Reintroduction of Marten to the Little Belt Mountains

In 2014, the Fish & Wildlife Commission directed FWP to develop a project that would restore marten to the Little Belt Mountains. The stated objective is to "increase species diversity and facilitate American marten range expansion back into the mountains of central Montana".

Marten were present in the isolated ranges of central Montana, Wyoming, and S. Dakota since the late Pleistocene, including in the Black Hills, Crazies, Big Belt and Little Belt Mountains (Gibilisco 1994, Buskirk 2002). Specimen records from the Black Hills indicate martens persisted in that range until extirpated by unregulated trapping and predator control by 1930.

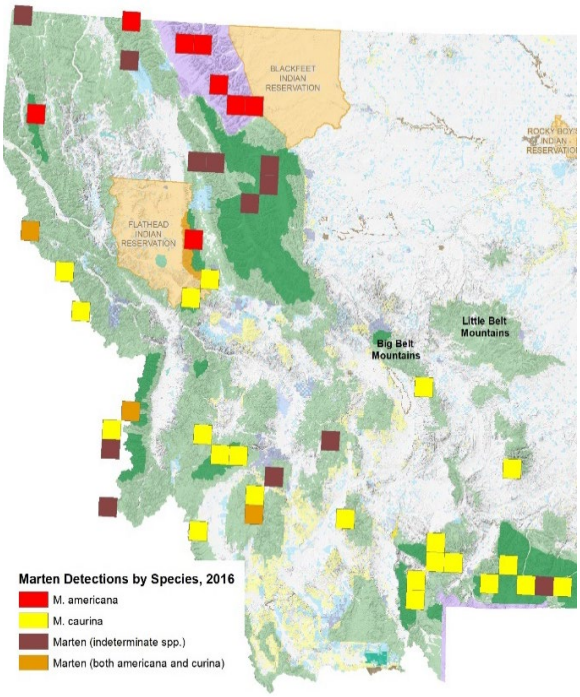
We are unaware of similar historic trapping records for Montana's Belt Mountains but it is reasonable to believe that martens were similarly extirpated there within the last 100 years. Extensive recent snow-track, camera trap, and genetic surveys conducted by the USFS and FWP have failed to confirm marten presence in the Little Belt Mountain complex.

Martens are generally poor dispersers and are behaviorally incapable of moving through areas lacking certain habitat traits. Martens generally will not disperse across non-forested areas below timberline wider than 5-10 km (Hawley and Newby 1957, Buskirk and Ruggiero 1994). Therefore, once extirpated, martens are unlikely to reoccupy previously occupied but spatially isolated habitats.

Marten populations have been successfully reestablished across their historic North American range using translocations. Thirty-two (72%) of the 44 attempted marten reintroduction efforts (with known outcomes) conducted prior to 2012 were successful (Powell et. al. 2012), including 2 in island ranges east of the Rocky Mountains. Nine martens (4M, 5F) were translocated into the Big Belt Mountains in 1956—FWP had detected the species there using camera traps there since 2016. Similarly, a total of 125 martens (78M, 47F) were released in two areas of South Dakota's Black Hills in 1980 and again from 1990-1993. The marten population in the Black Hills is now self-sustaining and well connected (SDGF&P pers. comm. 2020).

Wright (1953) classified marten in Montana as a single species (*M. americana*) due to morphological evidence suggesting extensive hybridization of the two previously recognized North American species (*M. americana* and *M. caurina*). However, recent genetic and phylogeographic studies suggest the potential occurrence of 2 distinct North American marten species, both of which occur in Montana. Despite hybridization and past translocations, these species' ranges appear to be relatively discrete within the state. For example, when marten DNA was collected coincident with a 2016 wolverine survey, *M. americana* were predominately detected in northwest Montana while *M. caurina* occurred in the west-central and southwest

Figure 1. Distribution of Marten (spp.) detected during a 2016 genetic survey (FWP).

