

ALBERTA RECREATION, PARKS AND WILDLIFE
FISH AND WILDLIFE DIVISION

MOVEMENTS OF TRANSLOCATED AND OTHER BLACK BEARS
FOLLOWING BEEHIVE DEPREDATIONS

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Abstract

This report summarizes preliminary radio-telemetric monitoring of black bears following damages to beehives. Nine bears were translocated distances of 18 to 122 km. Four radio-collared bears were released at the site of capture. Four translocated bears returned distances of 22.9, 23.3, 37.4 and 38.6 km to the area of capture. Three bears, translocated distances of 48.3, 69.5 and 101 km, did not return. Movements of two control bears were extensive; greatest distances between locations were 24 and 35 km. Data are compared to that from other studies of translocated bears and implications to the management of the bear-beehive conflict are discussed.

INTRODUCTION

Alberta Fish and Wildlife has conducted extensive investigations into black bear (*Ursus americanus*) depredations of beehives in the Peace River area of Alberta (Quaedvlieg, et. al. 1973, Gunson 1974, Denison and MacGougan 1974, Pecharsky 1975, Gunson 1975, Allen 1976). Annual damages range between 50 and 200 thousand dollars. Approximately 600 black bears have been captured at beeyards during the period 1972-76 by Division personnel; most of which have been shot and removed. In addition, beekeepers have removed another 4-500 bears during the same period. The program has been controversial because of the numbers of bears being killed.

In 1975 preliminary work on translocating problem black bears was conducted; 22 bears were immobilized, ear-tagged and moved to more remote locations (Allen 1976). The purpose of this report is to summarize more detailed studies involving radio-telemetric monitoring of the movements of translocated black bears from damaged beeyards in 1976.

METHODS

Beehive damages were reported to the Alberta Fish and Wildlife Division by participating beekeepers as part of an on-going bear control program in the area. Normally complaints were investigated during the day of complaint or the following day. Upon verification of bear damage either an Aldrich leg-hold snare or a culvert trap was placed in the vicinity of the beeyard where bear damage occurred.

Once captured and selected for this study most bears were immobilized intermuscularly with sernylan (phencyclidine hydrochloride); others with M99

(etorphine) and intravenous antagonist M50-50 (diprenorphine). Such narcotics were applied with either an extra-long range projector (.22 blank powered) or a short range projector (CO₂ powered) and Cap-chur syringes (Palmer Chemical and Equipment Co. Inc., Douglasville, Georgia).

All bears were double ear-tagged with small-size, black, numbered, one-piece Tuflex cattle tags (Fearing Manufacturing, St. Paul, Minn.). A lower first premolar was extracted with a dental periostiotome and stored in 5-10 percent formalin for subsequent age determination. Bears were weighed on a 400-pound capacity ~~Detecto~~ scale with the use of hoists and metal tripods.

Neck collars (LM model) with SB2 radio transmitters (AVM Instrument Company, Champaign, Illinois) were fitted to each bear. Frequencies ranged from 150.845 to 151.273 MHz. Most radiolocations were obtained with the use of a Cessna 185 aircraft. Two 4-element yagi antennas were mounted along each wing strut and a R-L switchbox was employed to maximize directional capability with the portable LA 12 receiver (AVM). More accessible bears were located with the use of a telescoping (maximum of 10 meters) mast mounted on a half-ton truck. Aerial locations were conducted, weather permitting, at approximately 3-day intervals from May to end August. During September, October and November locations were determined at about 10-day intervals.

Bears were either translocated by truck while immobilized or released at the capture site (control). Activity areas were calculated using the minimum area method of Mohr (1947).

RESULTS

Nine bears (Table 1) were translocated a total of 10 times (Table 2). Distances translocated varied from 18.3 km (11.4 miles) to 122.3 km (76.0 miles).

Four bears were released near the beeyard where damages occurred.

Translocated Bears:

Bear No. 51

A 3 year old unsuckled female black bear was captured during the night of 11-12 May in a leg-hold snare placed near beehives at NE 24-83-21-W5 following the loss of one hive. She was immobilized with 1.5 cc of sernylan at 1010. Following attachment of a radio-collar she was moved northeasterly (38°) some 23.2 kms (14.5 miles) and released on a cutline near the Old Cadotte Lake Road (SW 21-85-19-W5) at 1345 (Figure 1).

At 1100 the following day she was located about 200 meters south of the release site. The following day she had moved some 3.5 kms southwesterly and toward the capture site. On 16 May she was located and observed about 1.7 km north of the last observation. No contact was made until 22 May when she was located by aircraft about 500 meters north of the capture site. Route of return was undetermined.

During the next 4-5 months she remained in an area of 31 sq. km (12 sq. mi.) north and west of the capture site and east of the town of Peace River. During this period she was probably responsible for beehive losses at the same yard on 25 May and 22 June (Table 3).

She was located in a den at SE 25-83-21-W5 on 13 October and remained there into the winter.

Bear No. 52

This black bear, a 3 year old male, was captured on 14-15 May at an unfenced beeyard at SE 36-76-22-W5. Seven hives had been damaged prior to 12 May

of which four were completely destroyed. The 61.9 kg (143 lb.) bear was immobilized with 1.3 cc of sernylan and fitted with a radio-collar. He was then translocated and released at 2000 on NE 25-81-21-W5 some 48.3 km (30.0 mi.) from the capture site (Figure 2). The release site was near the Heart River in an area of intensive agriculture. The direction of translocation was 12° .

At noon 16 May he was located some 1.2 km northwest of the release site and continued to move westerly until 19 May when he was located 3.9 km west of the release site. No further contact was made until 22 May when he was located 16 km south of the release area; a movement in the general direction of the capture site.

Bear 52 remained in a largely wooded area, completely surrounded by intensively farmed land, north and west of the 22 May contact except for an easterly movement some 11 km between 15-18 June. He remained in that general area of 53 sq. km (20 sq. mi.) until 5 August when he was captured and shot following beehive damages at SW 10-80-21-W5.

Bear No. 56

A 44.5 kg (98 lb.) unsuckled 2 year old female black bear was captured in a leg-hold snare at SW 31-75-21-W5 on 28 May. This followed bear damages to three hives prior to 21 May. Following immobilization with 0.8 cc of sernylan and fitting with a radio-collar she was moved southwesterly (218°) some 18.3 km (11.4 mi.) and released near a small creek (Figure 3).

Telemetric contact was not successful at ground level on 30 and 31 May. Contact was achieved on 4 June by aerial telemetry by which time she had moved some 6 km southeasterly. No further contact was made with bear 56 despite and extensive aerial search.

Information received later in the summer strongly suggested that bear 56 was shot by a resident of the area near the last contact site.

Bear No. 58

On 12 June an 83.9 kg (185 lb.) 3 year old sow was captured at SW 26-81-20-W5 following bear damages to one hive prior to 10 June. After immobilization with 1.5 cc of sernylan and fitting with a radio-collar she was translocated 22.9 km (14.3 mi.) and released on 13 June near the Reno Road in a heavily forested area at SW 16-81-17-W5. Direction of translocation was 107° (Figure 4).

