

REPEATS, RETURNS AND RECOVERIES OF NORTH AMERICAN MIGRANT BIRDS BANDED IN PANAMA

By HORACE LOFTIN, DAVID T. ROGERS, JR. AND DAVID L. HICKS

Loftin (1963) reported a limited number of repeats and returns from some 200 North American migrant birds banded at Almirante, Bocas del Toro Province, Panama, in autumn 1962. From spring 1963 through autumn 1964, about 2,500 additional migrants (excluding thrushes and catbirds) have been banded by us at Almirante, plus some 500 other migrants in the Canal Zone and vicinity, as part of a general study of bird migration in Panama. Several additional repeats, returns and recoveries have resulted to date from this program of mist-netting and banding. In view of the scarcity of records of North American birds banded in the Neotropics bearing on their local status as transients or winter residents, a summary of these repeats, returns and recoveries is presented here.

Banding at Almirante.—Our netting and banding project at Almirante has been made possible through the courtesy and cooperation of the Gorgas Memorial Laboratory of Panama. As part of an intensive investigation of the ecology of arthropod-borne virus diseases in Panama, that laboratory operates from 60 to 100 mist nets the year round at Almirante; this phase of the Gorgas studies is under the direction of Dr. Pedro Galindo. Since that project is presently concerned only with certain local species, migratory thrushes and catbirds, Dr. Galindo has kindly allowed us to band and study any other migratory birds taken in the Gorgas nets. (For a description of the Almirante area and the Gorgas project there, see Galindo *et al.*, 1963.)

Mr. Storrs Olson banded at Almirante for our project during 10 days of spring 1963. Rogers attended the Gorgas nets from late September through October 1963, and Hicks through the same period in 1964. Loftin worked with the Gorgas nets at various times in spring and autumn of both years. On other occasions, personnel of the Gorgas Laboratory there kindly banded some of the migrants when we were not present; and they invariably recorded the numbers of any banded birds captured, turning these data over to us.

Banding in the Canal Zone and Vicinity.—Most of the mist-netting and banding of this project in and near the Canal Zone has been of the "week-end" variety and has involved the generous cooperation of a number of local bird students (see Acknowledgments below). Loftin, a resident of the Canal Zone, netted and banded at various times throughout the entire period covered in this report. Dr. E. L. Tyson and Mr. Frank Chapman of Florida State University worked nets almost daily near Gamboa for about a month in January-February 1964. In cooperation with Dr. Merle Kuns of the Middle America Research Unit (NIH), Loftin regularly operated a net line near Gamboa through September and October 1964. The great majority of all birds banded in this region were taken near Gamboa, Curundu, or Ancon Hill.

Results.—Tables 1 (Almirante) and 2 (Canal Zone area) present a list of migratory bird species banded during each season (spring, autumn, winter) for the period of this report (spring 1963 through autumn 1964), including numbers of each banded, number of repeats and number of returns. Two recoveries (Broad-winged Hawk and Dickcissel) are discussed in the species accounts. For purposes of this paper, "spring" is arbitrarily set at March through June; "autumn", August-November; and "winter", December-February. Since we wish to emphasize specific cases of individuals apparently remaining in the same area from autumn to winter or winter to spring, we have altered the usual definition of a "return." For purposes of this paper, a "return" is a bird recaptured in the season following the one in which he was first taken (e.g., autumn-winter) or later, provided at least 30 days have elapsed before recapture.

SPECIES ACCOUNTS

Buteo platypterus (Broad-winged Hawk). A banded specimen was shot by hunters on the "Pipeline Road" near Gamboa, on 16 March 1964; the bird and band were passed on to us. A report from the Banding Office, U. S. Fish and Wildlife Service, disclosed that this bird was banded on 25 February 1963 on this same "Pipeline Road" by Mr. Tom Crebbs of Rutgers University.

