

SWALLOW BANDING IN BANGKOK, THAILAND

BY BEN KING

Each year, a flock of up to 150,000 wintering Barn Swallows, *Hirundo rustica*, roosts nightly in the most crowded commercial district in Bangkok. In the winters of 1964/1965 and 1965/1966, a total of 73,276 of these birds were banded as part of the bird migration study of the Migratory Animals Pathological Survey (MAPS). The Thailand section of MAPS was operated as a function of the Southeast Asia Treaty Organization Medical Research Laboratory (SEATO Lab) and was funded by the United States Armed Forces Institute of Pathology and the Walter Reed Army Institute of Research.

Although southward migrating swallows are noted as early as the beginning of July, roosting does not commence in downtown Bangkok until the end of October when the entire flock begins to come in nightly. Northward migration apparently starts in February, but the bulk of the flock is present through April. By the end of May the entire flock has departed. Banded birds have been observed as far as 30 kilometers from the roost. It is presumed that these birds were roosting in Bangkok and flew that far to feed.

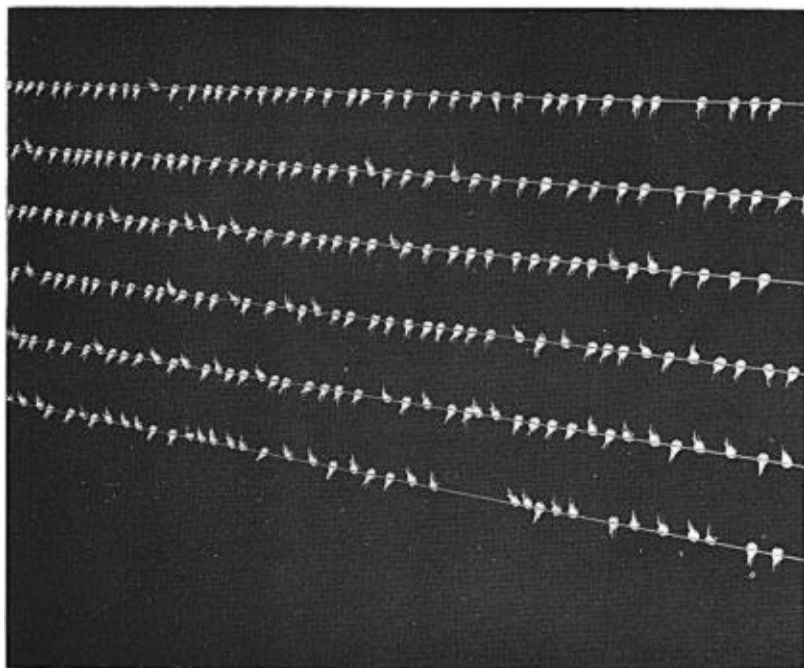
The birds roost in areas where there are four to six horizontally strung telephone wires, about 12 birds per yard of wire. Traffic is exceedingly heavy, slacking only between the hours of 0100 - 0600. The area is fairly well lit even in early morning hours. During the winter of 1966/1967, all the horizontally strung wires were gradually replaced with vertically strung ones in the roosting area. The birds moved to adjacent areas where many of the horizontal wires are also being replaced. The reason for the replacement is not known, although the birds were considered a pest by many of the residents who frequently had to clean the sidewalks in front of their shops.

In late March 1965, Dr. Joe T. Marshall estimated the flock at 120,000. In January 1966, flock size was approximately 150,000. Banding was done during the slack traffic hours between 0100 - 0600. In the winter 1964/1965, banding was done on 19 nights from 9 - 26 March and 5 - 12 April 1965. In the winter 1965/1966, banding was done on 28 nights between 4 January and 11 February 1966. In 1965, 20,561 birds were banded; in 1966, 52,715. Greatest one night total was 3,228 on 12 January 1966; highest one week (five days) total was 12,568 from 10 - 14 January 1966.

In 1965, one Bank Swallow, *Riparia riparia*, was banded; in 1966, one was banded and a second one skinned. These are the only records for central Thailand.

