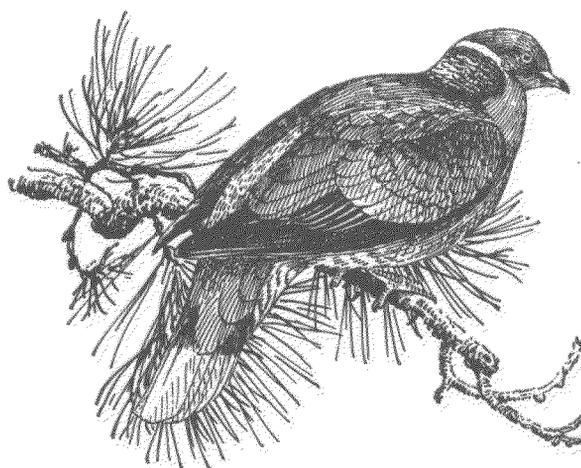


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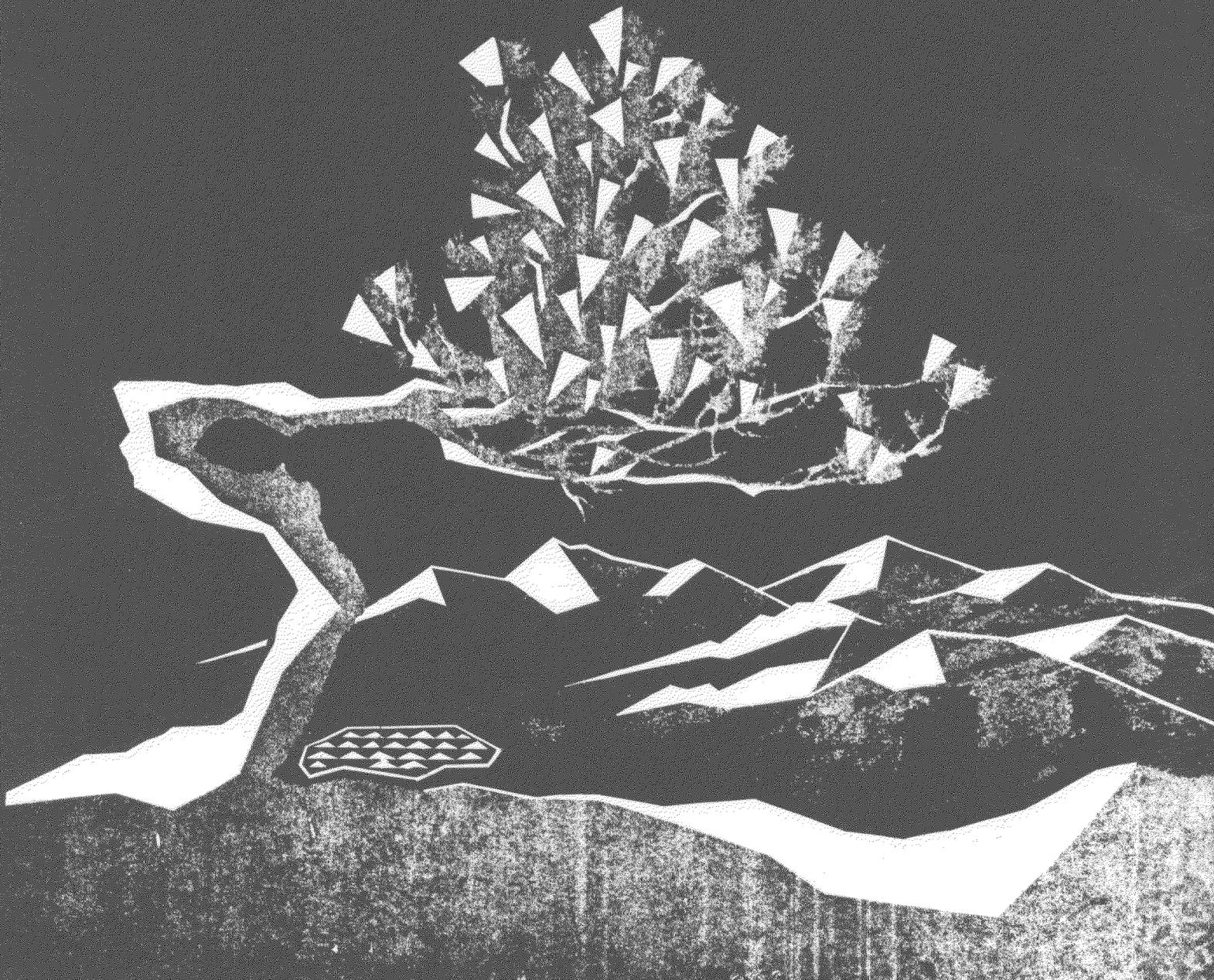
**METHODS FOR LOCATING,
TRAPPING AND BANDING
BAND-TAILED PIGEONS
IN COLORADO**

