

- Herrick, F. 1935. Wild Birds at Home. D. Appleton-Century Co., New York.
- Hickey, J.J. 1943. A Guide to Bird-Watching. Oxford University Press, New York.
- Kendeigh, S. C. 1952. Parental Care and Its Evolution in Birds. Illinois Biological Monographs, 22: 1-358.
- Lack, D. 1966. Population Studies of Birds. Oxford University Press, London, New York.
- Mosby, H. 1971. Reconnaissance mapping and map use. (In: Giles, R.H., 1971.) Wildlife Management Techniques. The Wildlife Society, Washington, D. C.
- Odum, E. P. and E. J. Kuenzler. 1955. Measurement of Territory and Home Range Size in Birds. Auk, 72: 128-137.
- Pettingill, O.S., Jr. 1970. Ornithology in Laboratory and Field (4th Ed.) Burgess Publishing Company, Minneapolis, Minn.
- Prescott, K. W. 1964. Constancy of Incubation for the Scarlet Tanager. Wilson Bulletin 76: 37-42.
- _____. 1965. The Scarlet Tanager. New Jersey State Museum, Investigations, No. 2.
- Schaeffer, F. S. 1970. Observations of "billing" in courtship behavior of Tree Swallow. Bird-Banding, 41: 242.
- Taber, R. D. and I. McT. Cowan, 1966. Capturing and Marking Wild Animals. (In: Giles, R.H., 1971.) Wildlife Management Techniques. The Wildlife Society, Washington, D. C.

-- 84-55 Daniels Street (Apt. 1-K), Jamaica, New York 11435.

NORTH AMERICAN NEST RECORD CARD PROGRAM											
Shaded Boxes not to be completed by observer											
Y E A R											
Species:	1	9									14
Observer (two initials, last name) In squares in space opposite →	15	17									
Locality (in relation to nearest town)							Fill in if known Latitude				
County							Elevation (in feet above sea level)				
State or Province							Longitude				
HABITAT (circle where appropriate) 1. Woods 2. Swamp 3. Marsh 4. Field 5. Grassland 6. Desert 7. Tundra 8. Suburban 9. Urban 0. Other (specify) 01. Coniferous 02. Deciduous 03. Mixed 04. Orchard 05. Cultivated 06. Fallow 07. No Veget. 08. Hedgerow 09. Shrub 10. Salt 11. Brackish 12. Fresh 13. Sandy Beach 14. Gravel Beach 15. Other (specify) DOMINANT PLANT(S) IN HABITAT (list one or two)										46	
NEST SITE (circle where appropriate) 01 Bare ground 02 On ground in vegetation 03 Floating 04 Low vegetation 05 Shrub 06 Palm 07 Deciduous tree branch 08 Deciduous tree cavity 09 Conifer branch 10 Conifer cavity 11 Nest box 12 Other structure 13 Cliff or bank 14 Other (specify) PRINCIPAL PLANT OR STRUCTURE SUPPORTING NEST										47	
Height of Eggs Above Ground or Water in Feet (feet and tenths if under five feet)										76	
If parasited by Cowbird check here <input type="checkbox"/> If same pair had other nestings this year, indicate which this is (1, 2, 3) and see instructions. (use separate card for each nesting)										77	
										78	
										79	
										80	
										1	

PLEASE COMPLETE BOTH SIDES OF THE CARD
Front side of Nest Card in use in North America. Rear side is for daily observations of eggs and young. (see p. 112).

MIGRATION TRAPPING OF HAWKS(AND OWLS)
AT CAPE MAY, N.J. - FIFTH YEAR

By William S. Clark

This article reports the results of the 1971 autumn raptor banding project at Cape May Point, New Jersey. The results of the first four years' banding are reported in previous volumes of this journal (see Clark, 1-4). Except for three days in November, the station was operated from September 4 until November 14.

Throughout I shall use the more esthetic names of Kestrel for Sparrow Hawk and Merlin for Pigeon Hawk.

The Trapping Station

For description of the station location, trapping equipment and methods employed at this station to catch migratory hawks, see Clark 2, 3.

Analysis of failures and shortcomings of past season's operations dictated certain modifications to the station arrangement. Those implemented this year included use of a lighter and smaller mesh mist net, more extensive use of Dho-Gazas, and rearrangement of the placement of the bow nets. Also a larger blind was constructed and placed in a location which afforded a better view of the hawk flight.