In the 1966 banding session, 3,721 birds banded the previous year were recaptured. This number added to the total of birds banded makes a total of about 37 percent of the flock captured, indicating that about 10,000 (about 48 percent) of the birds banded the previous year were present in the flock. Of these 3,721 recaptures, 483 (13 percent) were caught twice; 56 (1.5 percent) were caught three times; five were caught four times; one was caught

Figure 1. Barn Swallows roosting in the heart of the commercial district in Bangkok, Thailand. An excellent picture of the area and the swallows is on Page 86 of the July, 1967 *National Geographic*.



five times. Of the 483 birds recaptured twice, about 105 were caught twice in the same night and two birds were caught three times the same night. A large percentage of the birds caught more than once the same night flew into lowered nets upon release. Two of the recaptured birds had been reported elsewhere (Siberia and Korea) between time of banding and recapture (cf. *RECOVERIES*). Because of the poor light conditions (for reading), the small band numbers and the extreme fatigue of all the team members, a minimum of three percent error is known to exist in the recording of recaptured birds and possibly even includes the two Bangkok recaptures of foreign recovered birds listed above. The error is based on the fact that 3 percent of the band numbers recorded as recaptures were not placed on swallows.

In 1965, ectoparasites (Mallophaga and feather mites) were found on a few of the 100 birds sampled. Blood smears (from claw) were taken from the same 100 birds. In 1966, 200 birds were checked for ectoparasites and bled for smears. Mallophaga, feather mites, and a few hippoboscids flies were found. The Mallophaga have been identified by Dr. K. C. Emerson as *Myrsidea rustica* (Giebel, 1874). The hippoboscids (12) were identified by Dr. Tsing C. Maa as *Ornithomya comosa*. The feather mites are not yet identified. Results of the smears are, as yet, not known.

RECOVERIES

Bangkok coordinates: 13° 45'N, 100° 30'E

<i>Banded Bangkok</i>	<i>Recovered</i>	<i>Place Siberia, USSR</i>	<i>Latitude</i>	<i>Longitude</i>
10 Mar. 65	10 May 65	Belogorsk, Amur	50° 30'N	127° 35'E
19 Mar. 65	18 May 65	Seryshevo, Amur	51° 05'N	128° 20'E
24 Mar. 65	15 Jun. 65	Saskal near Shimanovsk, Amur	52° 00'N	127° 40'E
24 Mar. 65	20 Jun. 65	Razdolnoe near Novokiyevskiy Amur	51° 40'N	128° 55'E
23 Mar. 65	19 Jul. 65	Dezhnevo near Leninskoye, Khabarovsk	47° 55'N	132° 40'E
9 Apr. 65	28 Jul. 65	Il'inovka near Oktyabr'skiy, Amur	53° 00'N	128° 30'E
8 Apr. 65	13 Aug. 65	El'ban, Khabarovsk	50° 10'N	136° 30'E
*31 Jan. 66				
5 Apr. 65	May 66	near Tambovka Amur	50° 06'N	128° 05'E
12 Apr. 65	10 May 66	near Tambovka, Amur	50° 06'N	128° 05'E
2 Feb. 66	7 May 66	near Ussuriysk Primorsk	43° 47'N	123° 00'E
9 Feb. 66	11 May 66	near Oktyabr'skiy Amur	50° 00'N	128° 30'E
28 Jan. 66	18 May 66	Belogorsk, Amur	50° 30'N	127° 35'E
9 Feb. 66	22 May 66	near Ussuriysk Primorsk	43° 47'N	132° 00'E
12 Jan. 66	12 Jun. 66	near Khabarovsk Khabarovsk	47° N	135° E
24 Jan. 66	17 Jun. 66	Priamurski Khabarovsk	48° 31'N	134° 55'E
4 Jan. 66	20 Jun. 66	near Borisoglebka Oktyabr'skiy, Amur	50° 02'N	128° 36'E
27 Jan. 66	21 Jun. 66	near Kirovo Leninskoye Khabarovsk	47° 51'N	132° 02'E
4 Feb. 66	21 Jun. 66	near Borzuya, Chita	50° 23'N	116° 28'E
7 Feb. 66	22 Jun. 66	near Leninskoye Khabarovsk	47° 55'N	132° 40'E
9 Feb. 66	29 Jun. 66	Raychikhinsk, Amur	49° 46'N	129° 24'E
10 Jan. 66	12 Jul. 66	near Tambovka Amur	50° 06'N	128° 05'E
17 Jan. 66	Aug. 66	Chernigovka Arkharinski, Amur	49° 38'N	129° 55'E
2 Feb. 66	3 Aug. 66	near Tambovka Amur	50° 06'N	128° 05'E

