Management Indicator Species for the New Plan

Success in maintaining and restoring composition, structure, and function of forest ecosystems within desired ranges of variability is reflected by both changes in forest condition and by levels of management and other effects that are shaping these communities. Monitoring will include tracking the abundance of major forest cover/community types and levels of management activities conducted to maintain and restore desired conditions. Population trends and habitats of Management Indicator Species will be monitored to help indicate effects of national forest management within selected communities.

Indicator: Field Sparrow (Spizella pusilla)

From USGS Patuxent Bird ID InfoCenter

Reasons for Selection: Trends in presence and abundance of these species in areas restored to woodlands, savannas, and grasslands would be used to help indicate effectiveness of management at establishing desired conditions in these restoration areas.

Ecology & Life History

Basic Description: A small bird (sparrow).

Reproduction Comments: Clutch size usually three to five. Two or sometimes three broods per year. Incubation 10-17 days (average 11.6), by female. Young tended by both parents, leave nest at 7-8 days, independent at 26-34 days.

Ecology Comments

Territory sizes range from 0.3 to 2.4 hectares (Walkinshaw 1945, 1968; Crooks 1948; Best 1977; Evans 1978; Laubach 1984). In Illinois, territories that included sub-optimal habitats, such as grasslands devoid of woody vegetation and

woodlands, were found to be larger in area than those habitats that included only optimal habitat, such as shrubby grassland (Best 1977).

Non-Migrant: Y

Locally Migrant: Y

Long Distance Migrant: Y

Migration Comments: Northernmost breeding populations are migratory, move south for winter; migrate northward in small flocks in March-April (Terres 1980). Partially migratory in North Carolina; some individuals migrate in some years, all migrate in some years.

Terrestrial Habitat(s): OLD FIELD, SHRUBLAND/CHAPARRAL, WOODLAND – HARDWOOD.

Habitat Comments: Old fields, brushy hillsides, overgrown pastures, thorn scrub, deciduous forest edge, sparse second growth, fencerows (AOU 1983). Early nests on or near ground in weed clumps or grass tufts, later nests may be higher in small thick shrubs as leaves grow, to about 30 centimeters above ground (Harrison 1978). Suitable habitat includes old fields, sage (ARTEMISIA) flats, weedy pastures, untilled and idle cropland, Conservation Reserve Program fields, grassed waterways, hedgerows, shelterbelts, orchards, woodland edges, brushy woodlands, wooded draws, pine (PINUS) plantations, attenuated gallery and gallery forest, and reclaimed strip mines (Gabrielson 1914; Ely 1957; Graber and Graber 1963; Walkinshaw 1968; Stewart 1975; Best 1977, 1978; Evans 1978; Johnsgard 1980; Stauffer and Best 1980; Whitmore 1980; Best et al. 1981, 1997; Faanes 1981, 1983; Buech 1982; Hopkins 1983; Sousa 1983; Dinsmore et al. 1984; Kahl et al. 1985; Basore et al. 1986; Sample 1989; Bryan and Best 1991; Herkert 1991a; Cable et al. 1992; Zimmerman 1993; Carey et al. 1994; Vickery et al. 1994; Faanes and Lingle 1995). Woody vegetation and dense grass appear to be critical components for habitat suitability (Johnston 1947, Kupsky 1970, Lanyon 1981, Sousa 1983, Laubach 1984, Herkert 1991a). Optimal habitat was described as areas greater than 2 hectares containing dense, moderately tall grass, low to moderate shrub density with 50-75 percent of shrubs less than 1.5 meters tall, and shrub cover between 15-35 percent. Areas where most shrubs were less than 1.5 meters in height were considered too sparse in providing adequate numbers of perch sites, whereas areas where most shrubs were taller than 1.5 meters were considered too sparse in providing adequate numbers of possible nest sites. Areas with more than 75 percent shrub cover were too dense to be suitable breeding habitat (Sousa 1983).

