1. **Species:** American Marten *(Martes americana)*

2. **Status:** Table 1 summarizes the current status of this species or subspecies by various ranking entity and defines the meaning of the status.

Table 1. Current status of *Martes americana*

Entity	Status	Status Definition
NatureServe	G5	*Species is Secure* At very low risk or extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
CNHP	S4	*Species is Apparently Secure* At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
Colorado State List Status	SGCN, Tier 2	Species of Greatest Conservation Need
USDA Forest Service	R2 Sensitive	Region 2 Regional Forester's Sensitive Species
USDI FWS[b]	N/A	N/A
USDI FWS Critical Habitat	N/A	N/A

[a] Colorado Natural Heritage Program.
[b] US Department of Interior Fish and Wildlife Service.

The 2012 U.S. Forest Service Planning Rule defines Species of Conservation Concern (SCC) as "a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area" (36 CFR 219.9). This overview was developed to summarize information relating to this species' consideration to be listed as a SCC on the Rio Grande National Forest, and to aid in the development of plan components and monitoring objectives.

3. Taxonomy

Genus/species *Martes americana* is accepted as valid (ITIS 2015).

4. Distribution, abundance, and population trend on the planning unit [12.53.2,3,4]:

In Colorado, marten occurrence likely coincides with distribution of mature spruce-fir and lodgepole pine. A total of 9 occurrences are reported for the planning area within the past 20 years; the most recent observation was reported in 2015 (Table 2, Figure 1). However, the species is much more common than the record indicates and many occurrences have not been recorded (Ghormley, pers. comm.). A total of 30 observations have been recorded since 1991 (Figure 1).

Trend information for this species within the planning area is not available.

Table 2. Known Occurrence Frequency within the Planning Area

Known Occurrences within the past 20 years	10
Year Last Observed	2015

5. Brief description of natural history and key ecological functions [basis for other 12.53 components]:

Female marten are sexually mature at 15 months of age. Marten have delayed implantation with the majority of mating activity occurring in June and July. Female marten produce 1 litter per year of 1-5 kits. Kits are born in March through April and stay with their mother until September or October, when juveniles disperse. Juveniles can disperse up to 25 – 37+ miles (Strickland and Douglas 1987 summarized in Vasquez and Spicer 2005).

Martens are typically generalized carnivores. Food items include but are not limited to red backed voles, red squirrels, mice, snowshoe hare, bird eggs, nestlings, insects, fish, young mammals, berries, wood fiber, lichen and grass. Larger prey items such as the snowshoe hare become more important during the winter months. Gordon (1986) reported that voles, shrews, red squirrels, and other small mammals comprise the bulk of marten winter diets in Colorado.

Marten home ranges often overlap. Home range size reported in the literature varies widely and geographically. Home range sizes for marten in the western U.S. range from male home ranges in the Western United States have been found to be from 0.3 mi^2 to 1.8 mi^2 with female home ranges from 0.27 mi^2 to 1.3 mi^2 (summarized in Vasquez and Spicer 2005).

6. Overview of ecological conditions for recovery, conservation, and viability [12.53 7, 9?, 10, 11, 12]:

American martens are limited to conifer-dominated forests and vegetation types nearby. In most studies of habitat use, martens were found to prefer late-successional stands of mesic coniferous forest, especially those with complex physical structure near the ground (Buskirk and Powell 1994). Xeric forest types and those with a lack of structure near the ground are used little or not at all (Buskirk and Ruggiero 1994), although marten have been reported to utilize alpine habitats in Colorado (Streeter and Braun 1968).

Marten utilize two types of den sites: natal dens in which parturition takes place, and maternal dens occupied by mother and young subsequent to parturition. Trees, logs, and rocks comprise denning structure at 70% of den sites (Ruggiero et al. 1998).

Overall selection coefficients for maternal dens indicated the number of squirrel middens was the most important variable, followed by number of snags 20-40 cm (8-16 inches) diameter at breast height (dbh), number of snags <41 cm (16 in) dbh, and number of hard logs <41 cm in diameter. Selection of natal den sites was also significant via comparison between selection and no selection models, with number of middens, number of Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*) >20 cm dbh, and number of hard logs <41 cm in diameter the most important variables in descending order of importance. Large logs, large snags, and large, live spruce and fir trees are important characteristics of marten den sites in the central Rocky

Mountains. The prominence of middens at den sites suggests red squirrels provide important denning structures as well as prey for marten (Ruggiero et al. 1998).

