysis of scats. Extended warm autumn could retard or prevent hibernation and require species to draw heavily on body fat and food stores. Apparently hibernation is protection against virtual impossibility of foraging on ground in deep snow.

TAXON.: *Callospermophilus lateralis*

KEYWORDS: BEHAVIOR, CALIFORNIA, FOOD HABITS, METABOLISM

344. JAMESON, E. W., Jr., and R. A. MEAD. 1964. Seasonal changes in body fat, water and basic weight in *Citellus lateralis, Eutamias speciosus* and *E. amoenus*. J. Mammal. 45(3):359-365.

Annual change of total body fat in golden-mantled ground squirrels characterized by threefold increase from August to September, just prior to hibernation. Lodgepole and yellow-pine chipmunks have less body fat than ground squirrels; predormancy increase and dormancy occur in October. Prior to winter dormancy, slight drop in basic weight (fat-free, water-free body weight) and body water.

TAXON.: *Callospermophilus lateralis, Eutamias amoenus, E. speciosus*

KEYWORDS: BEHAVIOR, BODY CONSTITUTION, CALIFORNIA, METABOLISM

345. JENKINS, H. O. 1948. A population study of the meadow mice (*Microtus*) in three Sierra Nevada meadows. Proc. Calif. Acad. Sci., Ser. 4, 26(3):43-67.

Data on 195 individuals of two species: range measurements, population density, mortality.

TAXON.: *Microtus longicaudus, M. montanus*

KEYWORDS: BEHAVIOR, CALIFORNIA, HOME RANGE, POPULATION DENSITY

346. JOHNSON, D. H., M. D. BRYANT, and A. H. MILLER. 1948. Vertebrate animals of the Providence Mountains area of California. Univ. Calif. (Berkeley) Publ. Zool. 48(5):217-375.

Observations on occurrence and distribution.

TAXON.: Multiple

KEYWORDS: CALIFORNIA, DISTRIBUTION, HABITAT

347. JOHNSON, D. R. 1964. Effects of range treatment with 2,4-D on food habits of rodents. Ecology 45(2):241-249.

Diets of rodents trapped on areas treated with 2,4-D compared with those of rodents from untreated (control) areas. Diet variations with season, sex, age group.

TAXON.: *Eutamias minimus, Microtus montanus, Peromyscus maniculatus*

KEYWORDS: COLORADO, FOOD HABITS, FOREST MANIPULATION, HERBICIDES, SEED & CONE DAMAGE

348. JOHNSON, D. R., and R. M. HANSEN. 1969. Effects of range treatment with 2,4-D on rodent populations. J. Wildl. Manage. 33(1):125-132.

Treatment of perennial forb and shrub-grass ranges with 2,4-D produced increase in grass cover and decrease in most forbs and shrubs. Recovery time of herbicide-sensitive species varied. Density and litter size of various rodents affected in different ways.

TAXON.: *Eutamias minimus, Microtus montanus, Peromyscus maniculatus, Thomomys talpoides*

KEYWORDS: COLORADO, HERBICIDES, POPULATION DENSITY, REPRODUCTION

349. JOHNSON, D. R., and E. J. LARRISON. 1958. Food habits, study techniques, and literature survey of food habits of mammal species represented in southwestern Idaho range lands. Univ. Idaho Dep. Biol. Sci. SR48; Prog. Rep. no. 4. 51 p. (Ditto)

Bibliography and observations on food habits of many species.

TAXON.: Multiple

KEYWORDS: BIBLIOGRAPHY, CENSUS, FOOD HABITS, IDAHO

350. JOHNSON, H. N. 1964. Diseases derived from wildlife. Proc. Vertebr. Pest Control Conf. 2:138-142.

Discussion of specific diseases of man known to be derived from wildlife in California.

TAXON.: Multiple

KEYWORDS: CALIFORNIA, MORTALITY, OREGON, PARASITISM & DISEASE

351. JOHNSON, M. L., P. W. CHENEY, and T. H. SCHEFFER. 1950. Mammals of the Grand Coulee, Washington. Murrelet 31(3):39-42.

Occurrence and distribution noted during collections of 1948, 1949, and 1950. Specimens in Puget Sound Museum of Natural History, Tacoma, Wash.

TAXON.: *Castor canadensis, Erethizon dorsatum, Eutamias amoenus, Microtus longicaudus, Neotoma cinerea, Odocoileus hemionus, Peromyscus maniculatus, Sorex vagrans, Thomomys talpoides*

KEYWORDS: CENSUS, DISTRIBUTION, WASHINGTON

352. JOHNSON, M. L., and S. JOHNSON. 1952. Check list of mammals of the Olympic Penninsula. Murrelet 33(3):32-37.

Distributional summaries.

TAXON.: Multiple

KEYWORDS: CENSUS, DISTRIBUTION, WASHINGTON

353. JOHNSON, S. R. 1971. The thermal regulation, microclimate, and distribution of the mountain beaver, *Aplodontia rufa pacifica* Merriam. Ph.D. thesis, Oregon State Univ., Corvallis. 164 p.

Effects of ambient temperature on body temperature, metabolic rate, thermal conductance, insensible water loss, heart rate. Burrow system characterized by cool, stable microclimate. Maximum annual

fluctuation in temperature above soil, 40.5 Celsius deg; high environmental temperatures may limit distribution of mountain beaver, which lacks adequate mechanisms to avoid heat stress.

TAXON.: *Aplodontia rufa pacifica*

KEYWORDS: BEHAVIOR, DISTRIBUTION, HABITAT, METABOLISM, OREGON

354. JULANDER, O., and D. E. JEFFERY. 1964. Deer, elk, and cattle range relations on summer range in Utah. Trans. North Am. Wildl. Conf. 29:404-414.

Discussion of food preferences in various (topographic) locations; food density related to utilization by each species.

TAXON.: *Bos taurus, Cervus canadensis, Odocoileus hemionus*

KEYWORDS: COMPETITION, FOOD HABITS, HABITAT, UTAH

355. JULANDER, O., W. L. ROBINETTE, and D. A. JONES. 1961. Relation of summer range condition to mule deer productivity. J. Wildl. Manage. 25(1):54-69.

Productivity of two mule deer herds, one on severely depleted summer range in central Utah, the other on good summer range in southern Idaho. Weight ratios by age and sex classes on poor range 72%-90% of those on good range. Average ovulation rate per doe on depleted range only 67% of that on good range.

TAXON.: *Odocoileus hemionus*

KEYWORDS: ANIMAL PRODUCTIVITY, IDAHO, NUTRITION, REPRODUCTION, UTAH

356. JUSTICE, K. E. 1961. A new method for measuring home ranges of small mammals. J. Mammal. 42(4):462-470.

Movements of individually toe-marked wild mouse detected by tracking on smoked kymograph paper. Up to ten records obtained from individual mice in a single night. Method avoids biases of trap inhibition, learning, and trap fatigue and provides information suitable for investigation of theoretical probability density functions of mouse activity.

TAXON.: *Mus musculus*

KEYWORDS: HOME RANGE, MARKING, TRACKING

357. KADLEC, J. A. 1971. A partial annotated bibliography of mathematical models in ecology. Univ. Michigan, Ann Arbor. Contribution of the Ecosystem Analysis Studies, U.S./International Biological Program. 621 abstracts.

Goal is to identify and describe those references of particular value in constructing mathematical models of ecosystems.

KEYWORDS: BIBLIOGRAPHY, MODELS

358. KALMBACH, E. R., and J. F. WELCH. 1946. Colored rodent baits and their value in safeguarding birds. J. Wildl. Manage. 10(4):353-360.

Green-dyed grain or seed avoided by birds.

KEYWORDS: BAITS, TRAPPING

359. KARTMAN, L., M. I. GOLDENBERG, and W. T. HUBBERT. 1966. Recent observations on the epidemiology of plague in the United States. Am. J. Public Health 56(9):1554-1569.

From 1908 to 1965 there were 111 human infections contracted from wild rodents and other mammals or their fleas, resulting in 64 deaths. In recent years, human cases of plague, with a history of association with wild rodents, occurred in New Mexico, Arizona, Colorado, and California.

TAXON.: Multiple

KEYWORDS: HUMAN HEALTH, PARASITISM & DISEASE, UNITED STATES

360. KEBBE, C. E. 1949. Oregon's beaver program. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 29:201-204.

Oregon Legislature made entire state a beaver sanctuary, then vacillated through about 40 years of control versus open seasons. New management practices protect agricultural areas.

TAXON.: *Castor canadensis*

KEYWORDS: ANIMAL PRODUCTIVITY, DAMAGE, FOREST MANIPULATION, HARVEST, OREGON, TRAPPING

361. KEITH, J. D., R. M. HANSEN, and A. L. WARD. 1959. Effect of 2,4-D on abundance and foods of pocket gophers. J. Wildl. Manage. 23(2):137-145.

Aerial spraying of weedy, mountain rangeland with 2,4-D resulted in reduction of pocket gopher populations and production of perennial forbs, increase in grass production; diet changes in gophers. Untreated control areas showed no significant change in gopher numbers, herbage production, or gopher food habits.

TAXON.: *Thomomys talpoides*

KEYWORDS: COLORADO, DAMAGE, FOOD HABITS, FOREST MANIPULATION, HERBICIDES

362. KEITH, L. B., AND E. C. MESLOW. 1967. Juvenile breeding in the snowshoe hare. J. Mammal. 48(2):327.

Female captured 22 August 1966, probably born mid-May, became pregnant at two months (mid-July; gestation period ca. 35 days); evidence circumstantial; no other juvenile of 400 other females examined ever found pregnant.

TAXON.: *Lepus americanus*

KEYWORDS: AGE, ALBERTA, REPRODUCTION

363. KEITH, L. B., E. C. MESLOW, and O. J. RONGSTAD. 1968. Techniques for snowshoe hare population studies. J. Wildl. Manage. 32(4):801-812.

Use of baited and unbaited traps in runway sets, driving of hares into nets; marking by dyeing, ear tattooing, and web tagging of hind feet. Aging methods for embryos, juveniles, and adults. Detection of pregnancy, lactation, and suckling; treatment of trap sickness.

TAXON.: *Lepus americanus*

KEYWORDS: AGE, BAITS, HANDLING, MARKING, NORTH AMERICA, POPULATION DENSITY, REPRODUCTION, TRAPPING

364. KEITH, L. B., O. J. RONGSTAD, and E. C. MESLOW. 1966. Regional differences in reproductive traits of the snowshoe hare. Can. J. Zool. 44(5):953-961.

Onset of breeding chronologically similar throughout most of range, but about two weeks later in Alaska than elsewhere. Mean litter size increased significantly from south to north.

TAXON.: *Lepus americanus*

KEYWORDS: BODY CONSTITUTION, DISTRIBUTION, NORTH AMERICA, REPRODUCTION

365. KEITH, L. B., and J. D. WARING. 1956. Evidence of orientation and homing in snowshoe hares. Can. J. Zool. 34(6):579-581.

Marked snowshoe hares (54) released May 1951 to March 1956. Hares collected within a 16-km (10-mi) radius of release point; following ear-tagging all released; some hares liberated several kilometers (miles) from home range, others on familiar ground. Twelve sub-

sequently retaken in snares set by local inhabitants. Data indicate that hares were able to orient movements toward home range.

TAXON.: *Lepus americanus*

KEYWORDS: ALBERTA, BEHAVIOR, HOME RANGE, MARKING, TRAPPING

366. KEYES, J. 1934. Porcupine control on forests of California. Calif. Fish Game 20(2):148-150.

Description of strychnine-impregnated salt in wooden blocks nailed to trees.

TAXON.: *Erethizon dorsatum*

KEYWORDS: BAITS, CALIFORNIA, FIELD METHODS, TREE DAMAGE

367. KING, J. A. (ed.). 1968. Biology of *Peromyscus* (Rodentia). Am. Soc. Mammal. Spec. Publ. No. 2. xiii + 593 p.

Accounts of taxonomy, speciation, distribution, anatomy, development, genetics, parasites, home range, population dynamics, and behavior, each by an authority.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: AGE, BODY CONSTITUTION, BREEDING BEHAVIOR, DISTRIBUTION, GROWTH, METABOLISM, MORTALITY, NORTH AMERICA, PARASITISM & DISEASE, POPULATION DENSITY, POPULATION DYNAMICS, POPULATION GROWTH, REPRODUCTION

368. KITTAMS, W. H. 1953. Reproduction of Yellowstone elk. J. Wildl. Manage. 17(2):177-184.

Breeding common in two-year-olds, rare in yearlings, absent in calves. Pregnancy rate 85% for elk over two years of age. One young the rule, twins rare. Sex ratio of fetuses nearly 1:1.

TAXON.: *Cervus canadensis*

KEYWORDS: MONTANA, REPRODUCTION, SEX RATIO, WYOMING

369. KITTAMS, W. H. 1959. Future of the Yellowstone wapiti. Naturalist 10(2):30-39.

Biology and management of Yellowstone elk, especially northern herd. Too many elk for winter range; feeding not an adequate answer; even parts of summer range seriously overused. Necessity for herd reduction.

TAXON.: *Cervus canadensis*

KEYWORDS: DAMAGE, DISTRIBUTION, MONTANA, POPULATION DENSITY, WYOMING

370. KITTS, W. D., P. J. BANDY, A. J. WOOD, and I. M. COWAN. 1956. Effect of age and plane of nutrition on the blood chemistry of the Columbian black-tailed deer (*Odocoileus hemionus columbianus*). Can. J. Zool. 34(5):477-484.

Significant difference of packed-cell volume and hemoglobin level between two age groups of experimental animals, but no significant differences in sedimentation rates. High and low imposed planes of nutrition produced no significant difference in packed-cell volume, sedimentation rate, or hemoglobin value.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS; BODY CONSTITUTION, BRITISH COLUMBIA, GROWTH, NUTRITION

371. KITTS, W. D., I. M. COWAN, P. J. BANDY, and A. J. WOOD. 1956. The immediate post-natal growth in the Columbian black-tailed deer in relation to the composition of the milk of the doe. J. Wildl. Manage. 20(2):212-214.

Three milk samples from deer taken in British Columbia analyzed for fat, protein, lactose, ash, water, and total solids. Values higher than only other data (for a California specimen) in fat and total solids. Differences may be associated with latitude and climate. Formulation given for substitute milk for raising deer fawns.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BRITISH COLUMBIA, NUTRITION

372. KLEBENOW, D. A. 1965. A montane forest winter deer habitat in western Montana. J. Wildl. Manage 29(1):27-33.

Sampling reveals that four shrubs provide major amount of mule deer browse; ninebark (very common) not used. Forage plants on portions of winter range with greatest density of trees less utilized than those on more open portions of range.

TAXON.: *Odocoileus hemionus*

KEYWORDS: FIRE, FOOD HABITS, HABITAT, MONTANA

373. KLEIN, D. R., and S. T. OLSON. 1960. Natural mortality patterns of deer in southeast Alaska. J. Wildl. Manage. 24(1):80-88.

Starvation accounts for greatest losses; predation and accidents 20% of natural mortality. Highest mortality from starvation associated with poor range conditions and overstocked range. Mortality rates highest among the youngest and oldest age classes.

TAXON.: *Odocoileus hemionus sitkensis*

KEYWORDS: ALASKA, HERB AND SHRUB DAMAGE, MORTALITY, NUTRITION, POPULATION DENSITY, PREDATION

374. KLEVESAL, G. A., and S. E. KLEINENBERG. 1967. Age determination of mammals by layered structure in teeth and bones. Acad. Nauk USSR, Moscow. 144 p. (Transl. from Russian.) Fish. Res. Board Can. Transl. Ser. No. 1024. 172 p.

Historical development of use of layered structures in hard tissue for aging mammals traced; discussion of structure of dentine, cementum, and periosteal bone, and growth patterns in these tissues that lead to layering. Pattern is alternation of opaque and translucent tissue. In terrestrial mammals of Northern Hemisphere, opaque bands always laid down in summer, translucent bands in winter.

TAXON.: Multiple

KEYWORDS: AGE, BODY CONSTITUTION, EUROPE

375. KNOCHE, K. G. 1968. The ecology of the Rattlesnake Creek, Montana, mule deer. M.S. thesis, Univ. Montana, Missoula. xi + 152 p.

Production of browse reduced between 1961 and 1966/1967, while deer utilization increased. Deer consume plant species with higher levels of nutritional components and protein content. Condition of deer, determined by kidney fat indexes, poorer in 1968 than in 1958.

TAXON.: *Odocoileus hemionus*

KEYWORDS: BODY CONSTITUTION, FOOD HABITS, HERB AND SHRUB DAMAGE, MONTANA, NUTRITION

376. KNOTT, N. P. 1956. Possible effects of fertilization upon forage production and game use. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 36:207-209.

Well-fertilized strips of domestic and native vegetation on Washington game lands extremely attractive to deer and elk -- almost all use concentrated on them. They drew game from private crops. Method has promise for lessening damage complaints, for increasing productivity of game lands; conditioning animals for winter.

Heavily browsed areas may be attractive because of large amount of young, nutritious, growth.

TAXON.: *Cervus canadensis, Odocoileus hemionus*

KEYWORDS: DAMAGE, FOREST MANIPULATION, NUTRITION, WASHINGTON

377. KNOX, K. L., J. G. NAGY, and R. D. BROWN. 1969. Water turnover in mule deer. J. Wildl. Manage. 33(2):389-393.

Percentage of body water, turnover, half-time, and flux of nine deer maintained in nonconfined captivity compared with same parameters in two closely confined deer. Data suggest that water kinetics in nonconfined mule deer not essentially different from that in other mammals.

TAXON.: *Odocoileus hemionus, O. virginianus*

KEYWORDS: BODY CONSTITUTION, COLORADO

378. KOEHLER, J. H. (chairman). 1964. Proceedings: Second Vertebrate Pest Control Conference. Anaheim, California, 4-5 March 1964. xi + 160 p.

Many technical papers, including: Testing and registration of new control materials; The role of industry in developing new materials for vertebrate pest control; Animal population ecology and control fundamentals; Sound in vertebrate pest control; Pest control methods and people; Forest animal damage--Research and control methods; Rabbit control; Bait mixing equipment in vertebrate pest control; Animal control in New Zealand; Occupational hazards to pest control operators with special reference to pesticides; Anti-fertility agents in vertebrate pest control; Diseases derived from wildlife.

TAXON.: Multiple

KEYWORDS: DAMAGE, HERBICIDES, PARASITISM & DISEASE, REPELLENTS, RODENTICIDES

379. KRAUCH, H. 1942. Control of rodents in Douglas-fir cut-over stands relatively more important than seed supply. USDA For. Serv., Southwest. For. Range Exp. Stn. Res. Note No. 100. 2 p.

Best results for both sowed and nonsowed plots obtained where rodents had been controlled.

TAXON.: Rodentia

KEYWORDS: FOREST REGENERATION, SEED & CONE DAMAGE, SOUTHWESTERN UNITED STATES

380. KRAUCH, H. 1945. Influence of rodents on natural regeneration of Douglas-fir in the Southwest. J. For. 43(8):585-589.

Mice and other rodents may hinder restocking of cutover lands. Control urged for such areas in good seed years.

TAXON.: Rodentia

KEYWORDS: FOREST REGENERATION, SEED & CONE DAMAGE, SOUTHWESTERN UNITED STATES

381. KREBS, C. J. 1966. Demographic changes in fluctuating populations of *Microtus californicus*. Ecol. Monogr. 36(3):239-273.

Changes in population numbers as related to reproduction, mortality, growth, and movement. Food, disease, predation, and self-regulatory mechanisms discussed as factors regulating populations.

TAXON.: *Microtus californicus*

KEYWORDS: CALIFORNIA, DISPERSAL, GROWTH, MORTALITY, NUTRITION, PARASITISM & DISEASE, POPULATION DYNAMICS, PREDATION, REPRODUCTION

382. KREFTING, L. W., H. L. HANSEN, and R. W. HUNT. 1960. Improving the browse supply for deer with aerial applications of 2,4-D. Minn. For. Notes No. 95. 2 p.

First-year results of spraying with 2,4-D encouraging; greatest increase in browse occurred in aspen and jack pine types preferred by deer.

TAXON.: *Odocoileus virginianus*

KEYWORDS: FOOD HABITS, FOREST MANIPULATION, HERBICIDES, MINNESOTA

383. KREFTING, L. W., H. L. HANSEN, and M. H. STENLUND. 1956. Stimulating regrowth of mountain maple for deer browse by herbicides, cutting, and fire. J. Wildl. Manage. 20(4):434-441.

Herbicides, burners, diesel oil, and axes applied to mountain maple at bases of clumps and breast high in spring and fall. Cutting gave best sprout growth and had additional advantage of providing edible tops. Deer showed some preference for herbicide-treated clumps. Fire did not stimulate appreciable regrowth; oil alone had less effect than cutting or herbicides. Cutting cost about equal to final cost of spraying with herbicides.

TAXON.: *Odocoileus virginianus*

KEYWORDS: FIRE, FOOD HABITS, FOREST MANIPULATION, HERBICIDES, MINNESOTA

384. KRUTZSCH, P. H. 1954. North American jumping mice (genus *Zapus*). Univ. Kans. Publ., Mus. Nat. Hist. 7(4):349-472.

Jumping mouse decreases in size from northern to southern part of range; descriptions, range maps, habitats.

TAXON.: *Zapus* spp.

KEYWORDS: DISTRIBUTION, GROWTH, HABITAT, NORTH AMERICA, POPULATION DYNAMICS, REPRODUCTION

385. KUHN, L. W. 1942. Mortality studies of Columbian black-tailed deer in the coastal region of Oregon. M.S. thesis, Oregon State Coll., Corvallis. 78 p.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: MORTALITY, OREGON

386. KUHN, L. W. 1970. Mole control. Proc. Vertebr. Pest Control Conf. 4:71-76.

Of four kinds of moles found in Pacific Coast States, only Townsend mole in Washington and Oregon and broadhanded mole considered economically important. Control methods: traps, poisoned baits, gases, soil fumigants, natural enemies, and miscellaneous methods such as mole wheels, mole plant, nest digging, and flooding.

TAXON.: *Scapanus latimanus, S. townsendii*

KEYWORDS: BAITS, DAMAGE, PACIFIC COAST, TRAPPING

387. KUHN, L. W., W. Q. WICK, and R. J. PEDERSEN. 1966. Breeding nests of Townsend's mole in Oregon. J. Mammal. 47(2):239-249.

Two-year study of nesting habits of moles in Tillamook County, Oregon.

TAXON.: *Scapanus orarius, S. townsendii*

KEYWORDS: BREEDING BEHAVIOR, OREGON, REPRODUCTION

388. KVERNO, N. B. 1959. The problems in the use of systemic rodenticides. Proc. Soc. Am. For. Annu. Meet. 58:97-98.

Contact treatments not effective for long-term protection. A toxic systemic treatment that may solve hare damage problem is effective for at least three years; by limiting number of trees treated or screening treated trees, hazard to deer might be eliminated.

TAXON.: *Lepus americanus, Odocoileus hemionus,* Rodentia

KEYWORDS: PACIFIC NORTHWEST, REPELLENTS, RODENTICIDES, SEEDLING DAMAGE, TREE DAMAGE

389. KVERNO, N. B. 1964. Forest animal damage control. Proc. Vertebr. Pest Control Conf. 2:81-89.

Discussion of damage by rodents to seeds of Douglas-fir, ponderosa pine, and black walnut. Damage by browsing of snowshoe hare, mountain beaver, deer, and elk, and damage by meadow mice, bears, and porcupines to tree roots and bark also discussed. Three formulas for control treatments.

TAXON.: *Aplodontia rufa, Cervus canadensis, Citellus* spp., *Erethizon dorsatum, Euarctos americanus, Eutamias* sp., *Lepus americanus, Microtus* sp., *Odocoileus hemionus, Peromyscus* sp.

KEYWORDS: NORTH AMERICA, SEED & CONE DAMAGE, SEEDLING DAMAGE, TREE DAMAGE

390. KVERNO, N. B., and H. D. HARTWELL. 1957. Progress report/ Pacific Northwest 1955-56 and 1956-57 experimental seeding studies. USDI Fish. Wildl. Serv., Denver Wildl. Res. Cent. 50 p. (Mimeo.)

Reports of experiments by various agencies and companies. Chief aims: to determine effectiveness of endrin coating in protecting Douglas-fir seed from rodents and to test value of various adhesive and fungicidal additives.

TAXON.: Rodentia

KEYWORDS: PACIFIC NORTHWEST, REPELLENTS, SEED & CONE DAMAGE

391. LARRISON, E. J. 1942. Pocket gopher and ecological succession in the Wenas region of Washington. Murrelet 23(2):34-41.

Role of gophers in development of soil and vegetation; tunneling under snow important dispersal route.

TAXON.: *Thomomys talpoides*

KEYWORDS: BEHAVIOR, DISPERSAL, WASHINGTON

392. LARRISON, E. J. 1947. Notes on chipmunks of west-central Washington. Murrelet 28(2):23-30.

Subspecies of yellow-pine chipmunks, many with warbles (in long-tailed meadow mouse burrow), and Townsend chipmunks; foods eaten.

