# Autumn Raptor Migration 2009 at Big Bald Banding Station, Cherokee National Forest, Unicoi County, Tennessee.

## 2009 Annual Report to United States Forest Service, Cherokee National Forest

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## Introduction

Big Bald Banding Station (BBBS) is a migratory passerine monitoring station located high on Little Bald Mountain at 5,328 feet above sea level (1624 m), inside the Appalachian Trail corridor in Cherokee National Forest, Unicoi County, Tennessee. Formal data regarding migrating birds using the Big Bald Mountain environment have been collected at generally the same banding site since 1978. BBBS bands an average of 1,943 passerines every autumn (2004-2009) of approximately 50 species.

A limited raptor trapping station was begun in 2003 to better sample the migrating birds of prey observed on the ridge in conjunction with the peak of passerine migration. The raptor trap station was fully staffed in 2004 and has subsequently operated each autumn, annually luring and banding approximately 100 birds of prey of eight different species. The 2009 season is the sixth autumn that systematic raptor trapping has been conducted on Little Bald Mountain, Tennessee. The Big Bald Hawk Watch also commenced in 2003, documenting the passage of 15 different species of raptors annually. In the past six autumns, Big Bald Hawk Watch has counted a total of 14,388 birds of prey, with an average seasonal total of 2,055 migrating raptors.

## Methods

### Observation

Daily raptor migration counts are conducted near the summit of Big Bald Mountain, from approximately 1000 AM to 1700 PM from the first week in September until early November. Weather conditions are an important factor, often limiting the amount of observation hours and days per month. Migration counts are conducted only on days of no precipitation and adequate visibility. Weather condition data including temperature, wind direction, wind speed, visibility and cloud cover are recorded several times daily. Migrating raptors are identified to species and recorded by hour and direction of passage by experienced observers using binoculars and spotting scopes. On days when volunteer manpower is limited, migration observations are made from the raptor trap station blind. The raptor trap blind is located on the northern edge of a clearing, near the summit of Little Bald, approximately1 km north of the Big Bald observation site. Daily raptor migration flight count totals are submitted to the Hawk Migration Association of North America via internet. These data are made available on their website for public research and raptor population trend analysis and can been accessed at http://www.hmana.org/.

## Trapping and Banding

BBBS raptor trapping operates from 1000AM until one hour before sunset, from the first week in September to early November, and is limited to days of no precipitation and adequate visibility. Migrating raptors are captured using lure birds and specialized mist nets. Captured birds of prey are fitted with a US Bird Banding Lab metal leg band, measured, assessed for health condition then released unharmed. Birds are processed in compliance with the North American Raptor Banders guide and sanctioned by federal permit from the US Bird Banding Lab through a sub-permit with Mr. Bud Anderson of the Falcon Research Group, Bow, WA. All trapping and processing of raptors is completed by volunteers.

## Results and Discussion

### Raptor Observation (Hawk Watch)

During the three months of September, October and early November 2009, the Big Bald Hawk Watch logged 168 hours of observation on 43 weather permitting days.
Big Bald Mountain is one of the highest altitude sites of eastern US hawk watches. Both rain and fog adversely affected observation potential at Big Bald in 2009. Seven of 29 days in September and 11 of 31 days in October were deemed unsuitable for observation. Observation at Big Bald hawk watch was thwarted by weather on 30% of potential observation days (19 of 63 days) through the migration season.

A total of 16 volunteer observers contributed over 500 man hours of observation effort to gather these data. Primary observers are volunteers with several years of experience conducting hawk watch counts and doing hawk migration observations at Big Bald or other sites around the US. Primary counters at Big Bald in 2009 were Lynn Brandon, Marty Daniels, Cathy Flick, Kathy Gunther, Mark Hopey, G. Rad Mayfield and Aaron Steed. Assistant observers and spotters include volunteers helping to make observations and recording data during high count days. Assistant observers included Dottie Brown, Bobby Desportes, Becky Elkin, Mary Hughes, Mazy Hughes, Chris Kelly, Cleo Mayfield, Tedi McManus, Rebecca Pearson, Runner Pearson and Jim Petranka.