This would seem to demonstrate that some migrant Broad-winged Hawks in Panama utilize the same immediate wintering area in subsequent years. However, Dr. Pedro Galindo tells us that a few individuals of this species may be seen in Panama in summer months; thus, this recovery might represent a "lingering bird" rather than a wintering bird.

Contopus virens (Eastern Wood Pewee). There has been only one repeat of this species, with 7 days between capture and recapture.

Empidonax spp. (*Empidonax* flycatchers). No attempt was made at field identification of these difficult species; however, specimens were taken for later identification. *Empidonax flaviventris*, *E. virescens*, *E. trailli* and *E. minimus* migrate through or winter in Panama; and other members of the genus occur here.

One individual banded at Almirante on 1 November 1963 was retaken there on 12 March 1964. Of a total of 466 *Empidonax* flycatchers banded at Almirante, there were only 8 repeats, with 10 days maximum interval between banding and recapture. There have been no repeats or returns in the Canal Zone area.

Dumatella carolinensis (Catbird). This is a relatively abundant wintering bird in the Almirante area. The Gorgas Laboratory has numerous data on this species, which will be reported elsewhere by Dr. Galindo.

Hylocichla mustelina, *H. ustulata*, *H. minima* and *H. fuscescens* (thrushes). The Gorgas Laboratory has numerous data on these thrushes at Almirante; these will be reported elsewhere by Dr. Galindo. There have been no repeats or returns in the Canal Zone area.

TABLE 1. MIGRANT BIRDS BANDED, REPEATS AND RETURNS FROM MIST-NETTING AT ALMIRANTE, PANAMA
SPRING 1963 THROUGH AUTUMN 1964*

Species	Spring 1963			Autumn 1963			Spring 1964			Autumn 1964			Totals		
	Banded	Repeats	Returns	Banded	Repeats	Returns	Banded	Repeats	Returns	Banded	Repeats	Returns	Banded	Repeats	Returns
Broad-winged Hawk													1		
Common Snipe				1									1		
Black-billed Cuckoo				2									1		
Yellow-billed Cuckoo				3									3		
Eastern Kingbird				4					3						
Sulphur-bellied Flycatcher				3											
Great Crested Flycatcher	16					21									
Eastern Wood Pewee	1			4									14		
Empidonax spp.				58			4	1					407	4	
Barn Swallow				1									23		
Red-eyed Vireo	105			234			2		52				181		
Yellow-green Vireo				30			1		1				28		
Philadelphia Vireo													1		
Black-and-white Warbler				7			1	1					1		1
Prothonotary Warbler				11									16		
Worm-eating Warbler	1			5				1					3		
Golden-winged Warbler	2														
Tennessee Warbler	6			34			1	1					40	1	
Yellow Warbler				19			1		3				24	1	
Magnolia Warbler															
Chestnut-sided Warbler				23											
Bay-breasted Warbler				7					1				21		
Blackpoll Warbler									1				19		
													2		2

:Returns are tabulated here under the season in which the birds were banded, not the season of recapture.

TABLE 1. MIGRANT BIRDS BANDED, REPEATS AND RETURNS FROM MIST-NETTING AT ALMIRANTE, PANAMA
SPRING 1963 THROUGH AUTUMN 1964*

Species	Spring 1963			Autumn 1963			Spring 1964			Autumn 1964			Totals		
	Banded	Repeats	Returns	Banded	Repeats	Returns	Banded	Repeats	Returns	Banded	Repeats	Returns	Banded	Repeats	Returns
Ovenbird	5		1	91	4	1	2	1		45	4		143	9	2
Northern Waterthrush	10	1		176	6		18			134	8		338	15	
Kentucky Warbler	6			22	5	2	1			21			50	5	2
Mourning Warbler	12		1	57	6	2	18			25			112	6	3
Yellowthroat							1						1		
Yellow-breasted Chat	3		1	11	4	2	1	1		10	1		25	6	3
Hooded Warbler				1									1		
Canada Warbler	6			94			24			124			248		
American Redstart	1			2									3		
Orchard Oriole				2						1			3		
Baltimore Oriole	1			5		1				7			13		1
Summer Tanager	17			28	1	2	5			11			61	1	2
Scarlet Tanager				2						4			6		
Rose-breasted Grosbeak	2			13			7			13			35		
Blue Grosbeak				1						5			6		
Indigo Bunting	7			2			5			9	1		23	1	
Painted Bunting	2												2		
Dickcissel	1		3	12		14	171	2	0	6			19		
Totals	204	1	3	966	35	14	171	2	0	1201	20	0	2542	58	17