TAXON.: *Eutamias amoenus, E. townsendii, Microtus longicaudus*

KEYWORDS: BEHAVIOR, FOOD HABITS, MORBIDITY, WASHINGTON

393. LARRISON, E. J. 1970. Washington mammals. Seattle Audubon Society, Seattle, Wash. 243 p.

Accounts of occurrence, distribution, natural history, and measurements.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HABITAT, REPRODUCTION, WASHINGTON

394. LASSEN, R. W., C. M. FERREL, and H. LEACH. 1952. Food habits, productivity and condition of the Doyle mule deer herd. Calif. Fish Game 38(2):211-224.

Range badly overgrazed by livestock and deer. Deer well in summer; many starve and suffer a variety of accidents in winter. Reproduction low, survival of fawns and yearlings poor. Data on stomach contents (by season), range condition, herd composition, physical condition of deer, and reproduction.

TAXON.: *Odocoileus hemionus*

KEYWORDS: AGE, BODY CONSTITUTION, CALIFORNIA, COMPETITION, FOOD HABITS, HERB & SHRUB DAMAGE, MORTALITY, NEVADA, REPRODUCTION

395. LAUCKHART, J. B. 1956. The effect of logging old-growth timber on bear. Proc. Soc. Am. For. Annu. Meet. 55:128-130.

Bear damage to forests reviewed; cause and control discussed. Bear populations reduced by control not likely to regain former densities in maturing forests. Trapping best form of control--gets resident bears and does not scatter them as does hunting with dogs. Three of every four bears caught had fed on trees to some extent during spring and summer.

TAXON.: *Euarctos americanus*

KEYWORDS: FOOD HABITS, FOREST MANIPULATION, HARVEST, TRAPPING, TREE DAMAGE, WASHINGTON

396. LAUCKHART, J. B. 1962. Wildlife population fundamentals. Trans. North Am. Wildl. Conf. 27:233-242.

Idea that reproduction replaces loss should be supplanted by concept that reproduction causes loss. High production causes heavy loss and short life. Food may be most important capacity-

limiting factor. Animals can select more nutritious plants; plants low in nutritive value because animals continually killed most nutritious varieties. Social stress unlikely as natural animal control.

TAXON.: Multiple

KEYWORDS: AGE, BEHAVIOR, FOOD HABITS, NUTRITION, POPULATION DYNAMICS, REPRODUCTION, WASHINGTON

397. LAUPPE, E. 1963. A controversy and a question touched off a study that brought a solid scientific answer to an old dispute. The study showed that . . . deer eat trees. Outdoor Calif. 24(9):5-7.

In four years trees exposed to deer browsing grew an average of one-third as much in height as nearby trees protected from browsing. Land thus removed from effective timber production for average of 20 years incurs high rate of loss. Effective deer-proof fence described.

TAXON.: *Odocoileus hemionus columbianus, O. h. hemionus*

KEYWORDS: CALIFORNIA, FENCING, FOOD HABITS, TREE DAMAGE

398. LAWRENCE, G. E. 1966. Ecology of vertebrate animals in relation to chaparral fire in the Sierra Nevada foothills. Ecology 47(2):278-291.

Chaparral fire brings changes in species composition and density of plant and animal populations. Some species decrease, others increase, but none totally eliminated. Specific data given.

TAXON.: Multiple

KEYWORDS: CALIFORNIA, FIRE, FOOD HABITS, POPULATION DENSITY

399. LAWRENCE, W. H. 1952. Evidence of the age of beaver ponds. J. Wildl. Manage. 16(1):69-79.

Evidence obtainable from analysis of annual growth rings of wood, and from historical records and interviews.

TAXON.: *Castor canadensis*

KEYWORDS: BEHAVIOR, FIELD METHODS, FOOD HABITS, FOREST MANIPULATION, MICHIGAN, STANDING CROP

400. LAWRENCE, W. H. 1957. Procupine control: A problem analysis. Weyerhaeuser Timber Co. For. Res. Notes No. 16. iii + 43 p.

Review of damage and its significance, habits, breeding, foods, habitat, seasonal movements, population density, predators, and other natural controls. Discusses ecological control methods and control by hunting, poisoning, trapping, and fencing.

TAXON.: *Erethizon dorsatum*

KEYWORDS: BEHAVIOR, DISTRIBUTION, FENCING, FOOD HABITS, FOREST MANIPULATION, HARVEST, MORTALITY, NORTH AMERICA, POPULATION DENSITY, PREDATION, REPRODUCTION, RODENTICIDES, TRAPPING, TREE DAMAGE

401. LAWRENCE, W. H. 1958. Wildlife-damage control problems on Pacific Northwest tree farms. Trans. North Am. Wildl. Conf. 23:146-151.

Focuses attention on severity of problems associated with regenerating Douglas-fir stands; estimates annual losses sustained by different classes of growing stock on Weyerhaeuser Timber Co. tree farms. Discusses progress in developing wildlife repellents to protect broadcast Douglas-fir seed and plantations. endrin-Arasan coating effective in reducing seed destruction by mice; need better understanding of ecology of problem animals so biological controls may be employed.

TAXON.: *Aplodontia rufa, Cervus canadensis, Euarctos americanus, Lepus americanus, Neotoma* sp., *Odocoileus hemionus, Peromyscus* sp., *Sorex* sp.

KEYWORDS: FOREST REGENERATION, PACIFIC NORTHWEST, REPELLENTS, SEED & CONE DAMAGE, SEEDLING DAMAGE, TREE DAMAGE

402. LAWRENCE, W. H., N. B. KVERNO, and H. D. HARTWELL. 1961. Guide to wildlife feeding injuries on conifers in the Pacific Northwest. Western Forestry and Conserv. Assoc. iii + 44 p.

Injuries grouped according to stage in tree development: cone and seed losses, seedling and sapling injuries, mature tree injuries. Descriptive keys for identification of recent injuries. Brief descriptions and diagnostic photos illustrate typical injuries pertinent facts on range, habits, other distinctive field signs left by animals.

TAXON.: Multiple

KEYWORDS: BEHAVIOR, DISTRIBUTION, FIELD METHODS, HABITAT, HOME RANGE, PACIFIC NORTHWEST, SEED & CONE DAMAGE, SEEDLING DAMAGE, TREE DAMAGE

403. LAWRENCE, W. H., and J. H. REDISKE. 1960. Radio-tracer technique for determining the fate of broadcast Douglas-fir seed. Proc. Soc. Am. For. Annu. Meet. 59:99-101.

Scandium-46, a strong gamma emitter, used as radiotracer for Douglas-fir seed; can detect buried seeds. Although weathering removed up to 25% of tracer, by end of five-month test 95% of seeds were accounted for, including fragments of destroyed seeds recovered from insect and rodent burrows. Reliable means of obtaining quantitative data on causes of seed destruction.

KEYWORDS: FIELD METHODS, PACIFIC NORTHWEST, SEED & CONE DAMAGE

404. LAWRENCE, W. H., and C. A. SHERMAN. 1963. An electronic traffic counter for recording burrow activity of the mountain beaver. J. Mammal. 44(3):399-405.

Describes circuit diagram, construction details, technique of using small, self-contained recording instrument to study burrow-use patterns of mountain beavers.

TAXON.: *Aplodontia rufa*

KEYWORDS: BEHAVIOR, HOME RANGE, PACIFIC NORTHWEST, TRACKING

405. LAYCOCK, W. A. 1957. Seasonal periods of surface inactivity of the pocket gopher. J. Mammal. 38(1):132-133.

Environmental factors or phases in life history of gopher may cause changes in activity pattern, but do not necessarily cause complete inactivity.

TAXON.: *Thomomys talpoides tenellus*

KEYWORDS: BEHAVIOR, HABITAT, HOME RANGE, WYOMING

406. LAYCOCK, W. A. 1958. The initial pattern of revegetation of pocket gopher mounds. Ecology 39(2):346-351.

Species grouped according to life form classification of Raunkiaer, where pocket gopher is part of biotic community, mounds are microsites where pioneer plant species (therophytes) are continually perpetuated. Thus stable or "climax" communities as well as disturbed areas always include these pioneer species.

TAXON.: *Thomomys talpoides*

KEYWORDS: BEHAVIOR, DISPERSAL, FIELD METHODS, FOOD HABITS, FOREST MANIPULATION, HABITAT, WYOMING

407. LEACH, H. R. 1956. Food habits of the Great Basin deer herds of California. Calif. Fish Game 42(4):243-308.

Detailed report on analyses of 978 mule deer stomachs collected from four winter ranges. Some information on summer food habits,

most on winter foods. Each area and its vegetation described, seasonal use by deer reviewed. Food habits in area tabulated, graphed, discussed thoroughly in relation to year-to-year climatic variations and deer die-offs. Deer that perish in die-offs nearly always have stomachs full of same foods found in survivors. Apparently deer that survive do so because of greater vigor and better condition rather than better diet.

TAXON.: *Odocoileus hemionus*

KEYWORDS: CALIFORNIA, FOOD HABITS, HERB & SHRUB DAMAGE, MORTALITY, NUTRITION, PHYSICAL DESCRIPTION, POPULATION DENSITY

408. LEEGE, T. A. 1968. Natural movements of beavers in southeastern Idaho. J. Wildl. Manage. 32(4):973-976.

One hundred ninety-two beavers livetrapped and tagged to determine origin of troublesome beavers on private lands. Data from 87 retrapped animals showed greatest migration tendencies in yearling age class and males of all age groups. Common migration pattern from high-elevation public land to private holdings downstream. Beaver structures caused flooding of crops, pastures, roads; and interruption of irrigation and stock-watering systems.

TAXON.: *Castor canadensis*

KEYWORDS: BEHAVIOR, DISPERSAL, HOME RANGE, IDAHO, TRAPPING

409. LEEGE, T. A., and R. M. WILLIAMS. 1967. Beaver productivity in Idaho. J. Wildl. Manage. 31(2):326-332.

Data on productivity, including sex and age ratios, litter size, rate of pregnancy, gathered from livetrapping and fur-trapping operations in 1953-1956 and 1962-1964. Standard methods used for determinirg sex and age of live beavers and carcasses. Disturbed (trapped) beaver population had lower percentage of kit and yearling beavers than undisturbed population.

TAXON.: *Castor canadensis*

KEYWORDS: AGE, ANIMAL PRODUCTIVITY, BEHAVIOR, DISPERSAL, HARVEST, IDAHO, POPULATION DENSITY, REPRODUCTION, SEX RATIO, TRAPPING

410. LEOPOLD, A. S., and F. F. DARLING. 1953a. Wildlife in Alaska: An ecological reconnaissance. Ronald Press, New York. ix + 129 p.

Wildlife is, and with proper management should remain, one of the chief resources of Alaska. Discusses abundance of each species, ecological conditions, government programs.

TAXON.: *Alces alces, Bison bison, Cervus canadensis, Odocoileus hemionus sitkensis, Oreamnos americanus, Ovibos moschatus, Ovis dalli, Rangifer tarandus*

KEYWORDS: ALASKA, COMPETITION, DISTRIBUTION, FIRE, FOOD HABITS, HARVEST, HERB & SHRUB DAMAGE, MORTALITY, POPULATION DENSITY, POPULATION DYNAMICS, POPULATION GROWTH, PREDATION

411. LEOPOLD, A. S., and F. F. DARLING. 1953b. Effects of land use on moose and caribou in Alaska. Trans. North Am. Wildl. Conf. 18:553-560.

Removal of spruce forest and controlled use of fire improve moose range. Increased moose harvest recommended for certain regions. Caribou diminish with human encroachment and disturbance. Management recommendations: protection of lichen range from overgrazing and fire.

TAXON.: *Alces alces, Rangifer tarandus caribou*

KEYWORDS: ALASKA, COMPETITION, FIRE, HABITAT, HARVEST, POPULATION DENSITY

412. LERESCHE, R. E. 1968. Spring-fall calf mortality in an Alaska moose population. J. Wildl. Manage. 32(4):953-956.

From May through October 1965, number of calves per 100 cows decreased from 84.3 to 36.2, suggesting spring-fall calf mortality of more than 50%. Drowning, entrapment by vegetation, abandonment, injury inflicted by the dam, and predation by brown bears observed causes of calf mortality.

TAXON.: *Alces alces, Ursus arctos*

KEYWORDS: ALASKA, ANIMAL PRODUCTIVITY, MORTALITY, PREDATION

413. LEVIN, O. R. 1954. The south Olympic tree farm. J. For. 52(4):243-249.

Considerable data, some quantitative, on bear damage to trees. Restocking of forest retarded. Two-year control program removed 300 bears from eight townships; lowered damage by more than 50%. Few bears in area killed by hunters; population probably grew to point of food shortage. In May, June, and July, 75% of bear stomachs contained cambium striplings; 5% contained fawn remains.

TAXON.: *Euarctos americanus*

KEYWORDS: FOOD HABITS, HARVEST, POPULATION DENSITY, TREE DAMAGE, WASHINGTON

414. LIDICKER, W. Z., Jr., and S. F. MacLEAN, Jr. 1969. A method for estimating age in the California vole, *Microtus californicus*. Am. Midl. Nat. 82(2):450-470.

Several regression formulas based on sex, age; do not go beyond one year.

TAXON.: *Microtus californicus*

KEYWORDS: AGE, CALIFORNIA

415. LINSDALE, J. M. 1946. The California ground squirrel. A record of observations made on the Hastings Natural History Reservation. Univ. California Press, Berkeley. 475 p.

Result of seven-year field study, this treatise is perhaps most detailed ecological account of a mammalian species of its time. Text divided into: Introduction, Habitat, Associated vertebrate animals, Communication, Mannerisms, Activity, Food, Diseases and parasites, Reproduction, Numbers, Structure, and Summary.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: AGE, BEHAVIOR, CALIFORNIA, CENSUS, DISPERSAL, DISTRIBUTION, FOOD HABITS, GROWTH, HABITAT, MORTALITY, PARASITISM & DISEASE, POPULATION DENSITY, POPULATION DYNAMICS, POPULATION GROWTH, REPRODUCTION, TRAPPING

416. LINSDALE, J. M., and P. Q. TOMICH. 1953. A herd of mule deer. Univ. California Press, Berkeley. xiii + 567 p.

Thirteen years of detailed observation of deer on Hastings Reservation, California. Virtually every aspect of herd's field biology described; many special topics such as antler development and reproductive cycle analyzed. Substantial part is narration of single observations; many apparently minor details included.

TAXON.: *Odocoileus hemionus*

KEYWORDS: AGE, BEHAVIOR, CALIFORNIA, FOOD HABITS, HABITAT, PARASITISM & DISEASE, POPULATION GROWTH, REPRODUCTION

417. LLEWELLYN, L. M. 1950. Reduction of mortality in live-trapping mice. J. Wildl. Manage. 14(1):84-85.

Sherman traps, bait rolled oats + peanut butter + shelled corn, without bedding, furnished lowest incidence of trap death (0.14 per 100 captures).

TAXON.: *Clethrionomys* sp., *Microtus* sp., *Peromyscus leucopus*, *Zapus* sp.

KEYWORDS: BAITS, MORTALITY, SOUTHEASTERN UNITED STATES, TRAPPING

418. LONG, C. A., and W. C. KERFOOT. 1963. Mammalian remains from owl-pellets in eastern Wyoming. J. Mammal. 44(1):129-131.

Description of genera found in pellets of owl.

TAXON.: *Citellus richardsonii, Lagurus curtatus, Lepus townsendii, Microtus ochrogaster, M. pennsylvanicus, Mustela frenata, Ondrata zibethica, Onychomys leucogaster, Peromyscus maniculatus, Sorex merriami, Sylvilagus* sp., *Thomomys talpoides*

KEYWORDS: MORTALITY, WYOMING

419. LONGHURST, W. M. 1940. The mammals of Napa County, California. Calif. Fish Game 26(3):240-270.

Description by life zones.

TAXON.: Multiple

KEYWORDS: CALIFORNIA, CENSUS, DISTRIBUTION

420. LONGHURST, W. M. 1956. Population dynamics of deer. Calif. Agric. 10(7):9-10, 12, 14.

Four-year study of population fluctuations of black-tailed deer, only four-year-old does approached potential production. Starvation, accidents, parasites, disease, and predation accounted for 47% losses, hunting 23%, and collecting 24%. Deer carried 40 species of parasitic worms. Nematodes had worst effects. In conjunction with poor nutrition, worms caused weakness and death of many fawns. Tables show chronology of deer losses, reproductive rate, seasonal losses from natural causes, herd composition at various dates, and all losses of deer during study.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: AGE, CALIFORNIA, COMPETITION, HARVEST, MORTALITY, NUTRITION, PARASITISM & DISEASE, POPULATION DENSITY, POPULATION GROWTH, REPRODUCTION

421. LONGHURST, W. M. 1960. Big-game and rodent relationships to forests and grasslands in North America. IN: F. Bourliere (ed.), Symposium on the ecology and management of wild grazing animals in temperate zones, vol. 2, p. 305-326. (Eighth technical meeting of International Union for Conservation of Nature and Natural Resources, Warsaw, Poland, 15-24 July 1960.)

Relationships of herbivorous mammals to their food and habitat, with considerations of succession of management problems on animal nutrition and plant growth.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, FOOD HABITS, HABITAT, HERB & SHRUB DAMAGE, NORTH AMERICA, NUTRITION, POPULATION DYNAMICS

422. LONGHURST, W. M., V. SCHULTZ, and G. E. CONNOLLY. 1968. Accumulation of strontium-90 in yearling Columbian black-tailed deer 1960-67. J. Wildl. Manage. 32(3):621-623.

Data on yearling mandibles collected during 1961-1967. In general, positive correlation of strontium-90 accumulations in yearling mandibles with atmospheric testing, fallout deposition, and precipitation.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BODY CONSTITUTION, CALIFORNIA, MORBIDITY

423. LORD, R. D. 1960. Litter size and latitude in North American mammals. Am. Midl. Nat. 64(2):488-499.

Correlations between litter size and latitude.

TAXON.: *Callospermophilus lateralis, Eutamias amoenus, E. townsendii, Lepus americanus, Microtus longicaudus, Neotoma cinerea, Peromyscus maniculatus, Sorex cinereus, S. vagrans, Sylvilagus bachmani, Tamiasciurus douglasii, Thomomys talpoides*

KEYWORDS: DISTRIBUTION, NORTH AMERICA, REPRODUCTION

424. LORD, R. D., A. M. VILCHES, J. I. MAIZTEGUI, and C. A. SOLDINI. 1970. The tracking board: A relative census technique for studying rodents. J. Mammal. 51(4):828-829.

Smooth, gray plastic tile, 22 cm^2 (3.5 in^2), half covered with newspaper ink mixed with mineral spirits.

TAXON.: Rodentia

KEYWORDS: ARGENTINA, TRACKING

425. LOVAAS, A. L. 1958. Mule deer food habits and range use, Little Belt Mountains, Montana. J. Wildl. Manage. 22(3):275-283.

Range use determined by recording numbers of deer on various vegetative types. Food habits investigated by rumen analyses and

feeding site examinations, with comparable results. Major differences found in food habits between two types of winter ranges. Doe-fawn ratio counts made; reproduction poor.

TAXON.: *Odocoileus hemionus*

KEYWORDS: FIELD METHODS, FOOD HABITS, HABITAT, MONTANA, REPRODUCTION

426. LOVELESS, C. M. 1964. Somr relationships between wintering mule deer and the physical environment. Trans. North Am. Wildl. Conf. 29:415-431.

Deer behavior patterns in winter associated with complex of interrelated factors, seldom did reactions of animals appear to be induced by independent elements acting alone. Factors studied: high air temperature and low atmospheric moisture, low air temperature accompanied by high winds or high atmospheric moisture or both, presence or absence of ground-surface snow, duration and intensity of direct sunlight, and abundance and availability of preferred browse plants.

TAXON.: *Odocoileus hemionus*

KEYWORDS: BEHAVIOR, COLORADO, DISTRIBUTION, HABITAT, HOME RANGE

427. LYON, L. J. 1966a. How many serviceberry equal one deer? Mont. Wildl. 1966:15-18.

Eating the annual growth of 67 mature serviceberry shrubs a day, a deer requires nearly 25,000 plants each year.

TAXON.: *Odocoileus hemionus*

KEYWORDS: FOOD HABITS, MONTANA

428. LYON, L. J. 1966b. Initial vegetal development following a prescribed burning of Douglas-fir in Idaho. USDA For. Serv. Res. Pap. INT-29. 17 p.

Reports and evaluates ecological significance for wildlife habitat of early plant recovery following prescribed burning in Neal Canyon, 1963; compares recovery from this burn with recovery following Sleeping Child fire in 1961.

KEYWORDS: FIRE, FOREST MANIPULATION, IDAHO

429. McCONNELL, B. R., and P. D. DALKE. 1960. The Cassia deer herd of southern Idaho. J. Wildl. Manage. 24(3):265-271.

Major cover types on study area: sagebrush, juniper, lodgepole pine, aspen, and alpine fir. Aspen most important component in summer range. Bitterbrush (in sagebrush type) furnishes bulk of winter browse. Average hunter success 72%. Pregnancy varied from 66% in yearlings to 98% in deer over three years old. Average fetal rate for all age classes 1.41.

TAXON.: *Odocoileus h. hemionus*

KEYWORDS: COMPETITION, FOOD HABITS, HARVEST, IDAHO, POPULATION DENSITY, REPRODUCTION

430. McCONNELL, B. R., and J. G. SMITH. 1970. Frequency distributions of deer and elk pellet groups. J. Wildl. Manage. 34(1):29-36.

Frequency distributions of deer and elk pellet groups related to Poisson series, Neyman type A, Thomas double Poisson, and negative binomial models. Elk pellet groups less aggregated than deer groups; distribution pattern of both apparently influenced more by environmental than social factors.

TAXON.: *Cervus canadensis, Odocoileus hemionus*

KEYWORDS: CENSUS, DISTRIBUTION, FIELD METHODS, OREGON, WASHINGTON

431. McCULLOCH, C. Y. 1955. Utilization of winter browse on wilderness big game range. J. Wildl. Manage. 19(2):206-215.

Since 1910, decline in mule deer, great buildup of elk, and destructive use of winter range in Idaho's Upper Selway Wilderness. Of 10 most abundant available shrub species, six heavily used, four scarcely touched by big game. Reproduction of timber and desirable browse species retarded.

TAXON.: *Cervus canadensis, Odocoileus hemionus*

KEYWORDS: COMPETITION, FIRE, FOOD HABITS, HARVEST, HERB & SHRUB DAMAGE, IDAHO, POPULATION DENSITY, POPULATION GROWTH

432. McCULLOCH, C. Y. 1966. Pinyon-juniper control and deer. Wildl. Views (Ariz.) 13(2):10-13.

"Type conversion" (from one to another) of various kinds of natural vegetation much in demand for improving water and livestock production and for fire protection. For deer of pinyon-juniper areas, conversion effects can be neutral, harmful, or beneficial, depending largely on intensity and extent of tree removal efforts and, therefore, degrees to which some other land use needs can be adjusted to deer needs.

TAXON.: *Odocoileus* sp.

KEYWORDS: ANIMAL PRODUCTIVITY, FIRE, FOREST MANIPULATION, HABITAT, LOGGING, SOUTHWESTERN UNITED STATES, STANDING CROP

433. McCULLOCH, C. Y. 1969. Some effects of wildfire on deer habitat in pinyon-juniper woodland. J. Wildl. Manage. 33(4):778-784.

On plateau of pinyon-juniper woodland, half was previously burned by crown fires, deer droppings abundant in sampled strip that included burned and unburned areas. Accumulation rates of deer pellet groups greater in burned than in unburned parts of strip. Droppings accumulated at high rates in burned zone near edge of unburned woodland. For limited purpose of producing both cattle and deer, extensive crown fires acceptable range improvement technique in remote woodland near precipitous terrain like Grand Canyon.

TAXON.: *Odocoileus hemionus*

KEYWORDS: FIRE, FOOD HABITS, HABITAT, SOUTHWESTERN UNITED STATES

434. MACE, R. U. 1956. Oregon's elk. Oregon State Game Comm. 35 p.

Popular account of natural history, distribution and habitats, management, and hunting.

TAXON.: *Cervus canadensis*

KEYWORDS: CENSUS, DISTRIBUTION, FOOD HABITS, HABITAT, HARVEST, OREGON, POPULATION GROWTH, REPRODUCTION

435. McKEEVER, S. 1961. Relative populations of small mammals in three forest types of northeastern California. Ecology 42(2):399-402.

Small-mammal populations studied in three forest types; relative abundance of 12 species computed. Five species caught only sporadically. "Types" studied: ponderosa pine, lodgepole pine, red fir, white fir. Dead traps used, walnut kernels on larger, rolled oats and peanut butter on smaller.

TAXON.: *Callospermophilus lateralis, Clethrionomys occidentalis, Eutamias amoenus, E. speciosus, E. townsendii, Glaucomys sabrinus, Lepus americanus, Microtus montanus, Peromyscus maniculatus, Sorex trowbridgii, Sylvilagus nuttallii, Tamiasciurus douglasii*

KEYWORDS: BAITS, CALIFORNIA, CENSUS, DISTRIBUTION, POPULATION DENSITY, POPULATION DYNAMICS, TRAPPING

436. McKEEVER, S. 1964a. Variation in the weight of the adrenal, pituitary and thyroid gland of the white-footed mouse, *Peromyscus maniculatus*. Am. J. Anat. 114(1):1-16.