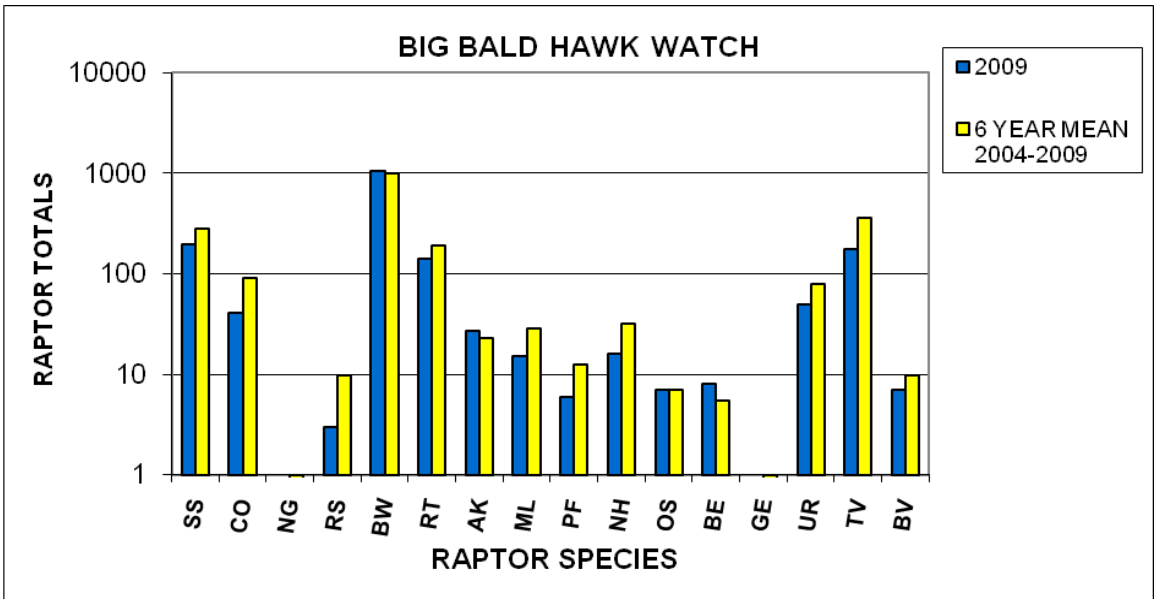
A total of 1744 birds of prey were counted migrating past Big Bald in 2009 (Table 1). Thirteen species of raptors were identified. The most numerous raptor species observed was the Broad-winged Hawk, with 1049 total birds counted in 2009. The second most numerous bird species was the Sharp-shinned Hawk (198), with the majority passing in late September. Turkey Vulture was the third most numerous migrant counted (177). Red-tailed Hawk was the most frequently observed raptor species, being seen on 33 of 43 (76%) observation days. The busiest hawk watch day in 2009 was on September 27th when 364 hawks were observed passing overhead after a cold front moved through the area. Broad-winged Hawks accounted for 85% (311) of all birds observed on that day.

**Table 1. Monthly totals of migrating raptors by species, observed in autumn 2009 at Big Bald Hawk Watch, Cherokee National Forest, Unicoi County, Tennessee.**

| 2009 | SS | CO | NG | RS | BW | RT | AK | ML | PF | NH | OS | BE | GE | UR | TV | BV | TOT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | 110 | 21 | 0 | 3 | 1010 | 50 | 11 | 11 | 5 | 14 | 7 | 7 | 0 | 39 | 85 | 7 | **1380** |
| OCT | 87 | 18 | 0 | 0 | 39 | 76 | 16 | 4 | 1 | 2 | 0 | 1 | 0 | 9 | 59 | 0 | **312** |
| NOV | 1 | 2 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 33 | 0 | **52** |
| TOTAL | **198** | **41** | **0** | **3** | **1049** | **141** | **27** | **15** | **6** | **16** | **7** | **8** | **0** | **49** | **177** | **7** | **1744** |

**SS**=Sharp-shinned Hawk, **CO**=Cooper's Hawk, **NG**=Northern Goshawk, **RS**=Red-shouldered Hawk, **BW**=Broad-winged Hawk, **RT**=Red-tailed Hawk, **AK**=American Kestrel, **ML**=Merlin, **PF**=Peregrine Falcon, **NH**=Northern Harrier, **OS**=Osprey, **BE**=Bald Eagle, **GE**=Golden Eagle, **UR**=Unidentified Raptor, **TV**=Turkey Vulture, **BV**=Black Vulture.