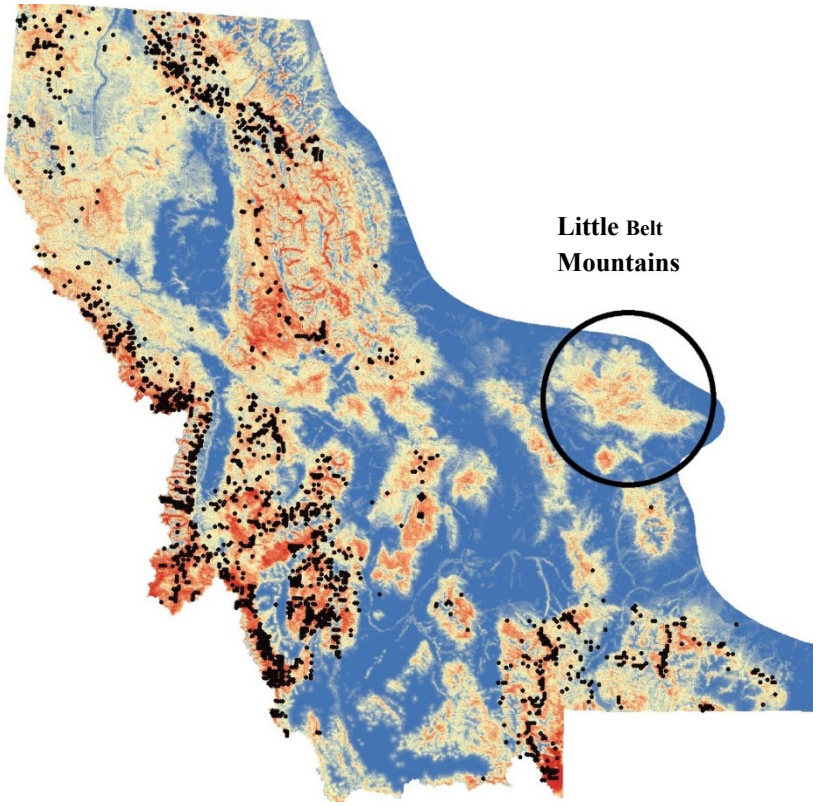


portions of the state (Figure 1). If the two varieties of marten are distinct, *M. caurina* most likely occupied the Belt Mountain complex prior to extirpation.

The success of past marten reintroduction efforts was most influenced by 3 primary factors: 1) habitat quality, 2) the number of individuals (primarily females) released, and 3) the number of release sites (Powell et. al. 2012).

To describe statewide marten habitat, FWP and the Montana Natural Heritage Program developed a predictive habitat suitability model for marten in Montana (MNHP 2019). It incorporated 10 years of marten harvest locations and 18 statewide biotic and abiotic GIS layers in a Maxent marten habitat model. The model indicates that the Little Belt and Castle Mountains include some of the highest quality unoccupied marten habitat in the state (Figure 2).

Figure 2. 2019 MNHP Maxent predictive marten habitat model and 2007 – 2018 marten harvest locations.