Monthly records of population reproductive status, gland weight against body weight for each gland. Significant changes in adrenal size showed no consistent correlation with changes in population density. No variation in thyroid size with season; glands decreased in weight on maturity. Pituitaries of adult females larger than of adult males.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: AGE, BODY CONSTITUTION, CALIFORNIA, GROWTH, METABOLISM, POPULATION DENSITY, REPRODUCTION

437. McKEEVER, S. 1964b. The biology of the golden-mantled ground squirrel. Ecol. Monogr. 34(4):383-401.

Population density in various forest types correlated with density of herbaceous vegetation. Squirrel breeds once in early spring and produces average of 5.1 embryos per litter. Gestation period approximately 28 days. Use of eye lenses to determine age was questionable technique for this species. Food habits. Atrophy of endocrine glands in fall precedes hibernation.

TAXON.: *Callospermophilus lateralis*

KEYWORDS: AGE, BEHAVIOR, BODY CONSTITUTION, CALIFORNIA, FOOD HABITS, GROWTH, LABORATORY METHODS, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, STANDING CROP

438. McMILLAN, J. F. 1953a. Measures of association between moose and elk on feeding grounds. J. Wildl. Manage. 17(2):162-166.

Mathematical analysis of frequency with which both species appeared in same plots. Three types of analyses applied. Elk used moose range more heavily, resulting in damage that could seriously affect Yellowstone moose population.

TAXON.: *Alces alces, Cervus canadensis*

KEYWORDS: COMPETITION, FORAGING BEHAVIOR, HOME RANGE, POPULATION DENSITY, WYOMING

439. McMILLAN, J. F. 1953b. Some feeding habits of moose in Yellowstone Park. Ecology 34(1):102-110.

Roughly 88% of food is willow browse, 9% aquatic plants, remainder forbs and sedges. Mineral licks regularly used. In feeding on willows, moose move about 2.7 m (3 yd) in 5 min, nipping and stripping tender browse as they go. Feeding done from underwater to heights of 2 m (7 ft), even higher in winter, but 56% of browsing is at heights of 0.6-1.2 m (2-4 ft). Browsing at center and edge of willow copse about equal.

TAXON.: *Alces alces*

KEYWORDS: FOOD HABITS, NUTRITION, WYOMING

440. McNAB, B. K. 1963. A model of the energy budget of a wild mouse. Ecology 44(3):521-532.

Energy exchange of a homoiotherm described in mathematical and physical terms as function of time. Model can be used in description of economy of a single species, or extended to study energy dynamics of populations of one or several species (community).

TAXON.: *Peromyscus maniculatus*

KEYWORDS: ANIMAL PRODUCTIVITY, BODY CONSTITUTION, CALIFORNIA, FORAGING BEHAVIOR, GROWTH, METABOLISM, MODELS, POPULATION DYNAMICS

441. McNAB, B. K. 1966. The metabolism of fossorial rodents: A study of convergence. Ecology 47(5):712-733.

Temperature regulation and rate of metabolism studied in five species of fossorial rodents: southeastern pocket gopher, blind mole-rat, root-rat, mole-rat, and naked mole-rat. Burrows in well-drained soils of poor water-holding capacity, oxygen concentration of 15%-20%, carbon dioxide concentration of 0.5%-2.0%, and limited temperature fluctuations; saturated with water vapor. Body temperatures somewhat low (35°-37°C) in four species in which temperature regulation is good at ambient temperatures down to 5° or 10°C. Naked mole-rat, has lower body temperature (about 32°C) and poorest capacity for thermoregulation of any known mammal. Lethal ambient temperatures inversely proportional to normal levels of body temperature.

TAXON.: *Geomys pinetis, Heliophobius kapeti, Heterocephalus glaber, Peromyscus* sp., *Spalax leucodon, Tachyoryctes splendens*

KEYWORDS: BEHAVIOR, BODY CONSTITUTION, HABITAT, LABORATORY METHODS, METABOLISM

442. McNAB, B. K., and P. MORRISON. 1963. Body temperature and metabolism in subspecies of *Peromyscus* from arid and mesic environments. Ecol. Monogr. 33(1):63-82.

Body temperatures measured in 10 subspecies of *Peromyscus* between ambient temperatures of 10° and 38°C. All subspecies can regulate at moderate (10°-30°C) temperatures; desert species poorest regulators at low temperatures (1°-5°C), best at high (38°C). Measurements of metabolism; facilitation of heat loss at high temperatures.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: CALIFORNIA, DISTRIBUTION, HABITAT, METABOLISM, NEVADA, SOUTHWESTERN UNITED STATES, UTAH

443. MAILLIARD, J. 1925. Notes upon the numerical status of rodent populations in parts of California. J. Mammal. 6(2):102-105.

While small rodent populations experienced great decline in 1923 in northeastern California, elsewhere they sometimes flourished.

TAXON.: *Microtus californicus, Neotoma* spp., *Peromyscus maniculatus, Sorex* sp.

KEYWORDS: CALIFORNIA, DISTRIBUTION, POPULATION DENSITY, POPULATION DYNAMICS

444. MANLY, B. F. J. 1970. A simulation study of animal population estimation using the capture-recapture method. J. Appl. Ecol. 7(1):13-39.

Pseudo-random number generation with computer program; theory and results; modeling.

KEYWORDS: MODELS, MORTALITY, POPULATION DENSITY

445. MARSH, R. E. 1968. An aerial method of dispensing ground squirrel bait. J. Range Manage. 21(6):380-384.

Aircraft used for baiting destructive populations of ground squirrels. Spot and strip baiting by air effective when applied in narrow swaths at a rate of 6.7 kg/swath hectare (6 lb/swath acre). Aerial technique gave good control when ground squirrel population foraging extensively for seed, applied to only fraction of ground surface of squirrel-infested rangeland.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: BAITS, CALIFORNIA

446. MARSH, R. E., W. E. HOWARD, and S. D. PALMATEER. 1970. Effects of odors of rodenticides and adherents on attractiveness of oats to ground squirrels. J. Wildl. Manage. 34(4):821-825.

Olfactory tests with 18 Douglas ground squirrels, strychnine and sodium fluoroacetate (1080) did not produce response-stimulating odors, whereas zinc phosphide, lecithin-mineral oil, and starch paste improved attractiveness of bait called "squirrel oat groats." Attractiveness of oats slightly increased with addition of Rhoplex AC-33 and slightly decreased with Dow Latex 512-R.

TAXON.: *Otospermophilus beecheyi douglasii*

KEYWORDS: BAITS, BEHAVIOR, CALIFORNIA, DAMAGE, LABORATORY METHODS

447. MARSHALL, J. T., Jr. 1942. Food and habitat of the spotted owl. Condor 44(2):66-67.

Found only in most dense transition zone forest; preys on small mammals.

TAXON.: *Peromyscus* sp., *Scapanus latimanus*, *Sorex* sp., *Zapus trinotatus*

KEYWORDS: CALIFORNIA, HABITAT, MORTALITY, OREGON, PREDATION

448. MARSHALL, W. H. 1941. *Thomomys* as burrowers in the snow. J. Mammal. 22(2):196-197.

Three uses of snow: as medium of travel on bottom and near top, and as waste deposit medium.

TAXON.: *Thomomys talpoides*

KEYWORDS: BEHAVIOR, HABITAT, IDAHO

449. MARSTON, J. H., G. RAND, and M. C. CHANG. 1965. The care, handling and anesthesia of the snowshoe hare (*Lepus americanus*). Lab. Anim. Care 15(5):325-328.

Methods of management, handling, and anesthesia of snowshoe hare used in experiments to study hybrid fertilization. With quiet and gentle handling these wild animals adapt to laboratory environment and thrive.

TAXON.: *Lepus americanus*

KEYWORDS: DRUGS, HANDLING, LABORATORY METHODS, NORTH AMERICA

450. MARTINKA, C. J. 1969. Population ecology of summer resident elk in Jackson Hole, Wyoming. J. Wildl. Manage. 33(3):465-481.

Quantitative data on distribution, population status, social habits, movements, and habitat relationships of relatively nonmigratory elk of Jackson Hole valley, Wyoming. Study area and eight major vegetation types described.

TAXON.: *Cervus canadensis*

KEYWORDS: BEHAVIOR, CENSUS, HABITAT, HOME RANGE, WYOMING

451. MARTINSEN, D. L. 1968. Temporal patterns in the home ranges of chipmunks (*Eutamias*). J. Mammal. 49(1):83-91.

Home range expressions may need time qualification; larger than otherwise indicated when long-range observation continued.

TAXON.: *Eutamias amoenus, E. minimus*

KEYWORDS: BEHAVIOR, HOME RANGE, MONTANA

452. MASER, C. 1967. Black bear damage to Douglas-fir in Oregon. Murrelet 48(2):34-38.

Damage from black bear occurs to trees whose crowns extend almost the length of trunks and whose growth rate is rapid. Mechanics and identification of damage also discussed.

TAXON.: *Euarctos americanus*

KEYWORDS: FOOD HABITS, OREGON, TREE DAMAGE

453. MASER, C., and R. M. STORM. 1970. A key to Microtinae of the Pacific Northwest. Oregon State Univ., Corvallis. 162 p.

Keys to a difficult-to-identify group; range maps.

TAXON.: *Clethrionomys gapperi, Microtus longicaudus, M. oregoni*

KEYWORDS: CENSUS, DISTRIBUTION, PACIFIC NORTHWEST

454. MAY, M. 1958. Bibliography on deer-range relationships. Wyo. Range Manage. No. 115. 5 p. (Mimeo.)

Lists 76 titles on deer nutrition and range relationships. Papers cited pertain to both eastern and western United States.

TAXON.: *Odocoileus hemionus, O. virginianus*

KEYWORDS: BIBLIOGRAPHY, FOOD HABITS, HERB & SHRUB DAMAGE, NUTRITION, UNITED STATES

455. MAYER, W. V. 1957. A method for determining the activity of burrowing animals. J. Mammal. 38(4):531.

Smoked paper rolled, placed in burrow; benzene lamp for field smoking.

TAXON.: Multiple

KEYWORDS: BEHAVIOR, FIELD METHODS

456. MERRILL, A. H. 1953. Bears hamper tree growing in California. J. For. 51(12):928-929.

Bears strip bark off growing redwoods and Douglas-firs to eat thin cambium layer directly below. One bear may kill 20-40 trees in a single day. Tree damage period, 75-100 days in spring and summer.

TAXON.: *Euarctos americanus*

KEYWORDS: CALIFORNIA, FOOD HABITS, TREE DAMAGE

457. MILLAR, J. S. 1970a. The breeding season and reproductive cycle of the western red squirrel. Can. J. Zool. 48(3):471-473.

Breeding period in southern British Columbia differed in some respects from that reported in eastern North America. Comparisons of breeding times, litter sizes, reproductive organs. Timing of breeding may be influenced by weather conditions.

TAXON.: *Tamiasciurus hudsonicus*

KEYWORDS: BEHAVIOR, BRITISH COLUMBIA, GROWTH, REPRODUCTION

458. MILLAR, J. S. 1970b. Variations in fecundity of the red squirrel, *Tamiasciurus hudsonicus* (Erxleben). Can. J. Zool. 48(5):1055-1058.

Ovulation rates, preimplantation losses, and postimplantation losses of red squirrels in southern British Columbia were examined in relation to age, area, and year, and related to population density and food supply.

TAXON.: *Tamiasciurus hudsonicus*

KEYWORDS: AGE, ANIMAL PRODUCTIVITY, BEHAVIOR, BRITISH COLUMBIA, MORTALITY, NUTRITION, POPULATION DENSITY, REPRODUCTION

459. MILLER, F. L. 1965. Behavior associated with parturition in black-tailed deer. J. Wildl. Manage. 29(3):629-631.

Black-tailed deer observed giving birth to fawn from 1 hr before birth to capture of fawn 2 hr after birth. Birth process without observable difficulty, took about 7 min. Fawn stood within one-half hour after birth and started to suck within an hour.

TAXON.: *Odocoileus hemionus*

KEYWORDS: BEHAVIOR, OREGON, REPRODUCTION

460. MILLER, F. L. 1968. Immobilization of free-ranging black-tailed deer with succinylcholine chloride. J. Wildl. Manage. 32(1):195-197.

Forty black-tailed deer on Tillamook Burn, Oregon, immobilized with succinylcholine chloride injected by automatic projectile syringes fired from a carbon dioxide Cap-Chur rifle. Four deer killed by drug. Effective range of dosages for black-tailed deer 0.15-0.31 mg/kg (0.07-0.14 mg/lb).

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: DRUGS, HANDLING, OREGON

461. MILLER, F. L. 1970. Accidents to parturient black-tailed deer. Am. Midl. Nat. 83(1):303-304.

Accidents to four parturient black-tailed deer were of severity that could have led to prenatal complications or fatalities in fetuses, yet all does gave birth to healthy fawns.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: MORBIDITY, OREGON, REPRODUCTION

462. MILLER, G. S., and R. KELLOGG. 1955. List of the North American Recent mammals. U.S. Nat. Mus. Publ. no. 205. 954 p.

Summarizes results of taxonomic studies of North America up to 1 January 1953, and indicates forms represented in collection of U.S. National Museum. Tables show number of forms in each family, and in the collection. Lists locality and ranges. Index also included.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, NORTH AMERICA

463. MILLER, L. S. 1957. Tracing vole movements by radioactive excretory products. Ecology 38(1):132-136.

Adult male meadow vole trapped, injected with 200 mCi phosphorus-32, released at point of capture. Small aluminum squares, in grid pattern, examined with field meter daily for radioactive excretory products. Technique appears to provide method for recording spatial and temporal distribution of small-mammal activity with minimum disturbance to marked animal or its habitat. Phosphorus-32 tracer is short-lived, beta-emitting isotope, relatively safe to handle. Metal squares provide convenient, standardized means of collecting data.

TAXON.: *Microtus pennsylvanicus, Mus musculus, Sorex cinereus*

KEYWORDS: BEHAVIOR, DISPERSAL, DISTRIBUTION, HANDLING, MIDWESTERN UNITED STATES, TRACKING

464. MILLER, M. A. 1946. Reproductive rates and cycles in the pocket gopher. J. Mammal. 27(4):335-358.

Average adult female capable of three litters per year, but performance limited to 1.5-2.5 with 4.9-5.8 young per litter. Average gross rate of increase, 10.7 per adult female per year.

TAXON.: *Thomomys bottae*

KEYWORDS: ANIMAL PRODUCTIVITY, CALIFORNIA, POPULATION GROWTH, REPRODUCTION

465. MILLER, M. A. 1948. Seasonal trends in burrowing of pocket gophers (*Thomomys*). J. Mammal. 29(1):38-44.

Nearly one year of weekly observations of activity, with records of soil temperature, soil moisture, rainfall, and kinds of soil moving. Control easiest in fall months.

TAXON.: *Thomomys bottae*

KEYWORDS: BEHAVIOR, CALIFORNIA, DAMAGE, DISPERSAL

466. MILLER, M. A., and W. E. HOWARD. 1951. Size of bait for pocket gopher control. J. Wildl. Manage. 15(1):62-68.

Large baits previously recommended because of necessity for chewing, pouching, but this study recommends dried prune or carrot (any size) with strychnine.

TAXON.: *Thomomys talpoides*

KEYWORDS: BAITS, PACIFIC NORTHWEST

467. MILLER, R. S. 1958. Rate of incisor growth in the mountain pocket gopher. J. Mammal. 39(3):380-385.

Average rates for extrusive incisor growth in pocket gophers from two different habitats were significantly different. Direct correlation between body weight and rate of incisor growth; rates for individuals from both populations found to follow same regressions.

TAXON.: *Thomomys talpoides*

KEYWORDS: AGE, BODY CONSTITUTION, COLORADO, DISTRIBUTION

468. MILLER, R. S., and H. E. BOND. 1960. The summer burrowing activity of pocket gophers. J. Mammal. 41(4):469-475.

Relatively little activity recorded during June and July, but burrowing increased during August to peak in late August. Seasonal trend in activity not correlated with precipitation and soil moisture but seemed, instead, to represent seasonal changes in breeding behavior and feeding habits.

TAXON.: *Thomomys talpoides*

KEYWORDS: BREEDING BEHAVIOR, COLORADO, DISPERSAL, FOOD HABITS, REPRODUCTION

469. MITCHELL, G. E. 1944. The Murderers Creek deer herd. Trans. North Am. Wildl. Conf. 9:167-172.

Story of an overpopulation in Oregon. Overpopulations became serious before conditions were fully appreciated.

TAXON.: *Odocoileus hemionus columbianus, O. h. hemionus*

KEYWORDS: HERB & SHRUB DAMAGE, MORTALITY, OREGON, POPULATION DENSITY

470. MOHR, C. O. 1947. Table of equivalent populations of North American small mammals. Am. Midl. Nat. 37(1):223-249.

Summary of 110 papers published through 1941, analyzed in 1943, and additions since. Number per acre, average individual weight, and grams per acre of population of several species. Cause of differing results of censusing considered; home range investigation methods summarized.

TAXON.: *Callospermophilus lateralis, Erethizon dorsatum, Lepus americanus, Otospermophilus beecheyi, Peromyscus maniculatus, Sorex cinereus, Thomomys talpoides*

KEYWORDS: CENSUS, HOME RANGE, NORTH AMERICA, POPULATION DENSITY, POPULATION DYNAMICS

471. MOHR, C. O. 1965. Home area and comparative biomass of the North American red squirrel. Can. Field Nat. 79(3):162-171.

Comparisons with data of others: the larger the individuals, the greater the biomass when small versus large animals compared.

TAXON.: *Tamiasciurus hudsonicus*

KEYWORDS: AGE, ANIMAL PRODUCTIVITY, BIOMASS, NORTHEASTERN UNITED STATES, POPULATION DENSITY, POPULATION DYNAMICS

472. MOORE, A. W. 1940. Wild animal damage to seed and seedlings on cut-over Douglas-fir lands of Oregon and Washington. USDA Tech. Bull. 706. 28 p.

Discusses habits of main seed-eaters and effect on them of slash burning. Deer mice and shrews hardest on seeds, rabbits and hares on new growth. Artificial reforestation suffers more than natural growth.

TAXON.: *Aplodontia rufa, Cervus canadensis, Clethrionomys occidentalis, Erethizon dorsatum, Euarctos americanus, Eutamias townsendii, Lepus americanus, Microtus oregoni, Neurotrichus gibbsii, Odocoileus hemionus, Peromyscus maniculatus, Scapanus townsendii, Sorex vagrans, Sylvilagus bachmani, Tamiasciurus douglasii, Thomomys* sp.

KEYWORDS: FIRE, FOOD HABITS, FOREST MANIPULATION, FOREST REGENERATION, LOGGING, OREGON, SEED & CONE DAMAGE, SEEDLING DAMAGE, WASHINGTON

473. MOORE, A. W. 1942. Shrews as a check on Douglas-fir regeneration. J. Mammal. 23(1):37-41.

Livetrapping with seed as bait revealed seed eaters; buried seed revealed extent of feeding.

TAXON.: *Clethrionomys occidentalis, Eutamias townsendii, Neurotrichus gibbsii, Peromyscus maniculatus, Sorex trowbridgii, S. vagrans*

KEYWORDS: BAITS, BEHAVIOR, FOOD HABITS, FOREST REGENERATION, OREGON, SEED & CONE DAMAGE, TRAPPING

474. MOORE, A. W. 1943. The pocket gopher in relation to yellow pine reproduction. J. Mammal. 24(2):271-272.

White-footed mice traveling in pocket-gopher burrows apparently consume seed crop on areas grazed by cattle in Ochoco National Forest, Oregon.

TAXON.: *Peromyscus maniculatus, Thomomys talpoides*

KEYWORDS: BEHAVIOR, DISPERSAL, FOOD HABITS, OREGON, SEED & CONE DAMAGE

475. MOORE, A. W. 1949-1950. Forest tree-seed-eaters and methods used to measure their populations in the Pacific Northwest Douglas-fir region. Univ. Wash. For. Club Q. 23(1):7-11, 25.

Baited acceptance spots used with white-footed mice.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BAITS, CENSUS, PACIFIC NORTHWEST, POPULATION DENSITY, SEED & CONE DAMAGE

476. MOORE, R. E. 1959. Population and home range studies of *Peromyscus maniculatus gambelii* in the Strawberry Mountains, Grant County, Oregon. M.S. thesis, Oregon State Univ., Corvallis. 87 p.

Population and home range relationships investigated, summer 1957. Results from livetrapping and dead trapping produced data on density, turnover, parasitism, and movement.

TAXON.: *Peromyscus maniculatus gambelii*

KEYWORDS: CENSUS, DISPERSAL, DISTRIBUTION, HOME RANGE, MORTALITY, OREGON, PARASITISM & DISEASE, POPULATION DENSITY, POPULATION DYNAMICS, POPULATION GROWTH, TRAPPING

477. MORRIS, M. S., and R. HUNGERFORD. 1953. Food consumption and weight response of elk under winter conditions. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 32:185-187.

Eight elk calves and five calves from Montana grass range kept captive and fed experimental diets of cultivated hay, native grass, and browse for two winter months. Botanical and chemical composition of foods stated. Weight loss least on hay, highest on browse. Poor showing of browse unexpected, may have been caused by unfamiliarity. Loss of weight in winter expected. Conclusion: meadow hay is satisfactory winter elk food.

TAXON.: *Cervus canadensis*

KEYWORDS: FOOD HABITS, MONTANA, NUTRITION

478. MORRIS, R. D. 1968a. A comparison of capture success between Sherman and Longworth live traps. Can. Field Nat. 82(2):84-87.

Sherman superior, possibly because of larger opening; comparisons for species listed.

TAXON.: *Citellus franklinii, C. tridecemlineatus, Clethrionomys gapperi, Microtus pennsylvanicus, Mustela rixosa, Onychomys leucogaster, Perognathus fasciatus, Peromyscus maniculatus, Zapus hudsonius*

KEYWORD: TRAPPING

479. MORRIS, R. D. 1968b. Effects of endrin feeding on survival and reproduction in the deer mouse, *Peromyscus maniculatus*. Can. J. Zool. 46(5):951-958.

Endrin feeding at intervals over seven-month period, with standard mouse pellets containing various concentrations of endrin. All groups subjected to short starvation periods. Selected mice from

each group exposed to cold stress at -18°C until dead. Adult mortality during feeding, starvation, and cold stress periods directly proportional to level of endrin supplied in food.

TAXON.: *Peromyscus maniculatus osgoodi*

KEYWORDS: AGE, BEHAVIOR, CANADA, INSECTICIDES, LABORATORY METHODS, MORBIDITY, POPULATION DENSITY, REPRODUCTION

480. MORRIS, R. D. 1970. The effects of endrin on *Microtus* and *Peromyscus*. I. Unenclosed field populations. Can. J. Zool. 48(4):695-708.

Deer mice more abundant on experimental than on control plot before first endrin application; numbers significantly reduced after spray and never recovered. No recruitment by immigration or breeding. Long-term toxicological effect on deer mice indicated differential response of two small-mammal species to endrin.

TAXON.: *Microtus pennsylvanicus, Peromyscus maniculatus*

KEYWORDS: CANADA, DAMAGE, DISPERSAL, INSECTICIDES, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, TRAPPING

481. MORRIS, R. F., W. F. CHESHIRE, C. A. MILLER, and D. G. MOTT. 1958. The numerical response of avian and mammalian predators during a gradation of the spruce budworm. Ecology 39(3):487-494.

Population of rodents and insectivores fluctuated independently of budworm density; however, decreased heights of peaks in cycles of red-backed vole and deer mouse possibly associated with shortage of tree seeds following budworm damage. Predators of little control value during outbreak.

TAXON.: *Clethrionomys gapperi, Peromyscus maniculatus, Sorex cinereus, Tamiasciurus hudsonicus*

KEYWORDS: CANADA, CENSUS, FOOD HABITS, POPULATION DENSITY, POPULATION DYNAMICS, SEED & CONE DAMAGE, STANDING CROP

482. MORRISON, J. A. 1960. Ovarian characteristics in elk of known breeding history. J. Wildl. Manage. 24(3):297-307.

Graafian follicles, corpora lutea, and corpora albicantia in ovaries from elk of known breeding history examined to learn if they could be correlated with specific breeding histories to measure past productivity.

TAXON.: *Cervus canadensis*

KEYWORDS: IDAHO, LABORATORY METHODS, REPRODUCTION

483. MORRISON, J. A., C. E. TRAINER, and P. L. WRIGHT. 1959. Breeding season in elk as determined from known-age embryos. J. Wildl. Manage. 23(1):27-34.

Eight known-age elk embryos and one term calf obtained from elk bred under observation. Specimens weighed and measured, morphology described. Growth curve constructed from crown-rump length. Use of growth curve illustrated by aging embryos from two groups of free-ranging elk and estimating average conception dates. Placental cotyledons and chorionic villi developed similarly to those in cattle.

