

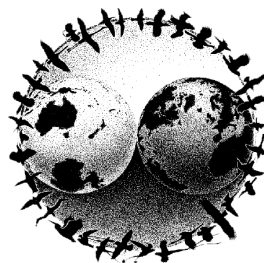
**Modeling Overwintering Survival of Declining Landbirds:
Monitoring Results from the November and December 2005 Pulses
for the
Monitoring Avian Winter Survival (MAWS) Program
on DOD Installations in the Southeastern United States**

**Technical Report
to the Legacy Resources Management Program
for DoD Legacy Project Number 05-186**

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Report on Monitoring Results from the November and December 2005 Pulses

We are pleased to report that as of December 31, 2005, we completed the first half of the field season for the 2005-06 Monitoring Avian Winter Survival (MAWS) project on four military installations in southeastern United States; Fort Chaffee and Camp Joseph Robinson in Arkansas, Fort Bragg in North Carolina, and Fort Benning in Georgia. In particular, we accomplished the following tasks:

1) IBP staff biologist Ron Taylor led the 2005 MAWS intern training program, which was held at Fort Chaffee during October 12-21. IBP seasonal MAWS field biologists Bernadette Emmons and Blanca Roldan assisted with this training program. Training consisted of banding during the morning, re-establishment of the Fort Chaffee stations during the afternoon, and evening lectures. Despite having fairly low capture rates, the interns caught on quickly to net set-up and to the extraction, banding, and processing of birds.

2) Following training, Bernadette and the Fort Bragg (John Siekierski and Corinne Campbell) and Fort Benning (Jeff Beauchamp and Jenny McCabe) interns departed for Fort Bragg to begin re-establishing those stations. Five of the six stations were set up by the whole group between October 25-26, at which time Jeff and Jenny departed for Fort Benning. Bernadette, John, and Corinne began the first pulse of banding at Fort Bragg on October 27. Bernadette departed Fort Bragg on October 28, leaving set up of the final station there to John and Corinne; she met up with Jeff and Jenny on October 28 at Fort Benning where they began setting up and operating stations between October 28-31. Bernadette reported that initial banding efforts by the interns at both locations went very well. While Bernadette was overseeing set-up and initial banding efforts at Forts Bragg and Benning, Ron and Blanca remained in Arkansas with the Camp Robinson (Ted Snyder and Melissa Wolfe) and Fort Chaffee (Rich Aracil and Rachel Rabinovitz) interns. Blanca stayed at Fort Chaffee with Rich and Rachel to continue set-up. They had five stations set up before going to Camp Robinson to help band and set up stations with Ted and Melissa. The three of them returned to Fort Chaffee to begin banding there on November 1. Ron helped Ted and Melissa set up four stations before leaving on October 27. They set up one station with the Fort Chaffee group and one station on their own. All stations were established and the first pulse of banding was completed at the first station on each installation by November 3, at which time Bernadette and Blanca established schedules of overseeing operation of stations on each of their respective two installations. We are extremely pleased that the entire set-up period went very well with no serious problems.

3) We completed the November and December banding pulses on schedule at all six stations on each of the four installations. Table 1a-d presents the number of net-hours completed in November and December for 2005 and each of the two previous MAWS seasons (along with a summary of captures; see below). Total effort was lower in 2005 compared to 2004 at all locations except Fort Bragg (but effort was high compared to 2003). Reasons for reduced effort at three of the four locations in 2005 included the opening of fewer nets early in the season at sites with high capture rates and inexperienced interns, and stretches of inclement weather (particularly the consistently strong winds experienced at Fort Chaffee and Camp Robinson). Despite this reduction in net-hours, our goal of operating nets for at least 60% of the maximum possible net-hours (16 nets operated for 6 hrs on 3 d per period = 1382 net-hours per location for

2 periods) was exceeded at all four locations (Table 1a-d). Overall, we are very pleased with this level of effort.

