

2003 Management Indicator Species Report for the American Kestrel (*Falco sparverius*) and the Eastern Screech-owl (*Otus asio*)

A review of the Management Indicator Species (MIS) data (USDA Forest Service 2002) indicated that there was a lack of population data for two species, the American Kestrel (*Falco sparverius*) and the eastern Screech-owl (*Otus asio*). It was apparent that the current monitoring protocols for these 2 species were not adequate to determine trends in population frequency. It was suggested that these species were not ideal candidates for MIS monitoring and that they should be replaced with species more appropriate to existing survey protocols and equivalent ecological indicators of their respective habitat types. As a result, in the spring of 2002, the Homochitto RD began a process to establish new sampling protocols for these species based on an extensive review of current sampling techniques and species specific literature (USDA Forest Service 2002a). In 2003 the Homochitto performed trials on improving the kestrel sampling technique by using call back surveys in addition to the transect protocol, however this method proved ineffective to sample kestrels. This report contains a summary of data collected in 2002 and 2003.

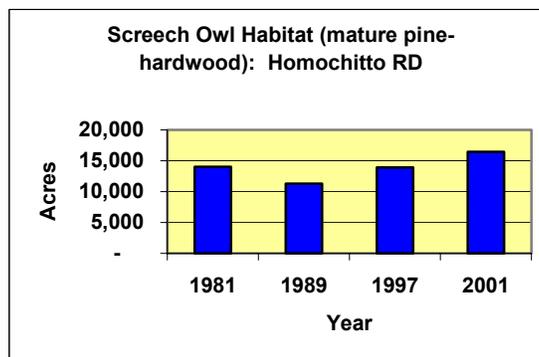
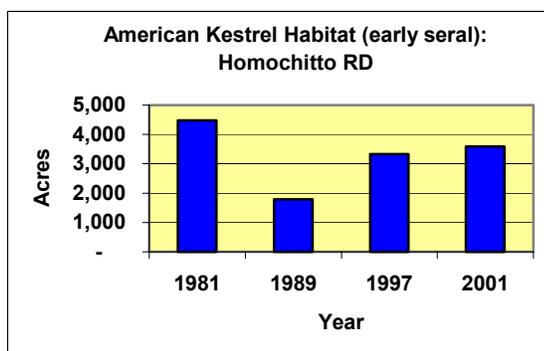
Monitoring Methods

The Forest Plan specifies that habitat trends will be monitored by tracking current stand inventory data. Population trends will be monitored by using bird census data according to the established Sampling Protocols (USDA Forest Service 2002a).

In this report, abundance of early age mixed pine hardwood habitat type across the entire national forest unit is derived from CISC data and graphed for points in time since the Forest Plan baseline (1981). In addition, region-wide population trends are calculated from North American Breeding Bird Survey databases. Population trends for the Homochitto RD are calculated from National Forests in Mississippi Bird Point Counts and 2002 and 2003 survey data listed in this report.

Habitat Trend

Habitat trends have indicated increasing acreage for mature pine-hardwood forest type (Figure 1) and decreasing acreage for early seral (0-10 years) pine-hardwood forest type on the Homochitto RD.



Detailed point habitat analysis will be performed when the CISC database is available with current stand information. Current available CISC data do not correspond with actual field conditions.

Population Trend

American Kestrel

The protocols were implemented during the summer 2002. American Kestrel data collected during survey periods in 2002 and 2003 combined yielded an average frequency of 14.6%, abundance of 0.18, and local abundance of 0.79 (Figure 2a-f) for 5 routes on the Homochitto RD. The USGS Breeding Bird Survey (BBS) has reported abundance of kestrels in MS as 0.08 (Sauer, *et al.* 2002, Figure 3) and the National Forests in MS Bird Point Counts (MSBPC) report a frequency of 0.22%, abundance of 0.00 and local abundance of 0.30. Of greatest interest is that zero birds have been detected on the Buffalo Lookout Transect. However, four kestrels have been observed off point during surveys on the Buffalo Lookout Transect. We are currently attempting to integrate the kestrel data into the FAUNA program to incorporate off point data into summary reports.