TAXON.: *Cervus canadensis*

KEYWORDS: AGE, GROWTH, MONTANA, PHYSICAL DESCRIPTION, REPRODUCTION

484. MORRISON, P. R., M. PIERCE, and F. A. RYSER. 1957. Food consumption and body weight in the masked and short-tail shrews. Am. Midl. Nat. 57(2):493-501.

Activity rhythm, metabolic rate for masked shrews; must take in 2.5 times body weight per day, average four feeding periods per hour.

TAXON.: *Blarina brevicauda, Sorex cinereus*

KEYWORDS: BEHAVIOR, FOOD HABITS, METABOLISM, MIDWESTERN UNITED STATES

485. MOSSMAN, A. S. 1955. Reproduction of the brush rabbit in California. J. Wildl. Manage. 19(2):177-184.

Males reproductive November to June, females December to June, with peak January to May. Gestation period is 27 ± 3 days; copulation soon after termination of pregnancy. Mean litter size 3.7; maximum litters six per season, mean three to four. Sex ratio, 88 male:100 female.

TAXON.: *Sylvilagus bachmani*

KEYWORDS: CALIFORNIA, REPRODUCTION, SEX RATIO

486. MULLALLY, D. P. 1953. Hibernation in the golden-mantled ground squirrel, *Citellus lateralis bernardinus*. J. Mammal. 34(1):65-73.

Habitat; annual cycle of activity; body temperatures, hibernation.

TAXON.: *Callospermophilus lateralis bernardinus*

KEYWORDS: BEHAVIOR, CALIFORNIA, HABITAT, METABOLISM

487. MULLER-SCHWARZE, D. 1968. Play deprivation in deer. Behavior 31(1-2):144-162.

Deprivation of play movements did not affect frequency of motor patterns in two hand-raised mule deer fawns. Major effects of play deprivation were prolongation of activity periods without increasing total amount of activity, higher rate of locomotion in first hours after deprivation, and, in female, more exploration in regular activity periods following experiment.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BEHAVIOR, CALIFORNIA

488. MUNRO, J. A. 1947. Observations of birds and mammals in central British Columbia. Occas. Pap. B.C. Prov. Mus. (Mammals) 6:109-164.

Observations on occurrences and abundance, summer 1944, plus trapping and bounty records for 1921-1943.

TAXON.: *Alces alces, Castor canadensis, Cervus canadensis, Clethrionomys gapperi, Erethizon dorsatum, Euarctos americanus, Eutamias amoenus, Lepus americanus, Odocoileus hemionus, Peromyscus maniculatus, Rangifer tarandus, Sorex cinereus, Tamiasciurus hudsonicus*

KEYWORDS: BRITISH COLUMBIA, DISTRIBUTION, HARVEST, POPULATION DENSITY, TRAPPING

489. MURIE, A. 1961. Some food habits of the marten. J. Mammal. 42(4):516-521.

In analysis of scats of marten, voles most prominent meat item in diet; red squirrel rarely eaten, but its home often used for lodging.

TAXON.: *Callospermophilus lateralis caryi, Citellus armatus, Clethrionomys* sp., *Eutamias* sp., *Lepus americanus, Marmota* sp., *Martes americanus caurina, Microtus* sp., *Neotoma* sp., *Ochotona* sp., *Peromyscus* sp., *Phenacomys* sp., *Sorex* sp., *Tamiasciurus* sp., *Thomomys* sp., *Zapus* sp.

KEYWORDS: FOOD HABITS, WYOMING

490. MURIE, M. 1961. Metabolic characteristics of mountain, desert and coastal populations of *Peromyscus*. Ecology 42(4):723-740.

Groups of deer mice and cactus mice, representing five subspecies, trapped in high mountain, lowland, and desert habitats. Measurements of oxygen consumption, deep body temperature, and pelage insulation made after acclimation to coastal conditions at

Berkeley, California. Implications of observed physiological and behavioral differences in relation to geographic distribution discussed.

TAXON.: *Peromyscus eremicus, P. maniculatus*

KEYWORDS: BEHAVIOR, CALIFORNIA, DISTRIBUTION, METABOLISM, TRAPPING

491. MURIE, M. 1963. Homing and orientation of deermice. J. Mammal. 44(3):338-349.

Hypothesis that displaced deer mice wander extensively, and at random, in relation to "true" homeward course. Disruption of pattern of attachment to original home range and interactions with residents are two factors that might cause such wanderings.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BEHAVIOR, DISPERSAL, HOME RANGE, WYOMING

492. MURIE, O. J. 1926. The porcupine in northern Alaska. J. Mammal. 7(2):109-113.

Observations on food and behavior.

TAXON.: *Erethizon dorsatum*

KEYWORDS: ALASKA, BEHAVIOR, DISTRIBUTION, FOOD HABITS

493. MURIE, O. J. 1945. Notes on coyote food habits in Montana and British Columbia. J. Mammal. 26(1):33-40.

From scat collections made 1934-1935.

TAXON.: *Alces alces, Bos taurus, Callospermophilus* sp., *Canis latrans, Castor canadensis, Cervus canadensis nelsoni, Citellus c. columbianus, Equus caballus, Erethizon dorsatum epixanthum, Eutamias* sp., *Lepus americanus bairdii, L. americanus macfarlani, L. townsendii campanius, Marmota flaviventris nosophora, M. monax, Microtus* sp., *Neotoma* sp., *Odocoileus h. hemionus, Ondrata zibethica spatulatus, Ovis aries, Peromyscus* sp., *Sciurus* sp., *Sylvilagus nuttallii grangeri, Thomomys* sp., *Zapus* sp.

KEYWORDS: BRITISH COLUMBIA, FOOD HABITS, MONTANA, PREDATION

494. MURRAY, K. F. 1957. Some problems of small mammal sampling in western North America. J. Mammal. 38(4):441-451.

Results of livetrapping small mammals by use of parallel lines, with lines running through different habitats. Habitat differences

tabulated, travel of individuals between lines analyzed. Discusses difficulty of sampling mixed habitats by standard procedures and emphasizes need for new techniques.

TAXON.: Multiple

KEYWORDS: DISPERSAL, DISTRIBUTION, HOME RANGE, TRAPPING, WESTERN NORTH AMERICA

495. NEGUS, N. C. 1950. Fluctuation in the population of *Neotoma cinerea* (woodrat) in Jackson Hole, Wyoming. J. Mammal. 31(2):196-197.

High population noted in 1941; diminished to point of rarity by 1948 and 1949. No control measures in effect, indicating natural cycle.

TAXON.: *Neotoma cinerea*

KEYWORDS: POPULATION DENSITY, POPULATION DYNAMICS, WYOMING

496. NEGUS, N. C., and J. S. FINDLEY. 1959. Mammals of Jackson Hole, Wyoming. J. Mammal. 40(3):371-381.

Accounts of species in area.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HABITAT, WYOMING

497. NEIDER, D. S. 1963. Population dynamics of enclosed *Microtus montanus* (Peale) in relation to cover and density. M.S. thesis, Oregon State Univ., Corvallis. 71 p.

Information on density, recruitment, reproduction, sex ratio, survival rate, and home range.

TAXON.: *Microtus montanus*

KEYWORDS: AGE, DISPERSAL, HOME RANGE, OREGON, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, SEX RATIO

498. NEILS, G., L. ADAMS, and R. M. BLAIR. 1955. Management of white-tailed deer and ponderosa pine. Trans. North Am. Wildl. Conf. 20:539-551.

Investigations of deer and ponderosa pine in northwestern Montana show that deer browsing is a primary limiting factor in pine regeneration. Heavy browsing results from overstocking of deer on winter range, which roughly coincides with best pine producing areas. Remedies appear to be herd reduction or fencing.

TAXON.: *Odocoileus virginianus*

KEYWORDS: FENCING, FOOD HABITS, MONTANA, POPULATION DENSITY, SEEDLING DAMAGE

499. NEITRO, W. A. 1970. A permanent type poison station for porcupine control. Proc. Vertebr. Pest Control Conf. 4:98-100.

Description of aluminum half-round culvert for protection of salt-strychnine bait from weathering: painted brown to reduce vandalism, labeled "poison."

TAXON.: *Erethizon dorsatum*

KEYWORDS: BAITS, DAMAGE, OREGON

500. NELLIS, C. H. 1968. Productivity of mule deer on the National Bison Range, Montana. J. Wildl. Manage. 32(2):344-349.

Deer controlled by selective removal of one-third of herd annually and suffer limited natural mortality. Fawn production only 5% lower than fetal rate; indicates very low postnatal fawn mortality. High annual adult mortality of 58% counterbalanced by low fawn loss.

TAXON.: *Odocoileus h. hemionus*

KEYWORDS: ANIMAL PRODUCTIVITY, HARVEST, MONTANA, MORTALITY, REPRODUCTION

501. NELLIS, C. H. 1969. Sex and age variation in red squirrel skulls from Missoula County, Montana. Can. Field Nat. 83(4):324-330.

Cranial measurements; age groupings based on maxillary tooth eruption.

TAXON.: *Tamiasciurus hudsonicus*

KEYWORDS: AGE, BODY CONSTITUTION, MONTANA, REPRODUCTION

502. NELLIS, C. H., and R. L. ROSS. 1969. Changes in mule deer food habits associated with herd reduction. J. Wildl. Manage. 33(1):191-195.

Forbs and shrubs each accounted for one-third of total diet, grass 21%, conifers 13%; compared with similar information from 1952, large increase in use of shrubs and smaller increase in conifer use from 1952 to 1963. Compensatory decrease in use of grass in spring and winter, forbs in summer and fall during this period. Changes in food habits associated with reduction in mule deer numbers by 1963 to about one-third of 1952 level. Range conditions declined from 1952 to 1963.

TAXON.: *Odocoileus hemionus*

KEYWORDS: FOOD HABITS, MONTANA, POPULATION DENSITY

503. NEW, J. G. 1959. Additional uses of dyes for studying the movements of small mammals. J. Wildl. Manage. 23(3):348-351.

No dyes found that would mark pelage or external parts of mice and shrews for extended periods when mixed with bait. Alizarin Red 3 successfully used to mark teeth of meadow mice up to five days and white-footed mice up to nine days after bait removal. Teeth of short-tailed shrews not marked with alizarin. Sudan III recovered in fat of snap-trapped white-footed mice three days and in short-tailed shrews 10 days after bait removal. No other dyes used to mark teeth or fat successful in field.

TAXON.: *Blarina brevicauda, Microtus pennsylvanicus, Peromyscus maniculatus*

KEYWORDS: BAITS, MARKING, NORTHEASTERN UNITED STATES

504. NILSSON, N. N. 1947. Rocky Mountain elk. Oregon State Game Comm. Bull. 2(2):1, 5-7.

Introductions; life history; habits; management in Oregon.

TAXON.: *Cervus canadensis nelsoni*

KEYWORDS: BEHAVIOR, FOOD HABITS, HARVEST, HOME RANGE, OREGON, POPULATION DYNAMICS

505. NORDAN, H. C., I. M. COWAN, and A. J. WOOD. 1970. The feed intake and heat production of the young black-tailed deer (*Odocoileus hemionus columbianus*). Can. J. Zool. 48(2):275-282.

Feed intake, resting heat production, and growth rate of prepubertal black-tailed deer fawns of both sexes under captive conditions. Comparisons of findings with those of others on domestic and other wild species.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BRITISH COLUMBIA, GROWTH, METABOLISM, NUTRITION, PHYSICAL DESCRIPTION

506. NOVAKOWSKI, N. S. 1965. Population dynamics of a beaver population in northern latitudes. Ph.D. thesis, Univ. Saskatchewan, Saskatoon. 164 p.

Climatic and edaphic factors did not directly influence beaver densities. New technique of molar closure and cementum deposition

for determining ages disclosed that a two-year-old group previously unreported was present in average colony; probably an adaptation to high density and need for larger size, sexual maturity, and longer learning period prior to emigration and colonization in northern latitudes. Some beaver colonies exist in winter at below basal levels without detriment; abundance of available food in area not reflected in amount stored.

TAXON.: *Castor canadensis*

KEYWORDS: AGE, BEHAVIOR, BODY CONSTITUTION, DISPERSAL, DISTRIBUTION, FOOD HABITS, GROWTH, HABITAT, METABOLISM, NORTHWEST TERRITORIES, NUTRITION, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION

507. O'FARRELL, T. P. 1965. Home range and ecology of snowshoe hares in interior Alaska. J. Mammal. 46(3):406-418.

In 3702 trap nights, 151 different hares livetrapped 324 times for trapping success of 8.8%. Mean home range size, 5.9 ha (14.5 acres). No significant difference in home range between males and females or in males during breeding season as compared with remainder of year. Varying use of runways; molting season, breeding season, growth curves, causes of mortality.

TAXON.: *Lepus americanus*

KEYWORDS: AGE, ALASKA, BEHAVIOR, DISPERSAL, DISTRIBUTION, GROWTH, HOME RANGE, MORTALITY, POPULATION DENSITY, POPULATION DYNAMICS, POPULATION GROWTH, PREDATION, REPRODUCTION, TRAPPING

508. OLSON, S. T. 1956. Distribution of some big game animals in southeast Alaska with particular reference to the Sitka blacktail deer. Sci. Alaska 4:182-185 (Proc. 4th Alaskan Sci. Conf., Alaska Div. AAAS, 1953).

Regional range of black-tailed deer, moose, and mountain goat in relation to topography and climate. Also mentions certain distributional peculiarities of bears and wolves.

TAXON.: *Alces alces, Canis lupus, Odocoileus hemionus sitkensis, Oreamnos americanus,* Ursidae

KEYWORDS: ALASKA, DISTRIBUTION, HABITAT

509. OLSZEWSKI, J. L. 1968. Role of uprooted trees in the movements of rodents in forests. Oikos 19(1):99-104.

Routes on or beneath downed trees investigated for wood mice (night) and red-backed mice (day).

TAXON.: *Apodemus flavicollis, Clethrionomys glareolus*

KEYWORDS: BEHAVIOR, DISPERSAL, EUROPE, HOME RANGE

510. OMMUNDSEN, P., and I. M. COWAN. 1970. Development of the Columbian black-tailed deer (*Odocoileus hemionus columbianus*) during the foetal period. Can. J. Zool. 48(1):123-132.

Comparison of fetal growth patterns of mule and white-tailed deer: subspecies of mule deer generally similar, both races of species differ from white-tailed deer in features of relative growth. Patterns of relative growth similar within species even when considerable difference in mature size. Interspecies differences occur even where ultimate size and general proportions similar.

TAXON.: *Odocoileus hemionus columbianus, O. h. hemionus, O. virginianus*

KEYWORDS: BRITISH COLUMBIA, GROWTH, PHYSICAL DESCRIPTION

511. ORR, R. T. 1934. Description of a new snowshoe rabbit from eastern Oregon, with notes on its life history. J. Mammal. 15(2):152-154.

Observations on occurrence, distribution, and life history, and description of subspecies.

TAXON.: *Lepus americanus oregonus*

KEYWORDS: BEHAVIOR, DISTRIBUTION, HABITAT, OREGON, PHYSICAL DESCRIPTION, REPRODUCTION

512. ORR, R. T. 1940. The rabbits of California. Calif. Acad. Sci., Occ. Pap. No. 19. 227 p.

Seven species in Leporidae described for California, "more than anywhere else in the world for area of comparable size." Description, life history, habitat, distribution, food habits.

TAXON.: *Lepus americanus, L. californicus, L. townsendii, Sylvilagus auduboni, S. bachmani, S. idahoensis, S. nuttallii*

KEYWORDS: CALIFORNIA, DISTRIBUTION, FOOD HABITS, HABITAT, PHYSICAL DESCRIPTION, REPRODUCTION

513. ORR, R. T. 1942. Observations on the growth of young brush rabbits. J. Mammal. 23(3):298-302.

Growth curve observations.

TAXON.: *Sylvilagus bachmani*

KEYWORDS: AGE, CALIFORNIA, GROWTH, REPRODUCTION

514. ORR-EWING, A. L. 1950. Life history of the deer mouse. For. Chron. 26(2):115-126.

Study on Vancouver Island, B.C., showed necessity of control if direct seeding of Douglas-fir on logged and burned land to be successful.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BRITISH COLUMBIA, FIRE, FOREST MANIPULATION, FOREST REGENERATION, POPULATION DENSITY, REPRODUCTION, SEED & CONE DAMAGE

515. OSBORN, D. J. 1953. Age classes, reproduction, and sex ratios of Wyoming beaver. J. Mammal. 34(1):27-44.

Methods for distinguishing age classes, observations on sexual development, data on developing fetuses.

TAXON.: *Castor canadensis*

KEYWORDS: AGE, BEHAVIOR, GROWTH, REPRODUCTION, SEX RATIO, WYOMING

516. PACKARD, F. M. 1947. A survey of the beaver population of Rocky Mountain National Park, Colorado. J. Mammal. 28(3):219-230.

Population estimates for various drainage systems; potential of each. Number of colonies dependent on willow rather than aspen.

TAXON.: *Castor canadensis*

KEYWORDS: CENSUS, COLORADO, DISTRIBUTION, HABITAT, POPULATION DENSITY

517. PARKER, L. A. 1965. Wildlife and chemical pesticides. J. Wash. Acad. Sci. 55(2):33-38.

Older organic pesticides were broad spectrum, nonselective, persistent: DDT, toxaphene, lindane, chlordane, heptachlor, dieldrin, aldrin (in decreasing persistency).

TAXON.: *Sylvilagus* sp.

KEYWORDS: FOREST MANIPULATION, HERBICIDES, INSECTICIDES, WASHINGTON

518. PARKER, R. R. 1945. Tularemia: Spontaneous occurrence in the chipmunk. USDHEW Public Health Serv., Public Health Rep. 60(1):17.

Isolation of bacterium described; first report of new reservoir host.

TAXON.: *Eutamias* sp.

KEYWORDS: HUMAN HEALTH, IDAHO, MORBIDITY, MORTALITY, PARASITISM & DISEASE

519. PATRIC, E. F., and W. L. WEBB. 1960. An evaluation of three age determination criteria in live beavers. J. Wildl. Manage. 24(1):37-44.

Weight data; product of tail dimensions, length by width; breadth of skull across zygomatic arches. Aging by weight satisfactory up to two years, plateaus first, second, third years (third assumed).

TAXON.: *Castor canadensis*

KEYWORDS: AGE, BODY CONSTITUTION, GROWTH, NORTHEASTERN UNITED STATES, REPRODUCTION

520. PATTON, D. R., and B. S. McGINNES. 1964. Deer browse relative to age and intensity of timber harvest. J. Wildl. Manage. 28(3):458-463.

Response of deer browse in a forest stand, as influenced by different cutting intensities and age of cut. Table for predicting browse from one to four years after cutting with 30%-80% of basal area removed.

TAXON.: *Odocoileus virginianus*

KEYWORDS: LOGGING, SOUTHEASTERN UNITED STATES, STANDING CROP

521. PEARSON, O. P. 1947. The rate of metabolism of some small mammals. Ecology 28(2):127-145.

Thermal neutrality defined as temperature at which metabolism is lowest because animal is not "working" to keep warm or cool. Comparison of oxygen consumption per 24 hr, number of metabolic cycles per day. Greatest variation in nocturnal species. Huddling an economic measure.

TAXON.: *Blarina brevicauda kirtlandi, Clethrionomys g. gapperi, Condylura cristata, Eptesicus f. fuscus, Glaucomys v. volans, Microtus p. pennsylvanicus, Mus musculus, Myotis l. lucifugus, Napaeozapus i. insignis, Peromyscus leucopus noveboracensis,*

P. maniculatus bairdii, P. m. gracilis, Pitymys pinetorum scalopsoides, Scalopus a. aquaticus, Sorex c. cinereus, Zapus hudsonius americanus

KEYWORDS: METABOLISM, NORTHEASTERN UNITED STATES

522. PEARSON, O. P. 1959. A traffic survey of *Microtus-Reithrodontomys* runways. J. Mammal. 40(2):169-180.

Single-framing motion picture camera synchronized to electronic flash unit recorded passage of animals along meadow mouse runways; temperature, relative humidity, and time at which animals passed. More than 26 species of vertebrates used runways during 111 weeks of recording. Comparison of daily and seasonal differences, patterns of various species.

TAXON.: Multiple

KEYWORDS: BEHAVIOR, CALIFORNIA, DISPERSAL, HOME RANGE, PHOTOGRAPHY

523. PEARSON, O. P. 1960. A mechanical model for the study of population dynamics. Ecology 41(3):494-508.

Mechanical model described capable of handling numerous variables such as litter sizes of different age groups, sex ratio, density-independent and compensatory mortalities of differing age groups, and compensatory alteration of breeding rate. Variables can be changed singly or in combination to demonstrate effect on size at equilibrium, stability, age structure, and sex ratio of population.

KEYWORD: MODELS

524. PEARSON, O. P. 1964. Carnivore-mouse predation: An example of its intensity and bioenergetics. J. Mammal. 45(2):177-188.

Peak population of mice could not have survived for one year on available seed crop. Carnivores ate 55% of available calories as mice and could have survived a full year if all mice had remained available; but by end of December many mice lost to other agents of mortality and emigration. In spite of initial high density of mice, 7% of seed crop escaped destruction and grew to form rich vegetation in following season.

TAXON.: *Felis catus, Mephitis mephitis, Microtus californicus, Mus musculus, Neotoma fuscipes, Peromyscus* sp., *Procyon lotor, Reithrodontomys megalotis, Sorex* sp., *Spilogale putorius, Sylvilagus* sp., *Thomomys bottae, Urocyon cinereoargenteus*

KEYWORDS: AGE, BIOMASS, CALIFORNIA, MORTALITY, POPULATION DENSITY, POPULATION DYNAMICS, PREDATION, SEED & CONE DAMAGE

525. PEDERSEN, R. J. 1963. The life history and ecology of Townsend's mole *Scapanus townsendii* (Bachman) in Tillamook County, Oregon. M.S. thesis, Oregon State Univ., Corvallis. 60 p.

Information on food habits, burrows, nests, predators, density, and parasites.

TAXON.: *Scapanus townsendii*

KEYWORDS: BEHAVIOR, DISTRIBUTION, FOOD HABITS, HABITAT, MORTALITY, OREGON, PARASITISM & DISEASE, POPULATION DENSITY, POPULATION DYNAMICS, PREDATION, REPRODUCTION

526. PEDERSEN, R. J. 1966. Nesting behavior of Townsend's mole. Murrelet 47(2):47-48.

Nests 20-51 cm (8-20 in) below soil surface, cavities 20 cm (8 in) diameter in slightly raised soil. "Nest mound" of excavated soil larger than other mounds nearby.

TAXON.: *Scapanus townsendii*

KEYWORDS: BEHAVIOR, HABITAT, OREGON, REPRODUCTION

527. PEEK, J. M. 1962. Studies of moose in the Gravelly and Snowcrest Mountains, Montana. J. Wildl. Manage. 26(4):360-365.

Cow-bull, cow-calf, adult-yearling ratios from 779 moose observations, factors influencing observed ratios. Examination of 18 female, 17 male reproductive tracts as well as field observations to evaluate fecundity, extent of breeding season, and status of yearling breeding. Movement information obtained from 37 ear-tagged calves. Standard measurements and weights of nine calves obtained.

TAXON.: *Alces alces*

KEYWORDS: HOME RANGE, MARKING, MONTANA, PHYSICAL DESCRIPTION, REPRODUCTION, SEX RATIO

528. PEEK, J. M., and A. L. LOVAAS. 1968. Differential distribution of elk by sex and age on the Gallatin winter range, Montana. J. Wildl. Manage. 32(3):553-557.

Adult bulls predominant in south and north units of winter range, cows and calves in central unit. Field classification efforts must consider such distribution patterns if representative sex and age ratios are to be obtained.

TAXON.: *Cervus canadensis*

KEYWORDS: FIELD METHODS, HOME RANGE, MONTANA, SEX RATIO

529. PEEK, J. M., A. L. LOVAAS, and R. A. ROUSE. 1967. Population changes within the Gallatin elk herd. J. Wildl. Manage. 31(2):304-316.

Trend downward at about 2% per year. Tag recovery rates and average harvest data for three periods 1940-1955 suggested harvest intensity increased. Life expectancies for both sexes (derived from tag recovery data) declined during these years. Aging of jaws collected from 1965 harvest of more than 150 animals suggested that when population increased temporarily, females accounted for greater share. General decline in population and age structure of both sexes and trend toward fewer males largely result of deteriorating winter forage supplies, resulting from excessive grazing by elk for at least 40 years.

TAXON.: *Cervus canadensis*

KEYWORDS: AGE, HARVEST, MARKING, MONTANA, NUTRITION, POPULATION DENSITY

530. PENDLETON, R. C. 1956. Uses of marking animals in ecological studies: Labeling animals with radioisotopes. Ecology 37(4):686-689.

Selection of correct isotope for each tagging purpose. Insect-labeling methods can be applied with great accuracy to study food habits of entomophagous mammals.

TAXON.: Multiple

KEYWORDS: FOOD HABITS, MARKING

531. PENGELLEY, E. T., and K. C. FISHER. 1963. The effect of temperature and photoperiod on the yearly hibernating behavior of captive golden-mantled ground squirrels (*Citellus lateralis tescorum*). Can. J. Zool. 41(6):1103-1120.