4) We summarized capture totals for November/December 2005 (Table 1a-d). Overall, capture rates (number of birds per 100 net-hours) were similar to, or slightly higher than, those of the previous MAWS season for the two Arkansas locations, but markedly lower than the previous season at the more southerly and easterly stations on Forts Bragg and Benning (45 and 65% declines in the capture rate of newly-banded birds, respectively). It is possible that declines on Forts Bragg and Benning simply reflect mild early-winter weather conditions in the more northerly parts of the wintering ranges of the species sampled by MAWS. For example, early season captures at Forts Bragg and Benning were also down during the early winter between the two previous MAWS seasons. Yet, late season (Jan-Mar) increases in captures more than made up for low early-season capture totals, such that overall captures increased between years. This late season increase could have been related to intra-seasonal movements of individual birds fleeing the arrival of harsh winter conditions farther North (see discussion in previous annual report). It will be interesting to see how intra-seasonal capture totals change during the remainder of the current MAWS season, and whether they lend any further insight into this hypothesis.

In summary, we are extremely pleased with the progress that we have made during the first two pulses of the 2005-06 MAWS field season. We look forward to completing collection of the remainder of this season's data.

All of us here at IBP are grateful for the funding and opportunity to conduct this important research in conjunction with the Legacy Resources Management Program. We are confident that our results will help the Department of Defense conduct landscape-scale natural resource conservation that will both reverse population declines of wintering birds and enhance its mission of military Readiness and Range Sustainment. Thank you very much.

Species	2003			2004			2005		
	N	U	R	N	U	R	N	U	R
Carolina chickadee	5.3 (65)	9.8 (12)	22.8 (28)	13.6 (33)	1.2 (3)	11.5 (28)	7.0 (12)	4.6 (8)	3.5 (6)
Tufted titmouse	5.9 (72)	4.9 (6)	19.5 (24)	18.1 (44)	0.8 (2)	7.0 (17)	9.9 (17)	4.6 (8)	5.2 (9)
Carolina wren	1.2 (15)	0 (0)	8.1 (10)	2.5 (6)	0.4 (1)	2.9 (7)	9.3 (16)	0.6 (1)	4.1 (7)
Ruby-crowned kinglet	2.6 (32)	8.1 (10)	9.8 (12)	10.3 (25)	2.5 (6)	2.5 (6)	11.6 (20)	0 (0)	9.9 (17)
Hermit thrush	4.4 (54)	1.6 (2)	38.2 (47)	12.7 (31)	0.8 (2)	15.6 (38)	18.6 (32)	1.2 (2)	15.7 (27)
Northern mockingbird	1.4 (17)	0.8(1)	4.1 (5)	7.8 (19)	1.2 (3)	2.5 (6)	2.3 (4)	0 (0)	0.6 (1)
Brown thrasher	2.1 (26)	0 (0)	5.7 (7)	6.6 (16)	2.1 (5)	2.1 (5)	9.3 (16)	0.6 (1)	2.9 (5)
Yellow-rumped warbler	0(0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	12.2 (21)	0 (0)	0.6 (1)
Common yellowthroat	0(0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Chipping sparrow	0(0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Field sparrow	12.8 (157)	1.6 (2)	34.2 (42)	18.9 (46)	0.4 (1)	5.8 (14)	19.7 (34)	2.9 (5)	2.9 (5)
Savannah sparrow	0.5 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Fox sparrow	6.8 (84)	1.6 (2)	17.1 (21)	19.3 (47)	2.1 (5)	2.5 (6)	9.9 (17)	0 (0)	6.4 (11)
Song sparrow	11.7 (144)	11.4 (14)	23.6 (29)	9.5 (23)	0.4 (1)	4.9 (12)	10.4 (18)	0 (0)	5.8 (10)
Swamp sparrow	2.3 (28)	0 (0)	4.9 (6)	2.9 (7)	1.2 (3)	2.5 (6)	0.6 (1)	0 (0)	0.6 (1)
White-throated sparrow	28.0 (344)	5.7 (7)	61.8 (76)	71.9 (175)	4.1 (10)	23.0 (56)	46.4 (80)	4.6 (8)	25.5 (44)
Dark-eyed junco	14.0 (172)	4.9 (6)	22.0 (27)	15.6 (38)	0 (0)	2.9 (7)	43.5 (75)	3.5 (6)	10.4 (18)
Northern cardinal	10.0 (123)	3.3 (4)	19.5 (24)	16.0 (39)	3.7 (9)	6.2 (15)	12.8 (22)	0.6 (1)	5.2 (9)
All captures	130.2 (1600)	87.1 (107)	295.4 (363)	282.8 (688)	29.6 (72)	93.3 (227)	255.2 (440)	24.4 (42)	103.8 (179)
Total net hours	1229			2433			1724		