Clait E. Braun

June 1976



COLORADO DIVISION OF WILDLIFE



This publication is dedicated to the late F. John Ward of Pebble Beach, California. Mr. Ward had a deep and sincere interest in research and management of band-tailed pigeons. He recognized the need for improved trapping techniques that would provide adequate samples of birds for banding studies. Through his interest, idea-sharing, and cooperation, he added greatly to the author's awareness of possible trapping methods. Mr. Ward suggested the need for this report and his encouragement was instrumental in its preparation.

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A PUBLICATION OF THE
COLORADO DIVISION OF WILDLIFE

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A Contribution of Federal Aid in Wildlife Restoration, Project W-88-R

FOREWORD

Prior to initiation of this investigation in 1969 little was known about the status of band-tailed pigeons in Colorado. More than 24,000 birds were trapped and banded during the course of this study, a figure far exceeding total population estimates made prior to this intensive investigational effort.

The band-tailed pigeon project has been a cooperative one in every sense of the word. Personnel from state and federal agencies have contributed, and the effort has been a fine example of research and management cooperating to achieve mutual objectives. Even funding was derived from varied sources. The success of this joint venture is not only a result of many people working together, but also reflects the tireless efforts of the author of this publication, who supervised, coordinated, and performed field activities.

As a result of this joint endeavor band-tailed pigeon hunting was legalized in Colorado in 1970 on an experimental basis and has since become operational. The season had been closed since the mid 1940's, so already this work has had significant impact on pigeon management in Colorado. To further improve utilization of a valuable band-tailed pigeon resource, managers are urged and encouraged to consider and implement the recommendations contained in this report.



Harold M. Swope
Wildlife Research Chief

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¹Photographs and drawings, except as otherwise noted, are by the author.



FRONTISPIECE — Band-tailed pigeon

METHODS FOR LOCATING, TRAPPING AND BANDING BAND-TAILED PIGEONS IN COLORADO

ABSTRACT

During the 1969-1975 period, 24,068 band-tailed pigeons (*Columba fasciata*) were trapped and newly banded at 53 different locations in Colorado. Methods were developed to locate, trap, and band pigeons in the most efficient manner possible. Trapping sites were primarily in grainfields, livestock feeding areas, and at urban feeding stations maintained for other birds. Methods used for capturing

bandtails primarily involved cannon nets and funnel traps. Descriptions of trapping sites selected and methods used in capturing, handling, and banding pigeons are presented, along with a key for determination of age and sex of pigeons. Locations of all known pigeon feeding areas in Colorado where trapping was or could be successfully conducted are presented in the Appendix.

INTRODUCTION

Band-tailed pigeons are native to most forested mountains of the central Rockies and Sierras of western North America. Two major populations occur north of Mexico, with the Coastal race (*C. f. monilis*) occurring in British Columbia, Washington, Oregon, California, and Baja California. The Interior race (*C. f. fasciata*) occurs from southern Wyoming and central Utah south through Colorado, New Mexico, west Texas, and Arizona and into central Mexico (Braun et al. 1975). Racial affinities of the scattered populations of bandtails in Nevada and western Arizona are presently unclear. In Colorado, band-tailed pigeons occur throughout the forested mountains, especially where pine (*Pinus* spp.) and oak (*Quercus* spp.) occur. Exceptions are in South Park, Gunnison Basin, northern San Luis Valley, and northwest Colorado areas (Braun 1973).