At 1036 on 15 June, some 2 days following release she was located and observed in a field some 5 km from the capture site. She had returned 23.5 km.

Between 15 and 28 June she moved about 5 km east; then 4 km south to the Heart River and another 3 km east toward the capture site. Her location on 28 June was SE 28-81-20-W5 some 3 km west of the capture site.

Following an identical location on 2 July the area was searched and her radio-collar was located. She had slipped her collar between 22-28 June.

Bear No. 67

A large (148.8 kg or 328 lb.) brown 4 year old male black bear was captured at SW 31-75-21-W5 on 6 July. One hive had been disturbed by a bear prior to 5 July. He was fitted with a radio-collar after immobilization with 2.0 cc of sernylan. He was translocated south-easterly (125°) 37.4 km (23.3 mi.) to the vicinity of an AGT tower at SE 24-73-19-W5 and released (Figure 5).

Bear 67 remained in the general vicinity of the release site for 2 weeks. On 23 July he was located at NE 3-75-20-W5, 21 km towards the capture site; and on 28 July he was located 5 km northwest of the capture site near the Little Smoky River. He had returned to the general area of capture moving a minimum distance of 44 km during the 8-day period.

He was again captured at a beeyard at SE 36-76-22-W5 some 10 km north of the first capture site on 20 August following beehive damages. Following his second capture he was immobilized with 4cc of M99 at 1427 and 2 cc of M99 at 1900 for collar adjustment and another translocation. Following translocation to SE 21-66-23-W5, some 101.4 km (63.0 mi.) southerly (189°) he was administered 4 cc of M50-50 at 1929 and 1 cc of M50-50 intermuscularly at 1951. He was completely mobile and moved away at 2004 near the road to Snuff Mountain Tower south of Valleyview (Figure 6).

Contact by aircraft was not achieved on 23 August, 3 days following release, but he was located on 24 August at SE 33-67-1-W6 (near the Latornell River) some 43 km west of release site 2. Further aerial contacts were unsuccessful until 4 September when bear 67 was re-captured in a leg-snare at a beeyard on NW 34-67-22-W5, near highway 43 south of Valleyview, 16 km north of the second release site.

He was again immobilized and returned to release site 2. He moved only a few kilometers from the release site over the following month until he was located at NW 35-69-1-W6 on 13 October near the Simonette River, some 48 km west and north of release site 2. During the following month he was located along the Simonette and Latornell Rivers until 18 November. At this time bear 67 was still active.

No further contacts were made with bear 67 due to receiver malfunction until January 10 when he was located in a den at SE 26-68-26-W5.

Bear No. 71

During the night of 27-28 July a 150.6 kg (332 lb.) 10 year old male black bear was captured in a culvert trap following damages to one hive at a beeyard on SE 28-73-22-W5. A total of 3.4 cc of sernylan was administered to affect

immobilization. Bear 71 was translocated 38.6 km (24.0 mi.) and 220° to an area near the Sturgeon Heights Road south of highway 34 and Sturgeon Lake (Figure 7) and released at 2230.

Three days later on 31 July he was located 8 km south; and on 4 August; 7 days after release, he was contacted at NE 20-73-22-W5, some 2 km from the capture site.

Bear 71 continued northerly, crossing the Little Smoky River between 6-9 August. He remained in a relatively small area north of the River until at least 13 October when the final telemetric contact was made. We located a carcass of a bear that had been shot and skinned on N 32-75-21-W5 on 21 October less than 1 km from the last contact. Information was received at a later date that a radio-collared bear had been shot by a hunter in that vicinity.

This turned out to be Bear # 56

Bear No. 72

Bear 72, a 191.4 kg (422 lb.) 9 year old male black bear, was fitted with a radio-collar following immobilization with 8cc of sernylan on 18 August. He had been captured in a leg-snare following damages to 3 hives at SE 17-81-22-W5. He was translocated 122.3 km (76.0 miles) to SE 4-69-25-W5, a direction of 191° . No movements were noted on telemetric contacts during the following week. The collar was located by a ground telemetric search. Bear 72 had slipped his collar soon after translocation.

Bear No. 74

A 101.6 kg (224 lb.) male black bear was captured in a leg-snare on 7 September at a beeyard on NE 29-69-22-W5 following damages to hives prior to 30 August. He was immobilized with 2.3 cc of sernylan, fitted with radio collar and translocated 69.5 km (43.2 miles) and released west of the Smoky River at SE 18-72-2-W6 (Figure 8).

Aerial monitoring during September and October revealed movements along the edge of the forest-farm fringe, crossing highway 43 on at least one occasion. Final contact was made on 26 October at NW 19-73-2-W6.

Bear No. 75

On 28-29 September a 61.2 kg (135 lb.) 2 year old male black bear was captured in a leg-snare at a beeyard at SE 3-75-20-W5 following damages to 8 hives. He was immobilized with 2.0 cc of sernylan, fitted with a radio-collar and translocated to NW 20-66-21-W5 a distance of 83.7 km (52.0 mi.) in the direction of 186° (Figure 9).

Over the following days bear 75 moved westernly across the Little Smoky River and highway 43 a distance of some 10 km. He was shot by a farmer on 10 October on the edge of a field at NW 30-66-22-W5.

Control Bears:

Bear No. 53

On 15 May a 138.8 kg (313 lb.) 5 year old boar was captured in a leg-hold snare at SW 13-74-22-W5. This followed damage to 3 hives prior to 10 May. He was immobilized with 3 cc of sernylan, an overdose of about 0.6 cc, which produced prolonged convulsions. He was fitted with a radio-collar and released at the capture site (Figure 10).

During the following 8 days bear 53 was located during 6 different days within a few hundred yards of the capture site. He appeared to be mostly inactive, especially for the first 2 days. On 27 May he was located near the Little Smoky River some 10 km north.

During the following 3 months bear 53 made extensive movements especially to the north, east and south of the capture site (Figure 10). On 17 August he was captured in a leg-snare at NE 16-74-21-W5 following losses from bear damages at a beeyard.

Bear No. 60

Two hives were destroyed in a beeyard at SE 30-75-22-W5 prior to 18 June when the complaint was received. One leg-hold snare was set on 18 June and that night a 72.6 kg (160 lb.) 2-year old male black bear was captured. He was immobilized with 1.5 cc of M99, fitted with a radio-collar and released at the capture site.

Bear 60 remained in the general capture vicinity, that is within 3 km of the capture site for 2 weeks. He was probably responsible for damages to hives at the yard where captured between 29 June and 2 July. On 9 July he was located 23 km south and east, near highway 34 (Figure 11). Three days later he was located near the Little Smoky River some 19 km north. Throughout the summer he continued to make extensive movements, mostly along the Little Smoky River, crossing the River a number of times.

On 13 October he was once again located much further south at SE 35-74-22-5, but had returned north to the River when contacted on 26 October. On 4 November he was located at SE 34-75-22-W5. Contact was lost because of receiver malfunction until 10 January when he was located in a den at SW 33-75-22-W5.