Both Sharp-shinned Hawk and Cooper's Hawk annual totals were the lowest values recorded for the species in the past six years (2004-2009) of observation at Big Bald. Likewise, both Merlin and Peregrine Falcon also recorded the lowest seasonal species counts since full season hawk watch began in 2004. Nine of the 13 species observed at Big Bald in 2009 were strongly below their six-year count mean. American Kestrel, Merlin, Osprey, Bald Eagle and Broad-winged Hawk matched or exceeded their species count six-year mean (Figure 1). Bald Eagle count totals (8) for 2009 were the highest seasonal count total for that species (2004-2009) ever recorded at Big Bald Hawk Watch.




**SS**=Sharp-shinned Hawk, **CO**=Cooper's Hawk, **NG**=Northern Goshawk, **RS**=Red-shouldered Hawk, **BW**=Broad-winged Hawk, **RT**=Red-tailed Hawk, **AK**=American Kestrel, **ML**=Merlin, **PF**=Peregrine Falcon, **NH**=Northern Harrier, **OS**=Osprey, **BE**=Bald Eagle, **GE**=Golden Eagle, **UR**=Unidentified Raptor, **TV**=Turkey Vulture, **BV**=Black Vulture.

**Figure 1. Total Raptors observed migrating past Big Bald Mountain in autumn, 2009, compared to six-year mean 2004-2009 total migrants charted on a logarithmic scale. Big Bald Hawk Watch, Cherokee National Forest, Tennessee**

## Raptor Trapping

Raptor trapping at Big Bald in 2009 was conducted during 34 trapping days in the months of September, October and early November. A total of 94 raptors were captured during 153 hours of trapping (Table 2). Trapping effort was the lowest hourly total in six years of trapping at Big Bald Banding Station. An unseasonable amount of wet weather in October resulted in fewer days suitable for trapping. Despite the wet weather, the total number of birds trapped was only slightly below the five-year mean of 101 birds (based on mean calculation without 2007 outlier).

**Table 2. Raptor captures and trapping effort at Big Bald Banding Station, Cherokee National Forest, Unicoi County, Tennessee. 2008.**

| Year | Hours | Trap days | Total birds | Birds/hour | Birds /day |
|---|---|---|---|---|---|
| **2009** | 153 | 34 | 94 | 0.62 | 2.8 |