These modifications proved to be very successful as many more hawks were caught this year. (See Table 1 and discussion below.) However, the most significant change this year was the addition of a second station about 150 yards south of the other station in a salt marsh. It consisted of a blind, 3 bow nets, 2 30-foot mist nets, and from 1 to 3 Dho-Gazas. The main station is now called the North Station and the new one, the South Station.

Trapping Results

Table 1 reports the daily catch at both stations. In addition, it gives the daily average wind direction and velocity, and the stations' operators and the hours they were manned.

These results are a step-jump over past results. This season the north station caught almost three times our previous high of 271 hawks and owls. However, we caught fewer Peregrines and Cooper's Hawks than the previous year. There were more Peregrines seen this year and we recorded more passes, but a combination of the lighter net which broke through and lack of aggressiveness yielded a lower catch. Most of these birds passing over were not hunting, as this activity is pursued along the beaches. Fewer Cooper's Hawks were recorded this season and we had a high rate of misses for this species, which is difficult to catch.

Prior to this season, we had banded only a token number of Red-tailed Hawks; until November 8 it appeared that this year was no different. But a most spectacular Red-tail flight followed a cold front which went through November 7. We caught 29 and could have had more, if we had been prepared for this flight. It wasn't until noon that we altered the style of luring, took down the mist nets (which spooked these hawks), and repositioned Dho-Gazas in order to bring in and catch them more effectively. On the few good flight days until we closed the station, we added good numbers to our Red-tail trapping total.

Early in the season we caught our first foreign recoveries. Greg Ivins caught a female Kestrel banded in June 1971 by Bob Wilson as a nestling in northern New Jersey. I caught an immature male Kestrel and misread the band number, hence no data.

Table 2 gives the number of hawks and owls caught by species and trap type. The lighter mist net was much more effective than the one used previously. The incoming hawks did not see it as well (hence didn't flare up and over it) and the fraction escaping dropped from 1/2 in 1970 to 1/5 in 1971. The small bow nets were especially effective for Kestrels. The Dho-Gaza total does not truly reflect its percentage contribution as there were few set up early in the season and it was late in the season before we had successfully mastered the setting of the triggers, so that even the littlest hawks would be captured.

The total number of hawks seen daily from both stations is reported in Table 3. A system was devised to insure that there was no duplication in counting between the stations. It wasn't foolproof but I believe that we undercounted the hawks which passed by. It was difficult enough just to lure and catch the flying hawks when the only visibility was through a slit in the bling, much less identify and count every bird of prey in the sky. Hawks could mill around Cape May Point and hence fly over the stations more than once; but except for the high kettles of Buteos and sometimes a few Kestrels, my five years experience there leads me to believe this doesn't happen.

Totals caught for each station are shown in Table 4 by species. It is interesting that the average catch per day is almost identical, even though the make-up of the flight over each station, station layout, and daily results varied quite markedly between them.

Table 5 gives a breakdown of the five species of hawks we are able to sex by age and sex. We catch more females of the small hawks and more males of the larger ones. I have no explanation for this now, but will be watching future results for a continuation and possibly an explanation of this phenomena.

Although we had a most successful year, we still have not reached our potential, as there were many excellent flight days when only one

station was manned or when no assistants were available.

Interesting Experiences

Operating a raptor trapping station requires concentration and patience and is often boring. But it can also be very exciting and fun. Unusual occurrences are part of the fun, and some of this season's more interesting events are described below.

Occasionally a hawk will stoop in at the lure bird and just before binding to it will break off and land on the ground near it. We had a Broad-wing land near the pigeon this year and eye it. Our procedure in this case is to work the House Sparrow lures knowing that the pigeon is probably too large for this bird. This hawk decided it wanted the sparrow that was on the opposite side of the mist net, so it started walking toward it. But its beak got hooked in the net. It was quite comical watching the hawk shake its head trying to free its beak but we couldn't laugh as this would frighten the bird away. We hoped that when it freed its beak it would come to the sparrow. But when it did, it leisurely flew away as it had had enough of us and our setup.

The procedure followed when a hawk captures the lure bird is to immediately set off the bow net by pulling the trigger. However, we operate three bows from the bling and occasionally (2 times this year) we get so excited we pull the wrong trigger. It's very embarrassing but we dutifully report it.