Bear No. 64

A 120.2 kg (265 lb.) 4 year old male black bear was captured in a leg-hold snare at SE 17-84-19-W5 on 22-23 June following damages to three hives. He was fitted with a radio-collar after immobilization with 3 cc of M99 and released at the capture site. Bear 64 remained in a 74 sq. km area during the summer and fall and no hives were reported damaged or destroyed that could be related to his activities. Final telemetric contact with bear 64 was made on 13 October at NE 18-84-19-W5 only 1.6 km from the capture site (Figure 12).

Bear No. 73

Bear 73, a 103.0 kg (227 lb.) sow was captured at SE 34-76-22-W5 on 5 September following damages to virtually all of the 40-odd hives in a beeyard at that location. A number of other bears were subsequently captured at the same location. Following immobilization with 2.3 cc of sernylan and fitting with a radio-collar she was released at the capture site.

She moved gradually westward until located at NE 12-76-24-W5 in a heavily forested area on 23 September, some 17.3 km from the capture site. She remained in that general vicinity until denning. Signal quality on 26 October strongly suggested she was in a den at the time. The den was located on 6 January at NW 7-76-23-W5 (Figure 13).

Summary of Results of Translocations

Of the 10 translocations one bear slipped its collar soon after release, two were shot within 2 weeks of release, three did not return and four returned to the vicinity of the capture site. Straight-line translocation distances for the four bears that did return were 22.9, 23.3, 37.4 and 38.6 km. Straight-line translocation distances of the three bears that did not return were 48.3, 69.5 and 101 km. Two of the returnees were male; two were female. Bears returned from translocation directions of 38° , 107° , 125° and 220° .

Bears that did not return were 52, 74 and 67 (second translocation). Bear 52 moved in the direction of the capture site, but only as far as an area of extensive forest cover; about one-third of the translocation distance. Open farm country appears to have impeded further southerly movement. Bear 74 may have found the Big Smoky River an effective barrier to easterly movement. Following the second translocation bear 67's extensive movements were orientated

north-westerly rather than northerly (the direction of the capture site). The country to the north was mostly farm developed; that to the west, south and east was primarily forest.

Summary of Movements of Control Bears

Bears 53 and 60 moved extensively during the summer months, but 64 did not. There was no obvious explanation for this difference. All three were males, of ages 5, 2 and 4 years, respectively. Bear 53 was immobilized with sernylan; bears 60 and 64 with M99. The extensive movement of bear 60 continued beyond the breeding season (June and July). Greatest distances between any two locations of bears 53, 60 and 64 were 24 km (15 mi.), 35 km (22 mi.) and 16 km (10 mi.) respectively and calculated activity areas were 192 sq. km (74 sq. mi.), 194 sq. km (75 sq. mi.) and 74 sq. km (28 sq. mi.) respectively (Table 3).

Bear 73, released late in the season, simply moved away from the damage area into a heavily forested area.

Additional Damages at Beeyards

Of the five translocated bears (51, 52, 67, 71 and 74) that survived with radio-collars for a period greater than 1 month, three were known to have caused additional damages at beeyards (Table 4). Bear 51 damaged hives on at least two additional occasions at the unfenced beeyard where initial damage occurred. Bears 52 and 67 were recaptured following additional beeyard damages. Radio-collared bears 71 and 74 were not recaptured at beeyards and probably did not cause further beeyard damages. Bears 58 and 72 both of which slipped their radio-collars, but were ear-tagged were also not recaptured in bear-beeyard control operations and may not have caused additional damages. Bear 74 was not released until 7 September when beeyard honey harvests were well underway.

Bears 56 and 75 were shot soon after release.

Two of the 4 control bears were known to be responsible for additional damages to beeyards.

DISCUSSION

The ability of black bears to return to a capture vicinity following translocation has been documented previously. Erickson and Petrides (1964) reported an adult male black bear removed 154 km (96 miles) returned to the capture area, but only two of the 19 translocated bears showed such homing behaviour. Twenty-two of 52 black bears translocated in New York distances from 13.2 km (8.2 mi.) to 107.2 km (66.6 mi.) returned to the capture site (Sauer et. al. 1969). The maximum return in that study was 90.1 km (56 mi.). Hager (1970) summarized the movements of 171 translocated black bears in Michigan between 1958 and 1969 and reported that 27 homed and some others moved toward the capture area. Greatest return was 230 km (142.5 mi.). Black bears moved within 32 km (20 mi.) in Pennsylvania returned, but those moved between 81 and 105 km (50-65 mi.) did not (Eveland 1973). One return of 40.2 km was reported in California (Piekielek and Burton 1975).

Such studies indicate that black bears may return from distances greater than about 40 km, but just as many do not. The ability to return, in all probability, is strongly related to the size of the area of familiarity that a bear possesses as suggested by Sauer et. al. (1969). That is, those bears that are familiar with large areas have a greater probability of returning. We suspect that bears removed to an unfamiliar area initially move randomly in respect to direction until either reaching familiar territory and continuing the return or exploring and settling in a new territory. The movements of bear 67 following its second translocation seemingly illustrate the latter type of behavior.

The large areas travelled by control bears 53 and 60 (192 sq. km and 194 sq. km) suggest that summer activity areas of some black bears in the forest-farm fringe habitat of the Peace River country may be considerably larger than that of bears in more natural forest habitats. Amstrup and Beecham (1976) reported mean home ranges of 48.9 sq. km for seven adult females and 112.1 sq. km for adult males. Other researchers found considerably smaller home ranges (Erickson and Petrides 1964, Jonkel and Cowan 1971).

These findings are of some significance to the continuing Peace River black bear-beehive conflict. If bears are to be translocated, they should be moved distances greater than 40 km (25 mi.). Since the rate of secondary damage was high in this study, such translocations should be directed away from agricultural activity. During years of abundant bears and damages such as 1971, 1973 and 1976 such translocations do not seem practical considering the workload already handled by bear control personnel. Research must continue to be directed to the development of damage preventative technology and to non-lethal methods of bear control.

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Table 1. Biological observations of translocated and control black bears in the Peace River area of Alberta: 1976.

| Type | Bear No. | Sex | Age | | Colour | Weight kg | Length cm |
|--------------|----------|-----|-----------|--------|--------|-----------|-----------|
| | | | Estimated | Dental | | | |
| Translocated | 51 | F | 2-3 | 3 | Black | 69.9 | - |
| | 52 | M | 2-3 | 3 | Black | 61.9 | 150 |
| | 56 | F | 2 | 2 | Black | 44.5 | 155 |
| | 58 | F | 4-5 | 3 | Black | 83.9 | 171 |
| | 67 | M | Adult | 4 | Brown | 148.8 | 193 |
| | 71 | M | 10+ | 10 | Black | 150.6 | 194 |
| | 72 | M | Adult | 9 | Black | 191.4 | 199 |
| | 74 | M | 3-4 | 5 | Brown | 101.6 | 175 |
| | 75 | M | 2-3 | 2 | Black | 61.2 | 134 |
| Control | 53 | M | 6-10 | 5 | Black | 138.8 | 192 |
| | 60 | M | 3-4 | 2 | Black | 72.6 | 170 |
| | 64 | M | 5-6 | 4 | Black | 120.2 | 192 |
| | 73 | F | Adult | 11+ | Black | 103.0 | 167 |