		RECOVERIES—(Continued)				
<i>Banded Bangkok</i>		<i>Recovered</i>	<i>Place Siberia, USSR</i>	<i>Latitude</i>	<i>Longitude</i>	
19 Jan. 66	66	2 Sep. 66	Leninskoye Khabarovsk	50° 23'N	116° 28'E**	
18 Jan. 66	66	Summer 66	Svobodnensk Kostyukovka, Amur	51° 39'N	127° 38'E	
11 Jan. 66	66	2 Jun. 67	Dmitrievka Chernigov, Primorsk	44° 23'N	132° 36'E	
<i>North Korea</i>						
24 Jan. 66	66	8 May 66	North Korea	38° 54'N	125° 38'E	
26 Jan. 66	66	15 May 66	North Korea	38° 25'N	125° 40'E	
11 Jan. 66	66	19 May 66	North Korea	38° 00'N	126° 58'E	
18 Jan. 66	66	19 May 66	North Korea	38° 00'N	126° 55'E	
18 Jan. 66	66	24 May 66	North Korea	39° 05'N	125° 25'E	
1 Feb. 66	66	26 May 66	North Korea	39° 31'N	125° 12'E	
19 Jan. 66	66	27 May 66	North Korea	39° 06'N	125° 36'E	
12 Jan. 66	66	30 May 66	North Korea	39° 02'N	125° 50'E	
1 Feb. 66	66	2 Jun. 66	North Korea	38° 42'N	125° 36'E	
10 Jan. 66	66	5 Jun. 66	North Korea	39° 50'N	124° 26'E	
11 Jan. 66	66	6 Jun. 66	North Korea	39° 27'N	125° 10'E	
1 Feb. 66	66	6 Jun. 66	North Korea	39° 04'N	126° 30'E	
1 Feb. 66	66	6 Jun. 66	North Korea	37° 55'N	125° 56'E	
26 Jan. 66	66	7 Jun. 66	North Korea	39° N	126° E	
10 Jan. 66	66	4 July 66	North Korea	37° 55'N	126° 16'E	
12 Jan. 66	66	8 July 66	North Korea	37° 50'N	125° 56'E	
14 Jan. 66	66	20 July 66	North Korea	38° 54'N	125° 15'E	
10 Jan. 66	66	1 Aug. 66	North Korea	39° 01'N	125° 50'E	
4 Jan. 66	66	5 Aug. 66	North Korea	39° 02'N	125° 40'E	
14 Jan. 66	66	7 Aug. 66	North Korea	37° 55'N	126° 00'E	
22 Mar. 65	65	Summer 66	North Korea	—	—	
25 Mar. 65	65	Summer 66	North Korea	39° N	126° E	
20 Jan. 66	66	Summer 66	North Korea	39°N	126°E	
28 Jan. 66	66	Summer 66	North Korea	39°N	126°E	
1 Feb. 66	66	Summer 66	North Korea	39°N	126°E	
1 Feb. 66	66	Summer 66	North Korea	39°N	126°E	
22 Mar. 65	65	—	North Korea	—	—	
12 Jan. 66	66	—	North Korea	—	—	
20 Jan. 66	66	—	North Korea	—	—	
26 Jan. 66	66	—	North Korea	—	—	
8 Feb. 66	66	—	North Korea	—	—	