State of torpidity (hibernation), food consumption, and weight recorded daily, weekly, and monthly, respectively, for periods up to two years. Ambient temperatures, lighting, and food supply manipulated to create various abnormal conditions. Hibernation possible only at specific stage of weight cycle. Manipulation of temperature changed weight cycle, therefore time of hibernation; manipulation of light did not. Removal of food did not induce hibernation, lack of food at end of hibernation period prolonged hibernation.

TAXON.: *Callospermophilus lateralis tescorum*

KEYWORDS: ALBERTA, BEHAVIOR, FOOD HABITS, LABORATORY METHODS, METABOLISM, NUTRITION

532. PENGELLY, W. L. 1961. Factors influencing production of white-tailed deer on the Coeur d'Alene National Forest, Idaho. Ph.D. thesis, Utah State Univ., Logan. 205 p.

Ten-year field study, 1949-1959, of vegetation, climate, geology, history, and big game populations. Estimates of white-tailed deer populations, 1921-1958, indicated 600% increase despite temporary setbacks. Suggests careful herd control and provision of proper forage and cover combinations by habitat manipulation. Seral shrub stages, important forage in winter, can be prolonged by selective chemical spraying; timber stand improvements.

TAXON.: *Odocoileus virginianus*

KEYWORDS: FIELD METHODS, FOOD HABITS, FOREST MANIPULATION, IDAHO, POPULATION DENSITY, POPULATION GROWTH

533. PENGELLY, W. L. 1963a. Timberlands and deer in the northern Rockies. J. For. 61(40):734-740.

Deer manager must achieve proper use of existing herds before trying to increase base herds. Logging most effective, least expensive habitat-management tool, but economically impractical if designed specifically to aid deer. White-tailed deer prefer to winter near valley bottoms and on south- and west-facing timbered slopes, where they constitute serious threat to pine forest regeneration.

TAXON.: *Odocoileus virginianus*

KEYWORDS: FOREST REGENERATION, HABITAT, IDAHO, LOGGING, SEEDLING DAMAGE

534. PENGELLY, W. L. 1963b. Thunder on the Yellowstone. Naturalist 14(2):18-25.

Discusses ecology of overpopulation and history of population control of Yellowstone National Park elk herd. In 1914, 35,000 elk on range with capacity of 5000. In 1934-1963, 67,333 elk removed.

TAXON.: *Cervus canadensis*

KEYWORDS: DAMAGE, HARVEST, HERB & SHRUB DAMAGE, MONTANA, MORTALITY, POPULATION DENSITY, WYOMING

535. PETTICREW, B. G., and R. M. F. S. SADLEIR. 1970. The use of index trap lines to estimate population numbers of deermice (*Peromyscus maniculatus*) in a forest environment in British Columbia. Can. J. Zool. 48(2):385-389.

Livetrapping on three 1-ha (2.5-acre) grids in differing forest habitats. After two nights of trapping on each grid, central index line trapped for two more nights. Total captures, number of males and females on index line correlated significantly with same parameters on grid. Survival rates and body weights almost identical; similar representation of other small-mammal species determined by both arrangements of traps. Suggests that index line may be efficient method of sampling small-mammal populations.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: AGE, BEHAVIOR, BRITISH COLUMBIA, CENSUS, SEX RATIO, TRAPPING

536. PFEIFFER, E. W. 1958. The reproductive cycle of the female mountain beaver. J. Mammal. 39(2):223-235.

Description of gross anatomy and microscopic anatomy of reproductive tract. Comparison of main features of female mountain beaver anatomy and sexual cycle with similar features of cycle in other rodent groups; conclusion, mountain beaver closely resembles certain sciurids.

TAXON.: *Aplodontia rufa*

KEYWORDS: BEHAVIOR, PACIFIC NORTHWEST, PHYSICAL DESCRIPTION, REPRODUCTION

537. PICTON, H. D. 1960. Migration patterns of the Sun River elk herd, Montana. J. Wildl. Manage. 24(3):279-290.

Of 190 elk tagged and marked to facilitate movement studies, 68 relocated one to three times. Discussion of use of vegetative types based on observations of 2544 elk during summers of 1957 and 1958. Movement from winter range to calving areas in April and May; movement through forest types to subalpine barrens, June and July. Forb subtype most heavily used in subalpine barrens. Weather apparently influenced movement, hunting season did not.

TAXON.: *Cervus canadensis*

KEYWORDS: FOOD HABITS, HABITAT, HOME RANGE, MARKING, MONTANA

538. PIPER, S. E., and E. JOHNSON. 1940. Some studies of *Peromyscus* and other rodents in the San Bernadino Mountains of California, 1937 to 1940. Calif. Dep. Agric. Bull. 29(3):131-145.

Investigations of sylvatic plague; thallium sulfate poisoning program, tests of various baits as carriers.

TAXON.: *Callospermophilus lateralis, Otospermophilus beecheyi, Peromyscus maniculatus*

KEYWORDS: BAITS, CALIFORNIA, HUMAN HEALTH, MORTALITY, PARASITISM & DISEASE, POPULATION DYNAMICS

539. POOLE, A. J., and V. S. SCHANTZ. 1942. Catalog of the type specimens of mammals in the United States National Museum, including the biological surveys collection. U.S. Nat. Mus. Bull. 178. xiii + 705 p.

List of mammalian types brought to date from 1909. Gain in total number of types 1419, from 1405 in 1909 to 2824 in 1942. Every order represented except Monotremata, Proboscidea, and Sirenia, and nearly every zoogeographic province except Australia. Names of types entered with full citations, indication of nomenclatural changes and current status with authorities. Innovation in arrangement is alphabetic sequence of genera and species, orders and families. Appended is list of missing types (only 23), geographic concordance, and list of collectors (491).

TAXON.: Multiple

KEYWORD: DISTRIBUTION

540. PROVOST, E. E. 1958. Studies on reproduction and population dynamics in beaver. Ph.D. thesis, Washington State Coll., Pullman. 85 p.

Data on sex and age composition of various populations, minimum breeding age, and litte/ size. General description of gross morphology of female urogenital system, tentative fetal growth curve. Corpora lutea and corpora albicantia, within certain limits, can be used as measures of reproductive performance, especially when correlations are established with fetal counts made just before parturition.

TAXON.: *Castor canadensis*

KEYWORDS: AGE, BODY CONSTITUTION, GROWTH, POPULATION DYNAMICS, REPRODUCTION, WASHINGTON

541. PROVOST, E. E. 1962. Morphological characteristics of the beaver ovary. J. Wildl. Manage. 26(3):272-278.

Corpora lutea and corpora albicantia prominent in beaver ovaries fixed in alcohol--formalin--acetic acid; often superior to uterine characteristics for population studies. Discrepancy between numbers of corpora lutea and fetuses requires establishment parturition frequency, for estimating population increments from

ovarian structures. Fetal counts made close to term provide accurate, practical measure of parturition frequency, defined as number of viable young per 100 corpora lutea in population sampled.

TAXON.: *Castor canadensis*

KEYWORDS: BODY CONSTITUTION, LABORATORY METHODS, POPULATION DYNAMICS, REPRODUCTION, WASHINGTON

542. PRUITT, W. O., Jr. 1966. Ecology of terrestrial mammals. IN: N. J. Wilimovsky and J. N. Wolfe (eds.), Environment of the Cape Thompson region, Alaska, p. 519-564. U.S. Atomic Energy Comm., Oak Ridge, Tenn.

Distribution, population dynamics, body measurements, and food habits; information obtained 1959-1961.

TAXON.: Multiple

KEYWORDS: ALASKA, DISTRIBUTION, FOOD HABITS, PHYSICAL DESCRIPTION, POPULATION DYNAMICS, REPRODUCTION

543. QUICK, H. F. 1954. Small mammal populations in northern British Columbia. Can. Field Nat. 68(3):95-102.

Collection of 350 small mammals, 3057 trap nights, 25 locations, 1947-1948. Habitats compared by years for major species caught. These species populations related to possible management of small furbearers, particularly fisher and marten.

TAXON.: *Clethrionomys gapperi, Peromyscus maniculatus, Sorex* sp.

KEYWORDS: BRITISH COLUMBIA, DISTRIBUTION, FIELD METHODS, HABITAT, POPULATION DYNAMICS, TRAPPING

544. QUILLIAM, T. A. (ed.). 1966. The mole: Its adaptation to an underground environment. J. Zool. (Lond.) 149(1):31-114.

Proceedings of a Ciba Foundation guest meeting on the mole. Papers include: Mole activity in woodlands, fens and other habitats; Catching and keeping live moles; The mole as a surface dweller; The soil fauna as a food source for moles; The anatomy of mole locomotion; Notes on the relationship between the burrowing capacity, size and shoulder anatomy of some eastern Asiatic moles; The pituitary gland of the mole in relation to that of other insectivores; The mole's sensory apparatus; Electron microscopic observations of the olfactory mucosa of the mole; The central visual pathways and their functional significance in the mole (*Talpa europaea*); Perception underground: Review of physical aspects and measurements; Mole footprints and heaps; Techniques

and apparatus used in mole research; Some observations on the ecology of the mole; Some aspects of mole behavior.

TAXON.: *Erinaceus europaeus, Martes martes, Neurotrichus* sp., *Scapanus* sp., *Sorex* sp., *Talpa caeca, T. europaea, T. micrura insularis, T. m. leucura, T. m. malayana, T. m. micrura, T. m. wogura*

KEYWORDS: BEHAVIOR, DISTRIBUTION, EUROPE, HOME RANGE, POPULATION DYNAMICS, REPRODUCTION

545. QUIMBY, D. C. 1951. The life history and ecology of the jumping mouse, *Zapus hudsonius*. Ecol. Monogr. 21(1):61-95.

Density, home range, habitat preference, reproductive cycle, growth rate, burrowing, hibernation, and food habits.

TAXON.: *Zapus hudsonius*

KEYWORDS: AGE, BEHAVIOR, DISTRIBUTION, FOOD HABITS, GROWTH, HABITAT, HOME RANGE, METABOLISM, MINNESOTA, MORTALITY, POPULATION DENSITY, POPULATION GROWTH, REPRODUCTION

546. RACEY, K. 1929. Observations on *Neurotrichus gibbsii gibbsii*. Murrelet 10(3):61-62.

Measurements; burrows, runways, nests; birth rate; habitat.

TAXON.: *Neurotrichus g. gibbsii*

KEYWORDS: BEHAVIOR, BODY CONSTITUTION, BRITISH COLUMBIA, DISTRIBUTION, HABITAT, REPRODUCTION

547. RADWAN, M. A. 1969. TMTD wild animal repellent: Review and current status. For. Sci. 15(4):439-445.

TMTD properties, assay methods, and use as repellent against wild mammals reviewed. Suggests that TMTD is very useful animal repellent.

TAXON.: Multiple

KEYWORDS: DAMAGE, PACIFIC NORTHWEST, REPELLENTS

548. RADWAN, M. A. 1970. Destruction of conifer seed and methods of protection. Proc. Vertebr. Pest Control Conf. 4:77-82.

Review of agents responsible for losses of conifer seed and methods for seed protection. Poison baits: sodium fluoroacetate (1080) applied to wheat inadequate; other toxicants needed. Best prospect

Diphacinone, an anticoagulant. Repellents: Tetramine unsatisfactory; endrin; complete information on fungicides, coloring agents, and adhesives given; especially good for Douglas-fir seed. Chemical means of control more promising than biological.

TAXON.: *Blarina* sp., *Citellus* sp., *Eutamias* sp., *Peromyscus maniculatus*, *Sorex* sp., *Tamias* sp.

KEYWORDS: BAITS, PACIFIC NORTHWEST, SEED & CONE DAMAGE

549. RADWAN, M. A., and D. L. CAMPBELL. 1968. Snowshoe hare preference for spotted catsear flowers in western Washington. J. Wildl. Manage. 32(1):104-108.

Hares demonstrated preference for open flowers, followed by flower buds, with leaves least preferred. Sugar content calculated on both fresh- and dry-weight bases; advantages of former method discussed. Based on fresh weights, levels of glucose and fructose appeared responsible for observed order of preference, other factors not ruled out.

TAXON.: *Lepus americanus washingtonii*

KEYWORDS: BEHAVIOR, FOOD HABITS, LABORATORY METHODS, NUTRITION, WASHINGTON

550. RADWAN, M. A., and W. E. DODGE. 1965. Effective application rates of TMTD rabbit repellent to Douglas-fir seedlings in the nursery. Tree Plant. Notes 72:7-9.

Application should be about 366.7 cm^3 of 10% TMTD per square meter (9.0 gal/ft^2) of seedbed area.

TAXON.: *Lepus americanus*, *Sylvilagus bachmani*

KEYWORDS: DAMAGE, PACIFIC NORTHWEST, REPELLENTS

551. RADWAN, M. A., and W. E. DODGE. 1970. Fate of radioactive tetramine in small mammals and its possible use as a seedling protectant. Northwest Sci. 44(1):25-30.

Administered orally; recovered in expired air, urine, feces, blood, other organs or tissues, and carcass remaining; partitioned. Not recommended as toxicant because elimination too rapid with spread over undesired areas.

TAXON.: *Lepus americanus*, *Mus musculus*

KEYWORDS: DAMAGE, PACIFIC NORTHWEST, RODENTICIDES

552. REDISKE, J. H., and W. H. LAWRENCE. 1962. Selenium as a wildlife repellent for Douglas-fir seedlings. For. Sci. 8(2):142-148.

Douglas-fir seedlings treated with maximum amount of systemic selenium as selenate ion (0.5 ppm) did not reduce consumption of seedlings by laboratory rabbits. On basis of coating studies, seedlings would have to contain at least 50-75 ppm selenium to reduce rabbit consumption 50%. Coating Douglas-fir seedlings by dipping in nonphytotoxic selenium-Phoplex mixture reduced consumption by rabbits to 42% when coating contained 500 ppm and to 9% with 5000 ppm selenate selenium. In tests with snowshoe hares, 0.5% (5000 ppm) selenate selenium coating more effective than standard 10% thiram coating.

TAXON.: *Lepus americanus*

KEYWORDS: DAMAGE, FIELD METHODS, LABORATORY METHODS, PACIFIC NORTHWEST, REPELLENTS

553. REID, V. H., R. M. HANSEN, and A. L. WARD. 1966. Counting mounds and earth plugs to census mountain pocket gophers. J. Wildl. Manage. 30(2):327-334.

Method for approximating rangeland populations of mountain pocket gophers by counting new sign (mounds and earth plugs) devised and tested.

TAXON.: *Thomomys talpoides*

KEYWORDS: CENSUS, COLORADO

554. RESNER, O. L. 1954. Damage to conifers by bear. Proc. Annu. Conf. West. Assoc. State Game Fish Comm. 33:109-111.

Bears stripped bark and ate cambium. Injuries varied from small patches to complete girdling and ranged from ground level to 15 m (50 ft) in height. Damage serious in three counties of Olympic Peninsula. All conifers attacked, Douglas-fir preferred; damage worst in relatively open stands, where 50% of trees killed or hurt. In 1952 hunters and trappers killed 237 bears in region; 40%-70% decrease in damage reported. Cause of outbreak probably overpopulation resulting in food shortage. Stomach contents of 44 bears recorded in table.

TAXON.: *Euarctos americanus*

KEYWORDS: FOOD HABITS, HARVEST, POPULATION DENSITY, TRAPPING, TREE DAMAGE, WASHINGTON

555. RETFALVI, L. 1969. Sexual dimorphism in fetuses of wapiti *Cervus canadensis*. Can. J. Zool. 47:1418-1419.

Standard measurements of 133 wapiti fetuses from Jasper and Banff National Parks analyzed. Neck girths of male specimens significantly differed from those of females. Larger neck girth of males interpreted as evidence of sexual dimorphism and attributed to faster growth rate of male fetuses.

TAXON.: *Cervus canadensis*

KEYWORDS: ALBERTA, GROWTH, PHYSICAL DESCRIPTION, REPRODUCTION

556. REYNOLDS, H. G. 1962a. Use of natural openings in a ponderosa pine forest of Arizona by deer, elk, and cattle. USDA For. Serv., Rocky Mt. For. Range Exp. Stn. Res. Notes No. 78.

Elk and cattle used forest openings more than borders or adjacent forest habitat. Deer used the three habitats about equally. Results based on fecal pellet counts made on transects.

TAXON.: *Bos taurus, Cervus canadensis, Odocoileus hemionus*

KEYWORDS: FIELD METHODS, HABITAT, HOME RANGE, SOUTHWESTERN UNITED STATES

557. REYNOLDS, H. G. 1962b. Effect of logging on understory vegetation and deer use in a ponderosa pine forest of Arizona. USDA For. Serv., Rocky Mt. For. Range Exp. Stn. Res. Notes No. 80. 7 p.

Understory vegetation estimated for measure of deer food available; accumulated deer pellets counted as measure of deer use at intervals after logging. First year after logging, perennial grasses and sedges reduced, but forbs and aspen sprouts increased slightly. Understory vegetation reached peak production about six years after logging, continued higher than on unlogged areas for 11 to 15 years. Ridgetop aspects and dense pole-size stands of timber produced least understory vegetation. Deer use lower on logged than unlogged areas for first two years after logging, several times higher on logged areas 3-11 years after logging. Deer use comparatively low in pole-size timber, ridgetops, and where perennial grasses and sedges dominated understory.

TAXON.: *Odocoileus hemionus*

KEYWORDS: FOOD HABITS, HABITAT, LOGGING, SOUTHWESTERN UNITED STATES

558. REYNOLDS, H. G. 1964. Elk and deer habitat use of a pinyon-juniper woodland in southern New Mexico. Trans. North Am. Wildl. Conf. 29:438-444.

Shrub abundance most important vegetation factor associated with pellet groups. Good coordination of livestock range improvement with game habitat preservation might be achieved by clearing only

slopes of less than 15%, or leaving existing cover on northeastern exposures. On areas reserved for game habitat, conditions for elk and deer might be improved by removing or thinning trees where they exceed about 370 trees/ha (150/acre) or cutting back sprouting species of shrubs too tall to be accessible to elk and deer.

TAXON.: *Cervus canadensis, Odocoileus hemionus*

KEYWORDS: FIELD METHODS, FOOD HABITS, FOREST MANIPULATION, HABITAT, LOGGING, SOUTHWESTERN UNITED STATES

559. REYNOLDS, H. G. 1969. Improvement of deer habitat on southwestern forest lands. J. For. 67(11):803-805.

Tentative suggestions for improving deer habitat: (1) maintaining forest openings and borders, (2) tree thinning, (3) minimizing slash cleanup, (4) including forbs and browse in range reseeding practices, and (5) allocating forage between deer and cattle.

TAXON.: *Bos taurus, Odocoileus hemionus*

KEYWORDS: COMPETITION, FOREST MANIPULATION, HABITAT, SOUTHWESTERN UNITED STATES

560. RICHENS, V. B. 1965. An evaluation of control of the Wasatch pocket gopher. J. Wildl. Manage. 29(3):413-425.

Pocket gopher control applied to areas of subalpine range of northern Utah over one- to four-year periods. Nearby range, infested with pocket gophers, not treated; used as checks. Hand baited gopher tunnels with whole oats treated with 0.125% sodium fluoroacetate (compound 1080). Gopher population-per-area index determined for each of five treatments by saturation trapping on trap blocks for three-day period. Gopher population reduced by about one-half by first year's control, but additional years of control failed to reduce gopher population significantly.

TAXON.: *Thomomys talpoides*

KEYWORDS: BAITS, RODENTICIDES, TRAPPING, UTAH

561. RICHENS, V. B. 1966. Notes on the digging activity of a northern pocket gopher. J. Mammal. 47(3):531-533.

Measurements of distance tunneled, number of mounds formed, dry weight of soil moved by one 130-g (4.6-oz) individual. Maximum populations seen in Cache National Forest 74/ha (30/acre), moved 7.2 t/ha (3.2 tons/acre) per month.

TAXON.: *Thomomys talpoides*

KEYWORDS: BEHAVIOR, CENSUS, DISTRIBUTION, HOME RANGE, POPULATION DENSITY, POPULATION DYNAMICS, UTAH

562. RICHENS, V. B. 1967. Characteristics of mule deer herds and their range in northeastern Utah. J. Wildl. Manage. 31(4):651-666.

Mule deer that winter in Daggett County are divided by Uinta Mountain crest into two distinct herds on summer ranges. Migration routes and, in large part, winter ranges separate. Time, rate, and extent of migration vary from yearly as environmental conditions vary. Preferred food species outlined. Winter range heavily used by large numbers of big game and domestic livestock; preferred browse species severely hedged or highlined wherever accessible, low rate of seedling establishment. Losses to predation, starvation, accidents, parasites, and disease mostly fawns and older deer with poor teeth. Net productivity during study period about 31%.

TAXON.: *Odocoileus hemionus*

KEYWORDS: ANIMAL PRODUCTIVITY, COMPETITION, FOOD HABITS, HABITAT, HERB & SHRUB DAMAGE, HOME RANGE, MORBIDITY, MORTALITY, PARASITISM & DISEASE, UTAH

563. RICKARD, W. H. 1960. The distribution of small mammals in relation to the climax vegetation mosaic in eastern Washington and northern Idaho. Ecology 41(1):99-106.

Twenty-four stands representative of 14 relatively undisturbed climax plant associations sampled for small-mammal species composition during summers of 1954 and 1955. Small mammals (600 representing 11 species) trapped during 14,175 trap days. Distribution of each species discussed in relation to occurrences in stands sampled.

TAXON.: *Clethrionomys gapperi, Eutamias amoenus, Lagurus curtatus, Microtus longicaudus, M. montanus, Perognathus parvus, Peromyscus maniculatus, Reithrodontomys megalotis, Sorex cinereus, S. obscurus, S. vagrans*

KEYWORDS: CENSUS, DISTRIBUTION, IDAHO, POPULATION DYNAMICS, TRAPPING, WASHINGTON

564. RICKARD, W. H., and R. E. NAKATANI. 1966. The length of deermice in relation to natural vegetation belts in southeastern Washington and northern Idaho. Murrelet 47(2):49-50.

Statistical treatment of measurements of mice from different elevations.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: AGE, DISTRIBUTION, GROWTH, IDAHO, PHYSICAL DESCRIPTION, WASHINGTON

565. ROBEL, R. J. 1960. Determining elk movements through periodic aerial counts. J. Wildl. Manage. 24(1):103-104.

Number of elk sighted in each sample section used as index to population concentrations, facilitating detection of population shifts.

TAXON.: *Cervus canadensis*

KEYWORDS: FIELD METHODS, HOME RANGE, IDAHO

566. ROBINETTE, W. L. 1966. Mule deer home range and dispersal in Utah. J. Wildl. Manage. 30(2):335-349.

Data from more than 900 mule deer fawns tagged shrotly after birth and 32 older animals trapped and tagged during winter provided information on home range and dispersal. Home range of bucks exceeded that of does and fawns by about 50%. Estimated size of home range from distance measurements between sightings of marked deer. Examples of dispersal few for fawns during first summer, frequent among yearlings; 60% of bucks and 35% does apparently dispersed by 16 months of age. Little additional dispersal among bucks; doe dispersal percentage and distance between tagging and kill sites increased for two- and three-year-olds. Evidence of annual reinvasion of an area where removals exceeded net production; void apparently filled by young deer dispersing from outside areas.

TAXON.: *Odocoileus hemionus*

KEYWORDS: DISPERSAL, HOME RANGE, MARKING, POPULATION DENSITY, UTAH

567. ROBINETTE, W. L., J. S. GASHWILER, D. A. JONES, and H. S. CRANE. 1955. Fertility of mule deer in Utah. J. Wildl. Manage. 19(1):115-136.

Reproductive rate of different ages, importance of summer and winter ranges in determining reproductive rate, ovulation rate in four age classes, mortality rate of ova, prenatal mortality and factors affecting it, and sex ratio of fetuses. Also discusses techniques, abnormalities, twinning, and related subjects.

TAXON.: *Odocoileus hemionus*

KEYWORDS: HABITAT, MORTALITY, REPRODUCTION, UTAH

568. ROBINETTE, W. L., J. S. GASHWILER, J. B. LOW, and D. A. JONES. 1957. Differential mortality by sex and age among mule deer. J. Wildl. Manage. 21(1):1-16.

Sex-ratio records indicate prenatal and early postnatal surplus of males, ratio of 114 males per 100 females for fetuses, newly born, and hunter-killed fawns. Sex ratio of fawns dying during winter contained lower proportion of males (97:100). Winter mortality rate for male yearlings about double that of females, results for older deer quite variable. Winter mortality rate of fawns about 2.6 times that of older deer, about 2.3 times that of yearlings; yearling loss rate about 1.6 times that of older deer.

TAXON.: *Odocoileus hemionus*

KEYWORDS: AGE, HARVEST, MORTALITY, SEX RATIO, UTAH

569. ROBINETTE, W. L., O. JULANDER, J. S. GASHWILER, and A. G. SMITH. 1952. Winter mortality of mule deer in Utah in relation to range condition. J. Wildl. Manage. 16(3):289-299.