Table 2. Specifics of ten translocations of black bears in the Peace River area of Alberta: 1976.

| Bear No. | Capture | | Translocation | | Return |
|----------|------------|----------------|---------------|---------------|--------|
| | Date ('76) | Location (-W5) | Distance (km) | Location | |
| 51 | 05/12 | NW 24-83-21 | 23.3 | SW 21-85-19-5 | Yes |
| 52 | 05/15 | SE 36-76-22 | 48.3 | NE 25-81-21-5 | No |
| 56 | 05/28 | SW 31-75-21 | 18.3 | SW 14-74-23-5 | 1) |
| 58 | 06/12 | SW 26-81-20 | 22.9 | SW 6-81-17-5 | Yes |
| 67 | 07/06 | SW 31-75-21 | 37.4 | SE 24-73-19-5 | Yes |
| 67 | 08/20 | SE 36-76-22 | 101.4 | SE 21-66-23-5 | No |
| 71 | 07/28 | SE 28-73-22 | 38.6 | NE 13-70-25-5 | Yes |
| 72 | 08/18 | SE 17-81-22 | 122.3 | SE 4-69-25-5 | 2) |
| 74 | 09/07 | NE 29-69-22 | 69.5 | SE 18-72-02-6 | No |
| 75 | 09/29 | SE 3-75-20 | 83.7 | NW 20-66-21-5 | 1) |

1) bear shot soon after release

2) collar slipped off soon after release

Table 3. Greatest distance between locations and activity areas of control and translocated black bears; Peace River area of Alberta: 1976.

| Type | Bear No. | Greatest Distance Between Locations (km) ¹⁾ | Activity Area (sq. km) |
|--------------|----------|--|------------------------|
| Control | 53 | 24 | 192 |
| | 60 | 35 | 194 |
| | 64 | 16 | 74 |
| Translocated | 51 | 8 | 31 |
| | 52 | 14 (22) ²⁾ | 53 |

1) within activity area only of translocated bears

2) 22 km includes distance to one location outside of activity area

Table 4. Specifics of beehive damages by translocated and control black bears in the Peace River area of Alberta: 1976.

| Type | Bear No. | Initial Damage | | Secondary Damage | | Tertiary Damage | |
|--------------|----------|--------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------|
| | | Date ¹⁾ | Hives Damaged | Date | Hives Damaged | Date | Hives Damaged |
| Translocated | 51 | 05/11 | 1 destroyed | 05/25 | 7 destroyed | 06/22 | 6 destroyed |
| | 52 | 05/12 | 4 destroyed 3 damaged | 08/04 | 3 damaged | | |
| | 56 | 05/21 | 3 destroyed | 2) | | | |
| | 58 | 06/10 | 1 damaged | 2) | | | |
| | 67 | 07/05 | 1 damaged | 08/19 | 1 destroyed 2 damaged | 09/02 | 6 damaged |
| | 71 | 07/12 | 1 damaged | None | | | |
| | 72 | 08/10 | 3 damaged | 2) | | | |
| | 74 | 08/30 | 3) | None | | | |
| | 75 | 09/13 | 8 damaged | 2) | | | |
| | Control | 53 | 05/10 | 2 destroyed 1 damaged | 08/01±08 | 2 destroyed 1 damaged | 08/17 |
| 60 | | 06/18 | 2 destroyed | 07/07/01 | 2 destroyed 2 damaged | | |
| 64 | | 06/21 | 2 destroyed 1 damaged | None | | | |
| 73 | | 09/03 | 4) | None | | | |

1) date complaint received

2) collar slippage or bear mortality soon after translocation

3) not recorded

4) damage by 4+ bears over period of 1 month; ± 40 hives destroyed

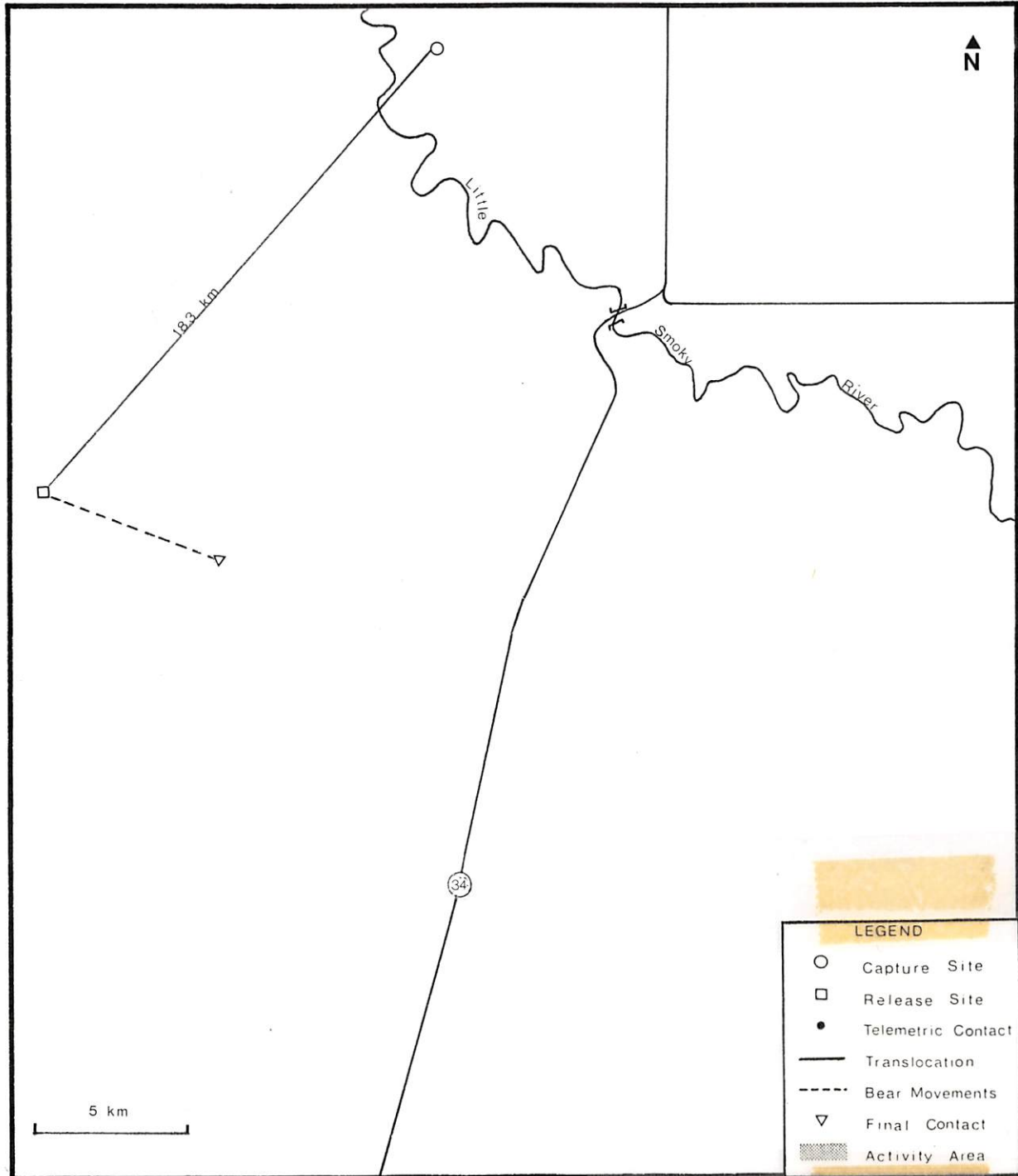


Figure 3. Translocation and subsequent locations of black bear 56 as determined by radio-telemetry; Peace River area of Alberta, 1976.