Marten in southwestern Wyoming, marten selected subnivean rest sites primarily associated with coarse woody debris, including logs and stumps. Use of spruce (*Picea* spp.)-fir (*Abies lasiocarpa*) stands by adults was greater than expected and use of lodgepole pine (*Pinus contorta*) stands was less than expected on the basis of spatial availability. Juveniles used stand types in proportion to spatial availability. Resting sites associated with coarse woody debris occurred primarily in spruce-fir stands (Buskirk et al. 1989).

7. Threats and Risk Factors

Past extensive logging and trapping for pelts led to extirpation in some areas. Martens are susceptible to overharvest when food supplies are low. Harvest data for Colorado shows a closed season up through the 2006/2007, and state-wide harvest numbers of 175, 52, 139, 940, and 1,569 for seasons ending in 2007, 2010, 2012, 2013, and 2014, respectively (Apker 2015).

Loss/ degradation of habitat due to timber harvest remains a threat in some areas (NatureServe 2015). Colorado Parks and Wildlife is currently investigating marten response to lodgepole pine and spruce forest habitats affected by beetle mortality (Apker 2015).

8. Key literature:

Apker, J.A. 2015. Furbearer management report, 2013-2014 harvest year. Colorado Parks and Wildlife. 19 pp.

Buskirk, S.W., S.C. Forrest, M.G. Raphael, and H.J. Harlow. 1989. Winter resting ecology of marten in the central Rocky Mountains. Journal of Wildlife Management 53(1): 191-196.

Buskirk, S.W. and L.F. Ruggiero. 1994. American marten. In Ruggiero, L.F, K.B. Aubry, S.W. Buskirk, L.J. Lyon, and W.J. Zielinski, tech eds. The scientific basis for conserving forest carnivores: American marten, fisher, lynx, and wolverine in the western United States. USDA Forest Service, Gen. Tech. Rep. RM-254. 184 pp.

NatureServe. 2015. Explorer, and online encyclopedia of life. Accessed online 06/22/2015 at: http://explorer.natureserve.org/index.htm.

Gordon, C.C. 1986. Winter food habits of the pine marten in Colorado. Great Basin Naturalist 46(1): 166-168.

Ruggiero, L.F., D.E. Pearson, and S.E. Henry. 1998. Characteristics of American marten den sites in Wyoming. Journal of Wildlife Management 62(2): 663-673.

Streeter, R.G. and C.E. Braun. 1968. Occurrence of pine marten, *Martes americana*, in Colorado alpine areas. Southwestern Association of Naturalists 13(4): 449-451.

Vasquez, M. and L. Spicer. 2005. American marten (*Martes americana*), species assessment. Unpublished report. Prepared for Grand Mesa, Uncompahgre, and Gunnison National Forest. 23 pp.

9. Map of Modeled Habitat and Known Occurrences

Model parameters that define American marten habitats were developed for the Grand Mesa, Uncompahgre, and Gunnison (GMUG) National Forest and compatible with FSVeg vegetation database fields and input values (Vasquez and Spicer 2005). Moderate and high quality marten habitat (identified as spruce-fir or lodgepole pine dominated stands in structural stages 4B or 4C within the planning area total 439,390 acres (Figure 1).