On properly stocked ranges, loss only slightly greater during severe winters than moderate winters. Loss on depleted ranges in severe winters may exceed that of moderate winter by several times.

TAXON.: *Odocoileus hemionus*

KEYWORDS: HERB & SHRUB DAMAGE, MORTALITY, POPULATION DENSITY, UTAH

570. ROBINETTE, W. L., and O. OLSEN. 1944. Studies of the productivity of mule deer in central Utah. Trans. North Am. Wildl. Conf. 9:156-161.

Fawn crop (60% of does with fawns had one, remainder two); fawn mortality (10.8% before predation); sex ratio of fawns (50.7:49.3); weights at birth (over 3.3 kg [7.2 lb]); age classes (of 2380 does, 28.4 were yearlings); number of does without young (13%-15%); hunting and wastage (15% of deer killed are not found or are abandoned); winter mortality (10.7% from all causes); and net increase (27.8%).

TAXON.: *Odocoileus hemionus*

KEYWORDS: AGE, ANIMAL PRODUCTIVITY, HARVEST, MORTALITY, REPRODUCTION, SEX RATIO, UTAH

571. RODECK, H. G. 1952. Guide to the mammals of Colorado. Univ. Colo. Mus. Leafl. 10:1-72.

Observations on occurrence, distribution, and natural history.

TAXON.: Multiple

KEYWORDS: BEHAVIOR, CENSUS, COLORADO, DISTRIBUTION, HOME RANGE, POPULATION DYNAMICS, REPRODUCTION

572. ROLAN, R., and H. T. GIER. 1967. Correlation of embryo and placental scar counts of *Peromyscus maniculatus* and *Microtus ochrogaster*. J. Mammal. 48(2):317-319.

Neither embryo nor placental scar counts completely satisfactory methods for estimating natality in wild mouse populations, but only means readily available other than more difficult and unreliable counts of corpora lutea and litter size.

TAXON.: *Microtus ochrogaster, Peromyscus maniculatus*

KEYWORDS: MIDWESTERN UNITED STATES, REPRODUCTION

573. ROUGHTON, R. D. 1963. Ecological history of key browse species on Cache la Poudre deer winter range. Colo. Game, Fish and Parks Dep. vi + 69 p.

Individual ages and age-class frequencies for 12 populations of browse. Frequency of occurrence in one- and five-year age classes and population densities of the browse species determined for 4-m^2 (milacre) plots. Age structure of browse population may reflect its current and past reproductive success, present successional status.

TAXON.: *Odocoileus hemionus*

KEYWORDS: COLORADO, FOOD HABITS, STANDING CROP

574. ROWAN, W., and L. B. KEITH. 1956. Reproductive potential and sex ratios of snowshoe hares in northern Alberta. Can. J. Zool. 34(4):273-281.

Nearly 900 hares collected in Auzac district of Alberta, May 1949 to April 1956. Average litter size, 3.82; modal litter size, 4; range, 1-7. Average number of litters each season, 2.75. Annual reproductive potential is 10.51 (3.82 x 2.75) young per female hare; more than 50% greater than indicated by comparable data from Minnesota. Sex ratios shifted from marked excess of females in 1949-1950 to about even numbers of both sexes in 1950-1951 and 1951-1952. Since change in sex ratio occurred at peak of cycle, the two factors may be correlated.

TAXON.: *Lepus americanus*

KEYWORDS: ALBERTA, ANIMAL PRODUCTIVITY, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, SEX RATIO

575. RUDD, R. L. 1955. Age, sex, and weight comparisons in three species of shrews. J. Mammal. 36(3):323-339.

Technique for determining age of individual shrews. Population data plotted for three species of San Francisco Bay region shrews. Sexual differences in weight marked only during breeding season.

TAXON.: *Sorex ornatus californicus, S. sinuosus, S. vagrans halicoetes, S. v. paludivagus, S. v. vagrans*

KEYWORDS: AGE, CALIFORNIA, GROWTH, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, SEX RATIO

576. RUDD, R. L., and R. E. GENELLY. 1956. Pesticides: Their use and toxicity in relation to wildlife. Calif. Dep. Fish Game, Game Bull. No. 7. 209 p.

Account of history of pesticides; history in California; wildlife losses in California following use; hazard estimation procedures; descriptions of pesticides and recommended use to achieve desired result.

KEYWORDS: CALIFORNIA, DAMAGE, FIELD METHODS, FOREST MANIPULATION, HERBICIDES, INSECTICIDES, NORTH AMERICA, RODENTICIDES

577. RUST, H. J. 1956. Mammals of northern Idaho. J. Mammal. 27(4):308-327.

Transition zone extensive here, ponderosa pine lower, Douglas-fir higher; no indication of extent of collecting or collections examined.

TAXON.: *Alces alces, Callospermophilus lateralis, Castor canadensis, Cervus canadensis, Clethrionomys gapperi, Erethizon dorsatum, Euarctos americanus, Eutamias amoenus, Lepus americanus, Microtus longicaudus, Neotoma cinerea, Odocoileus hemionus, O. virginianus, Peromyscus maniculatus, Rangifer tarandus, Sorex cinereus, S. vagrans, Tamiasciurus hudsonicus, Thomomys talpoides*

KEYWORDS: DISTRIBUTION, HABITAT, IDAHO

578. RUTHERFORD, W. H. 1953. Effects of a summer flash flood upon a beaver population. J. Mammal. 34(2):261-262.

Survey before flood revealed seven dams, two lodges, and nine fresh cutting areas. After flood there were no dams, no lodges, and four fresh cutting areas.

TAXON.: *Castor canadensis*

KEYWORDS: BEHAVIOR, COLORADO, DISTRIBUTION, HOME RANGE, MORTALITY, POPULATION DENSITY

579. RUTHERFORD, W. H. 1964. The beaver in Colorado: Its biology, ecology, management, and economics. Colorado Game, Fish and Parks Dep. Tech. Bull. No. 17. 49 p.

History, productivity, population dynamics, and management.

TAXON.: *Castor canadensis*

KEYWORDS: ANIMAL PRODUCTIVITY, BEHAVIOR, CENSUS, COLORADO, DISTRIBUTION, HOME RANGE, POPULATION DYNAMICS, REPRODUCTION

580. RYCKMAN, R. E. and others. 1953. The electric fence as an aid in field studies of rodents and their ectoparasites. Calif. Fish Game 39(4):489-496.

Three-wire charged fence next to a buried 1.8-m-high (6-ft-high), 2.54-cm (1-in) mesh provided enclosure for tests on insecticides.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: CALIFORNIA, DAMAGE, FENCING, FIELD METHODS, FOREST MANIPULATION, INSECTICIDES, MORTALITY

581. SADLEIR, R. M. F. S. 1965. The relationship between agonistic behavior and population changes in the deermouse, *Peromyscus maniculatus* (Wagner). J. Animal. Ecol. 34(2):331-352.

Monthly livetrapping confirmed that populations remain relatively stable through summer, increase suddenly to peak in fall, decline through winter. Males showed rise in aggression during breeding season, coinciding with sudden drops in numbers (especially juveniles). Tests in laboratory maze; resident adults antagonistic to intrusive juveniles, which died or were restricted to small areas of maze.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: AGE, BREEDING BEHAVIOR, BRITISH COLUMBIA, DISPERSAL, DISTRIBUTION, HOME RANGE, LABORATORY METHODS, MORTALITY, POPULATION DENSITY, POPULATION DYNAMICS, POPULATION GROWTH, REPRODUCTION

582. SAIGO, B. W. 1969. The relationship of non-recovered rodent caches to the natural regeneration of ponderosa pine. M.S. thesis, Oregon State Univ., Corvallis. 98 p.

Golden-mantled ground squirrel primarily responsible for seed caches, yellow-pine chipmunk may make a few, while deer mouse may plant single ponderosa pine seeds. Average 17 pines per clump. Germinating clumps serve as spring food for several animals, especially Oregon junco. One-half of regeneration thought due to rodent clumps. Most important in areas disturbed by road clearing, logging, and fire.

TAXON.: *Callospermophilus lateralis, Eutamias amoenus, Peromyscus maniculatus*

KEYWORDS: BEHAVIOR, FIRE, FOOD HABITS, FOREST MANIPULATION, FOREST REGENERATION, OREGON, SEED & CONE DAMAGE

583. SANDERSON, G. C. 1966. The study of mammal movements: A review. J. Wildl. Manage. 30(1):215-235.

Mammal movements defined. Techniques for determining locations: direct observation; indirect observation (i.e., of natural signs as tracks, beds, trails, droppings); capture, mark, release; radioactive materials; photographic devices (dyes for urine and feces); radiotelemetry.

TAXON.: *Dasypus novemcinctus, Didelphis marsupialis, Microtus pennsylvanicus, Mus musculus, Odocoileus hemionus, Onychomys leucogaster, O. torridus, Peromyscus leucopus, P. maniculatus, Procyon lotor, Rattus norvegicus, Sylvilagus floridanus, Urocyon cinereoargenteus*

KEYWORDS: BEHAVIOR, DISPERSAL, DISTRIBUTION, HOME RANGE, MARKING, MIDWESTERN UNITED STATES, PHOTOGRAPHY, POPULATION DYNAMICS, TRACKING, TRAPPING

584. SCHAMBERGER, M. L. 1965. An analysis of a small mammal population census. M.S. thesis, Oregon State Univ., Corvallis. 41 p.

Species composition of community determined by Revised North American Census of Small Mammals procedure. Efficiency of procedure itself tested.

TAXON.: *Eutamias townsendii, Microtus oregoni, Peromyscus maniculatus, Sorex trowbridgii, S. vagrans*

KEYWORDS: CENSUS, OREGON, POPULATION DENSITY, POPULATION DYNAMICS, TRAPPING

585. SCHAMBERGER, M. L. 1970. Mammals of Mount Rainier National Park. Ph.D. thesis, Oregon State Univ., Corvallis. 121 p.

Total of 57,246 trap nights from 58 trap sites produced 3717 animals. Fifty known mammalian species in park, plus 14 species

either formerly present and now extinct or that may expand their range into Mount Rainier area. Most abundant small-mammal species: deer mouse (38%), Gapper red-backed mouse (14%), Townsend chipmunk (10.3%), and Pacific jumping mouse (10.1%).

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HOME RANGE, POPULATION DENSITY, POPULATION DYNAMICS, TRAPPING, WASHINGTON

586. SCHEFFER, T. H. 1924. Breeding habits of the mole and the gopher. Murrelet 5(1):3-4.

Ordinary nests of Townsend mole, fairly deep underground, not used for parturition. Mother gives birth near surface, under roots or in green stubble. Usual litter three, once per season, mid-March, in Puget Sound area. Young are altricial.

TAXON.: *Scapanus townsendii, Thomomys mazama*

KEYWORDS: BREEDING BEHAVIOR, WASHINGTON

587. SCHEFFER, T. H. 1925. Notes on the breeding of beavers. J. Mammal. 6(2):129-130.

For collection of six female specimens, reproductive rate 3.5 per female. Weights and measurements of young given.

TAXON.: *Castor canadensis*

KEYWORDS: BODY CONSTITUTION, OREGON, REPRODUCTION

588. SCHEFFER, T. H. 1929. Mountain beavers in the Pacific Northwest: Their habits, economic status, and control. USDA Farmers' Bull. 1598. 18 p.

Distribution, habitat, burrows, reproduction, damage caused by animals, and information on trapping and poisoning.

TAXON.: *Aplodontia rufa*

KEYWORDS: BAITS, BEHAVIOR, CENSUS, DAMAGE, DISTRIBUTION, HABITAT, PACIFIC NORTHWEST, REPRODUCTION

589. SCHEFFER, T. H. 1930. Determining the rate of replacement in a species. J. Mammal. 11(4):466-469.

Mole, mountain beaver, and smaller ground squirrels have definite, brief breeding season in early spring; only one litter. Other species rear 2-12 broods a year. Replacement rate: number of

broods per year times number of young per brood; factors vary from two or three to more than 21.

TAXON.: *Aplodontia rufa, Citellus* sp., *Perognathus parvus lordi, Peromyscus maniculatus gambelii, Scalopus* sp., *Scapanus townsendii, Thomomys bulbivorus, T. talpoides yelmensis*

KEYWORDS: ANIMAL PRODUCTIVITY, PACIFIC NORTHWEST, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION

590. SCHEFFER, T. H. 1933. Breeding of the Washington varying hare. Murrelet 14(3):77-78.

Not abundant in area. Observations (from trapping operations) on time of litter production and litter size.

TAXON.: *Lepus americanus washingtonii*

KEYWORDS: CENSUS, DISTRIBUTION, POPULATION DENSITY, REPRODUCTION, TRAPPING, WASHINGTON

591. SCHEFFER, T. H. 1945. Burrow associations of small mammals. Murrelet 26(2):24-26.

Animals using mole or pocket gopher burrows; few or no mole predators underground (because of smell?), but many predators for pocket gopher.

TAXON.: *Citellus townsendii, Microtus oregoni, Peromyscus maniculatus, Scalopus aquaticus, Scapanus townsendii, Sorex vagrans, Thomomys talpoides*

KEYWORDS: BEHAVIOR, HABITAT, HOME RANGE, PACIFIC NORTHWEST, PREDATION

592. SCHEFFER, T. H. 1952. Spring incidence of damage to forest trees by certain mammals. Murrelet 33(3):38-41.

Bear damage analyzed; girdling by mountain beaver differentiated.

TAXON.: *Aplodontia rufa, Euarctos americanus*

KEYWORDS: PACIFIC NORTHWEST, TREE DAMAGE

593. SCHWARTZ, J. E. 1943. Range conditions and management of the Roosevelt elk on the Olympic Peninsula. USDA For. Serv., North Pac. Reg. 65 p.

History of elk in region from time of overexplotiation, through later protection, then overpopulation of certain areas. Weights,

measurements, molt, herd tendencies, antler development, mating, breeding, calving, migrations, daily movement, and feeding habits. Malnutrition, diseases, effects of predation and hunting.

TAXON.: *Cervus canadensis roosevelti*

KEYWORDS: AGE, FOOD HABITS, HABITAT, HARVEST, HERB & SHRUB DAMAGE, HOME RANGE, MORTALITY, PARASITISM & DISEASE, POPULATION DENSITY, PREDATION, REPRODUCTION, WASHINGTON

594. SEALANDER, J. A., and D. JAMES. 1958. Relative efficiency of different small mammal traps. J. Mammal. 39(2):215-223.

Comparisons of snap, line, and can traps.

TAXON.: *Blarina brevicauda, Glaucomys volans, Mus musculus, Oryzomys palustris, Peromyscus leucopus, P. maniculatus, P. nuttalli, Reithrodontomys fulvescens, Sylvilagus floridanus*

KEYWORDS: SOUTHEASTERN UNITED STATES, TRAPPING

595. SETON, E. T. 1929. Lives of game animals. Garden City Publ. Co., New York. 4 vol., each in 2 parts; 4671 p. total.

Accounts of natural history from early records, interviews, and personal experience.

TAXON.: *Alces alces, Aplodontia rufa, Callospermophilus lateralis, Castor canadensis, Cervus canadensis, Erethizon dorsatum, Lepus americanus, Neotoma cinerea, Odocoileus hemionus, O. virginianus, Rangifer tarandus, Sylvilagus bachmani, Tamiasciurus douglasii, T. hudsonicus, Thomomys talpoides*

KEYWORDS: BEHAVIOR, DISTRIBUTION, HABITAT, HOME RANGE, NORTH AMERICA, POPULATION DYNAMICS, REPRODUCTION

596. SEVERAID, J. H. 1945a. Pelage changes in the snowshoe hare. J. Mammal. 26(1):41-63.

History of theories on color change, and review. Color changes, molts, and sexual differences in captivity. Monoseasonal theory based on two different sets of hair roots, one for brown, other for white.

TAXON.: *Lepus americanus*

KEYWORDS: AGE, BEHAVIOR, BODY CONSTITUTION, NORTHEASTERN UNITED STATES, REPRODUCTION

597. SEVERAID, J. H. 1945b. Breeding potential and artificial propagation of the snowshoe hare. J. Wildl. Manage. 9(4):290-295.

Breeding potential for snowshoe hare in captivity 8.7 young per female per season, based on gestation period of 37 days, rebreeding on day of parturition, average litter of 2.9 young, average of 3.0 litters per season per female (young = leverets).

TAXON.: *Lepus americanus*

KEYWORDS: ANIMAL PRODUCTIVITY, NORTHEASTERN UNITED STATES, REPRODUCTION

598. SEVERTZOFF, S. A. 1934. On the dynamics of populations of vertebrates. Q. Rev. Biol. 9(4):409-437.

Review of all previous work and analysis of biology and hunting harvest of game species including roe deer.

TAXON.: *Capreolus capreolus*

KEYWORDS: EUROPE, HARVEST, POPULATION DYNAMICS

599. SHAW, H. 1963. Insectivorous white-tailed deer. J. Mammal. 44(2):284.

Five instances of midwinter digging through snow by deer for wintering colonies of ladybird beetles. Three of eight deer collected during midwinter had noticeable amounts of these beetles in rumen contents.

TAXON.: *Ococoileus virginianus*

KEYWORDS: FOOD HABITS, FORAGING BEHAVIOR, IDAHO

600. SHAW, W. T. 1936. Moisture and its relation to the cone-storing habit of the western pine squirrel. J. Mammal. 17(4):337-349.

Fir cones cut intact before scale opening, dropped to ground by these squirrels, kept in wet, cold, ground storage areas. May not open for two years when wet.

TAXON.: *Tamiasciurus douglasii*

KEYWORDS: BEHAVIOR, FOOD HABITS, IDAHO, SEED & CONE DAMAGE

601. SHAW, W. T. 1944. Brood nests and young of two western chipmunks in the Olympic Mountains of Washington. J. Mammal. 25(3):274-284.

Description of burrows, nests, young, and behavior during nesting.

TAXON.: *Eutamias amoenus, E. townsendii*

KEYWORDS: BREEDING BEHAVIOR, HABITAT, REPRODUCTION, WASHINGTON

602. SHELLHAMMER, H. S. 1966. Cone-cutting activities of Douglas squirrels in sequoia groves. J. Mammal. 47(3):525-526.

Observed 537 green cones cut within 30 min, usually one bite each; cached within three days.

TAXON.: *Tamiasciurus douglasii*

KEYWORDS: BEHAVIOR, CALIFORNIA, FOOD HABITS, SEED & CONE DAMAGE

603. SHEPPARD, D. H. 1968. Seasonal changes in body and adrenal weights of chipmunks (*Eutamias*). J. Mammal. 49(3):463-474.

Body and adrenal weights of two species of chipmunks from western Alberta charted and compared; adrenal weights of breeding males differ from those of rest of population. Discusses probable causes of seasonal changes in adrenal weights.

TAXON.: *Eutamias amoenus luteiventris, E. minimus oreocetes*

KEYWORDS: ALBERTA, BEHAVIOR, BODY CONSTITUTION, FOOD HABITS, HOME RANGE, METABOLISM, NUTRITION, REPRODUCTION

604. SHEPPARD, D. H. 1969. A comparison of reproduction in two chipmunk species (*Eutamias*). Can. J. Zool. 47(4):603-608.

Yellow pine chipmunk and least chipmunk potential competitors in western Alberta. Former has larger litters and reproduces at an earlier age, on average, than latter. Possible cause: difference in available food in thy two habitats. Other aspects of reproduction (breeding season, prenatal mortality) appear similar.

TAXON.: *Eutamias amoenus, E. minimus*

KEYWORDS: ALBERTA, BEHAVIOR, COMPETITION, NUTRITION, POPULATION DYNAMICS, REPRODUCTION

605. SHEPPE, W. 1963. Population structure of the deer mouse, *Peromyscus*, in the Pacific Northwest. J. Mammal. 44(2):180-185.

Life history data.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: AGE, PACIFIC NORTHWEST, POPULATION DYNAMICS, REPRODUCTION, SEX RATIO

606. SHEPPE, W. 1967a. The effect of livetrapping on the movements of *Peromyscus*. Am. Midl. Nat. 78(2):471-480.

Nightly smoked-paper tracking supplemented by occasional live-trapping. Mice usually move through home ranges for some time before being trapped; therefore little or no bias in favor of traps located near nest. Movements for several nights after trapping showed many more track records than usual on such nights; sometimes traveled far outside former home ranges, occasionally permanent shift in range.

TAXON.: *Peromyscus leucopus, P. maniculatus*

KEYWORDS: BEHAVIOR, CANADA, DISPERSAL, DISTRIBUTION, HOME RANGE,, TRACKING, TRAPPING

607. SHEPPE, W. 1967b. Habitat restriction by competitive exclusion in the mice *Peromyscus* and *Mus*. Can. Field Nat. 81(2):81-98.

Summer observations by livetrapping and smoked-paper tracking; habitat distribution determined in part by competitive exclusion, as well as characteristics of habitats.

TAXON.: *Clethrionomys gapperi, Eutamias amoenus, Microtus longicaudus, M. pennsylvanicus, Mus musculus, Neotoma cinerea, Neurotrichus g. gibbsii, Peromyscus maniculatus artemesiae, P. m. oreas, Thomomys talpoides, Zapus princeps*

KEYWORDS: BEHAVIOR, BRITISH COLUMBIA, COMPETITION, DISTRIBUTION, HABITAT, HOME RANGE, POPULATION DYNAMICS

608. SHIELDS, P. W. 1958. Ecology and population dynamics of the brush rabbit on the north spit of Humboldt County, California. M.S. thesis, Humboldt State Coll., Arcata, Calif. 98 p.

Entire adult brush rabbit population of sand dune area trapped and marked, yielding information on population turnover and reproductive behavior.

TAXON.: *Sylvilagus bachmani*

KEYWORDS: BREEDING BEHAVIOR, CALIFORNIA, DISPERSAL, MARKING, POPULATION DYNAMICS, POPULATION GROWTH, REPRODUCTION, TRAPPING

609. SHIELDS, P. W. 1960. Movement patterns of brush rabbits in northwestern California. J. Wildl. Manage. 24(4):381-386.

Capture, marking, release, and successive recaptures and releases over 16-months. Compares ranges of females, males, and juveniles. Brush rabbit mobility affected by cover and food supply, breeding season, population density, and possibly weather.

TAXON.: *Sylvilagus bachmani*

KEYWORDS: BEHAVIOR, CALIFORNIA, DISPERSAL, HOME RANGE, POPULATION DENSITY, REPRODUCTION

610. SIGLIN, R. J. 1965. Movements and capture techniques: A literature review of mule deer. Colo. Dep. Game, Fish Parks and Colo. Coop. Wildl. Res. Unit Spec. Rep. No. 4. iv + 39 p.

Methods of capture and marking; seasonal movements. Some material on white-tailed deer.

TAXON.: *Odocoileus hemionus, O. virginianus*

KEYWORDS: COLORADO, DRUGS, HANDLING, HOME RANGE, MARKING, TRACKING, TRAPPING

611. SIMPSON, G. G. 1964. Species density of North American Recent mammals. Syst. Zool. 13(2):57-73.

Comparison of numbers of species on four hundred fifty-three 58,275-km^2 (22,500 mi^2) quadrats distributed over mainland North America, along north-south and east-west transects. Number of species increases southward and westward. Pacific Northwest range has from 35 (Alaska) to 115 (California Sierras) species per area.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, NORTH AMERICA

612. SMITH, A. D. 1952. Digestibility of some native forages for mule deer. J. Wildl. Manage. 16(3):309-312.

Curl leaf mahogany, bitterbrush, and juniper compared as to amount and character of digestible nutrients. Alfalfa hay well digested, but wasteful because deer carefully pick it over, rejecting stems and scattering leaves.

TAXON.: *Odocoileus hemionus*

KEYWORDS: FOOD HABITS, FORAGING BEHAVIOR, NUTRITION, UTAH

613. SMITH, A. D. 1953. Consumption of native forage species by captive mule deer during summer. J. Range Manage. 6(1):30-37.

Quantities of food eaten, preferences, seasonal trends. Food habits of sheep and deer compared; large amounts of browse and forbs eaten by both, but deer prefer browse, sheep prefer forbs. In fall both species depend largely on browse.

TAXON.: *Odocoileus hemionus, Ovis aries*

KEYWORDS: COMPETITION, FOOD HABITS, UTAH

614. SMITH, A. D. 1954. How much water does a deer drink? Utah Fish Game Bull. 10(9):1, 8.

Mule deer in paddocks drank considerably more than deer in spruce-fir type habitat. On same sites, sheep drank more than deer but showed similar variation.

TAXON.: *Odocoileus hemionus, Ovis aries*

KEYWORDS: FOOD HABITS, UTAH

615. SMITH, A. D., and R. L. HUBBARD. 1954. Preference ratings for winter deer forages from northern Utah ranges based on browsing time and forage consumed. J. Range Manage. 7(6):262-265.

In feeding tests of captive deer, no relation between time spent feeding on a species and amount of feed obtained from it; volume consumed more closely relates to diet and importance of a plant as source of forage under a particular set of conditions.