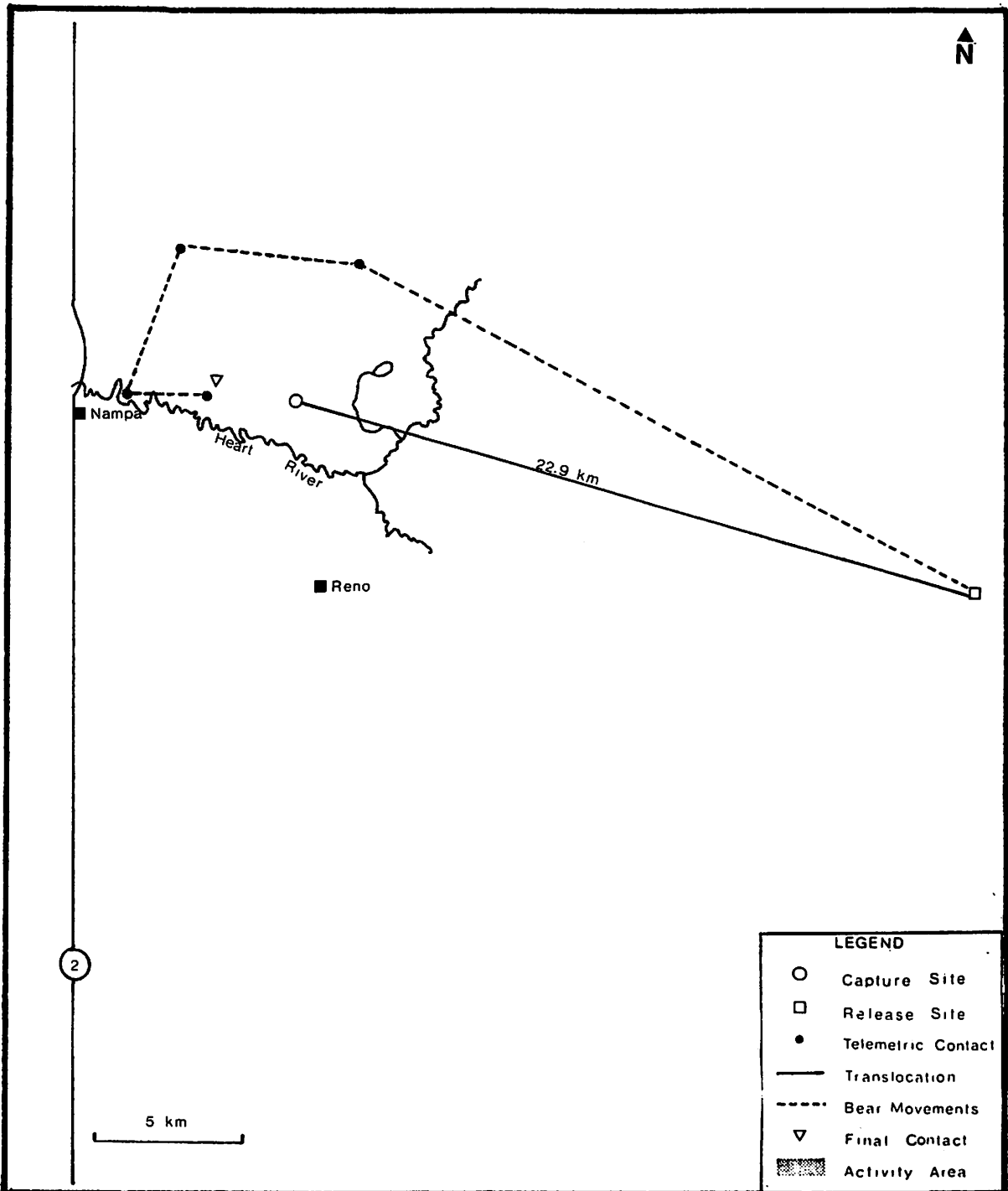


Figure 4. Translocation and subsequent locations of black bear 58 as determined by radio-telemetry; Peace River area of Alberta, 1976.