RECOVERIES—(Continued)					
<i>Banded</i>	<i>Recovered</i>	<i>Place</i>	<i>Latitude</i>	<i>Longitude</i>	
<i>Bangkok</i>		<i>North Korea</i>			
23 Mar. 65	Summer 67	North Korea	—	—	
1 Feb. 66	Summer 67	North Korea	—	—	
6 Jan. 66	Summer 67	North Korea	—	—	
7 Jan. 66	Summer 67	North Korea	—	—	
10 Jan. 66	Summer 67	North Korea	—	—	
12 Jan. 66	Summer 67	North Korea	—	—	
12 Jan. 66	Summer 67	North Korea	—	—	
12 Jan. 66	Summer 67	North Korea	—	—	
12 Jan. 66	Summer 67	North Korea	—	—	
14 Jan. 66	Summer 67	North Korea	—	—	
17 Jan. 66	Summer 67	North Korea	—	—	
24 Jan. 66	Summer 67	North Korea	—	—	
27 Jan. 66	Summer 67	North Korea	—	—	
31 Jan. 66	Summer 67	North Korea	—	—	
2 Feb. 66	Summer 67	North Korea	—	—	
7 Feb. 66	Summer 67	North Korea	—	—	

Incomplete ones as received.

<i>South Korea</i>					
25 Mar. 65	21 Jun. 65	Chin Ki Ri, Pong Dong Myun Wan Chu Kun	35° 59'N	127° 15'E	
26 Mar. 65	29 Jul. 65	Tai Nung	37° 38'N	127° 10'E	
* 6 Jan. 66					
18 Mar. 65	12 May 66	Pochun, Kyunggi	37° 49'N	127° 15'E	
26 Mar. 65	19 May 66	Pochun, Kyunggi	37° 49'N	127° 15'E	
4 Jan. 66	22 Apr. 67	Chinhae Kyungsang-Namdo	35° 10'N	128° 40'E	
12 Jan. 66	1 Jun. 67	Demilitarized Zone	38° N	126° 50'E	
6 Jan. 66	18 Jun. 67	Seoul	37° 37'N	127° 05'E	
<i>Laos</i>					
10 Jan. 66	28 Jun. 66	near Vientiane	18° N	102° 35'E	
<i>Thailand</i>					
11 Jan. 66	5 Mar. 68	Bung Boraphet Nakhon Sawan	15° 43'N	100° 14'E	

This bird was caught in a large roost of wintering swallows.

In addition, 25 swallows were reported from areas within the daily feeding range of the Bangkok roost.

Malaya

Six swallows captured and released in Malaya were reported bearing bands that were placed on swallows in Bangkok. However, the time element in two (recovery 1 month and 3 months after banding would necessitate southward migration in spring) and identification of another (identified as *Hirundo tahitica*

in Malaya) indicate the likelihood of misread band numbers and cast doubt on all six. Since the Malaya MAPS team had an extensive swallow banding program, it is possible that all were banded in Malaya. Thus these recoveries are considered doubtful until better evidence of interchange is found.

More details of swallow banding in Malaya are in the annual bird reports in the Malayan Nature Journal, 1965, 19 (2 & 3): 160-194; 1967, 20(1 & 2): 59-80; 1968, 21(1): 34-50; 1968, 21(4): 185-200.

*Recaptured in Bangkok.

**As received—place names or coordinates are in error.

TRAPPING TECHNIQUES

The swallows were captured using mist nets held high above the streets. In 1965, a cumbersome combination of bamboo and aluminum poles was used (bamboo was always used as a base in case an electrical wire was touched). Polyethelene ropes were attached to pulleys at the top of the poles to pull the nets up. A height of 50 ft. could be attained in this manner. The poles were tethered at their bases to a telephone pole and a vehicle in the street (one lane of traffic had to be kept open). This was a very unwieldy setup as the lightweight poles that had to be used were not stout enough and bent easily.