Hunting of pigeons of the Coastal race has been an important sport since the early 1900's. In the Interior, hunting of pigeons has been discontinuous, with season closures from the mid-1940's (Colorado) and early 1950's (Arizona and New Mexico) until the late 1960's. Up until 1970, bandtails had not been legal game in Utah (Braun et al. 1975). Hunting seasons for pigeons in the Rocky Mountain states were closed in the mid-1940's and early 1950's

due to concern about the welfare of the populations present in the various states. Research efforts after the closure were sporadic until the late 1960's. Some work was done in Colorado and elsewhere by Neff (1947) and coworkers (Neff and Niedrach 1946, Neff and Culbreath 1947, Kinghorn and Neff 1948) in the late 1940's and early 1950's (Matteson 1950). In the late 1960's coordinated research efforts in the Four Corners States of Arizona, Colorado, New Mexico, and Utah were initiated. Major thrusts of this research effort were to document migration routes and mortality and survival rates, and explore the feasibility of hunting seasons for the Interior population of pigeons (Braun et al. 1975). Colorado initiated intensive studies of bandtails in 1969, with major emphasis on trapping and banding adequate samples. Through 1975, 24,068 pigeons were banded in Colorado. Prior to 1969, only 557 pigeons had been banded in Colorado. This report outlines procedures used in locating, trapping, and banding pigeons in the 1969-1975 period and is intended to serve as a reference source for management personnel in Colorado. Techniques described herein are suitable, with minor alterations, for use in other areas, especially the Rocky Mountain states.

METHODOLOGY

Locating Feeding Sites

Band-tailed pigeons feed on a variety of foods, depending upon season of year and food availability. Native foods extensively used are acorns (*Quercus gambelii*, *Q. undulata*), buds and flowers of a variety of deciduous and coniferous trees and shrubs including oak, cottonwoods (*Populus* spp.), willow (*Salix* spp.), Engelmann spruce (*Picea engelmannii*), and Douglas fir (*Pseudotsuga menziesii*), and fruits of many different trees and shrubs. Especially preferred fruits in Colorado are those of chokecherry (*Prunus virginiana*), elderberry (*Sambucus* spp.), bearberry (*Arctostaphylos* spp.), serviceberry (*Amelanchier* spp.), honeysuckle (*Lonicera involucrata*) and blueberries (*Vaccinium* spp.). At times seeds of ponderosa (*Pinus ponderosa*) and pinon pine (*Pinus edulis*) are extensively used. Pigeons also feed on the seeds of a variety of cultivated crops, primarily barley (*Hordeum vulgare*), and wheat (*Triticum aestivum*), with lesser dependence upon oats (*Avena sativa*) and peas (*Pisum sativum*). Corn (*Zea mays*) and milo (*Sorghum vulgare*) are preferred foods at livestock feeding areas and urban bird feeders when a variety of grains is available.

Feeding aggregations of bandtails can be classified as (1) when native foods are primarily being used and (2) when cultivated grains are being utilized. Locating pigeons when they are feeding on native foods can be difficult, as frequently only small numbers of birds may be observed, depending upon food availability. When pigeons are feeding on native foods, trapping is difficult even with mist nets. Consequently, most trapping activities in the 1969-1975 period centered around newly seeded or harvested grainfields, livestock feeding sites, and residential feeders for a variety of small birds.

Locating bandtails when they are using non-native foods is not difficult. The easiest method is to monitor obvious flight paths from mountain areas to locations where food might be available (Fig. 1). Since various segments of the pigeon population usually feed at varied but regular intervals, i.e. prior to 0800 hours, between 0930 to 1130 hours and 1300 to 1600 hours MDT, observations are most profitable during these times. This is not to indicate that feeding does not occur at other times, especially when interrupted by man-related disturbances. Feeding flights in areas where pigeons occur can be located by making observations from elevated regions overlooking areas where suitable feeding sites may occur (Fig. 2). Typically, low foothills along mountainous areas provide advantageous observation posts. Pigeons frequently follow stream courses from nesting areas to feeding sites; thus, observations from low foothills next to streams or rivers often result in location of flight paths. Once flying pigeons are located, following them away from normal nesting habitats, such as coniferous

forests, normally results in locating the feeding site. It should be noted that pigeons rarely fly enmasse to or from feeding sites. Thus, small numbers of pigeons observed flying frequently result in flocks of 30 to several hundred birds being located at a particular site. During the course of research field activities, bandtails were frequently located by systematically searching all likely grainfields, feed lots, and corrals and talking to landowners in the vicinity of (up to 20 mi from) nesting habitats (Fig. 3). In urban areas, pigeons were frequently located by inquiring at the local feed store to learn who regularly bought large amounts of hen scratch or cracked corn. This procedure was based on our experience that individuals having pigeons at their feeders purchased larger-than-normal amounts of grain.