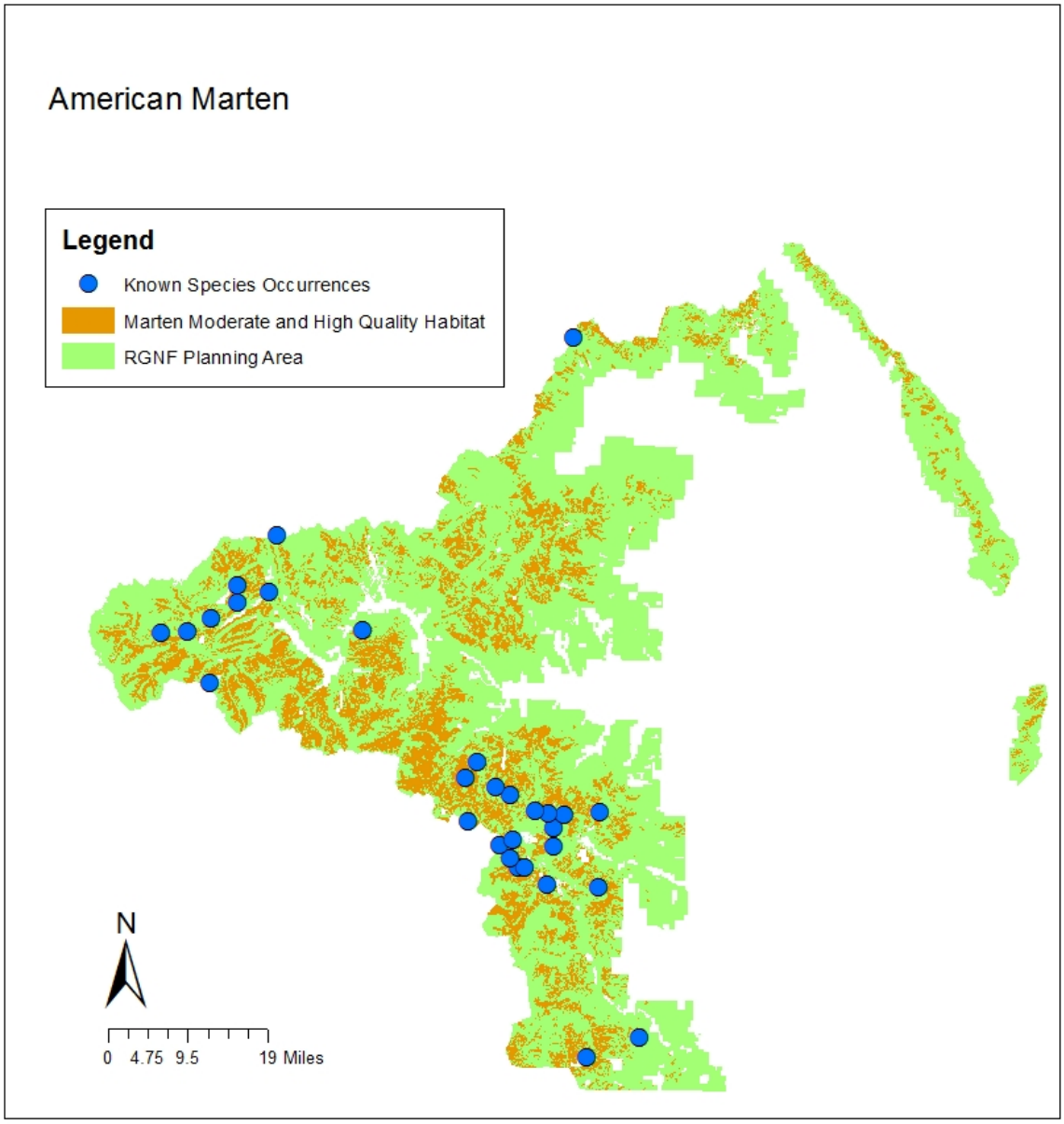

Figure 1. American Marten Known Occurrences and Modeled Habitat.

Appendix A.

Table 3. American Marten Habitat Suitability Model for the Grand Mesa, Uncompahgre, and Gunnison National Forests (Vasquez and Spicer 2005)