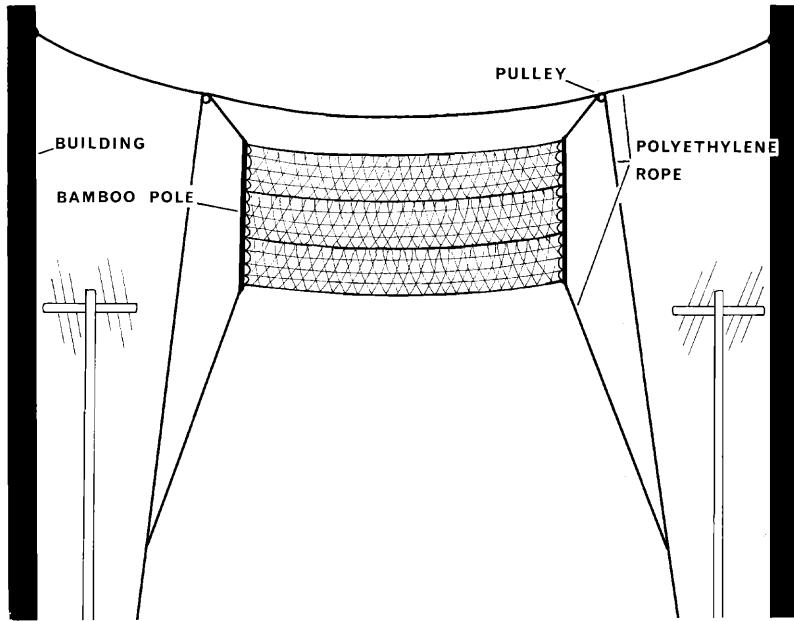
In 1966, a much improved technique was used, eliminating the poles altogether. Polyethelene ropes were strung across the street between the higher buildings 40 to 70 ft. above the street. Groups of three ropes each were set up at seven different places in the roosting area. Pulleys were tied to the ropes at a distance of 17 yards apart (on wide streets to accommodate 13 yd. nets) or 14 yds. apart (for 10 yd. nets—the extra four yards allowed the nets to be pulled tight). Ropes were hung from the pulleys for attaching the nets. By day, the dangling ropes were tied to telephone poles or buildings above the reach of passersby.

Both one inch (24 mm.) and $1\frac{1}{2}$ " (36 mm.) mesh nets were tried. Swallows became badly tangled in the $1\frac{1}{2}$ " nets but almost not at all in the 1" nets. Three nets, 10 or 13 yds. long and two yds. high, were tied together, one above the other, and attached at their ends to four yd. bamboo poles. This setup resulted in huge pockets and often 50 - 100 birds could be caught in a single pocket. All panel strings were taped to the bamboo poles to keep the net set properly. It was found that the nets had to be removed nightly from the bamboo poles. If the nets were wrapped around the poles, they became badly tangled.

The ends of the ropes hanging from the pulleys were attached to either end of the net poles by means of screw-eyes. The nets were then hoisted up. Groups of three nets were used at a time, usually with the nets at different heights to cover more of the flight lane. Nets were placed between the highest buildings where possible because the birds stayed closer to the center of the street (where the nets were), rather than fly close to the buildings. Two main streets and one minor street were in the roost area. Usually two teams were working, one to each of the main streets. A daily rotation scheme utilizing different net setups provided maximum trapping efficiency.