Because the hawks at the station can come in from any direction, we often do not see a hawk until it is at the station. Once, while luring a Merlin with one of the sparrows, I caught the motion of a Red-tail just over the pigeon, probably after a long stoop. He was travelling very fast and did not slow down, but ran into and through the mist net, landing on the ground near one of our sparrows (and leaving a very large hole in the net). My assistant, Pete Davis, reacted automatically and brought the sparrow to the center of the bow. The Red-tail jumped on, Pete set off the trigger and we had our first Red-tail on a small bow net.

On our big Red-tail day, November 8, Joe Harmer had one of these hawks capture the pigeon outside the bow. Most of the time one can drag the hawk into the center of the bow and catch it, but this hawk let go of the pigeon just outside and stood looking at it. Then another Red-tail landed next to the pigeon but didn't grab it. The first hawk then jumped into the bow on the other side of the lure bird. The hawks glared at each other and when Joe recovered from the surprise of these actions he set off his trigger and caught both hawks at once.

Future Plans

For next year, operation of both stations is planned from Labor Day weekend through Thanksgiving. An alternate north station will be set up facing the west. (Present setup faces east). This will be used on North-east wind days when the majority of the hawk flight is from the west. New and better equipment to be used includes better mist nets, more Dho-Ghazas, more Verball pole traps, and faster bow nets. We will also set up many mist nets at night for owls.

The operators of the stations this season, in alphabetical order were: Chris Curts, Joe Harmer, Larry Hood, Greg Ivins; Jerry Mersereau, Lance Morrow and Brian Sharp. The assistance of the following was greatly appreciated by the banders: Pat Carter, Joe Carter, Sammy Chevalier, Pete Davis, and Gordon Ivins. There were many visitors at the station this season and a few demonstrations were given for birding groups.

Anyone desiring to assist or visit the station should contact the author or any of the operators. Unplanned visits are not appreciated at the station due to the nature of the operation, but are most welcome when arranged beforehand. It is possible to arrange demonstrations for groups.

The continued success of this operation is due to the cooperation and assistance of many people, the banders and the assistants especially. But thanks must also be extended to Dr. Ernest Choate for his assistance in many details and unfailing help on many problems. Mr. David Rutherford also deserves a thank you for allowing us to use his property for this operation.

The accompanying photographs were taken at the station during this season's operation.

Literature Cited

1. Clark, W. S., Migration Trapping of Hawks at Cape May, N.J., EBBA News, 31: 112-114 (May-June 1968)
2. Migration Trapping of Hawks at Cape May, N.J., Second Year, 32: 69-77 (March-April 1969)
3. Migration Trapping of Hawks (and Owls) at Cape May, N.J., Third Year, 33: 181-189 (July-August 1970)
4. Migration Trapping of Hawks (and Owls) at Cape May, N.J., Fourth Year, 34: 160-169 (July-August 1971)



Male Kestrel
(photo by author)

Five Merlins

(photo by author)



TABLE 2. TRAPPING RESULTS BY TYPE OF TRAP AND SPECIES

	Mist Net	Small Bows	Large Bows	Dho-Gaza	Verbail	Bal-Chatri	Total
Sharp-shinned Hawk	211	71		74			356
Cooper's Hawk	5	2	1	1			9
Red-tailed Hawk	3	2	48	4			57
Red-shouldered Hawk	1		2				3
Broad-winged Hawk	1	1		2	1		5
Marsh Hawk	2	2		1			5
Peregrine Falcon			1				1
Merlin	47	10		21			78
Kestrel	280	266		74	2	16	638
Barn Owl					4		4
Total	550	354	52	177	7	16	1156

TABLE 3. DAILY SUMMARY OF ALL HAWKS SEEN (Continued page 129, Ed.)

	SEPTEMBER																				
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Turkey Vulture																		1			
Sharp-shinned Hawk																	17	40			
Cooper's Hawk													3					1			
Red-tailed Hawk	1				5							6	3		2						
Red-shouldered Hawk																					
Broad-winged Hawk					6							2	2		42			2			
Rough-legged Hawk																					
Golden Eagle															1						
Bald Eagle										2			7	1	5	11	2	24			
Marsh Hawk	1	1			1								4	1			7	9			
Osprey	2	2						1									2	1			
Peregrine Falcon																					
Merlin							1	2	4			3	6	3	15	23	28	35			
Kestrel	9	78	17	29	28	67	130	99	47	8	94	768	471	39	183	158	75	407			
TOTAL	9	82	20	29	40	67	131	102	53	8	94	779	496	44	246	194	131	520			