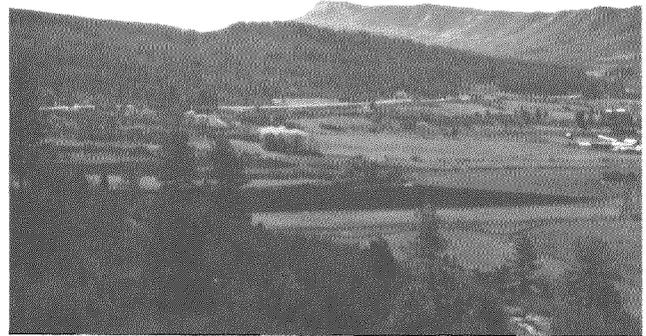


Fig. 1. Pigeon habitat and associated feeding sites, Cherry Creek near Mancos.



Fig. 2. Pigeon habitat and associated feeding sites, Animas Valley.



Fig. 3. Pigeon habitat and associated feeding sites, LaVeta.

Once feeding pigeons are located, these sites should be recorded and periodically checked, as many of these sites or the adjacent areas are used year after year (Appendix). Frequently no pigeons will be observed upon initial inspection of reported or old feeding sites. However, if likely roost trees in the area are closely examined, it is possible pigeons that are not actively feeding might be located.

Trap Site Preparation and Baiting

Upon location of sites where 30 or more pigeons are feeding, particular attention must be given to proper trap-site selection. Improper selection of trap sites may cause delays in attracting pigeons to the bait and may result in no pigeon captures. Factors to be considered in selection of trap-site location are (1) pigeon feeding and roosting locations, (2) type of trap to be used, (3) type of surface, (4) wind direction, and (5) probability of being disturbed by normal road traffic, farming, livestock, or household operations.

Pigeons normally arrive at feeding sites in small numbers. Typically, early arrivals will perch or roost in trees, on power lines, on fences, and even on buildings immediately adjacent to available food (Fig. 4). Pigeons will roost in such sites immediately prior to or after feeding, unless disturbed. Sites selected for trapping should be the actual place where pigeons are observed feeding (Fig. 5). This is possible to accomplish when foods are concentrated, but this situation is not common. Most frequently, pigeons feed on foods scattered over a large area, such as in newly planted or harvested grainfields, and livestock feeding sites (Fig. 6). In these situations, bait in the form of grain should be placed in an exposed (bare or extremely short vegetation) site between the places the pigeons perch or roost and areas where they are feeding. Such areas are usually within 20-30 yds of the roosting site in clear view of the pigeons. Pigeons are fairly easy to attract to a baited site where food is concentrated, especially if they are harassed in the area where they are feeding on scattered foods. Harassment should be in-