Figure 2 (a – f). Frequency and Abundance Data for American Kestrels by Transect and Survey Period.

Figure 2a. Kestrel Observations on Clear Springs Transect							
Point #	2002				2003		
	Survey 1	Survey 2	Survey 3	Total	Survey 1	Survey 2	Total
1	0	1	2	3	0	1	1
2	0	0	0	0	0	0	0
3	0	0	0	0	0	1	1
4	0	1	0	1	0	0	0
5	0	1	1	2	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	1	1	0	0	0
Total per Survey Period	0	3	4	7	0	2	2
# points with Kestrels	0	3	3	4	0	2	2
Abundance	0	0.3333333	0.4444444	0.259259259	0	0.222222222	0.111111111
Local Abundance	0	1	1.3333333	0.777777778	0	1	0.5
Frequency	0	0.3333333	0.3333333	0.222222222	0	0.222222222	0.111111111

Figure 2b. Kestrel Observations on Sandy Creek Transect							
Point #	2002				2003		
	Survey 1	Survey 2	Survey 3	Total	Survey 1	Survey 2	Total
1	1	0	0	1	0	0	0
2	0	0	0	0	1	0	1
3	0	0	0	0	1	0	1
4	0	0	0	0	0	0	0

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5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
Total per Survey Period	1	0	0	1	2	0	2
# points with Kestrels	1	0	0	1	2	0	2
Abundance	0.125	0	0	Average 0.041666667	0.25	0	Average 0.125
Local Abundance	1	0	0	0.333333333	1	0	0.5
Frequency	0.125	0	0	0.041666667	0.25	0	0.125

Figure 2c. Kestrel Observations on Caston Creek Transect							
Point #	2002				2003		
	Survey 1	Survey 2	Survey 3	Total	Survey 1	Survey 2	Total
1	1	1	1	3	0	1	1
2	0	0	0	0	0	0	0
3	0	0	0	0	0	1	1
4	0	1	0	1	1	0	1
5	0	0	0	0	0	1	1
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	1	0	1
Total per Survey Period	1	2	1	4	2	3	5
# points with Kestrels	1	2	1	2	2	3	5
Abundance	0.11111111	0.22222222	0.11111111	Average 0.148148148	0.222222222	0.333333333	Average 0.277777778
Local Abundance	1	1	1	1	1	1	1
Frequency	0.11111111	0.22222222	0.11111111	0.148148148	0.222222222	0.333333333	0.277777778

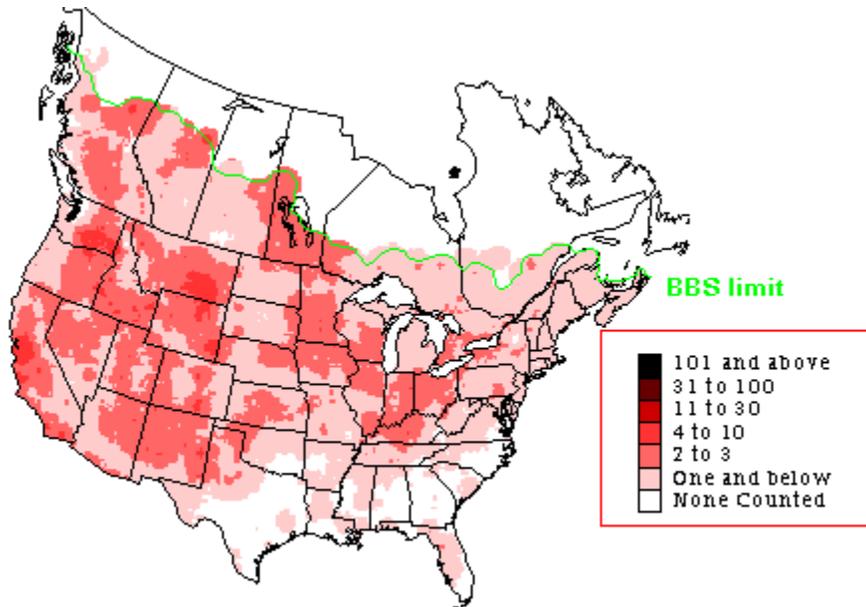
Figure 2d. Kestrel Observations on Buffalo Lookout Transect							
Point #	2002				2003		
	Survey 1	Survey 2	Survey 3	Total	Survey 1	Survey 2	Total
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0