	SEPTEMBER										OCTOBER								
	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	
Turkey Vulture	26		10	5									2			3	18		
Sharp-shinned Hawk	179	3	364	115	3	7	5	6	22	17	25	300	203	194	233	199	79	43	
Cooper's Hawk	2		1	1							2	2	2	3	1	7	3	1	
Red-tailed Hawk	22		2	5				1	1							5	5		
Red-shouldered Hawk	2												2			2			
Broad-winged Hawk	29	1	45	16												23	80	2	
Rough-legged Hawk																			
Golden Eagle																			
Bald Eagle																			
Marsh Hawk	21	5	12	5	1	1		2	2	3	4	7	3			12	3	1	
Osprey	16	8	6	1	6	4	1	3	4	5	4	6	12	6	26	10	6	4	
Peregrine Falcon							1					2	4	9	3	3			
Merlin	27	26	25	11	3	1	1		4	7	9	25	22	14	16	8	1	8	
Kestrel	360	55	598	42	13	5	36	25	51	53	28	370	245	52	671	175	26	64	
TOTAL	684	98	1053	201	26	18	44	37	84	85	72	712	495	278	950	447	221	123	

	OCTOBER																	
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Turkey Vulture		28	32			10	1	2	2	9	2	25	10					
Sharp-shinned Hawk	2	94	97	264	289	194	68	445	488	660	160	96	62	41	4		14	180
Cooper's Hawk	2	4	3	10	14	21	6	2	5	21	5	6	3	3				6
Red-tailed Hawk		5	16	1	1		2	1	1		2	2		1				
Red-shouldered Hawk		6	6	2	25	2	4											
Broad-winged Hawk			8	1		19	33	37	20	11	8	119	6					16
Rough-legged Hawk											1							
Golden Eagle																		
Bald Eagle		1	1															
Marsh Hawk		11	11	9	8		3	6	19	5	10	6	2				1	11
Osprey		18	4	5	10		1	1	5									11
Peregrine Falcon			2		5	5		5	2	1		1	1					
Merlin	1	4	7	5	7	4		10	10	2		1		12		1		1
Kestrel	4	215	46	64	30	26	7	304	410	82	35	27	11	6	3		3	33
TOTAL	9	386	233	361	389	281	125	813	962	791	223	285	95	63	7	1	18	258

continued page 130

TABLE 3 (Continued)

	OCTOBER				NOVEMBER										TOTAL				
	28	29	30	31	1	2	3	4	5	6	7	8	9	10		11	12	13	14
Turkey Vulture		10							75			23						14	344
Sharp-shinned Hawk	92	275	15	24	122			153	49	24	12	43			29	7	25	19	6115
Cooper's Hawk		1							2			6			1	1		1	152
Red-tailed Hawk	1	9						1	49	1	7	550			149	81	19	89	1046
Red-Shouldered Hawk												4					3	2	62
Broad-winged Hawk		1		1				2	30	4		1					2	1	567
Rough-legged Hawk									2		1	2			1				10
Golden Eagle																			1
Bald Eagle																			3
Marsh Hawk	8	1	2	2	1		1	3	8	7	3	17			4	1	6	5	308
Osprey	1		4	3	1					1									219
Peregrine Falcon	1	2																	50
Merlin	4	2	1	2	1			1	1		1	1							407
Kestrel	25	45	7	2	19			66	6	7	16	13			24	5	8	7	7132
TOTAL	132	346	29	34	144		1	226	222	44	40	660			243	111	63	138	16416

TABLE 4. TRAPPING RESULT BY STATION

Species	North Station	South Station	Total
Sharp-shinned Hawk	223	133	356
Cooper's Hawk	3	6	9
Red-tailed Hawk	27	30	57
Red-shouldered Hawk		3	3
Broad-winged Hawk	5		5
Marsh Hawk	2	3	5
Peregrine Falcon	1		1
Merlin	53	25	78
Kestrel	347	291	638
TOTAL	661	491	1152
Days in Operation	67	50	117
Avg. Hawks/Days	9.87	9.82	9.8



Immature Broadwing

TABLE 5. SPECIES TOTAL BY AGE AND SEX

Species	Age-Immature		Unknown		Adult		Total
	Sex-M	F	M	F	M	F	
Sharp-shinned Hawk	155	186			4	10	187
Cooper's Hawk	6	3				6	3
Marsh Hawk	4	1				4	1
Merlin	29				48	1	48
Kestrel	276	292	4		50	11	488
						5	291
							347



Immature Male Peregrine

--7800 Dasset Court, Apt. 101, Annandale, Virginia 22003