The birds were easily driven toward the nets by waving a flag

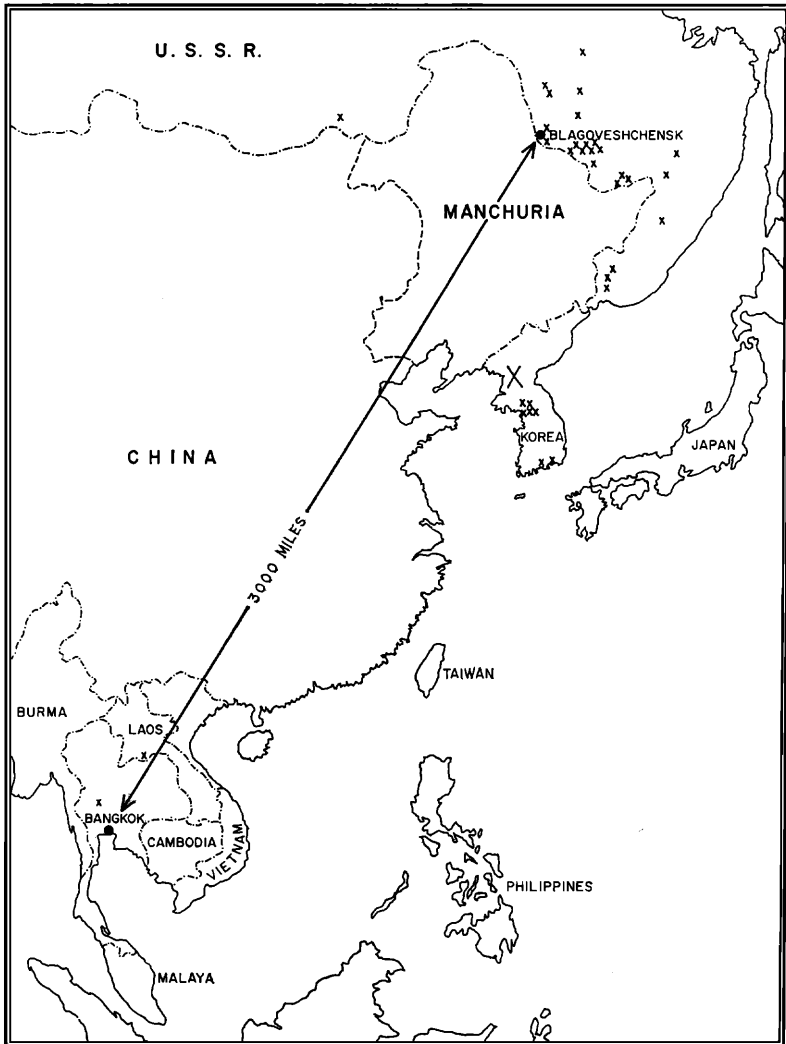
Figure 2. Net setup used in downtown Bangkok for catching swallows.



tied atop a long bamboo pole near them. A drive would start at one end of the street up to 1/4 of a mile away and progress to the net setup. As one net filled, it would be lowered to allow the next to fill. Then the second was lowered to let the birds hit the third. Up to 500 birds could be caught in a single drive. A drive and removal of birds took from 20 - 40 minutes. The next drive would start at the opposite end of the street. (A modification of this net setup could certainly be used in forest flight lanes.)

In the earlier hours (0100 - 0300), up to 300 people gathered around to watch. Many wished to help remove the birds from the nets. Most were sincere but were often unknowingly rough. A few took birds home to supplement their diet. Since it was felt that their assistance could not be rejected, every effort was made to get them to handle the birds with care. It was found that up to 10 birds could be kept in a single large cloth bag (10'' x 20'') without harm if not kept in the bag very long. The quiet nature of the birds also allowed several to be handled at the same time, thus facilitating efficiency. Several people were kept busy banding. Bands were dumped in a pan 100 at a time to speed up banding. The team leader recorded recaptures (current year recaptures were not listed). All birds were banded and released immediately with the exception of those few that were taken to SEATO Lab for ectoparasite check and blood smears.

Figure 3. Recoveries of swallows banded in Bangkok. A small "x" indicates a single recovery. The large "X" in North Korea indicates 47 recoveries.



MIGRATION NOTES

Because swallows migrate by day, their migration has been noted in several areas in Thailand. Most important are the observations from 10 - 18 August 1965 in coastal Southeast Thailand where numbers of swallows were seen apparently following a coastal migration route going westward. The previous fall, on 9 and 10

August, large numbers of swallows were seen streaming southward on the eastern coast of northern peninsular Thailand. Although swallows were present in the same areas in Southeast Thailand from 14 - 30 April 1966, no migration was noted. At Khao Luang in Nakhon Si Thammarat Province (on the east coast of peninsular Thailand), a few swallows were seen between 29 April and 6 May 1965 at 5,000 ft., apparently migrating northward along the ridges. Swallows observed between 28 October and 8 November at the summit of Doi Pha Hom Pok (7,500 ft.) in northern Chiangmai Province in Northwest Thailand were presumed not migrating. From these observations, it appears that part of the fall swallow migration is coastal and that migration and feeding are not restricted to low altitudes.

