Influence of Whitebark Pine Decline on Fall Habitat Use and Movements of Grizzly Bears in the Greater Yellowstone Ecosystem

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Seeds of whitebark pine (WBP; *Pinus albicaulis*) are a major food item for grizzly bears (*Ursus arctos*) in the greater Yellowstone ecosystem. Higher rates of bear mortality and bear-human conflicts are linked with low WBP productivity. Recently, infestations of mountain pine beetle (Dendroctonus ponderosae) have killed many mature, cone-bearing WBP trees. We investigated whether this decline caused bears to reduce their use of WBP and increase use of areas near humans. We used 52,332 GPS locations of 72 individuals (89 bear-years) monitored during fall (15 Aug–30 Sep) to examine temporal changes in habitat use and movements during 2000–2011. We calculated a Manley-Chesson (MC) index for selectivity of mapped WBP habitats for each individual within its 100% local convex hull home range, and determined dates of WBP use. One third of sampled grizzly bears had fall ranges with little or no mapped WBP habitat. Most other bears (72%) had a MC index > 0.5, indicating selection for WBP habitats. Over the study period, mean MC index decreased and median date of WBP use shifted about 1 week later. We detected no trends in movement indices over time. Outside of national parks, 78 percent of bears selected for secure habitat (areas $\geq$ 500 m from roads), but mean MC index decreased over the study period during years of good WBP productivity. The foraging plasticity of grizzly bears likely allowed them to adjust to declining WBP. However, the reduction in mortality risk associated with use of WBP habitat may be diminishing for bears in multiple-use areas.