

**Northern Saw-whet Owl Monitoring at Big Bald Mountain,
Cherokee National Forest, Unicoi County, Tennessee and
Pisgah National Forest, Yancey County, North Carolina**

Report to the Tennessee Ornithological Society, 2010-2011

*Southern Appalachian Raptor Research
PO Box 305, Mars Hill, NC 28754
www.bigbaldbanding.org*



Introduction

This report for the period January 2010 – September 2011, includes the sixth autumn that systematic Northern Saw-whet Owl (*Aegolius acadicus*) trapping has been conducted at Big Bald Banding Station (BBBS). Northern Saw-whet Owl (NSWO) has been documented at Big Bald through aural surveys since 1995 and by incidental diurnal capture in passerine mist nets since the autumn of 2003. Data gathered from trapping and banding at BBBS in 2005 prompted the Cherokee National Forest to install owl nest boxes on the northern flanks of Big Bald Mountain in 2006. In 2010, NSWO monitoring effort expanded to include playback surveys during spring and summer, nocturnal trapping samples during summer and autumn, and the application of radio telemetry for tracking NSWO using the Big Bald Mountain habitat.

BBBS, operated by volunteers from Southern Appalachian Raptor Research (SARR), bands approximately 2000 passerines every autumn of some 50 species. A raptor trap station was staffed in 2004 and has operated each autumn season, luring and banding approximately 100 birds of prey of 10 different species. The Big Bald Hawk Watch documents the passage of 15 different species of raptors annually. From 2003-2010, Big Bald Hawk Watch has counted a total of 14,644 birds of prey, averaging 2107 migrating raptors each season.

Location

Big Bald Banding Station (BBBS) is located high on Little Bald Mountain at 5390 feet above sea level (1643 m), inside the Appalachian Trail corridor in Cherokee National Forest, Unicoi County, Tennessee and Pisgah National Forest, Yancey County, North Carolina.

The habitat is an edge ecotone mix of exotic and native grasses surrounded by northern hardwood forest, dominated by American Beech (*Fagus*), Hawthorne (*Crataegus spp.*), Northern Red Oak (*Quercus*) and native shrub thickets.

Monitoring Methods

Trapping of NSWO is conducted during appropriate weather windows from sundown to a variable end time during the night. The BBBS passerine banding station, consisting of 16 mist nets in permanent locations, are most often used as traps for migrating owls. During the summer and late autumn, NSWO trapping was conducted in Big Stamp Gap, located 1 kilometer from BBBS. All trapping is done following protocols set by the US Bird Banding Lab and the North American Banding Council. Captured owls are processed in the established manner for small raptors, with age determined from flight feather observations (Pyle, 1997). Gender is determined using the wing-mass data chart developed by David F. Brinker (Project OwlNet, 2005).

Playback call surveys of the NSWO are broadcast as audio lures using a boom-box with MP3 recordings. NSWO calls are broadcast for 2.5 minutes, after which, surveyors listen for response for another 2.5 minutes. The sequence is repeated two times at each of six listening positions within a 3 km area trail around the Big Bald habitat.

Nest box checks are conducted by climbing a ladder to a position that allows safe observation of the box contents. Nest boxes are secured to a tree approximately 7 meters above the forest floor.

Radio transmitters and a radio receiver were procured in 2010 to monitor NSWO movements and evaluate the extent of Big Bald Mountain habitat use by NSWO.

Results

Trapping

Trapping for NSWOW was attempted on 21 days during the period July 1, 2010 – June 30, 2011, totaling 295 net hours of effort (Table 1). Ten new NSWOW were trapped and banded and three NSWOW were recaptured during this period. The recaptures were all banded during the same reporting period at the Big Bald location.

Table 1. Trapping dates, effort and capture results for Northern Saw-whet Owls from July 1, 2010 – June 30, 2011. Big Bald Banding Station, Cherokee National Forest, Unicoi County, TN and Pisgah National Forest, Yancey County, NC.

