PROJECT TITLE: Marmots on the Move? Dispersal in a Declining Mountain Mammal

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PROJECT SUMMARY:

Olympic marmots (*Marmota olympus*) are large, burrowing rodents inhabiting scattered subalpine meadows primarily in Olympic National Park. Over the past 25 years, they have disappeared from many locations and the remaining population is increasingly fragmented. A possible management action would be translocation of marmots to bolster or reestablish local populations. Knowledge of how far and how often these marmots are likely to disperse on their own would greatly improve the efficacy of such a translocation program, yet little is known dispersal patterns in Olympic marmots. We are combining data collected in 2007 on 53 radio-tagged marmots with previously collected data with the objective of enhancing our understanding of this critical life-history parameter. These data will be used to parameterize and compare competing models of dispersal rates and distances. The rate estimates and the distance curves can then be used to construct plausible probabilities that marmots will rescue or recolonize individual sites without translocation. This is an ideal opportunity to provide information that may be crucial for the effective long-term management of this charismatic and declining Olympic NP resource.

PROGRESS REPORT:

Beginning in late-April, 2007, fifty-three marmots, including 10 males age 2 or 3 and 16 similarly aged females, were monitored on foot 1-2 times per week until they died (*n*=8), the transmitter failed (*n*=5), or they initiated hibernation. Six attempted dispersal, including 4 males (ages 2, 3, 3, and 4) and 2 females (both age 2). These 6 dispersals increased the sample size of observed dispersal events accumulated during the 4 previous years by 55%. Unlike previous years, no disperser died. Four settled with or near other marmots and 1 is hibernating in a recently occupied meadow. The final animal is hibernating on the west bank of Lake Mills after spending several weeks on an island in the Elwha River. The signal of one disperser was lost near the end of the summer; because the transmitter was due to fail and the animal had not moved in several weeks, we discontinued looking for it after an extensive search. All other dispersers were monitored until they initiated hibernation. Distances traveled were generally greater than in previous years and one marmot traveled >15 km, ultimately crossing the Elwha River near the head of Lake Mills. In the process of collecting the data on dispersal, we collected an additional >1500 locations and survival data for the 53 animals.

Although we have not completed data analyses, we can make some preliminary observations. First, it is notable that in most cases, marmots find suitable habitat, regardless of whether it is occupied, despite that habitat being relatively rare on the landscape. Only 2 of 17 dispersers did not find appropriate meadows before they died. Second, dispersal rates for the 2007 animals do not appear to be substantially different than 2002-2006 rates. About 25% of males move as either 2 or 3 year olds and an occasional older male will move a short distance (< 1 km). About 10% of females move as either 2 or 3 year olds. Movement of females > 3 years is almost non-existent – of 62 monitored, 1 moved to an adjacent but non-overlapping home range. Third, although most marmots settled within 1 km (>50%) of their natal territory, 18% (3 of 17) traveled > 5 km. Since marmots will travel long distances and are adept at finding suitable habitat, when densities of marmots are high, relatively long distance colonization or genetic rescue is likely fairly common. At current densities, however, the low rate of dispersal, particularly by females, makes successful recolonization unlikely.