Table 1a. Comparison of captures in November and December per 1,000 net hours between 2003, 2004 and 2005 at MAWS stations on Fort Chaffee, Arkansas. N= number of newly banded birds, U = number of birds released unbanded, R= number of recaptures. Numbers in parentheses represent total number of captures in each category.

Species	2003			2004			2005		
	N	U	R	N	U	R	N	U	R
Carolina chickadee				8.9 (25)	0.7 (2)	4.3 (12)	11.9 (22)	1.6 (3)	8.7 (16)
Tufted titmouse				59.9 (168)	8.9 (25)	23.2 (65)	16.2 (30)	0 (0)	6.5 (12)
Carolina wren				9.6 (27)	3.2 (9)	5.7 (16)	11.9 (22)	1.1 (2)	6 (11)
Ruby-crowned kinglet				31.8 (89)	3.9 (11)	3.9 (11)	39.9 (74)	3.2 (6)	8.1 (15)
Hermit thrush				19.6 (55)	3.2 (9)	16.4 (46)	21 (39)	1.6 (3)	25.5 (47)
Northern mockingbird				4.6 (13)	0 (0)	1.4 (4)	0 (0)	0 (0)	0 (0)
Brown thrasher				8.6 (24)	3.9 (11)	3.2 (9)	9.2 (17)	3.8 (7)	3.3 (6)
Yellow-rumped warbler				1.4 (4)	0 (0)	0 (0)	38.8 (72)	2.7 (5)	0.5 (1)
Common yellowthroat		Not run in 2003		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Chipping sparrow				0.7 (2)	0 (0)	0 (0)	0.5 (1)	0 (0)	0 (0)
Field sparrow				26.4 (74)	1.4 (4)	3.2 (9)	25.4 (47)	3.2 (6)	3.3 (6)
Savannah sparrow				0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Fox sparrow				2.9 (8)	0.4 (1)	0 (0)	8.6 (16)	1.1 (2)	0 (0)
Song sparrow				13.6 (38)	2.5 (7)	2.1 (6)	14 (26)	1.6 (3)	6 (11)
Swamp sparrow				6.4 (18)	0.7 (2)	0.7 (2)	1.1 (2)	0 (0)	0 (0)
White-throated sparrow				62.1 (174)	3.6 (10)	27.1 (76)	139.2 (258)	9.2 (17)	30.3 (56)
Dark-eyed junco				4.9 (12)	1.4 (4)	0.4 (1)	11.9 (22)	1.1 (2)	0 (0)
Northern cardinal				18.2 (51)	1.8 (5)	7.8 (22)	21 (39)	2.7 (5)	6.5 (12)
All captures				332.5 (932)	43.2 (121)	104.5 (293)	431.5 (800)	51.2 (95)	102.4 (189)
Total net hours					2803			1854	

Table 1b. Comparison of captures in November and December per 1,000 net hours between 2004 and 2005 at MAWS stations on Camp Robinson, Arkansas. N= number of newly banded birds, U = number of birds released unbanded, R= number of recaptures. Numbers in parentheses represent total number of captures in each category.