TABLE 2. MIGRANT BIRDS BANDED, REPEATS AND RETURNS FROM MIST-NETTING IN THE CANAL ZONE AND VICINITY, SPRING 1963 THROUGH AUTUMN 1964*

Species	Spring 1963		Autumn 1963		Winter 1963-1964		Spring 1964		Autumn 1964		Totals	
	Banded	Repeats	Banded	Repeats	Banded	Repeats	Banded	Repeats	Banded	Repeats	Banded	Repeats
Upland Plover					1				1		1	
Solitary Sandpiper											1	
Spotted Sandpiper			4								4	
Least Sandpiper			1								1	
Black-billed Cuckoo			1								1	
Yellow-billed Cuckoo									1		1	
Eastern Kingbird									1		1	
Sulphur-bellied Flycatcher			3						1		4	
Great Crested Flycatcher							1				1	
Eastern Wood Pewee					2				1		3	
Empidonax spp.			21		7						29	
Barn Swallow			5								5	
Bank Swallow			2								2	
Wood Thrush					3						3	
Swainson's Thrush			83								83	
Gray-cheeked Thrush			17						16		33	
Red-eyed Vireo			5						9		14	
Yellow-green Vireo	4	2	2		8	1	3	7	2		23	1
Black-and-white Warbler		2	2		2						4	
Prothonotary Warbler			1				1		2	1	4	
Golden-winged Warbler			1		1						2	
Tennessee Warbler			11		18				9		40	
Nashville Warbler											1	

*"Returns" are tabulated here under the season in which the birds were banded, not the season of recapture.

TABLE 2. MIGRANT BIRDS BANNED, REPEATS AND RETURNS FROM MIST-NETTING IN THE CANAL ZONE AND VICINITY, SPRING 1963 THROUGH AUTUMN 1964*

Species	Spring 1963			Autumn 1963			Winter 1963-1964			Spring 1964			Autumn 1964			Totals		
	Banded	Repeats	Returns	Banded	Repeats	Returns	Banded	Repeats	Returns	Banded	Repeats	Returns	Banded	Repeats	Returns	Banded	Repeats	Returns
Yellow Warbler	1						2											
Chestnut-sided Warbler				1			6	1					1	1		12		
Bay-breasted Warbler	1			12			5									23		
Northern Waterthrush				13		1	14	1					33	4		65		1
Louisiana Waterthrush							1									1		
Kentucky Warbler				1			7						2			10		
Mourning Warbler				4			3		1							8		1
Canada Warbler				23			1		1							24		1
American Redstart				2			1									4		
Orchard Oriole				66			2						1			69		
Summer Tanager				18			3						1			25		1
Scarlet Tanager				1												1		
Rose-breasted Grosbeak				1			1									2		
Dickcissel							2									2		
Totals	6	0	2	303	0	1	90	3	6	6	33	0	85	7	517	10		9

Vireo olivaceus (Red-eyed Vireo). This species is very abundant in spring and fall migration through Almirante. But of 572 specimens banded there, only 2 repeats are recorded (and this of the same individual), with 8 days maximum between banding and recapture.

Vireo flavoviridis (Yellow-green Vireo). This species, which after some experience can readily be told from *V. olivaceus*, migrates into Panama in early autumn and has moved on to South America by early November; it begins to reappear in Panama by January.