TAXON.: *Odocoileus hemionus*

KEYWORDS: FOOD HABITS, FORAGING BEHAVIOR, UTAH

616. SMITH, C. C. 1968. The adaptive nature of social organization in the genus of tree squirrels *Tamiasciurus*. Ecol. Monogr. 38(1):31-63.

Establishment of defense territory, breeding behavior, parental care of young, and juvenile behavior of Douglas and red squirrels. Food items: pine cambium and high-energy reproductive products of conifers, fungi, deciduous trees, and brushes. Territory size adjusted to food supply.

TAXON.: *Tamiasciurus douglasii, T. hudsonicus*

KEYWORDS: BREEDING BEHAVIOR, BRITISH COLUMBIA, FOOD HABITS, NUTRITION, REPRODUCTION

617. SMITH, C. C. 1970. The coevolution of pine squirrels (*Tamiasciurus*) and conifers. Ecol. Monogr. 40(3):349-371.

Presumed effects of feeding on cones of Douglas-fir and ponderosa pine; assimilated energy and metabolizable energy calculations for seed.

TAXON.: *Tamiasciurus douglasii, T. hudsonicus*

KEYWORDS: BEHAVIOR, BRITISH COLUMBIA, FOOD HABITS, METABOLISM, NUTRITION, SEED & CONE DAMAGE

618. SOPER, J. D. 1921. Notes on the snowshoe rabbit. J. Mammal. 2(2):101-108.

Observations of very large numbers of hares, winter 1912; behavior, especially as pests on fur-bearer traplines.

TAXON.: *Lepus americanus*

KEYWORDS: ALBERTA, BEHAVIOR, MORTALITY, POPULATION DENSITY

619. SOPER, J. D. 1961a. Field data on the mammals of southern Saskatchewan. Can. Field Nat. 75(1):23-41.

Occurrence and distribution.

TAXON.: *Alces alces, Castor canadensis, Erethizon dorsatum, Lepus americanus, Neotoma cinerea, Odocoileus hemionus, O. virginianus, Peromyscus maniculatus, Rangifer tarandus caribou, Sorex cinereus, S. vagrans, Tamiasciurus hudsonicus, Thomomys talpoides*

KEYWORDS: CANADA, DISTRIBUTION

620. SOPER, J. D. 1961b. The mammals of Manitoba. Can. Field Nat. 75(4):171-219.

Occurrence and distribution.

TAXON.: *Alces alces, Castor canadensis, Erethizon dorsatum, Lepus americanus, Neotoma cinerea, Odocoileus hemionus, O. virginianus, Peromyscus maniculatus, Rangifer tarandus caribou, Sorex cinereus, S. vagrans, Tamiasciurus hudsonicus, Thomomys talpoides*

KEYWORDS: CANADA, DISTRIBUTION

621. SPENCER, A. W., and D. PETTUS. 1966. Habitat preferences of five sympatric species of long-tailed shrews. Ecology 47(4):677-683.

Long-tailed shrews of five species captured throughout four years at a single 24-ha (60-acre) site at 2960 m (9700 ft) elevation. Significant interspecific differences in proportions of captures in three habitats; sedge marsh, subalpine forest, and clearcut forest. All species except water shrew (taken only adjacent to bodies of water) captured in all three types.

TAXON.: *Microsorex hoyi, Sorex cinereus, S. nanus, S. palustris, S. vagrans*

KEYWORDS: CENSUS, COLORADO, DISTRIBUTION, FOREST MANIPULATION, HOME RANGE, LOGGING, POPULATION DENSITY, POPULATION DYNAMICS

622. SPENCER, D. A. (ed.). 1951. Investigations in rodent control to advance reforestation by direct seeding. Progr. Rep. No. 1. USDI Fish & Wildl. Serv., Denver Wildl. Res. Lab. 34 p.

Wheat acceptable to deer mice, Douglas-fir seed perferred. Impregnation with thallium and sodium fluoroacetate (Compound 1080); laboratory tests with running water leaching less spectacular than field leaching in removing toxicity. Field leaching caused complete loss within six months. Water and acetone compared as carriers; screening tests with repellents and toxicants; germination tests of treated seed; effects on predators, tetramine effects.

TAXON.: *Dipodomys* sp., *Neotoma* sp., *Peromyscus maniculatus*, *Rattus* sp.

KEYWORDS: FIELD METHODS, LABORATORY METHODS, MORTALITY, SEED & CONE DAMAGE, WESTERN NORTH AMERICA

623. SPENCER, D. A. 1964. Porcupine population fluctuations in past centuries revealed by dendrochronology. J. Appl. Ecol. 1(1):127-149.

Ponderosa pine is economic target, but dating based on pinyon pine.

TAXON.: *Erethizon dorsatum*

KEYWORDS: CENSUS, COLORADO, DISTRIBUTION, FOOD HABITS, POPULATION DYNAMICS, TREE DAMAGE

624. SPENCER, D. A., and N. B. KVERNO. 1953. Research in rodent control to promote reforestation by direct seeding. Progr. Rep. No. 4, Sec. 2. USDI Fish & Wildl. Serv., Denver Wildl. Res. Lab. 7 p.

Effect on conifer seed germination of 26 different organic solvents tested for use as repellents or adhesives.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: FOREST REGENERATION, REPELLENTS, SEED & CONE DAMAGE, WESTERN NORTH AMERICA

625. STANTON, F. W. 1944. Douglas ground squirrel as a predator on nests of upland game birds in Oregon. J. Wildl. Manage. 8(2):153-161.

Reactions of ground squirrels to dummy nests; behavior of captive squirrels.

TAXON.: *Felis catus*, *Mephitis mephitis occidentalis*, *Otospermophilus beecheyi douglasii*, *Rattus norvegicus*, *Urocyon cinereoargenteus*

KEYWORDS: BEHAVIOR, FOOD HABITS, OREGON, PREDATION

626. STEGEMAN, L. C. 1954. The production of aspen and its utilization by beaver on the Huntington Forest. J. Wildl. Manage. 18(4):348-358.

Amount of utilizable beaver food represented by aspen of various diameters. Size of aspen producing greatest amount of beaver food per year, 2.5-cm- (1-in-) diameter class averaged 6.6 years of age. Degree of utilization of aspen by beaver decreases from 97.8% for 2.5-cm- (1-in-) diameter class to 64.4% in 20.3-cm- (8-in-) diameter and larger classes.

TAXON.: *Castor canadensis*

KEYWORDS: BEHAVIOR, FOOD HABITS, NORTHEASTERN UNITED STATES, NUTRITION, POPULATION DENSITY, STANDING CROP

627. STEPHENS, F. 1906. California mammals. West Coast Publ. Co., San Diego. 351 p.

First general work covering mammals of California since 1857. Accounts of 276 species.

TAXON.: Multiple

KEYWORDS: CALIFORNIA, DISTRIBUTION

628. STEVENS, D. R. 1966. Range relationships of elk and livestock, Crow Creek drainage, Montana. J. Wildl. Manage. 30(2):349-363.

Study of range relationships between elk, cattle, and sheep, 1963-1964. Use by elk of fescue-wheatgrass, Douglas-fir, and spruce-fir zones determined from 4939 observations. Data from rumen samples indicated percentages of various foods used at different seasons; cattle food habits determined by examining 69 feeding sites. Interspecific competition on various zones by season.

TAXON.: *Bos taurus, Cervus canadensis, Ovis aries*

KEYWORDS: COMPETITION, FOOD HABITS, MONTANA

629. STEVENS, D. R. 1970. Winter ecology of moose in the Gallatin Mountains, Montana. J. Wildl. Manage. 34(1):37-46.

Moose winter range use and food habits studied by aerial observation. Rumen sample analyses indicated specific items in diet by season. Range condition and trend transects; reproduction data.

TAXON.: *Alces alces shirasi*

KEYWORDS: DISTRIBUTION, FOOD HABITS, HABITAT, HOME RANGE, MONTANA, REPRODUCTION

630. STEWART, S. F., H. A. NORDAN, A. J. WOOD, and I. M. COWAN. 1964. Changes in the plasma lipids in the black-tailed deer throughout a year. Proc. Intern. Congr. Zool. 16(2):46.

Body weights of six captive black-tailed deer steadily increased from late spring until October; then marked decrease in body weights and food intake. At point of maximum gain, plasma cholesterol rose. Plasma-level patterns in males and females compared.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: BODY CONSTITUTION, BRITISH COLUMBIA, GROWTH, PHYSICAL DESCRIPTION

631. STICKEL, L. F. 1948a. The trapline as a measure of small mammal populations. J. Wildl. Manage. 12(2):153-161.

Lines of traps are not fully reliable means of measuring relative abundance of small mammals.

TAXON.: Multiple

KEYWORDS: CENSUS, POPULATION DENSITY, TRAPPING

632. STICKEL, F. 1948b. Effect of bait in live-trapping *Peromyscus*. J. Wildl. Manage. 12(2):211-212.

Deer mice not attracted from home ranges to trap bait in nearby areas.

TAXON.: *Peromyscus leucopus*

KEYWORDS: BAITS, BEHAVITOR, CENSUS, DISPERSAL, SOUTHEASTERN UNITED STATES, TRAPPING

633. STORER, T. I., F. C. EVANS, and F. G. PALMER. 1944. Some rodent populations in the Sierra Nevada of California. Ecol. Monogr. 14(2):165-192.

Invasion of immigrants into areas cleared through Public Health Service poisoning of rodents for plague control at Lake Tahoe; observations on population dynamics and behavior at another station at Bass Lake, 1937-1939.

TAXON.: *Aplodontia rufa, Callospermophilus lateralis, Eutamias amoenus, Microtus longicaudus, Neotoma cinerea, Otospermophilus beecheyi, Peromyscus maniculatus, Tamiasciurus douglasii*

KEYWORDS: BEHAVIOR, CALIFORNIA, DISPERSAL, HOME RANGE, HUMAN HEALTH, POPULATION DYNAMICS, REPRODUCTION, RODENTICIDES

634. STUDHOLME, C. R. 1964. The control of meadow mice in Christmas tree plantings. Am. Christmas Tree Grow. J. 8(2):23.

Bait preparation and distribution, particularly zinc phosphide, explained.

TAXON.: *Microtus* spp.

KEYWORDS: BAITS, NORTH AMERICA

635. STURGES, F. W. 1957. Habitat distributions of birds and mammals on Lostine Canyon, Wallowa Mountains, northeast Oregon. Ph.D. thesis, Oregon State Univ., Corvallis. 136 p.

Observations on the flora and fauna of region, and of zonal distributions.

TAXON.: *Callospermophilus lateralis, Castor canadensis, Cervus canadensis, Clethrionomys gapperi, Erethizon dorsatum, Euarctos americanus, Eutamias amoenus, Lepus americanus, Microtus longicaudus, Odocoileus hemionus, Peromyscus maniculatus, Sorex vagrans, Tamiasciurus hudsonicus, Thomomys talpoides*

KEYWORDS: DISTRIBUTION, HABITAT, HOME RANGE, OREGON, POPULATION DYNAMICS

636. SUMNER, F. B. 1922. Longevity in *Peromyscus*. J. Mammal. 3(2):79-81.

Known to have reached age of five years eight months in captivity.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: AGE, CALIFORNIA

637. SUMNER, J. S. 1953. Birds and mammals of the Sierra Nevada, with records from Sequoia and Kings Canyon National Parks. Univ. Calif. Press, Berkeley. xvii + 484 p.

Occurrence and distribution.

TAXON.: Multiple

KEYWORDS: CALIFORNIA, DISTRIBUTION

638. SVIHLA, A. 1931. The Olympic red-backed mouse. Murrelet 12(2):54.

Gestation period 18 days; litter size three to four; eyes open 14 days.

TAXON.: *Clethrionomys occidentalis nivarius*

KEYWORDS: GROWTH, REPRODUCTION, WASHINGTON

639. SVIHLA, A. 1932. Notes on the meadow mouse (*Microtus oregoni oregoni* [Bachman]). Murrelet 13(3):94-95.

Birth weights; age at eye opening.

TAXON.: *Microtus o. oregoni*

KEYWORDS: GROWTH, REPRODUCTION, WASHINGTON

640. SVIHLA, A. 1936. Development and growth of *Peromyscus maniculatus oreas*. J. Mammal. 17(2):132-137.

Growth curves for linear measurements and weight from birth.

TAXON.: *Peromyscus maniculatus oreas*

KEYWORDS: GROWTH, REPRODUCTION, WASHINGTON

641. SVIHLA, A., and H. S. BOWMAN. 1954. Hibernation in the American black bear. Am. Midl. Nat. 52(1):248-252.

Dormant young black bear: posture, responses, respiratory rate, body and skin temperatures; nest and ambient temperatures. Proposes terms partial dormancy or torpor rather than hibernation for bears, and complete dormancy or torpor for ground squirrels and other true hibernators.

TAXON.: *Euarctos americanus*

KEYWORDS: ALASKA, BEHAVIOR, METABOLISM, PHYSICAL DESCRIPTION

642. SVIHLA, A., and R. D. SVIHLA. 1933. Notes on the jumping mouse *Zapus trinotatus trinotatus* Rhoads. J. Mammal. 14(2):131-134.

Collected in wet, marshy habitats ranging from deep forest to meadows. Observations on newly born young, locomotion, and hibernation.

TAXON.: *Zapus t. trinotatus*

KEYWORDS: BEHAVIOR, GROWTH, HABITAT, METABOLISM, POPULATION DYNAMICS, REPRODUCTION, WASHINGTON

643. SVIHLA, R. D. 1932. The ecological distribution of mammals of the north slope of the Uinta Mountains. Ecol. Monogr. 2(1):47-81.

Occurrence and distribution along transect running approximately north-south from 3630 to 1830 m (11,900 to 6000 ft).

TAXON.: *Callospermophilus lateralis, Castor canadensis, Cervus canadensis, Erethizon dorsatum, Lepus americanus, Neotoma cinerea, Odocoileus hemionus, Peromyscus maniculatus*

KEYWORDS: DISTRIBUTION, HABITAT, HOME RANGE, UTAH

644. SWARTH, H. S. 1936. Mammals of the Atlin region, northwestern British Columbia. J. Mammal. 17(4):398-405.

Occurrence and distribution, 1924, 1929, 1931, 1934. Population fluctuations; species list.

TAXON.: *Alces alces, Castor canadensis, Erethizon dorsatum epixanthum, Euarctos americanus, Lepus americanus, Neotoma cinerea, Peromyscus maniculatus, Rangifer tarandus, Sorex cinereus, Tamiasciurus hudsonicus*

KEYWORDS: BRITISH COLUMBIA, DISTRIBUTION, POPULATION DYNAMICS

645. TABER, R. D. 1953. Studies of black-tailed deer reproduction on three chaparral cover types. Calif. Fish Game 39(2):177-186.

Examination of 38 does representing three cover types. Reproduction best in chaparral interspersed with herbaceous cover, poorest in mature chaparral. Age at breeding, fertilization rate; no prenatal mortality. Productivity varied with age of doe and with habitat.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: CALIFORNIA, HABITAT, HOME RANGE, REPRODUCTION

646. TABER, R. D. 1956a. Deer nutrition and population dynamics in the north Coast Range of California. Trans. North Am. Wildl. Conf. 21:159-172.

Comparisons between chaparral range and shrubland; forage production, yearly trends in protein content of forage, food habits, deer populations and weights.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: ANIMAL PRODUCTIVITY, CALIFORNIA, FIRE, FOOD HABITS, GROWTH, HABITAT, HARVEST, NUTRITION, POPULATION DENSITY, POPULATION DYNAMICS

647. TABER, R. D. 1956b. Uses of marking animals in ecological studies: Marking of mammals; standard methods and new developments. Ecology 37(4):681-685.

Marking methods.

TAXON.: Multiple

KEYWORD: MARKING

648. TABER, R. D., and R. F. DASMANN. 1954. A sex difference in mortality in young Columbian black-tailed deer. J. Wildl. Manage. 18(3):309-315.

Mortality differences as related to age, sex, season of greatest environmental stress.

TAXON.: *Odocoileus hemionus columbianus*

KEYWORDS: CALIFORNIA, METABOLISM, MORTALITY, PARASITISM & DISEASE, SEX RATIO

649. TABER, R. D., and R. F. DASMANN. 1957. The dynamics of three natural populations of the deer *Odocoileus hemionus columbianus*. Ecology 38(2):233-246.

Deer in three man-modified portions of chaparral association compared for stability, density, structure, reproduction, mortality, and movement. Details of population gain and loss through one typical year reconstructed from data. Relationship between production of young and survival of breeding adults. Compares dynamics of these populations to those of red deer, roe deer, Dall sheep.

TAXON.: *Canis lupus, Capreolus capreolus, Cervus elaphus, Odocoileus hemionus columbianus, Ovis dalli*

KEYWORDS: AGE, CALIFORNIA, DISPERSAL, FIRE, HARVEST, HOME RANGE, MODELS, MORTALITY, POPULATION DYNAMICS, PREDATION

650. TABER, R. D., and R. S. HOFFMANN. 1964. Behavioral adaptations of mammals to mountain environments. Proc. Intern. Congr. Zool. 16(3):54.

Small mammals unable to move long distances adapt to montane climatic conditions, living on stored food or fat, or increasing insulation of fur. Large mammals capable of long movement generally migrate to more temperate areas during winter; movement is apparently learned during first cycle.

TAXON.: Multiple

KEYWORDS: BEHAVIOR, HOME RANGE

651. TANNER, D. L. 1956. The Soldier Mountain elk herd. Idaho Wildl. Rev. 9(3):8-11.

Spectacular population growth. Artificial feeding costly, especially in deterioration of soil and browse up to 3 km (2 mi) from feeding stations. Herd reduction recommended.

TAXON.: *Cervus canadensis*

KEYWORDS: FORAGING BEHAVIOR, HERB & SHRUB DAMAGE, IDAHO, POPULATION DENSITY, POPULATION GROWTH

652. TAPPE, D. T. 1942. The status of beavers in California. Calif. Div. Fish Game, Game Bull. 3. 59 p.

Description of colonies by geographic sections of state. Sierra Nevadas apparently not originally occupied, but were following planting operations. Protection since 1933 allowed increase.

TAXON.: *Castor canadensis*

KEYWORDS: CALIFORNIA, DISTRIBUTION, HABITAT, POPULATION DYNAMICS

653. TAYLOR, W. P. 1918. Revision of the rodent genus *Aplodontia*. Univ. Calif. Publ. Zool. 17:435-504.

Reduction of all known forms to nine subspecies of a single species; range maps; natural history information.

TAXON.: *Aplodontia rufa*

KEYWORDS: BEHAVIOR, DISTRIBUTION, HOME RANGE, PACIFIC NORTHWEST, POPULATION DYNAMICS, REPRODUCTION

654. TAYLOR, W. P. 1922. A distributional and ecological study of Mount Rainier, Washington. Ecology 3(3):214-236.

Of the 55 species of mammals found in the park, evidence that 18 entered from east, 15 from west.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HABITAT, WASHINGTON

655. TAYLOR, W. P., and W. T. SHAW. 1927. Mammals and birds of Mount Rainier National Park. USDI Nat. Park Serv. 249 p.

Occurrence, distribution, behavior, foods.

TAXON.: Multiple

KEYWORDS: BEHAVIOR, DISTRIBUTION, FOOD HABITS, HABITAT, REPRODUCTION, WASHINGTON

656. TERMAN, C. R. 1966. Population fluctuations of *Peromyscus maniculatus* and other small mammals as revealed by the North American Census of Small Mammals. Am. Midl. Nat. 76(2):419-426.

Data from NACSM analyzed to reveal fluctuations in local populations of several species of small mammals through successive years of trapping. Failure of a species to fluctuate widely may indicate effective biological or sociobiological controls. Fluctuations compared among several species.

TAXON.: *Blarina brevicauda, Microtus californicus, M. montanus, M. pennsylvanicus, Peromyscus maniculatus, Reithrodontomys megalotis*

KEYWORDS: CENSUS, DISTRIBUTION, NORTH AMERICA, POPULATION DENSITY, POPULATION DYNAMICS, POPULATION GROWTH

657. TERMAN, C. R. 1968. Population dynamics. IN: J. A. King (ed.), Biology of *Peromyscus* (Rodentia), p. 412-445. Am. Soc. Mammal. Spec. Publ. No. 2.

Reviews studies on density, sex ratio, population changes including reproduction (additive), mortality (damping), movement (either). Transients mostly young or young adults.

TAXON.: *Peromyscus boylii, P. californicus, P. gossypinus, P. leucopus, P. maniculatus, P. maniculatus oreas, P. polionotus, P. truei*

KEYWORDS: AGE, BEHAVIOR, DISPERSAL, GROWTH, MORTALITY, POPULATION DENSITY, POPULATION DYNAMICS, POPULATION GROWTH, REPRODUCTION

658. TERMAN, C. R. 1969. Weights of selected organs of deer mice (*Peromyscus maniculatus bairdii*) from asymptotic laboratory populations. J. Mammal. 50(2):311-320.

Weights of reproductive organs, bacula, adrenal glands, spleens, and thymus glands of deer mice from asymptotic laboratory populations compared with controls kept as bisexual pairs. Reproductive maturation and function may be drastically inhibited in each population because of some attribute of density; each population independent entity regulating its growth in response to intrinsicially developed stimuli. Data from natural populations indicate effective population control mechanisms.

TAXON.: *Peromyscus maniculatus bairdii*

KEYWORDS: BODY CONSTITUTION, GROWTH, LABORATORY METHODS, NORTHEASTERN UNITED STATES, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION

659. TERMAN, C. R., and J. F. SASSAMAN. 1967. Sex ratio in deer mouse populations. J. Mammal. 48(4):589-597.

Captive colony produced 500 litters; 54% of total born = males; NASCM data also analyzed.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BEHAVIOR, NORTH AMERICA, POPULATION DYNAMICS, REPRODUCTION, SEX RATIO

660. TEVIS, L., Jr. 1952. Autumn foods of chipmunks and golden-mantled ground squirrels in the northern Sierra Nevada. J. Mammal. 33(2):198-205.

Failure of seed crop caused four diurnal species of rodents to eat sporophores of hypogeous fungi; they flourished, became fat.

TAXON.: *Callospermophilus lateralis, Eutamias amoenus, E. quadrimaculatus, E. townsendii*

KEYWORDS: BEHAVIOR, BODY CONSTITUTION, CALIFORNIA, FOOD HABITS, NUTRITION, POPULATION DYNAMICS

661. TEVIS, L., Jr. 1953. Stomach contents of chipmunks and mantled squirrels in northeastern California. J. Mammal. 34(3):316-324.

Percentage volume and percentage frequency of types of food in stomachs: seed, fungus, leaf, flower, fruit, root, arthropods, flesh; comparisons between mantled squirrel and chipmunks.

TAXON.: *Callospermophilus lateralis, Eutamias amoenus, E. townsendii*

KEYWORDS: BEHAVIOR, CALIFORNIA, FOOD HABITS, SEED & CONE DAMAGE

662. TEVIS, L., Jr. 1955. Observations on chipmunks and mantled squirrels in northeastern California. Am. Midl. Nat. 53(1):71-78.

Observations on 1340 specimens collected from 1370-1680 m (4500-5500 ft) elevation. Hibernation times; breeding season; embryo counts; body weight unreliable criterion of age because of variable stomach and caecum weight.

TAXON.: *Callospermophilus lateralis, Eutamias amoenus, E. townsendii*

KEYWORDS: AGE, BEHAVIOR, BODY CONSTITUTION, CALIFORNIA, FOOD HABITS, METABOLISM, POPULATION DYNAMICS, REPRODUCTION

663. TEVIS, L., Jr. 1956a. Pocket gophers and seedlings of red fir. Ecology 37(2):379-381.

High ridge between New and Trinity Rivers originally covered with Idaho fescue prevented spread of conifers. Overgrazing by livestock caused gradual destruction of turf and multiplication of deep-rooted and bulbous plants. Pocket gophers, responding to new food supply, increased in numbers. Removal of vegetation and churning of ground produced ideal seedbed for conifers. In 1951 red fir set bumper crop of cones. Enormous numbers of seedlings sprouted, mortality high. Abundant survivors only on bare ground not visited by rodents.

TAXON.: *Thomomys monticola*

KEYWORDS: CALIFORNIA, FOOD HABITS, FOREST MANIPULATION, SEEDLING DAMAGE

664. TEVIS, L., Jr. 1956b. Seed spot method of censusing forest rodents. J. For. 54(3):180-182.

Method practical for judging presence of absence of small mammals; no exact population density figures. Seed spots grouped, on line. Number of spots robbed versus time gives results significant for reseeding operations.

TAXON.: *Eutamias townsendii, Peromyscus maniculatus, P. truei, Sorex* sp.

KEYWORDS: BEHAVIOR, CALIFORNIA, FIELD METHODS, FOOD HABITS, POPULATION DYNAMICS, SEED & CONE DAMAGE

665. TEVIS, L., Jr. 1956c. Responses of small mammal populations to logging of Douglas-fir. J. Mammal. 37(2):189-196.

Logging causes increase in some species, decrease in others. Species that become most numerous are white-footed mice and

Townsend chipmunks, responsible for destruction of large amounts of naturally produced seed.