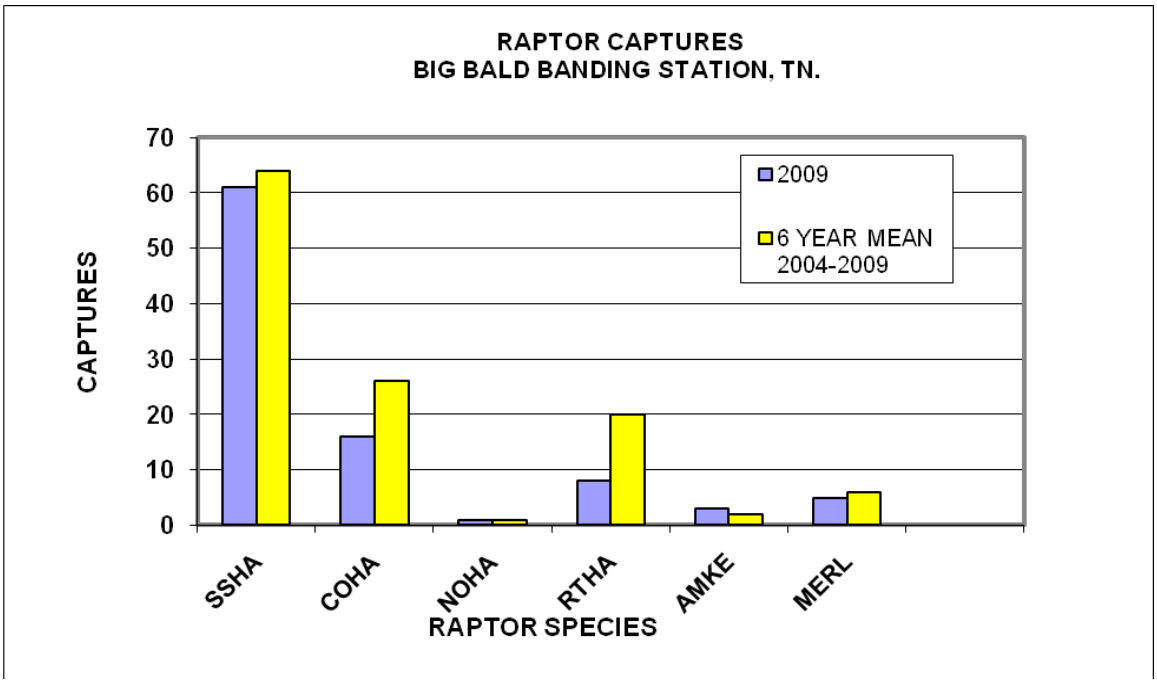
Six species of raptors captured in 2009 are Sharp Shinned Hawk, Cooper's Hawk, Red Tailed Hawk, American Kestrel, Merlin and Northern Harrier (Table 3). Species diversity totals declined from the past two seasons, when seven and eight species were captured respectively. The 2009 season is the first at Big Bald when no Peregrine Falcons were trapped and banded (2004-2009).

**Table 3. Raptor Species Trapped at Big Bald Banding Station, Cherokee National Forest, Unicoi County, Tennessee. Autumn, 2009.**

| Species | 2009 total |
|---|---|
| Sharp-shinned Hawk | 61 |
| Cooper's Hawk | 16 |
| Red-tailed Hawk | 8 |
| American Kestrel | 3 |
| Merlin | 5 |
| Northern Harrier | 1 |

Raptor trap numbers decreased in 2009 and correlated with below-average raptor observation totals for most species. Below-average numbers of Cooper's Hawk, Red-tailed Hawk and Merlin were trapped based on the six year mean of species captures at Big Bald Banding Station from 2004 -2009 (Figure 2). The exception was the second

highest seasonal total of Sharp-shinned Hawk captures (61), compared to the lowest Sharp-shinned Hawk observation numbers (198) ever recorded at Big Bald Hawk Watch.




**SSHA**=Sharp-shinned Hawk, **COHA**=Coopers Hawk, **RTHA**=Red-tailed Hawk, **AMKE**=American Kestrel, **MERL**=Merlin, **NH**=Northern Harrier

**Figure 2. Totals of six raptor species captured in 2009 compared to six-year mean from 2004-2009 at Big Bald Banding Station, Cherokee National Forest, TN.**

## Summary

Big Bald Hawk Watch and the raptor trapping unit of Big Bald Banding Station completed its sixth autumn season of gathering data on migrating and resident birds of prey passing through or using the Big Bald Mountain environment. Volunteer assistance and visitor participation in daily data gathering continued to increase in 2009. Baseline numbers and trends of raptors using Big Bald continue to be established. The total count for the 2009 hawk watch season was below average for migrating raptors due in part to unseasonably wet weather extending into October and limiting the number of suitable observation days. Wet October weather also limited the raptor trapping effort and contributed to species trap totals that were below the six-year mean for all species, with the exception of American Kestrel.

## Acknowledgments

Raptor trapping and hawk watch at Big Bald are supported by generous donations from private individuals to Southern Appalachian Raptor Research, a non-profit 501(c)(3). Many thanks are extended to all the volunteers that keep the station operating safely. The Big Bald Banding Station operates with the cooperation, permission and support of the US Forest Service, Cherokee National Forest, Pisgah National Forest, Tennessee Wildlife Resources Agency, North Carolina

Wildlife Resources Commission, the US Bird Banding Lab, the Appalachian Trail Conservancy, and the Tennessee Ornithological Society.