

than twelve sub-faunal divisions.¹⁹ Some closely allied species run across all these sub-faunal belts, often with slight subspecific differences, and some of the forms of each adjoining area are found in each belt. These are well illustrated by the various subspecies of flying squirrels (Glaucomys sabrinus), snowshoe rabbits (Lepus americanus), and pikas (Ochotona princeps). As we pass from one belt to another. or from lower to higher levels, we pick up new forms, or distinct geographical races, which give character to the local fauna and flora and show the effects of a different environment. The dominant trees and herbaceous plants mark obvious changes The bird fauna gives a definite character to the various interin the landscape. mountain areas during the breeding season, but at other times is much complicated by seasonal migrations northward and southward in spring and autumn, as well as by local altitudinal movements. The mountain seed-eating birds come down to lower levels when seeds and fruits are ripe, and hummingbirds which breed at the lower levels presumably move upwards to the natural flower gardens at timber-line on the border of Hudsonian-Alpine Zones after the breeding season when the lowlands are dried up as the male hummingbirds seem to disappear from the lower levels and are conspicuous near the timber-line soon afterwards. The mammal life is more static, although some large, hoofed mammals make short movements from summer to winter pastures and vice versa. Many of the species, from bears to chipmunks, evade the effects of severe climates by hibernating in winter and. on the other hand, in some of the hot, dry valleys, species like the yellow-bellied woodchuck (Marmota flaviventris) and Columbian ground squirrel (Citellus columbianus) go into a state of æstivation or dormant inaction during the late summer when vegetation is withered. As the occurrence of many of the larger game and furbearing species at the present time is largely dependent upon survival from persecution rather than distribution from natural causes, the peculiarities of mammal distribution in these sub-faunal areas is more readily worked out by study of the