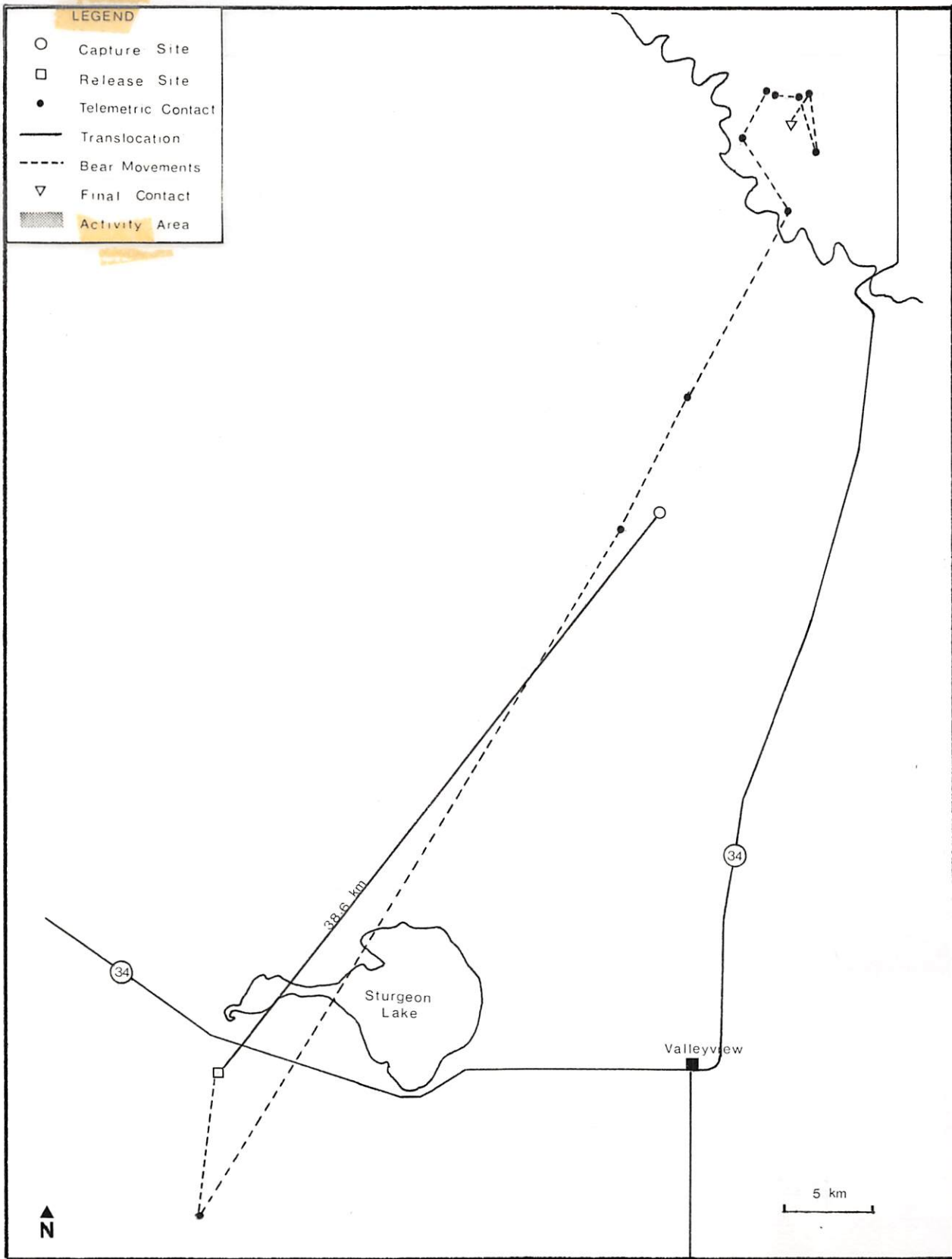


Figure 7. Translocation and subsequent locations of black bear 71 as determined by radio-telemetry; Peace River area of Alberta, 1976.

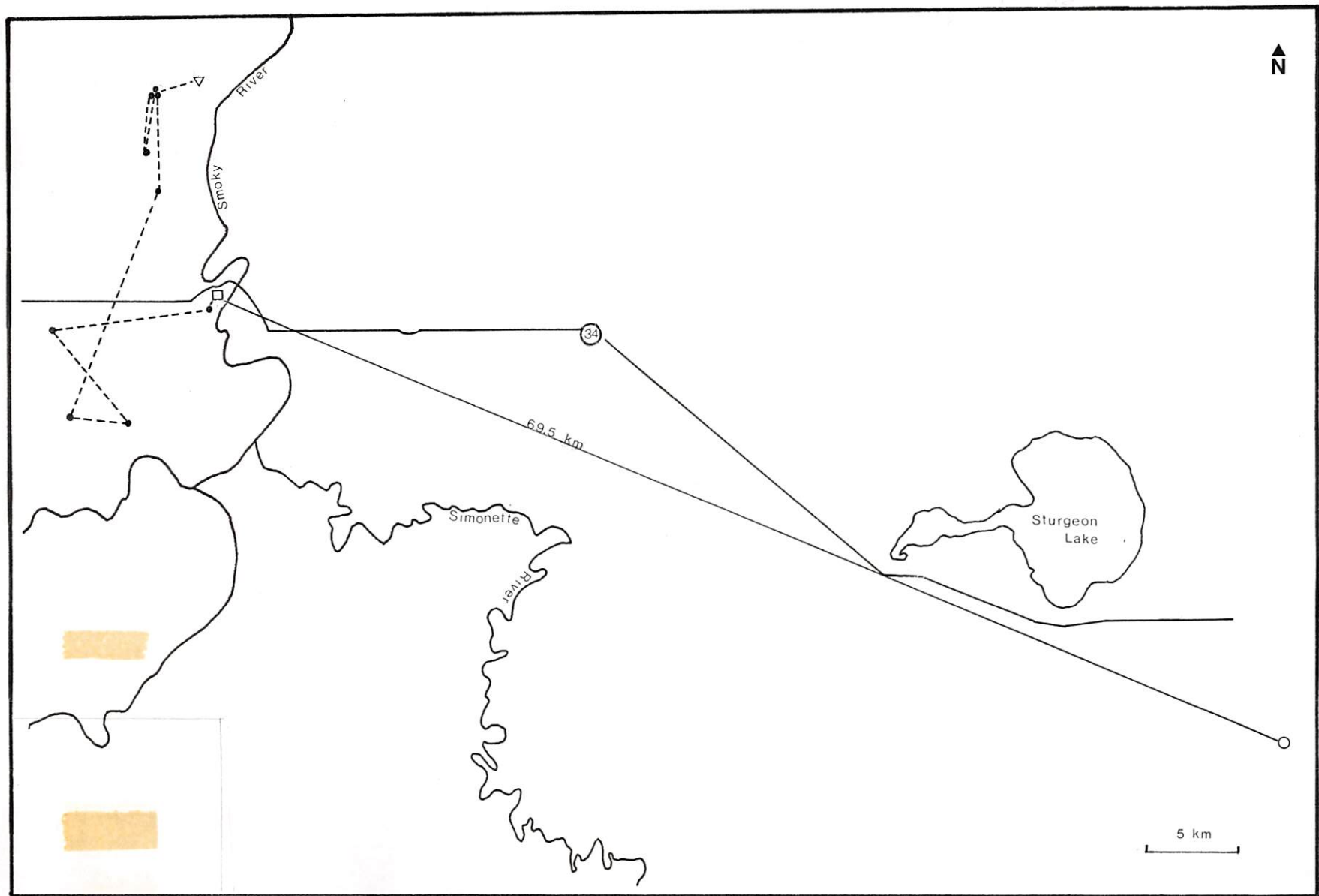


Figure [redacted] Translocation and subsequent locations of black bear 74 as determined by radio-telemetry; Peace River area of Alberta, 1976.