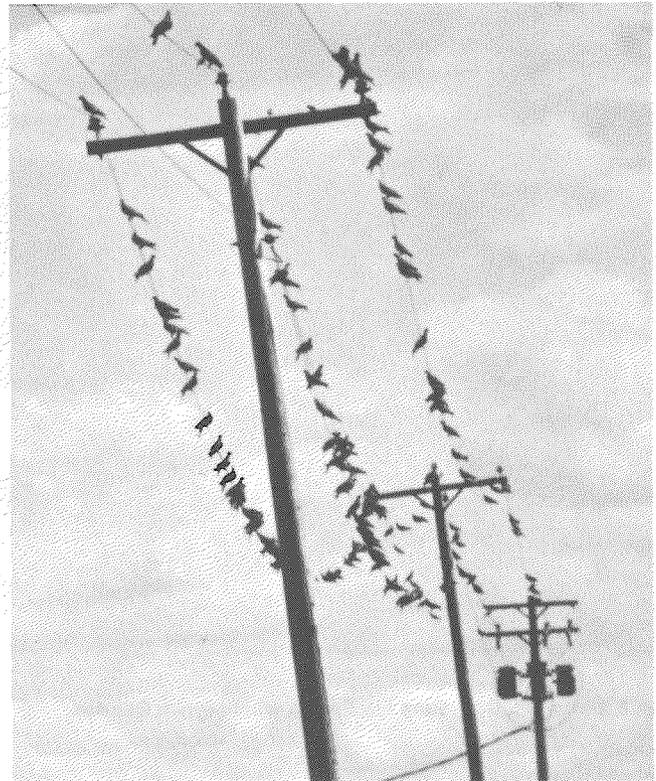


Fig. 4. Band-tailed pigeons on power line prior to feeding in grainfields, Monte Vista.

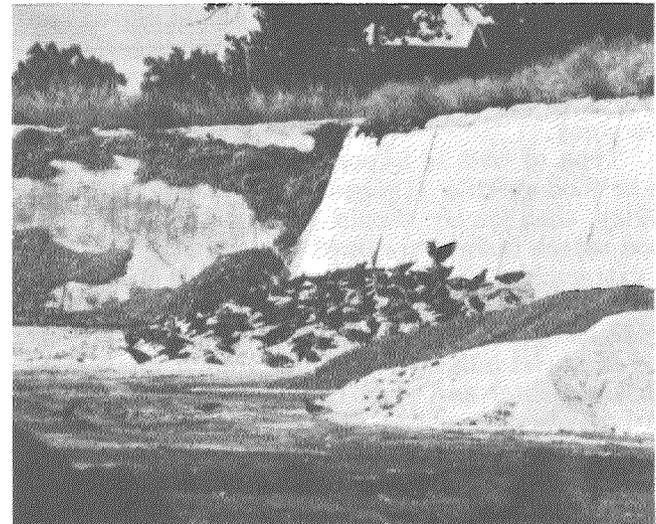


Fig. 5. Band-tailed pigeons feeding on stored corn, Niwot.

direct, with a person on foot or in a vehicle moving slowly toward a group of feeding pigeons opposite the location of the baited site. Once pigeons flush toward the baited site or roosting area, the individual should drop to the ground or, if in a vehicle, turn away from the direction the birds flew. In most situations pigeons will start using the baited site within a day or so of establishment. Once pigeons start using a potential trap site, care must be exercised to have bait present at all times, for pigeons will quickly abandon a site if no food is available.



Fig. 6. Band-tailed pigeons feeding on waste grain, Dolores.

During the baiting period disturbances other than normal activities of people living in the area should be kept at a minimum. When cannon nets are used, 20 to 30 lbs of grain is adequate to hold pigeons on a site for up to 2 days. Two to three lbs are sufficient for funnel trap sites, while 10 lbs are necessary for drop traps. Bait on trap sites should be checked every day.

Type of bait is important, as pigeons appear to be food-specific. If pigeons are feeding on waste barley, then barley should be used for bait. Once food search images are fixed at a particular site, it is extremely difficult to attract birds to a different food. Thus, corn should not be used for bait in wheat fields, etc. However, if no food is available to pigeons and artificial bait sites are desirable, a mixture of chicken scratch and whole corn is best for attracting birds. Pigeons seem to prefer whole corn over all other grains. If whole corn is used to attract birds, cracked corn should be substituted just prior to trapping to ensure that pigeons remain on the trap site for the longest time possible. This is necessary, as individual birds quickly fill their crop with kernels of whole corn and frequently depart the trap site before substantial numbers of birds are on the ground and available for trapping. When scattering grain at a trap site, it is important to be sure that the net or trap will completely cover all of the bait. Generally, bait should be in the center of a site that will be covered by the net or trap.

While trap-site selection and type of bait to be used are most important for successful pigeon trapping, it is also important not to saturate the area with prospective trapping locations. One trap site is usually adequate in a given feeding location, unless numbers of pigeons using the area are large

and they are feeding and roosting over a large area. In these situations, two, or rarely three, baited sites may be useful. However, if two sites are baited, they should be far enough apart that disturbance at one will not keep the birds away from the other.