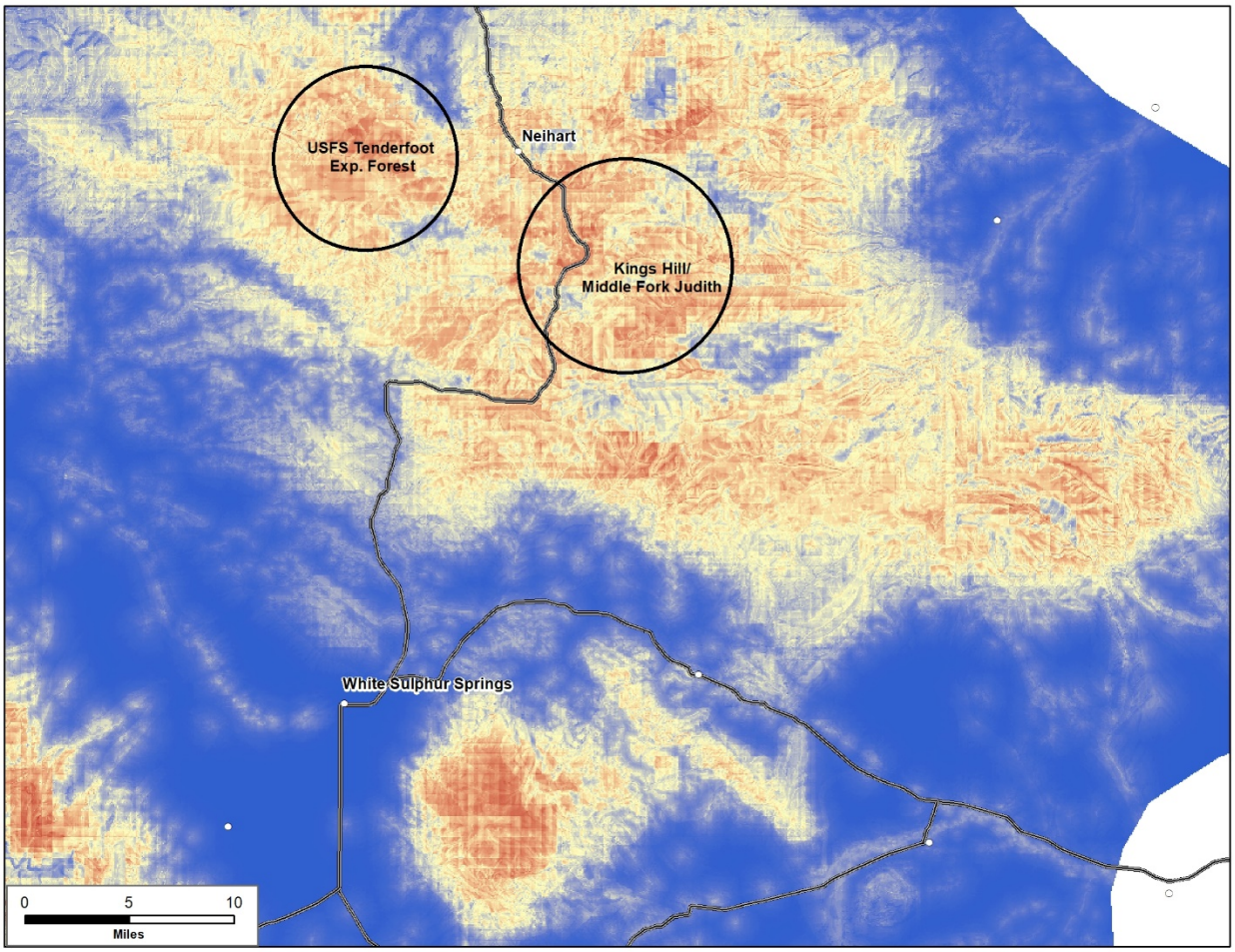


The more marten (especially females) that are released into an area, the higher the likelihood that a self-sustaining population will become established. A larger and more diverse founding population helps ensure a higher effective population size and improves initial genetic diversity. Because of post-release mortality, variation in individual breeding success, and the need for heterogeneity in isolated populations, a minimum of 60 individuals (with an equal or female-biased sex ratio) should be translocated into an insular area. However, individual releases can be conducted over several years without significantly affecting the ultimate success of a reintroduction effort (Jachowski et. al. 2016). Periodic supplemental reintroductions can then help maintain the genetic diversity of those isolated populations.

The purpose of this project is to re-establish a self-sustaining marten population in this portion of their historic range, the Little Belt Mountain complex, by translocating a minimum of 60 *M. caurina* (>30F) from various locations in southwest MT (Region 3). Using the MNHP model and local knowledge, FWP identified 2 proposed initial release sites within the Little Belts (Figure 3). These release sites are comprised of primarily USFS land and the Forest Service has been supportive of this proposal. The two release sites are connected by contiguous forest cover and we expect that there will be genetic exchange between the two areas over time.

While the overall goal of this work is to restore a native species to its historic range in central MT, this work is also intended to provide recreational viewing and marten harvest opportunity, both of which are currently lacking in these mountain ranges. We believe these goals complement each other, and fulfil FWP's management responsibilities.

Figure 3. Potential marten release sites in the Little Belt Mountains.