The key to determining suitability of an area for nesting in Illinois was the availability of shrubs, trees, or other substrates that could be used as song perches; sparrows stayed within or near the forest edge, not venturing deeper

than a few meters into the forest, nor farther than 12-15 meters into surrounding fields (Johnston 1947). In Illinois, preferred shrub-grassland, where shrubs and trees were less than 8 meters tall, over adjacent grassland or woodland edge; shrub-grassland offered an assemblage of grasses, forbs, trees, and shrubs to accommodate temporal shifts in the nesting and foraging preferences (Best 1974a, 1977). All available shrub-grassland habitat was encompassed within territories, whereas not all grassland or woodland edge habitat was encompassed within territories. Within riparian habitats ranging from hayfields to closed canopy woodlands in Iowa, density was positively correlated to species richness of shrubs; 67 percent of nine nests were built in shrubs, 22 percent in evergreen trees, and 11 percent in forbs (Stauffer and Best 1980, Best et al. 1981). Also in Iowa, preferred grassy areas with shrubs or low trees (Laubach 1984). In Wisconsin, density was positively correlated with percent woody cover and total number of dead stems (Sample 1989). In North Dakota, were attracted to wooded draws with a high shrub density (Faanes 1983). In Missouri, occupied grasslands and idle areas were characterized by low to intermediate canopy height (2-8 meters, never more than 8 meters), few woody stems less than 2.5 centimeters diameter at breast height (dbh) (approximately 350-700 per hectare), and moderate numbers of woody stems more than 2.5 centimeters dbh (approximately 25-50 per hectare) (Kahl et al. 1985). Moderate amounts of dense grass also are important (Sousa 1983). Optimal grass density is 50-90 percent canopy cover, which provides adequate nesting cover, abundant food sources, and ease of movement through vegetation (Sousa 1983). Optimal height of herbaceous vegetation during May and June is 16-32 centimeters; vegetation with an average height more than 40 centimeters provides suboptimal habitat and vegetation with an average height less than 5 centimeters provides inadequate concealment (Sousa 1983). In Wisconsin, preferred habitats that were relatively undisturbed, that were uncultivated, and that contained an average of 75 percent herbaceous cover (Sample 1989). In an Ohio oldfield, foraged in grasses in higher frequencies than expected based on their availability (Kupsky 1970). In Michigan, preferred to nest in residual stands of Indiangrass (SORGHASTRUM NUTANS) over residual stands of big bluestem (ANDROPOGON GERARDII) because most of the big bluestem was prostrate whereas most of the Indiangrass was upright (Best 1974a).

Nests on or near the ground in weed clumps, grass tufts, or litter usually at or near the base of woody vegetation early in the breeding season (May-June), but nest in small shrubs and saplings later in the breeding season as vegetative cover increases in height (Walkinshaw 1936, 1945; Crooks 1948; Crooks and Hendrickson 1953; Nolan 1963; Best 1974a, 1978; Evans 1978; Sousa 1983; Carey et al. 1994). Nest height ranges from 0 to 4.4 meters above ground (Walkinshaw 1936, 1945; Crooks 1948; George 1952; Ely 1957; Nolan 1963; Kupsky 1970; Best 1978; Evans 1978; Lanyon 1981; Buech 1982; Laubach 1984; Carey et al. 1994; D. E. Burhans, pers. comm.), but height is dependent upon time of season and substrate type. Based on the observations of one male that returned to the same Michigan site for 6 years, May nests were on the

ground, and June and July nests averaged 26.0 centimeters and 40.5 centimeters above the ground, respectively (Walkinshaw 1945). In Iowa, six of 11 nests built in May were above ground with an average height of 16 centimeters; by June, six of 10 nests were above ground with an average height of 40 centimeters, and by July, all of the 11 nests found were above ground with an average of 51 centimeters (Crooks 1948). May nest in woody vegetation after foliage becomes dense enough to conceal nests (Crooks 1948, Nolan 1963). Best (1978), however, found preference for use of residual grasses as a nesting substrate over live grasses or woody vegetation that had leafed out. As long as isolated clumps of residual grass remained exposed from new growth, nested in residual grass; once residual grass was covered by live grasses, nested in woody vegetation.

Other important habitat features are vegetation patchiness, species richness of herbaceous and woody vegetation, and slope (Stauffer and Best 1980, Best et al.1981, Sample 1989, Vickery et al. 1994). In riparian habitats in Iowa, densities were positively correlated to horizontal patchiness of shrubs, vertical patchiness of trees, slope, and species richness of grass-like vegetation, shrubs, and evergreen trees; densities were negatively correlated to tree density and tree size, species richness of vines, and vertical stratification of vegetation (Stauffer and Best 1980, Best et al. 1981). In Maine grassland barrens, abundance was positively correlated to habitat patchiness, litter, shrub cover, and short grass, and negatively correlated to bare ground (Vickery 1993, Vickery et al. 1994). Density in Wisconsin was positively correlated to plant species richness (Sample 1989). In Iowa, all 15 breeding territories in an idle pasture were located on semi-wooded hillsides or lowlands (Crooks and Hendrickson 1953).

Food Habits: GRANIVORE, INVERTIVORE

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