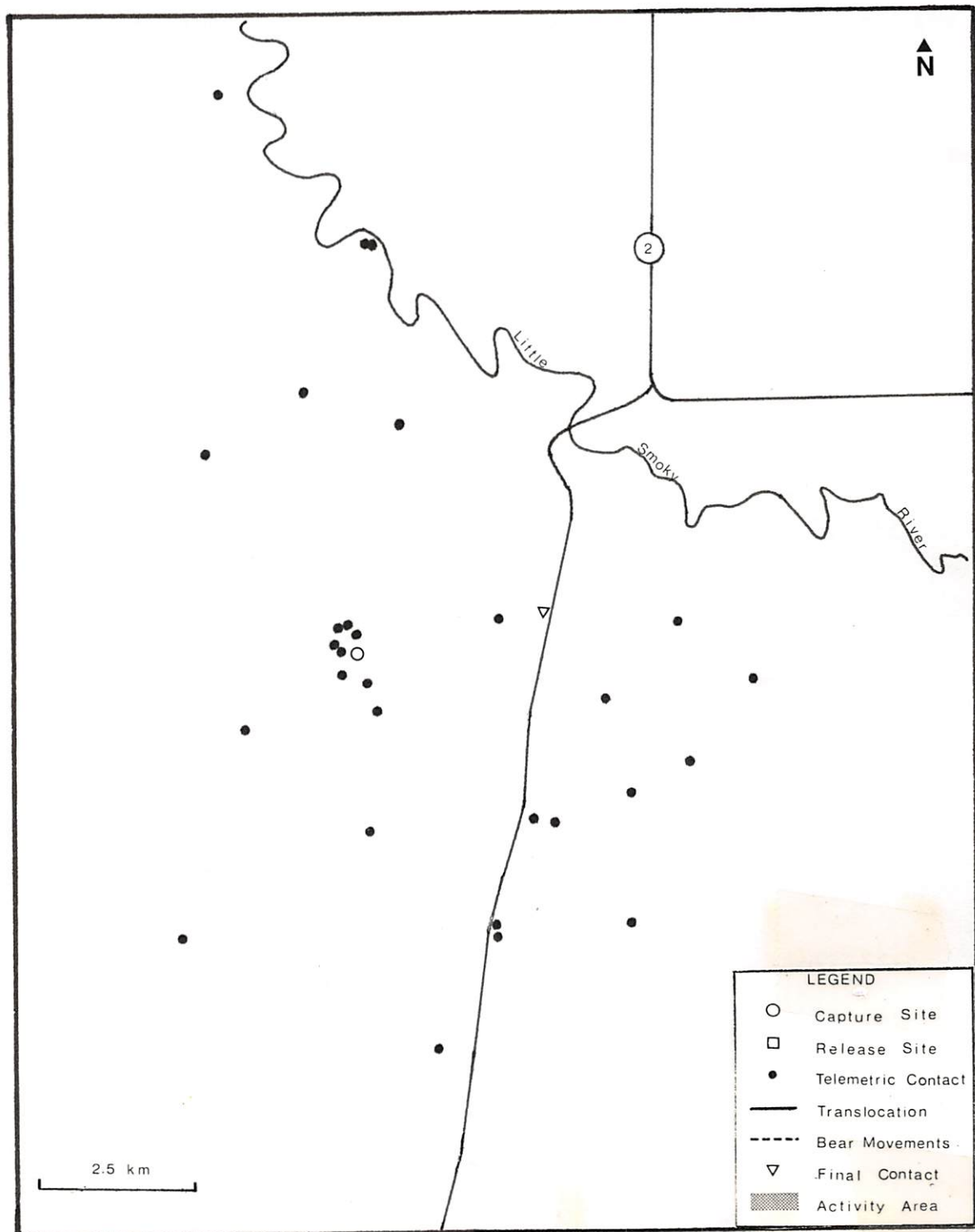


Figure 10. Locations of black bear 53 as determined by radio-telemetry; Peace River area of Alberta, 1976.

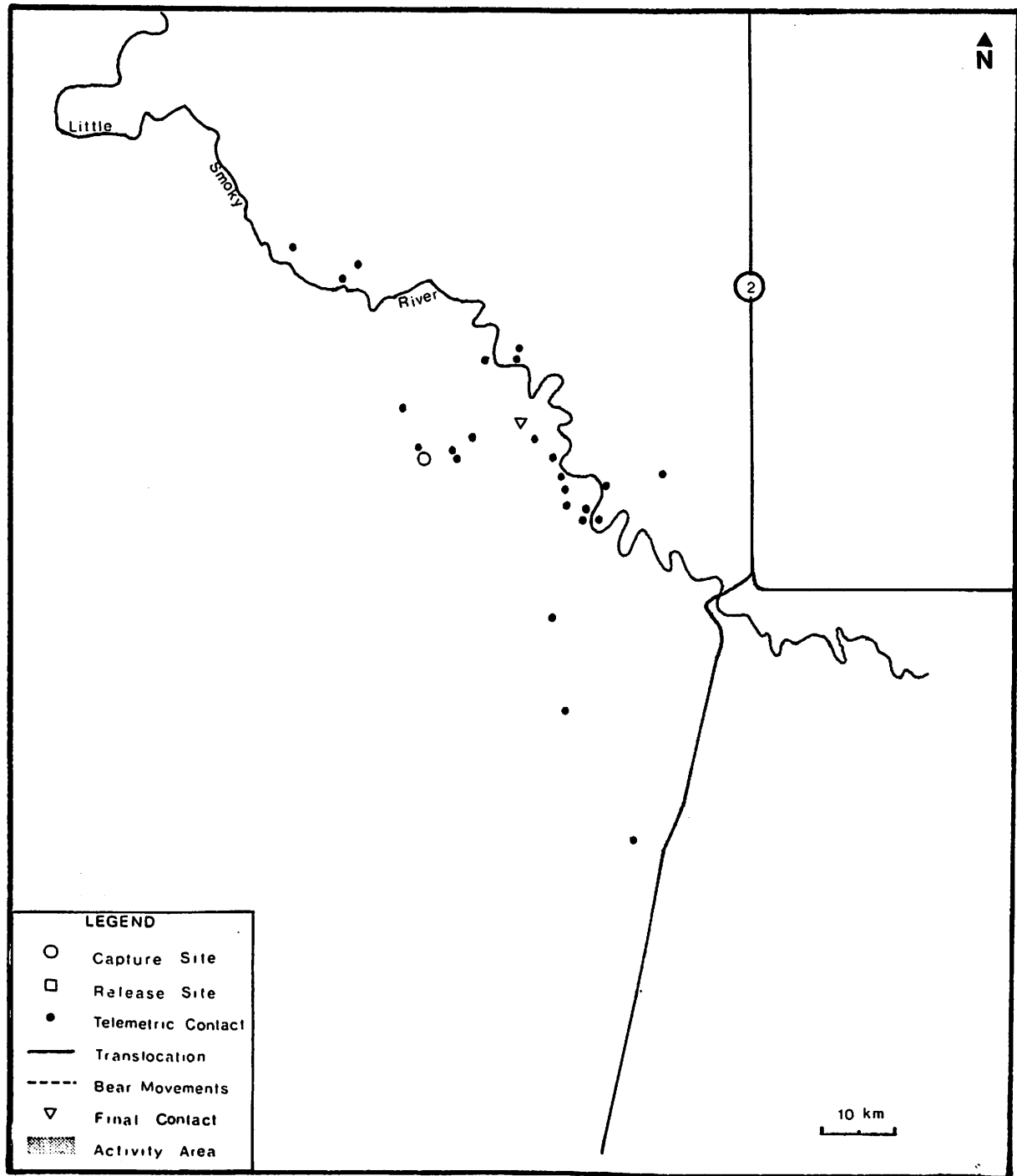


Figure 11. Locations of black bear 60 as determined by radio-telemetry; Peace River area of Alberta, 1976.