SUMMARY

A flock of up to 150,000 wintering Barn Swallows, *Hirundo rustica*, roosts nightly in the busiest commercial district of Bangkok, Thailand. In the winters, 1964/65 and 1965/66, a total of 73,276 swallows were banded. Of these, 81 (0.11 percent) were recovered outside Thailand: 26 in Southeastern Siberia, 47 in North Korea, 7 in South Korea and 1 in Laos. About 10,000 (about 48 percent) of the 20,561 banded in 1965 returned to the roost in 1966. Some blood smears were taken and ectoparasites collected. The techniques of catching the birds are discussed. Some observations indicate that many migrating swallows in fall follow a coastal migration route and that neither migration nor feeding is restricted to low altitudes.

ACKNOWLEDGEMENTS

Special thanks is extended to the Jakkrawad, Plabplachai and Sanyaag Police Stations in Bangkok for nightly supplying policemen to direct traffic and keep order.

The Metropolitan Electrical Authority graciously made available on a nightly basis one or two trucks with an electrical crew to stand by in case of damage to an electrical wire.

Dr. Joe T. Marshall made his SEATO Lab team available for the whole of the 1965 banding session and is thus responsible for banding half that year's total. He also helped out himself on many nights and made many useful suggestions. Maj. Gen. Pung Phintuyothin, Director General of SEATO Lab, Col. James L. Hansen, Director of the U. S. Component of SEATO Lab and Dr. David Weinman, head of Special Projects Section of SEATO Lab, were very helpful in getting the project underway. Mr. Curnow and Major Yao of the SEATO Public Information Office gave the project fine world-wide press coverage. Dr. Boonsong Lekagul and Mr. Kittitonglongya assisted the team in many ways. Thanks are given to those who reported recoveries, especially the Bird-Ringing Bureau of the USSR Academy of Science, Dr. Won Hong Koo of the North Korea National Academy of Sciences and Dr. Won Pyong Oh of the South Korea MAPS Team. Dr. H. E. McClure of MAPS Head-

quarters in Tokyo, supplied the nets and bands. Mr. Noel Kobayashi assisted the team on several occasions. Mr. Jon Ahlquist made the drawing of the net setup. Finally, my bird team must be given the major share of credit for the project's success. Outstanding was Mr. Chairat Pohldisri whose idea it was to utilize ropes across the streets instead of poles to elevate the nets. He also contributed many other useful ideas in the course of the project. Mr. Nivesh Nadee, Mr. Nark Suwanpitak and Mr. Samroeng Jantinmatorn are specially commended for their long hours of patient and tiring work.

NOTE: several *Hirundo rustica* recoveries were received too late for inclusion. All the Bangkok recoveries of birds two years of age or over are included. The minimum age of 3 1/2 years of the last three recoveries listed is the oldest recorded in this project.

Banded (Bangkok)	Recovered	Place	Lat.	Long.
11 Jan 66	27 Jun 68	Smeloe, Oktyabr'skiy, Amur, Siberia USSR	50° 37N	129° 13E
7 Jan 66	Dec 68	Bangkok	13° 45N	100° 30N
14 Jan 66	Dec 68	Bangkok	13° 45N	100° 30N
17 Jan 66	21 Dec 68	Bangkok	13° 45N	100° 30N
28 Jan 66	20 Dec 68	Bangkok	13° 45N	100° 30N
1 Feb 66	18 Dec 68	Bangkok	13° 45N	100° 30N
5 Apr 65	13 Jan 66	Bangkok	13° 45N	100° 30N
	8 Jan 69	Bangkok	13° 45N	100° 30N
13 Jan 66	6 Mar 69	Bangkok	13° 45N	100° 30N
14 Jan 66	24 Feb 69	Bangkok	13° 45N	100° 30N

The third from last bird listed was inadvertently banded twice (5 Apr 65 and 13 Jan 66) and carried 2 bands when recovered on 8 Jan. 69.

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