One individual banded on 6 March 1963 near Curundu was retaken in the same immediate locality on 9 February 1964; another banded there on 9 March 1963 was recaptured at the same locality on 11 February 1964. These records demonstrate that some individuals of this species return to identical localities in migration between their wintering and breeding grounds in subsequent years.

Further, of 8 specimens banded near Curundu in winter 1964, three were recaptured in the same locality after lengthy periods of time; 15 February to 29 March; 13 February to 28 March and 4 April; and 12 February to 4 April. Of 59 individuals banded at Almirante, there has been only one repeat, with 2 days between banding and recapture.

Mniotilta varia (Black-and-white Warbler). An individual banded on 7 September 1963 at Almirante was recaptured there first on 7 October 1963 and again on 8 January 1964.

Protonotaria citrea (Prothonotary Warbler). Of 4 birds banded in the Canal Zone area, there has been one repeat, with 8 days between banding and recapture. There were no repeats or returns of 27 birds banded at Almirante.

Helmitheros vermivorus (Worm-eating Warbler). An individual banded at Almirante on 21 October 1963 was recaptured there on 8 January 1964.

Vermivora peregrina (Tennessee Warbler). An individual banded on 21 October 1963 at Almirante was recaptured there on 25 February 1964. Of 85 specimens banded at Almirante, there has been only one repeat, with 12 days between banding and recapture. (But see Loftin, 1963, for repeats and returns in 1962.) There were no repeats among 40 specimens banded in the Canal Zone area.

Dendroica aestiva (Yellow Warbler). There were two repeats from 46 specimens banded at Almirante, with 5 days maximum interval between banding and recapture. (But see Loftin, 1963, for a return for autumn 1962.)

Dendroica magnolia (Magnolia Warbler). Only one specimen was banded during the period of study, with no recapture (but see Loftin, 1963, for a return for autumn 1962).

Dendroica pensylvanica (Chestnut-sided Warbler). One specimen banded near Curundu on 8 December 1963 was taken at that same locality on 9 February 1964, and presumably represents a wintering individual.

Seiurus aurocapillus (Ovenbird). A specimen, banded at Almirante on 23 April 1963, was recaptured there on 22 April 1964. Another, banded 21 October 1962, was recaptured there on 29 October 1963; and one banded there on 21 October 1962 was first retaken on 7 January 1963 (see Loftin, 1963), then again on 25 October 1963. Another Ovenbird banded at Almirante on 29 October 1963 was retaken there on 25 April 1964.

These data, plus the repeats recorded, clearly demonstrate that the Ovenbird regularly winters in the Almirante area, and that some individuals return to the same wintering area in subsequent years.

Seiurus noveboracensis (Northern Waterthrush). This species is a very common migrant and wintering bird at both Almirante and the Canal Zone area. A specimen banded on 10 November 1962 at Almirante was first retaken there on 7 January 1963 (see Loftin, 1963), then again on 14 October 1963. This demonstrates that some individuals return to identical wintering areas in subsequent years.

In the Canal Zone, a specimen banded on 5 October 1963 was retaken in the same locality on 9 February 1964. Of 65 birds banded in the Canal Zone area, there were 5 repeats; and of 338 birds banded at Almirante, 15 repeats.

Oporornis formosus (Kentucky Warbler). An individual banded at Almirante on 12 October 1963 was first recaptured there on 22 October 1963, then again on 29 October 1964. Another, banded on 14 October 1963, was retaken on 15, 16, 18 and 31 October, then again on 25 February 1964. These data indicate that the Kentucky Warbler winters in the Almirante area, and that some individuals return to the same wintering area in subsequent years.