Total per Survey Period	0	0	0	0	0	0	0
# points with Kestrels	0	0	0	0	0	0	0
Abundance	0	0	0	Average 0	0	0	Average 0
Local Abundance	0	0	0	0	0	0	0
Frequency	0	0	0	0	0	0	0

Figure 2e. Kestrel Observations on North End Transect							
Point #	2002				2003		
	Survey 1	Survey 2	Survey 3	Total	Survey 1	Survey 2	Total
1	1	1	1	3	0	0	0
2	2	0	0	2	3	0	3
3	2	1	0	3	0	1	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	1	2	3	0	0	0
7	1	0	1	2	0	0	0
8	0	0	0	0	0	3	0
9	0	0	0	0	0	0	0
Total per Survey Period	6	3	4	13	3	4	3
# points with Kestrels	4	3	3	5	1	2	1
Abundance	0.6666667	0.3333333	0.4444444	Average 0.481481481	0.333333333	0.444444444	Average 0.388888889
Local Abundance	1.5	1	1.3333333	1.277777778	3	2	2.5
Frequency	0.4444444	0.3333333	0.3333333	0.37037037	0.111111111	0.222222222	0.166666667

Figure 2f. Summary of Kestrel Observations on the Homochitto RD (2002 – 2003 data combined)						
	Clear Springs	Sandy Creek	Caston Creek	Buffalo Lookout	North End	Average
Abundance	0.185185	0.083333	0.212963	0	0.435185	0.183333333
Local Abundance	0.638889	0.416667	1	0	1.888889	0.788888889
Frequency	0.166667	0.083333	0.212963	0	0.268519	0.146296296

Figure 3. Abundance of American Kestrels in the US according to the BBS 1982 – 1996 data (Sauer 2002).



Eastern Screech-owl

The surveys of 50 random points on 5 transects for eastern-screech owls were conducted in August 2002, April 2003 and August 2003 and established a frequency of 82.0%, abundance of 1.63 and local abundance of 1.99 (Figure 4a - b). The BBS reported abundance of Eastern screech-owls as 0.02 birds per route (Sauer 2002, Figure 5). Abundance, local abundance and frequency were not examined by the MSBPC due to lack of data and the ineffectiveness of the survey method (only 2 owls were recorded over 5 years on 2,095 points).

A preliminary analysis of habitat types and owl point locations suggests that the owl points are located in a variety of different habitat types, with the majority being in loblolly pine, mature sawtimber stands. A review of the raw survey data revealed that only one point (SC-8) out of fifty has never had an owl recorded during a survey. This point was originally located in an area with a high level of noise interference from an existing oil well and was moved for survey 2 and 3. It is the only point located on an undrained flatwood and noise interference still exists due to the high number of Anurans that breed at this site. We will continue to survey this point, although our expectations are low due to the habitat type and interference.