MONTH	DATE	OPEN	CLOSE	TRAP HOURS	NET HOURS	NEW	RECAP	RETURN
JUL	23	2200	2300	1.5	3.0	0	0	0
JUL	27	2200	0030	2.5	3.75	0	0	0
JUL	30	2130	2230	1.0	3.0	0	0	0
AUG	7	2130	2245	1.25	1.25	0	0	0
AUG	8	2145	2345	2.0	4.0	0	0	0
AUG	10	2130	2300	1.5	3.0	0	0	0
SEP	14	2100	2330	2.5	25.0	3	0	0
SEP	20	2100	2300	2.0	20.0	2	2	0
OCT	18	2030	2200	1.5	25.0	0	1	0
OCT	22	2100	2300	2.0	36.0	1	0	0
NOV	01	0445	0730	2.75	27.5	1	0	0
NOV	29	1800	2000	2.0	8.0	0	0	0
DEC	02	1800	2200	4.0	16.0	0	0	0
DEC	06	1800	2200	4.0	16.0	0	0	0
APR	24	2200	0030	2.5	5.0	0	0	0
MAY	05	2130	0030	3.0	6.0	0	0	0
MAY	09	2100	2400	3.0	12.0	1	0	0
MAY	28	2115	2315	2.0	10.0	0	0	0
MAY	29	2115	2345	2.5	12.5	0	0	0
MAY	30	2130	0500	8.5	42.5	1	0	0
JUN	07	2230	0030	2.0	8.0	1	0	0

NSWOW Capture Data

Ten NSWOW were trapped during the period July 1, 2010 – June 30, 2011. No NSWOW return captures (owls banded in past years) were trapped during this period. Three of the ten new captures were aged as immature (hatch-year) and seven owls were determined to be adults (after

hatch-year). The 2010-2011 reporting period is the first in six years of trapping at BBBS that adult NSWOW captures outnumber immature NSWOW captures. Of the seven adult owls captured, three are male and four are female. Two immature owls were male and the gender of one immature owl was unknown (Table 2).

Table 2. Descriptive banding measurements of Northern Saw-whet Owls for the period July 1, 2010 – June 30, 2011. Big Bald Banding Station, Cherokee National Forest, Unicoi County, TN and Pisgah National Forest, Yancey County, NC.

YEAR	MONTH	DATE	SPP	AGE	SEX	WT	TAIL	HAL	WING	CUL	STATUS
2010	SEP	14	NSWO	HY	M	77	67	7.8	130	15.1	NEW
2010	SEP	14	NSWO	AHY	M	81	68	8.0	130	12.4	NEW
2010	SEP	14	NSWO	AHY	F	105	71	8.6	139	13.5	NEW
2010	SEP	20	NSWO	AHY	F	98	74	8.6	142	14.4	NEW
2010	SEP	20	NSWO	HY	M	80	67	8.2	130	11.8	NEW
2010	OCT	22	NSWO	HY	U	86	68	8.0	131		NEW
2010	NOV	01	NSWO	AHY	F	101	65	8.9	136	12.8	NEW
2011	MAY	09	NSWO	SY	F	105		9.5	139	11.7	NEW
2011	MAY	30	NSWO	AHY	M	79		9.1	129	13.0	NEW
2011	JUN	07	NSWO	AHY	M	75		7.6	127	10.5	NEW

HY=hatch year, AHY=after hatch year, SY=second year, F=female, M=male, U=undetermined, HAL=halux, CUL=culmen

Telemetry

The small sample of NSWOW trapped during the period July 1, 2010 – June 30, 2011, provided limited opportunity to gather preliminary data on NSWOW movement and territory via radio transmitters. Radio transmitters were deployed on two adult female NSWOW trapped on 01-November, 2010 and 09-May, 2011 (Figure 1). The November NSWOW roosted in a large rhododendron thicket after release, approximately 2 meters off the forest floor and 75 meters from BBBS on the east side of Little Bald Mountain. The next evening she was located with a distant signal, moving to the west. No other signal was detected despite repeated searches. The May NSWOW was tracked after release to a day roost in a rhododendron thicket approximately 2km distant and ~300 meters lower in elevation than the BBBS trapping location. Searches for her location in the following weeks were unsuccessful. A general location to the east of BBBS was determined following a *Southwings* reconnaissance flight on 08-June, 2011. An exact roost location has not been determined at the time of this report. Minimal data on roost and habitat use have been gathered from these encounters, and valuable experience using our telemetry monitoring equipment has been accrued.



Figure 1. Adult female Northern Saw-whet Owl with radio transmitter attached. November 1st, 2010. Big Bald Banding Station, Cherokee National Forest, Unicoi County, TN and Pisgah National Forest, Yancey County, NC.

Owl Nest Boxes

Eighteen nest boxes on the northern flanks of Little Bald, approximately 1 km from the Big Bald Banding Station, were checked five times during the 2010-2011 reporting period NSWOW activity (Table 3). An additional 12 boxes were hung in the Little Bald northern hardwood habitat area in early April and May, 2011. New boxes were constructed and donated by *Mountain Wild*, a local not for profit wildlife organization. New boxes were checked once since their initial placement. No evidence of NSWOW nest box use was detected during the period of July 1, 2010 – June 30, 2011. Evidence of nest box use by NSWOW has been gathered from two boxes (2008 and 2009) since box distribution in 2006.