	Primary Habitat		Secondary Habitat
Habitat Parameter	**High Quality (Optimum)**	**Moderate Quality (Suitable)**	**Low Quality (Marginal)**
1. Foraging Requirements	4b, 4c, 5 stands containing > 50% spruce-fir, primarily multiple canopy layers, interspersed with small (<0.5 ac) openings containing good ground cover (rocks, talus slopes, logs, stumps, abundant herbaceous vegetation Dense high elevation riparian corridors w/in 4b, 4c, 5 spruce-fir stands	4b, 4c, 5 stands containing > 50% lodgepole pine, primarily multiple canopy layers, interspersed with small (0.5-2ac) openings containing good ground cover Dense high elevation riparian corridors w/in 4b, 4c, 5 lodgepole pine, Douglas-fir, and blue spruce stands	1, 2, 3a, 3b, 3c, 4a spruce-fir and lodgepole pine stands and dense high elevation riparian corridors w/in these stands* 1, 2, 3a, 3b, 3c, 4a, 4b, 4c, 5 Douglas-fir and blue spruce stands* Dense high elevation riparian corridors w/in 1, 2, 3a, 3b, 3c, 4a Douglas-fir and blue spruce stands* Single canopy becoming more prominent then multiple canopy layers > 25% of forest stands should be in mature conditions
2. Cover Requirements	4b, 4c, 5 stands containing > 50% spruce-fir, primarily multiple canopy layers Dense high elevation riparian corridors w/in 4b, 4c, 5 spruce-fir stands	4b, 4c, 5 stands containing > 50% lodgepole pine, primarily multiple canopy layers Dense high elevation riparian corridors w/in 4b, 4c, 5 lodgepole pine stands	3b, 3c, 4a spruce-fir, lodgepole pine, Douglas-fir, and high elevation riparian Single Canopy becoming more prominent than multiple canopy layers > 25% of forest stands should be in mature conditions
3. Denning/Resting Habitat	4b, 4c, 5 stands containing > 50% spruce-fir, primarily multiple canopy layers Dense high elevation riparian corridors w/in 4b, 4c, 5 spruce-fir stands	4b, 4c, 5 stands containing > 50% lodgepole pine, primarily multiple canopy layers Dense high elevation riparian corridors w/in 4b, 4c, 5 lodgepole pine stands	4a spruce-fir and lodgepole pine, single canopy becoming more prominent than multiple canopy layers Dense high elevation riparian corridors w/in 4a spruce-fir and lodgepole pine stands
4. High Elevation Riparian Proximity to Denning and Resting Stands	< or = 0.25 mi	> 0.25-0.5 mi	0.5-1 mi
5. Denning, Resting, Winter Habitat Canopy Closure	> 70%	50-70%	30-49%
6. Forest Canopy Height	> or = 49 ft	33-48 ft	16-32 ft
7. Minimum Size of Isolated Habitat Patches	> or = 37 acres	> or = 37 acres	< 37 acres

8. Distance of Isolated Habitat Patches to Nearest Habitat Patches	< 100 ft	100-199 ft	200-300 ft
9. Core Habitat Area Size	12 - 19 square miles or greater Minimum of 7,680 ac	12 - 19 square miles or greater Minimum of 7,680 ac	> 19 square miles*** Minimum of 12,160 ac
10. Core Habitat Area Stand Structure	> 75% (> 5,760 ac) should be comprised of optimal to suitable marten habitat specified above under forage and cover requirements > 4,176 ac required for foraging > 1,584 ac required for cover	> 75% (> 5,760 ac) should be comprised of at least suitable marten habitat specified above under forage and cover requirements > 4,176 ac required for foraging > 1,584 ac required for cover	> 75% (> 9,120 ac) should be comprised of suitable to marginal marten habitat specified above under forage and cover requirements > 6,612 ac required for foraging > 2,508 ac required for cover
11. Habitat Spacing Distance Between Core Habitat Areas**	< 0.6 mi	< 0.6 mi	0.6 - 1.2 mi
12. Travel Corridor Width	> 300 ft within mature stands > 600 ft if corridor is adjacent to openings or areas of no canopy	150-299 ft within mature stands 300-599 ft if corridor is adjacent to openings or areas of no canopy	100-149 ft within mature stands 200-299 ft if corridor is adjacent to openings or areas of no canopy
13. Travel Corridor Canopy Closure	> 50-70%	> 50-70%	30-50%
14. Size of Openings	< 0.5 ac each	> = 0.5-2 ac each	> 2-3 ac each
15. Coarse Woody Debris Densities	> 20 per ac that are > or = 15 inches dbh and at least 15 ft in length Intermediate decay classes preferred	10-19 per ac that are > or = 15 inches dbh and at least 15 ft in length Intermediate decay classes preferred	5-9 per ac that are > or = 15 inches dbh and at least 15 ft in length Intermediate decay classes preferred
16. Snag Densities	at least 6 per acre, at least 2 with a minimum dbh of 12 inches	at least 6 per acre, at least 2 with a minimum dbh of 12 inches	< 6 per acre, with 2 or less with a minimum dbh of 12 inches
17. Road Densities	< 1 mi per square mi	1-2 mi per square mi	> 2-3 mi per square mi

^ Habitat parameters for marten are based on literature reviews documented in the 2005 American marten MIS assessment and distribution of habitat and marten detections on the Forest.

* Habitat structural stages 1 and 2 need to conform to minimum sizes of openings specified under habitat parameter # 14

** Core habitat areas should be connected by riparian reserves and other unharvested forests. Connectivity between core habitat areas does not need to be continuous, but gap distance should conform to minimum distances specified under habitat parameter # 11.

*** Core habitat areas comprised primarily of secondary habitat characteristics will need to be larger to provide the habitat requirements necessary to support martens.