Species	2003			2004			2005		
	N	U	R	N	U	R	N	U	R
Carolina chickadee	13.5 (19)	0 (0)	0.7 (1)	3.6 (11)	0 (0)	2.3 (7)	3.3 (8)	0 (0)	2.0 (5)
Tufted titmouse	14.2 (20)	0.7 (1)	4.3 (6)	3.6 (11)	0 (0)	2.6 (8)	3.7 (9)	0 (0)	2.0 (5)
Carolina wren	26.2 (37)	1.4 (2)	15.6 (22)	13.1 (40)	0.7 (2)	10.2 (31)	9.0 (22)	1.2 (3)	4.9 (12)
Ruby-crowned kinglet	12.8 (18)	0 (0)	3.5 (5)	28.2 (86)	0.3 (1)	16.1 (49)	22.9 (56)	1.6 (4)	7.8 (19)
Hermit thrush	5.7 (8)	0 (0)	0.7 (1)	7.6 (23)	0 (0)	3.3 (10)	2.0 (5)	0 (0)	0.8 (2)
Northern mockingbird	4.3 (6)	0.7 (1)	2.8 (4)	0.7 (2)	0 (0)	0.3 (1)	1.2 (3)	0.4 (1)	0.8 (2)
Brown thrasher	2.8 (4)	0 (0)	0.7 (1)	2.3 (7)	0 (0)	0 (0)	0.8 (2)	0.8 (2)	0.4 (1)
Yellow-rumped warbler	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	9.0 (22)	0.4 (1)	0.8 (2)
Common yellowthroat	17.7 (25)	0 (0)	9.9 (14)	13.1 (40)	0.3 (1)	7.2 (22)	4.9 (12)	0 (0)	2.0 (5)
Chipping sparrow	85.1 (120)	1.4 (2)	1.4 (2)	55.2 (168)	1.0 (3)	1.3 (4)	21.3 (52)	0.4 (1)	1.2 (3)
Field sparrow	61.0 (86)	0 (0)	25.5 (36)	29.9 (91)	0.7 (2)	12.1 (37)	9.4 (23)	0.8 (2)	4.5 (11)
Savannah sparrow	42.6 (60)	2.1 (3)	13.5 (19)	14.4 (44)	0 (0)	3.3 (10)	4.5 (11)	0 (0)	2.0 (5)
Fox sparrow	5.0 (7)	0 (0)	0 (0)	2.6 (8)	0 (0)	0.3 (1)	0.4 (1)	0 (0)	0 (0)
Song sparrow	50.4 (71)	0.7 (1)	22.0 (31)	46.9 (143)	2.0 (6)	15.1 (46)	17.2 (42)	1.2 (3)	11.9 (29)
Swamp sparrow	54.6 (77)	0.7 (1)	22.0 (31)	52.2 (159)	0.7 (2)	23.0 (70)	21.7 (53)	0.8 (2)	13.1 (32)
White-throated sparrow	48.9 (69)	0.7 (1)	7.1 (10)	44.0 (134)	1.3 (4)	15.8 (48)	17.6 (43)	0.4 (1)	6.1 (15)
Dark-eyed junco	12.1 (17)	0.7 (1)	1.4 (2)	12.5 (38)	0.3 (1)	4.3 (13)	3.3 (8)	0 (0)	0.8 (2)
Northern cardinal	19.1 (27)	0 (0)	0.7 (1)	14.1 (43)	0 (0)	3.3 (10)	3.7 (9)	1.6 (4)	3.3 (8)
All captures	563.1 (794)	13.5 (19)	135.5 (191)	432.7 (1318)	11.2 (34)	129.7 (395)	188.5 (461)	17.2 (42)	68.7 (168)
Total net hours	1410			3046			2446		

Table 1c. Comparison of captures in November and December per 1,000 net hours between 2003, 2004 and 2005 at MAWS stations on Fort Benning, Georgia. N= number of newly banded birds, U = number of birds released unbanded, R= number of recaptures. Numbers in parentheses represent total number of captures in each category.