Marten pelt prices are currently very low (2020 average of $25). Therefore, we expect to actively partner with skilled private Region 3 marten trappers to assist with marten capture. FWP staff may also supplement trapping effort outside of the fur harvest season. Marten give birth beginning in late March and breeding season extends through August— captures would therefore only occur between September and February each year. Live (cage) trapping and transport methods are well described in the literature. "Hard" releases (without holding

animals for at the release location) appear to be as effective as “soft” (extended) release methods. We expect the initial restoration effort to be accomplished in two subsequent winter field seasons. FWP biologists, as well as one 4-month/yr. technician, will conduct the necessary field work.

Near and long-term monitoring will be accomplished using extensive and systematically-placed baited camera traps and track surveys. Genetic samples will be collected at camera sets (consistent with current FWP multi-species monitoring protocols) to document individual survival, reproduction, and movement.

The following budget does not include additional, and expected, private funding support.

BUDGET	FY2020	FY2021	**Total**
Supplies			
Snowmobile gas/oil	2,000	2,000	**4,000**
(20) Cameras and associated supplies	4,000		**4,000**
DNA sampling supplies	500		**500**
Lure and bait	500		**500**
Travel and Transportation			
Vehicle mileage	5,000	5,000	**10,000**
Technician	16,000	16,000	**32,000**
Housing	1,000	1,000	**2,000**
Contract Services			
Traps and supplies	5,000		
Marten capture	6,000	6,000	**12,000**
DNA lab work (sex, heterozygosity, spp., monitoring samples)	5,000	5,000	**10,000**
Snowmobile repair	1,500	-	**1,500**
Miscellaneous (10% each year)	**4,650**	**3,500**	**7,650**
Total	**51,150**	**38,500**	**84,150**
SCI Contribution			**25,000**
FWP Cost	**51,150**	**38,500**	**59,150**

Literature Cited

Buskirk, S. W. and L. F. Ruggiero. 1994. American Marten *in* American Marten, Fisher, Lynx, and Wolverine in the Western United States. General Technical Report RM-254. USDA Forest Service. Fort Collins, CO.

Buskirk, S. W. 2002. Conservation Assessment for the American Marten in the Black Hills National Forest, South Dakota and Wyoming. USDA Forest Service, Rocky Mountain Research Station Forestry Sciences Laboratory, Missoula, MT.

Dawson, N., and J. Cook. 2012. Behind the genes; Diversification of North American martens (Martes Americana and M. caurina) *In*: Biology and conservation of martens, sables, and fishers: A new synthesis. Cornell University Press, Editors: K.B. Aubry, W.J. Zielinski, M.G. Raphael, G. Proulx, S.W. Buskirk, pp. 23 – 38.

Gibilisco, C.J. 1994. Distributional dynamics of martens and fishers in North America. In: Buskirk, S.W.; Harestad, A.S.; Raphael, M.G., comps., eds. Martens, sables, and fishers: biology and conservation. Ithaca, NY: Cornell University Press: 59-71.

Hawley, V. D., F. E. Newby. 1957. Marten home ranges and population fluctuations in Montana. Journal of Mammology. 38:174-184.

Jachowski, D. S., J. J. Millspaugh, P. L. Angermeier, R. Slotow (eds.). 2016. Reintroduction of Fish and Wildlife Populations. University of California Press. Oakland, California.

Montana Natural Heritage Program. 2019. Marten (*Martes spp.*) predicted suitable habitat models created on January 10, 2019. Montana Natural Heritage Program, Helena, MT. 15 pp.

Powell, Roger, J.C, Lewis, B. Slough, S. Brainard, N. Jordan, A. Abramov, V. Monakhov, P. Zollner, T. Murakami 2012. Evaluating translocations of martens, sables, and fishers: testing model predictions with field data *In*: Biology and conservation of martens, sables, and fishers: A new synthesis. Cornell University Press, Editors: K.B. Aubry, W.J. Zielinski, M.G. Raphael, G. Proulx, S.W. Buskirk, pp.93-137.

Small, Maureen, K Stone, J. Cook. 2003. American marten (Martes americana) in the Pacific Northwest: Population differentiation across a landscape fragmented in time and space. Molecular ecology. 12. 89-103.

Wright, P. L. 1953. Intergradation between Martes americana and Martes caurina in western Montana. Journal of Mammology 34: 74 – 86.