TAXON.: *Clethrionomys occidentalis, Eutamias townsendii, Neotoma cinerea, Neurotrichus gibbsii, Peromyscus maniculatus, Sorex trowbridgii, Tamiasciurus douglasii*

KEYWORDS: BEHAVIOR, CALIFORNIA, FOREST MANIPULATION, LOGGING, POPULATION DYNAMICS, SEED & CONE DAMAGE

666. TEVIS, L., Jr. 1956d. Invasion of a logged area by golden-mantled squirrels. J. Mammal. 37(2):291-292.

Golden-mantled squirrels threat to reforestation of Douglas-fir--white fir belt.

TAXON.: *Callospermophilus lateralis*

KEYWORDS: BEHAVIOR, CALIFORNIA, DISPERSAL, FOOD HABITS, FOREST MANIPULATION, FOREST REGENERATION, LOGGING, SEED & CONE DAMAGE

667. TEVIS, L., Jr. 1956e. Behavior of a population of forest mice when subjected to poison. J. Mammal. 37(3):358-370.

Behavior and control of deer mice in Douglas-fir area of California. Bait-shyness can be used to protect planted tree seed.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BAITS, BEHAVIOR, CALIFORNIA, FOOD HABITS, SEED & CONE DAMAGE

668. TEVIS, L., Jr. 1956f. Effect of a slash burn on forest mice. J. Wildl. Manage. 20(4):405-409.

Cutover in California Douglas-fir region livetrapped for five days before slash burn, snap-trapped for 18 days thereafter, to determine if fire would control seed-eating mice that hinder reforestation. Fire killed or drove out all resident mice except few that stayed on unburned areas. No reinvasion of cutover until rain settled ashes. Then, in 18 days, mice trapped were 171% of original trap count.

TAXON.: *Peromyscus maniculatus*

KEYWORDS: BEHAVIOR, CALIFORNIA, DISPERSAL, FIRE, FOREST MANIPULATION, MARKING, POPULATION DENSITY, SEED & CONE DAMAGE, TRAPPING

669. THAELER, C. S., Jr. 1968. An analysis of the distribution of pocket gopher species in northeastern California (genus *Thomomys*). Univ. Calif. Publ. Zool. 86. 46 p.

Accounts of five species, range of morphological variation, habitat diversity; distribution. Occasional near interspecific contact, but usually no overlap.

TAXON.: *Thomomys bottae, T. mazama, T. monticola, T. talpoides, T. townsendii*

KEYWORDS: CALIFORNIA, DISTRIBUTION, HABITAT, HOME RANGE, PHYSICAL DESCRIPTION, POPULATION DENSITY, REPRODUCTION

670. THOMPSON, H. V., and C. J. ARMOUR. 1954. Methods of marking wild rabbits. J. Wildl. Manage. 18(3):411-414.

Tattooing recommended.

TAXON.: *Oryctolagus cuniculus*

KEYWORDS: EUROPE, MARKING

671. TIMIN, M. E., and B. D. COLLIER. 1971. A model incorporating energy utilization for the dynamics of single species populations. Theor. Popul. Biol. 2(2):237-251.

Three ordinary differential equations expressing rates of change of state variables (density of animals, mean biomass per animal, food density) and several algebraic equations. Mean biomass used as index of population size-age structure; energy utilization considered; dimensionless form developed. Food supply and harvest rates included.

KEYWORDS: BIOMASS, HARVEST, MODELS, NUTRITION, POPULATION DENSITY, POPULATION DYNAMICS

672. TOMICH, P. Q. 1962. The annual cycle of the California ground squirrel *Citellus beecheyi*. Univ. Calif. Publ. Zool. 65(3):213-282.

Tooth wear, closure of distal femoral epiphysis, and placental scars criteria for age classifications of adults. Dates for breeding, dormancy (females one or two months later than males); data on body weight, pituitary weight, and adrenal weight and size. Population size correlated with regional environment.

TAXON.: *Otospermophilus beecheyi*

KEYWORDS: AGE, BEHAVIOR, CALIFORNIA, GROWTH, PHYSICAL DESCRIPTION, POPULATION DENSITY, REPRODUCTION

673. TOWNSEND, J. E. 1953. Beaver ecology in western Montana with special reference to movements. J. Mammal. 34(4):459-479.

Study in 1949, 1950, 1951 on breeding condition and behavior, territorial behavior, home range, numerical population, sex and age composition of colonies, and determination of ultimate or maximum colony.

TAXON.: *Castor canadensis*

KEYWORDS: AGE, BEHAVIOR, BREEDING BEHAVIOR, DISPERSAL, HOME RANGE, MONTANA, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, SEX RATIO

674. TRAPP, G. R. 1962. Snowshoe hares in Alaska. II. Home range and ecology during an early population increase. M.S. thesis, Univ. Alaska. 137 p.

Methods for determining home range, reproduction, behavior; age-determination criteria; census methods; parasites. Changes in size of home range with population density.

TAXON.: *Lepus americanus*

KEYWORDS: AGE, ALASKA, BEHAVIOR, BODY CONSTITUTION, CENSUS, DISPERSAL, DISTRIBUTION, HABITAT, HOME RANGE, MORTALITY, PARASITISM & DISEASE, POPULATION DENSITY, POPULATION DYNAMICS, REPRODUCTION, TRAPPING

675. TROYER, W. A. 1960. The Roosevelt elk on Afognak Island, Alaska. J. Wildl. Manage. 24(1):15-21.

Five female and three male Roosevelt elk introduced in 1929; by 1960 had increased to 800 (est.). Preferred winter and summer browse listed. Elk remain in large herds; do not break up into small harems during rut. Breeding and calving dates; weights; hunting kills.

TAXON.: *Cervus canadensis roosevelti*

KEYWORDS: ALASKA, BEHAVIOR, FOOD HABITS, HARVEST, PHYSICAL DESCRIPTION, POPULATION GROWTH, REPRODUCTION

676. TRYON, C. A., Jr. 1946. Montana records of beaver embryos. J. Mammal. 27(4):396-397.

Examined 49 embryos, sexed 46, listed by counties.

TAXON.: *Castor canadensis*

KEYWORDS: CENSUS, DISTRIBUTION, MONTANA, REPRODUCTION

677. TRYON, C. A., Jr. 1947a. The biology of the pocket gopher (*Thomomys talpoides*) in Montana. Mont. State Coll. Agric. Exp. Stn. Bull. 448. 33 p.

Pocket gopher most important burrowing animal in western mountain ranges. Describes habitat, burrows, reproduction, behavior, food, parasites.

TAXON.: *Thomomys talpoides*

KEYWORDS: BEHAVIOR, DISTRIBUTION, FOOD HABITS, HABITAT, MONTANA, MORTALITY, PARASITISM & DISEASE, REPRODUCTION

678. TRYON, C. A., Jr. 1947b. Behavior and post-natal development of a porcupine. J. Wildl. Manage. 11(3):282-283.

Growth rate data on precocial young.

TAXON.: *Erethizon dorsatum*

KEYWORDS: BEHAVIOR, GROWTH, MONTANA, REPRODUCTION

679. TRYON, C. A., and H. N. CUNNINGHAM. 1968. Characteristics of pocket gophers along an altitudinal transect. J. Mammal. 49(4):699-705.

Transect of 1830-3100 m (6000-10,170 ft), stations in alpine, Canadian, and transition zones. Comparisons of proximate analysis of vegetation, stomach contents, body size, adrenal size, and population size.

TAXON.: *Thomomys talpoides*

KEYWORDS: BODY CONSTITUTION, FOOD HABITS, GROWTH, NUTRITION, POPULATION DENSITY, REPRODUCTION, WYOMING

680. USDA FOREST SERVICE. 1944-1949. Wildlife handbook. USDA For. Serv., North Pac. Reg., Div. Wildl. Range Manage. (Looseleaf, pagination internal.)

Descriptions of species; lists of parasites; estimates or opinions of importance in management.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, FOREST MANIPULATION, HABITAT, MORTALITY, PACIFIC NORTHWEST, PARASITISM & DISEASE

681. VAN VLECK, D. B. 1969. Standardization of *Microtus* home range calculation. J. Mammal. 50(1):69-80.

Compares minimum-area, boundary-strip-exclusive, boundary-strip-inclusive, observed-range-length, and adjusted-range-length methods.

TAXON.: *Microtus pennsylvanicus*

KEYWORDS: DENSITY-RELATED BEHAVIOR, HOME RANGE, MODELS, NORTHEASTERN UNITED STATES, TRAPPING

682. VAUGHAN, T. A. 1961. Vertebrates inhabiting pocket gopher burrows in Colorado. J. Mammal. 42(2):171-174.

Twenty-two species of vertebrates use pocket gopher burrows for retreats and foraging routes. Local occurrence of several reptiles and tiger salamander determined by presence of burrows.

TAXON.: Multiple

KEYWORDS: BEHAVIOR, COLORADO, COMPETITION

683. VAUGHAN, T. A. 1963. Movements made by two species of pocket gophers. Am. Midl. Nat. 69(2):367-372.

Data on 259 specimens; dispersal, mean per year 240 m (785 ft), maximum 790 m (2590 ft).

TAXON.: *Thomomys bottae, T. talpoides*

KEYWORDS: BEHAVIOR, COLORADO, DISPERSAL, HOME RANGE

684. VINCENT, W. L. 1959. Need for an annual report on wild animal problems. IN: W. O. Hagenstein (chm.), Forest pest conditions in western United States and British Columbia, p. 14-16. (Western Forest Pest Committee, Spokane, Wash., 8 December 1959.)

Estimates of damage caused by single animal. Animal damage greatest problem to regeneration; annual loss from all types of animal damage in Pacific Northwest estimated conservatively at $15 million.

TAXON.: *Cervus canadensis, Lepus americanus, L. californicus, L. townsendii, Odocoileus hemionus, O. virginianus,* Rodentia

KEYWORDS: CENSUS, DAMAGE, FOREST REGENERATION, PACIFIC NORTHWEST

685. VOTH, E. H. 1968. Food habits of the Pacific mountain beaver, *Aplodontia rufa pacifica* Merriam. Ph.D. thesis, Oregon State Univ., Corvallis. 276 p.

Mountain beaver occupies food niche no other herbivore wants. Sword fern (rarely used by deer) and bracken (toxic to other herbivores) compose 82% of mountain beaver diet.

TAXON.: *Aplodontia rufa pacifica*

KEYWORDS: FOOD HABITS, OREGON

686. WAGG, J. W. B. 1964. Design of small mammal exclosures for forest-seeding studies. Ecology 45(1):199-200.

Device that protects seedling plots from small-mammal depredation without disturbing microclimatic environment during germination and early stages of seedling development.

TAXON.: Multiple

KEYWORDS: FENCING, PACIFIC NORTHWEST, SEED & CONE DAMAGE, SEEDLING DAMAGE

687. WALKER, P. P., F. WARNICK, K. I. LANGE, H. E. UIBLE, S. E. HAMLET, M. A. DAVIS, and P. F. WRIGHT. 1964. Mammals of the world. Johns Hopkins Press, Baltimore, Md. (2 vol.)

688. WALTERS, J., and J. SOOS. 1961. The relative efficiency of three hare-repellents in protecting Douglas-fir seedlings. For. Chron. 37(1):22-28.

Three repellents tested following extensive damage by varying hares to Douglas-fir plantations. Describes nature of damage and relative efficiency of repellents.

TAXON.: *Lepus americanus*

KEYWORDS: BRITISH COLUMBIA, REPELLENTS, SEEDLING DAMAGE

689. WANGERSK, P. J., and W. J. CUNNINGHAM. 1957. Time lag in prey-predator population models. Ecology 38(1):136-139.

Analysis of differential equations resulting from introduction of time lag in response of predator to changes in prey population shows array of possible solutions. Once reasonable values known for the many parameters, population equations of this degree of complexity most easily handled by approximation on analog computer.

KEYWORDS: MODELS, PREDATION

690. WARD, A. L. 1960. Mountain pocket gopher food habits in Colorado. J. Wildl. Manage. 24(1):89-92.

Data on 285 stomachs; aluminum paint on oats found in stomach later for some. Aboveground versus belowground parts consumed compared by season.

TAXON.: *Thomomys talpoides*

KEYWORDS: BEHAVIOR, COLORADO, FOOD HABITS, TRACKING

691. WARD, A. L., P. L. HEGDAL, V. B. RICHENS, and H. P. TIETJEN. 1967. Gophacide, a new pocket gopher control agent. J. Wildl. Manage. 31(2):332-338.

Gophacide, known as Bayer 38819 and DRC-714, successfully tested as pocket gopher control agent. Grain baits containing 0.1%-0.2% Gophacide, properly distributed, gave good control, often 90% or better. Baits placed on substrate burrows and pocket gophers die there; hazards to other animals slight.

TAXON.: *Geomys bursarius, Thomomys bottae, T. talpoides, T. umbrinus*

KEYWORDS: BAITS, DAMAGE, MORTALITY, NORTH AMERICA, RODENTICIDES

692. WARD, A. L., and J. O. KEITH. 1962. Feeding habits of pocket gophers on mountain grasslands, Black Mesa, Colorado. Ecology 43(4):744-749.

Data on 397 stomachs; histological methods. In habitats where vegetation consisted of 50% grasses, 42% forbs, 8% shrubs, summer diet of pocket gophers consisted of 6% grass, 93% forbs, 1% shrubs; 74% of this food was stems and leaves, 26% roots.

TAXON.: *Thomomys talpoides*

KEYWORDS: COLORADO, FOOD HABITS, LABORATORY METHODS

693. WARREN, E. R. 1928a. Beavers in the Elk Mountain region, Colorado. J. Mammal. 9(4):320-334.

Changes in beaver populations and habitats over the years 1899-1927.

TAXON.: *Castor canadensis*

KEYWORDS: BEHAVIOR, CENSUS, COLORADO, DISTRIBUTION, HABITAT, POPULATION DENSITY, POPULATION DYNAMICS

694. WARREN, E. R. 1928b. The most interesting wild animal in America. Sci. Mon. 27:33-41.

Habits of the beaver.

TAXON.: *Castor canadensis*

KEYWORDS: BEHAVIOR, COLORADO, DISTRIBUTION, HABITAT, HOME RANGE, REPRODUCTION, WYOMING

695. WARREN, E. R. 1932. The abandonment and reoccupation of pond sites by beavers. J. Mammal. 13(4):343-346.

Observations of rapidity with which beaver works appear and disappear.

TAXON.: *Castor canadensis*

KEYWORDS: BEHAVIOR, COLORADO, DISPERSAL, HABITAT, HOME RANGE, MORTALITY

696. WARREN, E. R. 1942. The mammals of Colorado. 2d ed. (revised). Univ. Oklahoma, Norman. 330 p.

Occurrence, distribution, natural history, and regional taxonomy.

TAXON.: Multiple

KEYWORDS: COLORADO, DISTRIBUTION, HABITAT, REPRODUCTION

697. WARREN, G. 1970. Introduction of the masked shrew to improve control of forest insects in Newfoundland. Proc. Annu. Tall Timbers Conf. Ecol. Anim. Control Habitat Manage. 2:185-202.

Masked shrews, introduced in 1958 to control larch sawfly cocoons, multiplied.

TAXON.: *Sorex cinereus*

KEYWORDS: BEHAVIOR, CANADA, DISTRIBUTION, POPULATION DYNAMICS, POPULATION GROWTH, TREE DAMAGE

698. WASHINGTON, STATE OF. 1953. Monthly summary of deer losses from protector's reports, 1952. State of Wash. Dept. of Game. 12 p. (unnumbered; mimeo.).

Tables show causes of losses, frequency of various losses by county, months, and numbers of young carried by adult does in spring. Other tables summarize elk losses by month, cause, sex, and age groups.

TAXON.: *Cervus canadensis, Odocoileus hemionus columbianus, O. h. hemionus*

KEYWORDS: AGE, MORTALITY, POPULATION GROWTH, REPRODUCTION, SEX RATIO, WASHINGTON

699. WATT, K. E. F. 1964. Animal population ecology and control fundamentals. Vertebr. Pest Control Conf. 2:24-28.

Biological mechanisms that can operate against as well as for control include genetic, physiological, populational, and environmental. Homeostatic mechanisms are assumed. Models cited.

KEYWORDS: ANIMAL PRODUCTIVITY, DAMAGE, MODELS

700. WEBB, W. L. 1942. Notes on a method for censusing snowshoe hare populations. J. Wildl. Manage. 6(11):67-69.

Visual estimates based on distance and angles from census line.

TAXON.: *Lepus americanus*

KEYWORDS: CENSUS, FIELD METHODS, NORTH AMERICA, POPULATION DENSITY

701. WECKER, S. C. 1962. The effects of bot fly parasitism on a local population of the white-footed mouse. Ecology 43(3):561-565.

Botfly eggs laid on vegetation; contact necessary for infestation. Forest conditions more favorable than open areas. Development of parasite; physiological effects.

TAXON.: *Peromyscus leucopus*

KEYWORDS: AGE, BREEDING BEHAVIOR, MICHIGAN, MORBIDITY, MORTALITY, PARASITISM & DISEASE, POPULATION DYNAMICS, REPRODUCTION, SEX RATIO

702. WELCH, J. F. 1967. Review of animal repellents. Proc. Vertebr. Pest Control Conf. 3:36-40.

Repellents defined, area versus contact. Chemical contact: 96-A, ZAC, TMTD (spraying of Douglas-fir seedlings), TNBA, endrin (presowing application to seed).

TAXON.: *Erethizon dorsatum, Lepus americanus, Odocoileus hemionus, Peromyscus* sp.

KEYWORDS: DAMAGE, SEED & CONE DAMAGE, REPELLENTS, SEEDLING DAMAGE

703. WEST, N. E. 1968. Rodent-influenced establishment of ponderosa pine and bitterbrush seedlings in central Oregon. Ecology 49(5):1009-1011.

Unrecovered caches of ponderosa pine and bitterbrush seed made by small rodents frequently result in establishment of seedling clusters. About 90% of bitterbrush and at least 15% of pine seedlings result from rodent caches.

TAXON.: *Callospermophilus lateralis, Eutamias amoenus, E. townsendii*

KEYWORDS: BEHAVIOR, FOOD HABITS, OREGON, SEED & CONE DAMAGE

704. WHITELAW, C. J., and E. T. PENGELLEY. 1954. A method for handling live beavers. J. Wildl. Manage. 18(4):533-534.

Canvas bag on hoop used for sexing, marking, or tagging.

TAXON.: *Castor canadensis*

KEYWORDS: CANADA, HANDLING, MARKING

705. WICK, W. Q., and H. E. PENTTILA. 1957. Beaver litter of seven from Skagit County, Washington. Murrelet 38(1):7.

Litter of five rare in area of study; average three. Note on development of fetuses.

TAXON.: *Castor canadensis*

KEYWORDS: GROWTH, REPRODUCTION, WASHINGTON

706. WIGHT, H. M. 1930. Breeding habits and economic relations of the Dalles pocket gopher. J. Mammal. 11(1):40-48.

Observations on orchard damage (girdling, root severing). Reproductive status of 552 specimens captured March-April; evidence of plural occupancy of burrows; 79% of females captured reproductive.

TAXON.: *Thomomys talpoides quadratus*

KEYWORDS: BEHAVIOR, OREGON, REPRODUCTION, TREE DAMAGE

707. WILLIAMS, C. S. 1938. Aids to the identification of mole and shrew hairs with general comments on hair structure and hair determination. J. Wildl. Manage. 2(4):239-250.

Identification material and keys for microscopic observation of hairs.

TAXON.: *Ammospermophilus nelsoni, Blarina brevicauda, Canis latrans, C. lupus, Citellus spilosoma, Clethrionomys* sp.,

Condylura cristata, Cryptotis floridana, C. parva, Didelphis marsupialis, Felis concolor, Lemmus sp., *Microsorex hoyi, Neurotrichus gibbsii, Notiosorex crawfordi, Onychomys* sp., *Parascalops breweri, Peromyscus* sp., *Reithrodontomys* sp., *Scalopus aquaticus texanus, Scapanus latimanus, S. orarius, Sorex arcticus, S. obscurus, S. tundrensis*

KEYWORDS: BODY CONSTITUTION, FOOD HABITS, LABORATORY METHODS, MORTALITY

708. WILLIAMS, O. 1955a. Home range of *Peromyscus maniculatus rufinus* in a Colorado ponderosa pine community. J. Mammal. 36(1):42-45.

Home range estimates based on capture at three or more points: for mature males, 2104 m^2 (0.52 acre); mature females 1457 m^2 (0.36 acre); immature males, 2529 m^2 (0.625 acre); immature females, 1255 m^2 (0.31 acre). Little intraspecific intolerance indicated.

TAXON.: *Peromyscus maniculatus rufinus*

KEYWORDS: BEHAVIOR, COLORADO, COMPETITION, HOME RANGE, POPULATION DYNAMICS

709. WILLIAMS, O. 1955b. Distribution of mice and shrews in a Colorado montane forest. J. Mammal. 36(2):221-231.

Distribution and relative populations of mice and shrews in a single forested valley on eastern slope of the Colorado Front Range.

TAXON.: *Clethrionomys gapperi galei, Microtus longicaudus mordax, M. montanus fuscus, Peromyscus maniculatus rufinus, Phenacomys i. intermedius, Sorex c. cinereus, S. obscurus, Zapus p. princeps*

KEYWORDS: COLORADO, DISTRIBUTION, HOME RANGE, POPULATION DENSITY, POPULATION DYNAMICS

710. WILLIAMS, O., and B. A. FINNEY. 1964. *Endogone*--Food for mice. J. Mammal. 45(2):265-271.

Analysis of contents of digestive tracts of 450 mice revealed 38% of animals ate phycomycete, *Endogone*.

TAXON.: *Clethrionomys gapperi, Microtus longicaudus, Peromyscus maniculatus, Phenacomys intermedius, Zapus princeps*

KEYWORDS: COLORADO, FOOD HABITS, WYOMING

711. WILLIAMS, O., and B. A. FINNEY. 1967. Small mammals on Jumbo Mountain: 1960-1966. J. Colo.-Wyo. Acad. Sci. 5(8):74.

At elevation of 3050 m (10,000 ft), density fluctuations occurred in different years for different species.

TAXON.: *Clethrionomys gapperi, Microtus longicaudus, Peromyscus maniculatus, Sorex vagrans*

KEYWORDS: COLORADO, POPULATION DENSITY, POPULATION DYNAMICS

712. WILLIAMS, R. M. 1965. Beaver habitat and management. Idaho Wildl. Rev. 17(4):3-7.

Of the 70,810 km (44,000 mi) of Idaho streams, 50% is unsuitable for beaver because slopes are too steep, and 17% because of use by man. Population densities surveyed.

TAXON.: *Castor canadensis*

KEYWORDS: DISTRIBUTION, HABITAT, IDAHO

713. WIRTZ, J. H. 1961. The golden-mantled ground squirrel *Citellus lateralis chrysodeirus* (Merriam): Its social and community interactions. Ph.D. thesis, Oregon State Univ., Corvallis. 134 p.

Behavior, learning, burrowing, vocalizations, activity cycle, locomotion, food habits, hibernation, and movements.

TAXON.: *Callospermophilus lateralis chrysodeirus*

KEYWORDS: BEHAVIOR, DISPERSAL, FOOD HABITS, HOME RANGE, OREGON, POPULATION DYNAMICS, REPRODUCTION

714. WISE, D. H. 1967. Home range of a wandering shrew, *Sorex vagrans*, by tracking. J. Mammal. 48(3):490-492.

Toe clipping; method of Justice (1961); distance larger than estimates of Ingles (1961).

TAXON.: *Sorex vagrans*

KEYWORDS: COLORADO, HOME RANGE, MARKING, TRACKING

715. WOODBURY, A. M. 1956. Uses of marking animals in ecological studies. Ecology 37(4):665.

Studies of physiology or behavior of organisms held under abnormal conditions may be misleading. Importance of fieldwork.

KEYWORDS: BHEAVIOR, FIELD METHODS, MARKING

716. YEAGER, L. E. 1961. Classification of North American mammals and birds according to forest habitat preference. J. For. 59(9):671-674.

Species or groups of mammals and birds classified according to their forest-dwelling affinities.

TAXON.: Multiple

KEYWORDS: DISTRIBUTION, HABITAT, NORTH AMERICA

717. YEAGER, L. E., and W. H. RUTHERFORD. 1957. An ecological basis for beaver management in the Rocky Mountain region. Trans. North Am. Wildl. Conf. 22:269-299.

Overpopulation related to nonmanagement.

TAXON.: *Castor canadensis*

KEYWORDS: COLORADO, HARVEST, HERB & SHRUB DAMAGE, POPULATION DENSITY

718. YOCUM, C. F. 1971. Invasion of Humboldt and Del Norte Counties of northwestern California by porcupines. Murrelet 52(1):1-6.

Spread of porcupines apparently associated with cutting of virgin stands of redwood and Douglas-fir. Porcupines invaded entire area even to ocean beaches.

TAXON.: *Erethizon dorsatum*

KEYWORDS: CALIFORNIA, DISPERSAL, DISTRIBUTION, HABITAT, POPULATION DENSITY

INDEX TO COAUTHORS

INDEX TO KEYWORDS

INDEX TO TAXONOMIC NAMES