Species	2003			2004			2005		
	N	U	R	N	U	R	N	U	R
Carolina chickadee	8.8 (17)	0.5 (1)	5.7 (11)	6.9 (14)	0.5 (1)	2.5 (5)	3.5 (8)	0 (0)	3.9 (9)
Tufted titmouse	6.8 (13)	0 (0)	2.1 (4)	10.3 (21)	3.0 (6)	4.9 (10)	1.7 (4)	0 (0)	0.4 (1)
Carolina wren	12.5 (24)	0.5 (1)	7.8 (15)	12.3 (25)	3.4 (7)	3.9 (8)	6.1 (14)	0 (0)	1.7 (4)
Ruby-crowned kinglet	100.5 (193)	2.6 (5)	58.8 (113)	97.6 (198)	22.2 (45)	33.0 (67)	35.4 (81)	0.9 (2)	12.2 (28)
Hermit thrush	18.2 (35)	0.5 (1)	17.2 (33)	15.3 (31)	1.0 (2)	7.9 (16)	10.9 (25)	0 (2)	3.9 (9)
Northern mockingbird	0 (0)	0 (0)	0 (0)	2.0 (4)	1.0 (2)	0.5 (1)	0.4 (1)	0.4 (1)	0.4 (1)
Brown thrasher	3.6 (7)	0 (0)	1.6 (3)	1.0 (2)	0 (0)	1.0 (2)	1.3 (3)	0 (0)	0.4 (1)
Yellow-rumped warbler	0 (0)	0 (0)	0 (0)	3.4 (7)	0 (0)	0 (0)	37.1 (85)	2.2 (5)	1.3 (3)
Common yellowthroat	4.7 (9)	0.5 (1)	1.6 (3)	0 (0)	0 (0)	0 (0)	0.4 (1)	0 (0)	0.4 (1)
Chipping sparrow	77.6 (149)	1.6 (3)	4.2 (8)	47.3 (96)	16.8 (34)	1.5 (3)	25.8 (59)	0.9 (2)	1.7 (4)
Field sparrow	39.0 (75)	0 (0)	13.0 (25)	32.5 (66)	1.5 (3)	5.9 (12)	36.2 (83)	3.9 (9)	5.7 (13)
Savannah sparrow	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Fox sparrow	2.1 (4)	0 (0)	0 (0)	0.5 (1)	0 (0)	0 (0)	0.4 (1)	0 (0)	0 (0)
Song sparrow	42.7 (81)	1.0 (2)	17.2 (33)	67.5 (137)	1.5 (3)	14.8 (40)	45.8 (105)	1.3 (3)	9.6 (22)
Swamp sparrow	27.1 (52)	1.0 (2)	9.9 (19)	37.5 (76)	0.5 (1)	11.8 (24)	38.4 (88)	3.1 (7)	5.7 (13)
White-throated sparrow	42.7 (82)	1.6 (3)	16.1 (31)	27.1 (55)	0 (0)	5.9 (12)	35.4 (81)	2.2 (5)	4.4 (10)
Dark-eyed junco	54.1 (104)	0 (0)	7.8 (15)	38.4 (78)	0 (0)	2.5 (5)	7.0 (16)	0.4 (1)	1.3 (3)
Northern cardinal	10.9 (21)	1.0 (2)	6.2 (12)	10.3 (21)	12.8 (26)	5.4 (11)	7.4 (17)	0 (0)	1.7 (4)
All captures	578.3 (1111)	32.8 (63)	182.2 (350)	542.1 (1100)	121.7 (247)	111.9 (227)	353.1 (809)	19.2 (42)	61.1 (179)
Total net hours	1921			2029			2291		

Table 1d. Comparison of captures in November and December per 1,000 net hours between 2003, 2004 and 2005 at MAWS stations on Fort Bragg, North Carolina. N= number of newly banded birds, U = number of birds released unbanded, R= number of recaptures. Numbers in parentheses represent total number of captures in each category.