

medium population in both the Kiowa and Bijou HUCs, no confirmation of the Preble's existed at the time of proposed critical habitat designation for either of these subdrainages. Based on lack of known Preble's occurrence, no critical habitat was proposed within either of these areas. Two 2002 trapping efforts on the Kiowa Creek resulted in captures of jumping mice identified in the field as the Preble's, with one specimen confirmed as the Preble's through morphological examination. After review of habitat at the capture sites in relation to that found elsewhere on Kiowa Creek and its tributaries, we have elected not to designate reaches adjacent to the capture sites as critical habitat. We encourage further trapping to better understand the extent and distribution of occupied habitat in the Kiowa Creek subdrainage.

Arkansas River Drainage

Within the Fountain Creek HUC our conservation strategy calls for a large recovery population along Monument Creek and its tributaries including lands within the Air Force Academy. While the Academy property would support an essential part of this recovery population, we have determined that the Academy does not meet the definition of critical habitat under 3(5)(A) and merits exclusion under 4(b)(2) of the Act (see Relationship with Department of Defense Lands).

Our conservation strategy calls for either three small recovery populations or one medium recovery population to meet recovery criteria in both the Chico and the Big Sandy HUCs. The Preble's has been documented at a single location within the Chico HUC, in apparently marginal habitat along an unnamed tributary of Black Squirrel Creek. Subsequent trapping could not relocate the Preble's at the site. Limited trapping of other sites has produced no captures of the Preble's and the extent of appropriate habitat components within the subdrainage appears limited. We have not designated critical habitat in the Chico HUC based on our uncertainty that the Preble's exists within any given reach in this area. In the Big Sandy HUC limited trapping efforts targeted at the Preble's have not confirmed Preble's presence. Sites supporting primary constituent elements required by the Preble's appear few. For these reasons we have not designated critical habitat in the Big Sandy HUC.

Delineation of Critical Habitat Boundaries

Critical habitat for the Preble's was delineated based on the interpretation of

multiple sources used during the preparation of this rule. We used GIS-based mapping using ARCInfo that incorporated streams, stream order (Stahler method), roads, and cities from USGS maps, floodplains from Federal Emergency Management Agency maps, and surface management maps depicting property ownership from the Bureau of Land Management (primarily from the early 1990s). Lands designated as critical habitat were divided into specific mapping units, *i.e.*, critical habitat units, often corresponding to individual HUCs. For the purposes of this rule these units have been described primarily by latitude and longitude, and by section, township, and range, to mark the upstream and the downstream extent of designated critical habitat along rivers and streams.

We were presented with a decision in designating outward extent of critical habitat into uplands. The Service has typically described Preble's habitat as extending outward 300 ft (90 m) from the 100-year floodplain of rivers and streams (Service 1998). The Working Draft defines Preble's habitat as the 100-year floodplain plus 100 m (330 ft) outward on both sides, but allows for alternative delineations that provide for all the needs of the Preble's and include the alluvial floodplain, transition slopes, and pertinent uplands.

In order to allow normal behavior and to assure that the Preble's and the primary constituent elements on which it depends are protected from disturbance, the outward extent of critical habitat should at least approximate the outward distances described above in relation to the 100-year floodplain. Unfortunately, floodplains have not been mapped for many streams within Preble's range and electronic layers depicting 100-year floodplains needed to facilitate GIS mapping are not available for several counties within Preble's range. Where floodplain mapping is available, we have found that it may include local inaccuracies.

While alternative delineation of critical habitat based on geomorphology and existing vegetation could accurately portray the presence and extent of required habitat components, we lacked an explicit data layer that could support such a delineation over the species range. Creation of such a layer through interpretation of aerial photographs and site visits was not possible given the time and resources available for this designation.

We also considered determining the outward extent of critical habitat based on a distance outward from features such as the stream edge, associated

wetlands, or riparian areas. We judged wetlands an inconsistent indicator of habitat extent and found no consistent source of riparian mapping available across the range of the Preble's. We also considered using an outward extent of critical habitat established by a vertical distance above the elevation of the river or stream to approximate the floodplain and adjacent uplands likely to be used by the Preble's.

For this designation we ultimately settled on delineating the upland extent of critical habitat boundaries as a set distance outward from the river or stream edge (as defined by the ordinary high water mark) varying with the size (order) of a river or stream. We compared known floodplain widths to stream order over a series of sites and approximated average floodplain width for various orders of streams. To that average we added an additional 100 m (330 ft) outward on each side. Based on this calculation, for streams of order 1 and 2 (the smallest streams) we have delineated critical habitat as 110 m (360 ft) outward from the stream edge, for streams of order 3 and 4 we have delineated critical habitat as 120 m (400 ft) outward from the stream edge, and for stream orders 5 and above (the largest streams and rivers) we have delineated critical habitat as 140 m (460 ft) outward from the stream edge. While designated critical habitat will not include all areas used by individual Preble's mice over time, we believe that these corridors of critical habitat ranging from 220 m (720 ft) to 280 m (920 ft) in width (plus the river or stream width) will support the full range of primary constituent elements essential for persistence of Preble's populations, and should help protect the Preble's and their habitats from secondary impacts of nearby disturbance. We received a number of public comments regarding the appropriate outward limits of critical habitat and means of establishing them. However, most comments suggested either standardizing a single outward distance for all rivers and streams, site specific mapping of critical habitat for each reach designated, or relying on alternative mapping created for HCPs as a surrogate for site-specific mapping of critical habitat. None of these alternatives were determined to be both feasible given the time and resources available to us, and a more accurate alternative to the methodology employed in the proposed rule.

In selecting areas of designated critical habitat, we made an effort to avoid developed areas that are not likely to contribute to Preble's conservation. However, the scale of mapping that we