Table 3. Northern Saw-whet Owl nest box check dates for July 1, 2010 – June 30, 2011. Big Bald Banding Station, Cherokee National Forest, Unicoi County, TN and Pisgah National Forest, Yancey County, NC.

YEAR	MONTH	DATE	NEST BOX CHECK	NUMBER OF BOXES
2010	JUL	22	NO USE	18
2010	AUG	15	NO USE	18
2011	APR	29	NO USE	18
2011	MAY	30	NO USE	28

Audio surveys

Playback surveys were conducted seven times, during the 2010-2011 reporting period. NSWOW were detected by call response two times from February into early May, 2011 (Table 4).

Playback call surveys and trapping conducted in 2010-2011 confirm the presence of NSWOW in the Big Bald habitat for nine months, from late winter until late autumn.

Table 4. Northern Saw-whet Owl Audio Playback survey dates and results for July 1, 2010 – June 30, 2011. Big Bald Banding Station, Cherokee National Forest, Unicoi County, TN and Pisgah National Forest, Yancey County, NC.

YEAR	MONTH	DATE	AUDIO SURVEY	NUMBER OF NSWOW
2010	JUL	22	NO RESPONSE	0
2011	FEB	23	NO RESPONSE	0
2011	MAR	17	NO RESPONSE	0
2011	APR	7	NO RESPONSE	0
2011	APR	18	NO RESPONSE	0
2011	MAY	02	RESPONSE	1
2011	MAY	23	RESPONSE	1

Discussion

The capture of six ‘return’ NSWOW, originally banded at Big Bald in previous years, and then recaptured in 2006, 2008 and 2009 respectively, demonstrates site fidelity (Table 5). Return captures also indicate that adult birds remain on territory during the winter months, or return in late spring to use the northern hardwood forest habitat at Big Bald. The capture of juvenile plumage NSWOW in mid-summer supports the possibility of resident NSWOW nesting in the Big Bald habitat. Probable NSWOW eggs, observed at two boxes in 2008 and 2009 respectively, also supports the possibility of resident NSWOW nesting in the Big Bald northern hardwood forest habitat.

Table 5. Age and Gender of Northern Saw-whet Owl trapped at Big Bald Banding Station, Cherokee National Forest, Unicoi County, TN and Pisgah National Forest, Yancey County, NC.

YEAR	JUV-M	JUV-F	HY-M	HY-F	HY-U	AHY-U	AHY-M	AHY-F	TOTALS NEW	RETURNS
2005			5	2	5				12	
2006			1	1	3			3	8	2
2007			3	11	8		1		23	
2008			4	4	3	1	1	1	14	2
2009			1	4	5	1		1	10	2
2010			2		1		1	3	7	
2011	1	3	1	5	1		2	2	15	1
TOTALS	1	3	16	22	25	2	5	9	89	7

HY=hatch year, AHY=after hatch year, SY=second year, F=female, M=male, U=undetermined, TOTALS NEW=birds banded for the first time, RETURNS= recaptured birds banded in previous seasons or years at BBBS

Efforts and Recommendations for the 2011-2012 season:

- Continue to monitor for adult NSWOW presence or absence during the early nesting season
- Monitor USFS nest boxes regularly for nesting activity through the breeding season
- Trap spring and summer residents and use radio-tracking to determine habitat use and nesting locations
- Complete habitat use parameter measurements
- Continue trapping and banding during the autumn migration season
- Radio track early autumn hatch-year captures to determine dispersal and survivorship
- Measure prey base diversity and density with seasonal small mammal trapping samples
- Develop education materials for the public to raise awareness of the NSWOW habitat

Acknowledgments

Northern Saw-whet Owl trapping and monitoring is supported by generous private donations to Southern Appalachian Raptor Research (SARR), a non-profit 501(c)(3). SARR is especially grateful of financial support for the NSWOW project from the Tennessee Ornithological Society, the Appalachian Trail Conservancy and the North Carolina Wildlife Resources Commission. Thanks to Kathryn Gunther, Lynn Brandon, Tedi McManus, Joe McGuinness, Mark Hopey and other volunteers that help with owl trapping and monitoring. The Big Bald Banding Station operates with the cooperation and permission of the US Forest Service and the US Bird Banding Lab. SARR also receives support from the Tennessee Wildlife Resources Agency.

References

Project OwlNet. <http://www.projectowl.net/org/df.htm>

Pyle, P. 1997. Identification Guide to North American Birds. Part 1. Columbidae to Ploceidae. Slate River Press, Bolinas, CA.