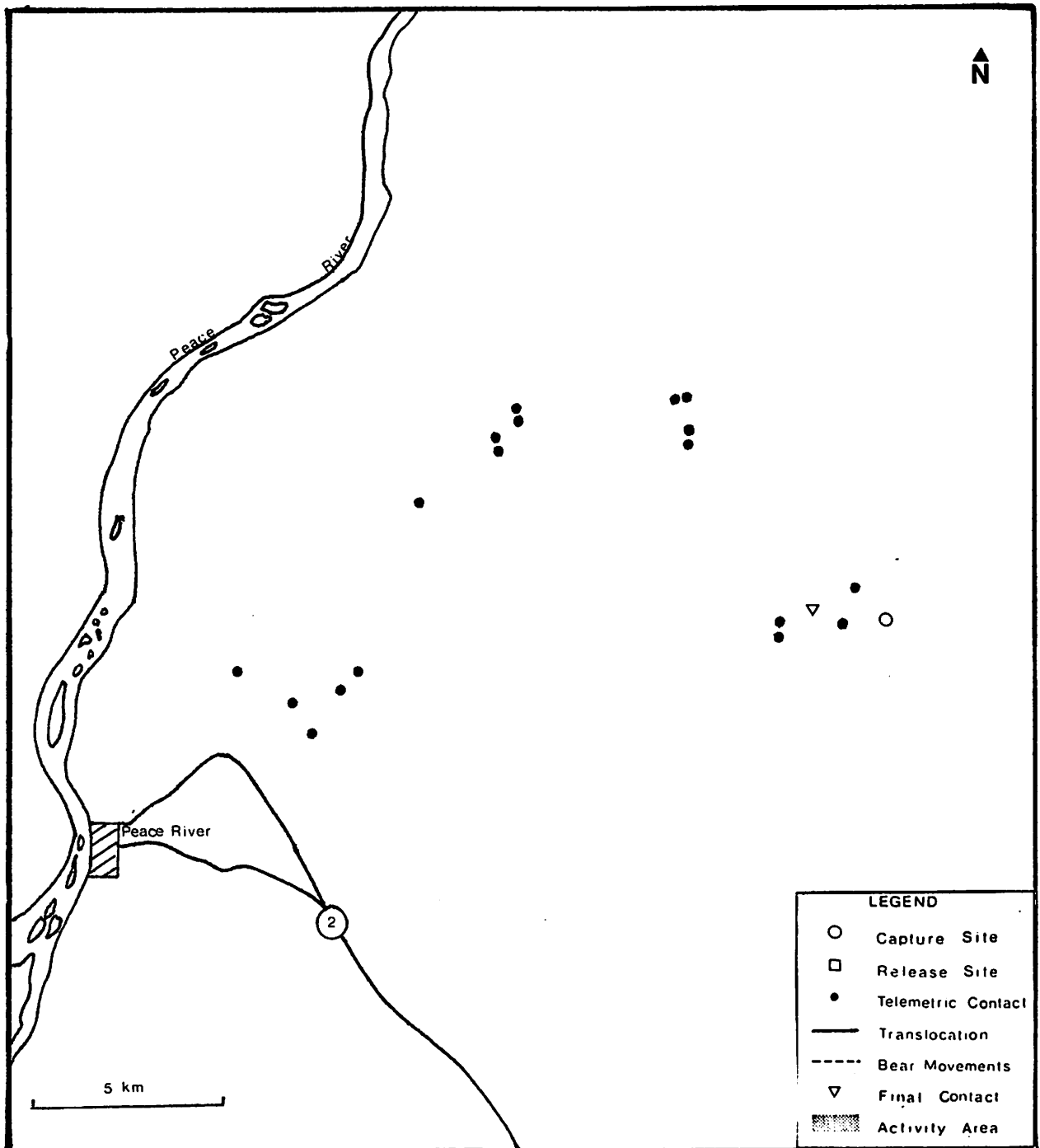


Figure 12. Locations of black bear 64 as determined by radio-telemetry; Peace River area of Alberta, 1976.

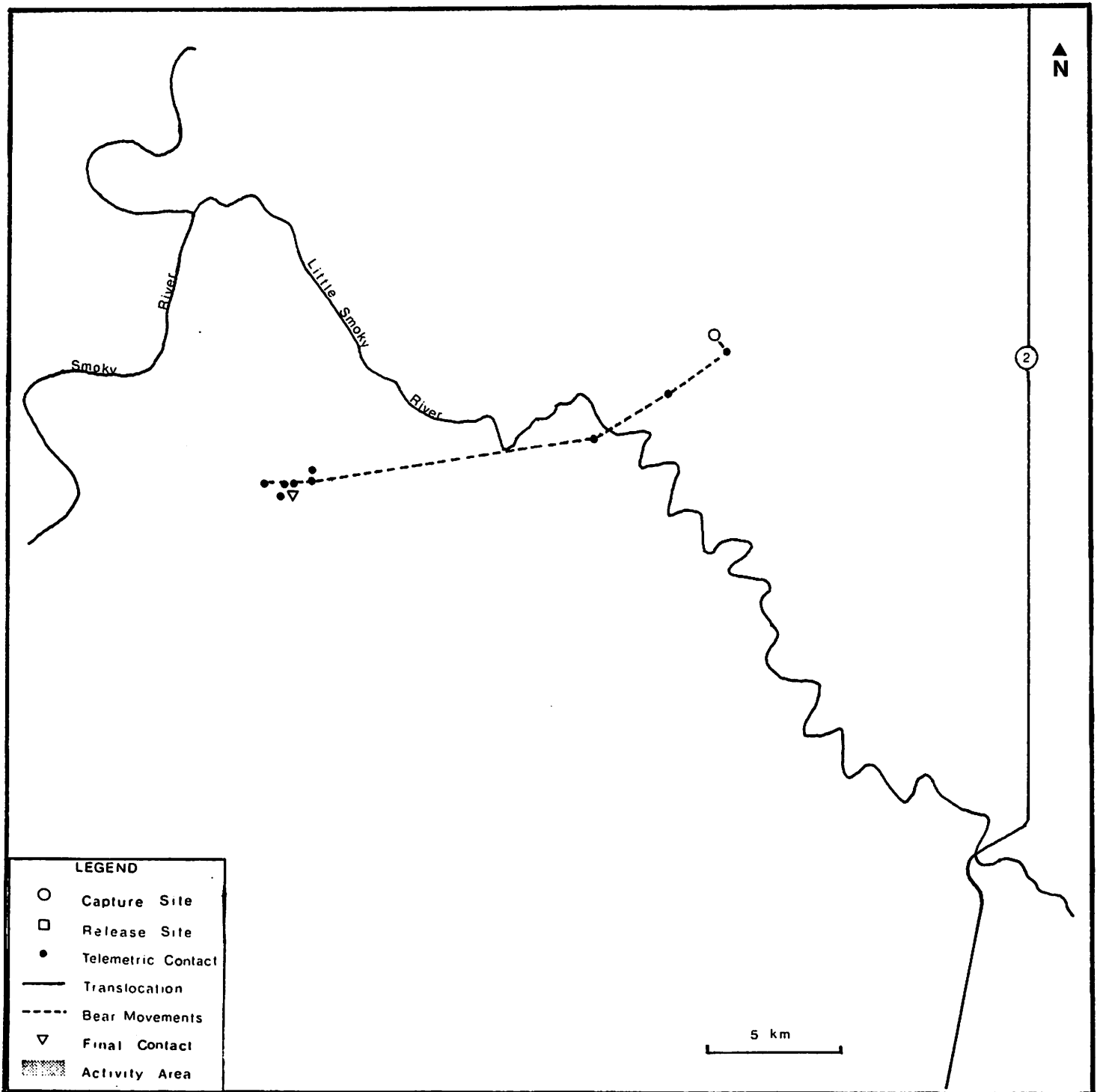


Figure 13. Locations of black bear 73 as determined by radio-telemetry; Peace River area of Alberta, 1976.