Figure 4a. Eastern Screech-owl Observations for 2002 and 2003, Homochitto Ranger District, National Forests in Mississippi

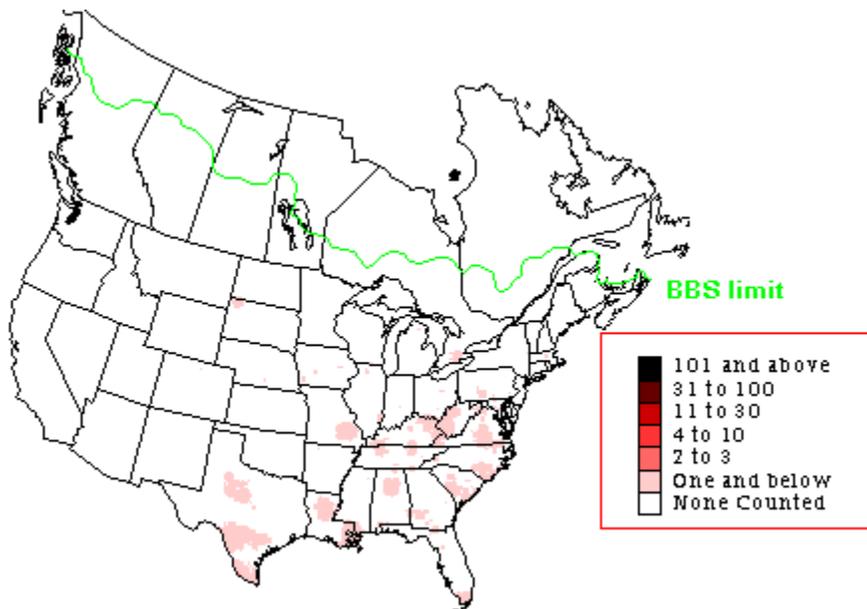
	Clear Springs			Caston Creek			Buffalo Lookout		
	2002	2003 Survey 1	2003 Survey 2	2002	2003 Survey 1	2003 Survey 2	2002	2003 Survey 1	2003 Survey 2
Total Number of Points	10	10	10	10	10	10	10	10	10
Total Number of Points with Owls	8	7	10	9	10	10	7	10	9
Total Number of Owls Observed	15	12	24	22	25	26	14	16	20
Abundance	1.5	1.2	2.4	2.2	2.5	2.6	1.4	1.6	2
Local Abundance	1.875	1.71428571	2.4	2.44444444	2.5	2.6	2	1.6	2.22222222
Frequency	0.8	0.7	1	0.9	1	1	0.7	1	0.9

Figure 4a. Eastern Screech-owl Observations for 2002 and 2003, Homochitto Ranger District, National Forests in Mississippi (continued)

	Sandy Creek			North End			Total (All Transects)		
	2002	2003 Survey 1	2003 Survey 2	2002	2003 Survey 1	2003 Survey 2	2002	2003 Survey 1	2003 Survey 2
Total Number of Points	10	10	10	10	10	10	50	50	50
Total Number of Points with Owls	6	7	6	6	10	8	36	44	43
Total Number of Owls Observed	7	10	7	13	17	17	71	80	94
Abundance	0.7	1	0.7	1.3	1.7	1.7	1.42	1.6	1.88
Local Abundance	1.166667	1.42857143	1.16666667	2.16666667	1.7	2.125	1.97222	1.8181818	2.18604651
Frequency	0.6	0.7	0.6	0.6	1	0.8	0.72	0.88	0.86

Figure 4b. Eastern Screech-owl Observations on the Homochitto RD (2002 – 2003 data combined).				
	2002	2003 Survey 1	2003 Survey 2	Average
Abundance	1.42	1.6	1.88	1.633333333
Local Abundance	1.97222	1.8181818	2.18604651	1.992150184
Frequency	0.72	0.88	0.86	0.82

Figure 5. Abundance of Eastern Screech-owls in the US according to the BBS 1982 – 1996 data (Sauer 2002).



Evaluation

Data suggest that the protocols are very effective for sampling these 2 species and that our populations are greater than previously recorded for this area. This difference is most likely directly attributable to the improved quality of the sampling technique. These data represent a limited sampling period and will need to be combined with additional years data to determine significant population trends. Data for both species in this report indicate that their management does not preclude the use of vegetative management as listed in the environmental assessments for the Homochitto RD.

Future owl surveys will be conducted once per year between June and mid-August and kestrel surveys will be conducted twice per year during the spring and summer (USDA Forest Service 2003).

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