Oporornis philadelphia (Mourning Warbler). A specimen banded on 19 April 1963 at Almirante was recaptured there on 25 February 1964. Another, banded on 9 October 1963, was recaptured there on 27 September 1964. Yet another, banded on 1 November 1963, was retaken there on 21 April 1964. In the Canal Zone area, a specimen banded on the "Pipeline Road" near Gamboa on 27 January 1964 was retaken in the same immediate vicinity on 11 November 1964. These data demonstrate that this species winters in Panama and that some individuals return to the same wintering areas in subsequent years.

Icteria virens (Yellow-breasted Chat). A specimen, banded on 17 April 1963 at Almirante, was retaken there on 17 and 18 October 1963. Another, banded on 11 October 1963, was first retaken on 14 October 1963, then again on 14 January 1964. Yet another, banded on 13 October 1963, was retaken there on 10 October 1964. (See Loftin, 1963, for another repeat.) These data demonstrate that the Yellow-breasted Chat winters in the Almirante area and that some individuals return to the same wintering area in subsequent years.

Wilsonia canadensis (Canada Warbler). An individual banded

on 13 February 1964 near Curundu was recaptured at the same location on 29 March 1964, and thus was probably wintering there.

Icterus galbula (Baltimore Oriole). An individual, banded on 7 October 1963 at Almirante, was recaptured there on 29 January 1964, and thus was probably wintering.

Piranga rubra (Summer Tanager). This species is a well known winter resident in Almirante and the Canal Zone area. An individual, banded 13 October 1963 at Almirante, was recaptured there on 7 January 1964; and another, banded on 31 October 1963, was retaken there on 18 March 1964. A specimen banded on 28 January 1964 on the "Pipeline Road" near Gamboa was recaptured in the same locality on 7 November 1964; this demonstrates that some individuals return to identical winter areas in subsequent years.

Pheucticus ludovicianus (Rose-breasted Grosbeak). A specimen, banded on 10 November 1962 at Almirante, was recaptured there on 12 October 1963; this demonstrates that some individuals return to identical tropical areas in subsequent years.

Spiza americana (Dickcissel). A specimen, banded at Almirante on 18 October 1963, was recovered at Algarrobo, Magdalena Province, Colombia, in February 1964, and was reported by Sr. Dario Restrepo to the Banding Office, U. S. Fish and Wildlife Service.

SUMMARY

This paper presents a summary of birds banded, repeats, returns and recoveries resulting from a mist-netting and banding program of North American migrant birds in Panama from spring 1963 through autumn 1964. Of 51 species banded (counting *Empidonax* spp. as a single form), there were repeats, returns or recoveries of 21 species. A number of returns of birds banded in autumn 1962 were also obtained. The records obtained demonstrate or strongly indicate actual wintering in Panama of several of these migrants. Of especial interest were recapture records clearly demonstrating the return of a number of species to identical localities in Panama in subsequent years. These include: Broad-winged Hawk (possibly a "lingering bird"); Yellow-green Vireo; Ovenbird; Northern Waterthrush; Kentucky Warbler; Mourning Warbler; Yellow-breasted Chat; Summer Tanager; and Rose-breasted Grosbeak. A Dickcissel, banded at Almirante, Panama, on 18 October 1963, was recovered in February 1964 at Algarrobo, Magdalena Province, Colombia.

REFERENCES

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ANNUAL CYCLE OF THE YELLOW WARBLER IN THE GALAPAGOS¹

By D. W. SNOW

From February 1963 to June 1964 I made regular observations on the Yellow Warbler (*Dendroica petechia*) at Academy Bay on Santa Cruz Island (Indefatigable) in the Galapagos Archipelago, almost exactly on the Equator (0° 45'S). Nests were found throughout both the breeding seasons included in the period of observation, and some birds were trapped in nearly every month, many of them being color-banded. Altogether, 96 individuals were trapped, and 29 recaptures were made. For the two preceding breeding seasons, records have been kindly supplied by R. Lévêque.

The Yellow Warbler is almost certainly a comparatively recent colonizer of the Galapagos. Though described as a distinct sub-

¹Charles Darwin Foundation for the Galapagos, Contribution No. 25.