Preparation of sites to be used for trapping is important. Trap sites should be free of debris; this can be accomplished by raking and removing materials that would interfere with nets, or drop or funnel traps. Frequently, vegetation may have to be cut or removed so that cannon nets are not held above the surface of the ground. Size of the area to be cleared depends upon method of trapping. It is exceedingly important that edges of cannon nets when fully extended be free of debris such as stones or brush and tall vegetation so that captured birds do not escape along the periphery of the net. Trap sites can be used many times, provided most, if not all, larger feathers such as primaries, secondaries, rectrices, and contour body feathers are removed after each trapping attempt. Experience has shown that pigeons are easily flushed or kept away from the site by excessive numbers of feathers, especially if they are being moved about by wind. Appearance of the trap site is the most important factor affecting success of continued trapping operations at a particular location. It would appear that pigeons avoid sites littered with feathers, probably because of predator association.

Once sites suitable for trapping have been selected, prepared, and baited, they should be examined on a daily basis. Time of arrival of the observer should be staggered on successive days to ascertain approximate numbers of birds at various feeding periods. Birds should not be flushed off the

bait site but should be allowed to leave when they have filled their crops (Fig. 7). Replenishing the bait can be accomplished at that time. If cannon nets are to be used, it is important that the observer note the direction in which the birds normally flush from the bait site and the direction of the prevailing wind. Then, to ensure best results, nets should be placed to project with the prevailing wind, normally in the opposite direction in which the birds will flush (i.e., if the birds flush, they should fly into the net). Once 30 or more birds are using the bait, traps should be set after the last feeding period of the day so that the next day can be utilized in actual trapping. Delays in trapping, once birds are attracted to the bait site, may result in capture of few or no birds as occasionally pigeons abruptly stop using a given site.



Fig. 7. Pigeon feeding on baited trap site, Dolores.

Traps and Trapping

Band-tailed pigeons have been captured with a variety of traps and nets. Small numbers have been captured with box traps (Neff and Culbreath 1947, Smith 1968), and larger numbers have been captured in pens with either roof openings (Drewien et al. 1966) or drop doors (Neff and Culbreath 1947, Mace and Batterson 1961). Drop nets have been used with some success (Wooten 1955, Morse 1957, Drewien et al. 1966). In recent years F. J. Ward of Pebble Beach, California has been highly successful with modified drop nets. Personnel in Arizona have had some success with clap nets, funnel traps, and mist nets (Evans 1972). Cannon and/or rocket nets have been most successfully used for pigeon capture (Morse 1957, Evans 1972, Braun et al. 1975, Pederson and Nish 1975). Of the 24,068 pigeons newly banded in Colorado between 1969 and 1975, approximately 23,000 were captured with cannon nets.

Selection of trapping method should be based on number of pigeons desired, size of potential trapping site, and potential disturbance in the area. In urban areas, cannon nets should not be used, because of size of net and noise. Funnel traps can be used in areas of limited size, but not where potential predators, such as dogs and cats, abound. In these situations, drop nets must be used, since release of the trap is controlled by an observer.

Funnel traps

Funnel traps used were 3-ft-square modified cage-type traps (Reeves et al. 1968) with two funnels (4-5 in. high and wide) on opposite sides (offset entrances), constructed of 1- x 2-in. welded wire. These traps have doors on top which swing upward to remove captured birds. In locations where funnel traps were used, small piles of grain about 10-12 in. in diameter were placed where pigeons commonly fed. Once use (scattering of the grain, droppings, tracks) was observed, funnel traps were placed over each grain pile, funnels were checked to ensure that they were not blocked, and a thin trail of grain was placed in the mouth of the funnel. Care should be taken to keep grain in the funnel to a minimum, with only a few kernels in the inner area of the funnel. Pigeons frequently had difficulties gaining immediate entrance to the trap, especially when other birds were inside. In these situations, they would frequently walk around the outside of the trap but not enter. This problem can be solved by placing two funnel traps in staggered fashion, with funnels of one trap adjacent to the edge of the other. Pigeons following the edge of one trap and seeking access to the grain are led directly to the funnel of the adjacent trap. Up to 20 birds can be caught per capture period in a funnel trap (Fig. 8). When using funnel traps for pigeons, traps should be examined three times daily at about 1000, 1400, and 1800 hours MDT. Upon removing birds from the traps they should be placed in burlap-covered holding cages or burlap sacks for subsequent banding. Traps should be checked to ensure that the center grain pile is adequate, feathers should be removed, and

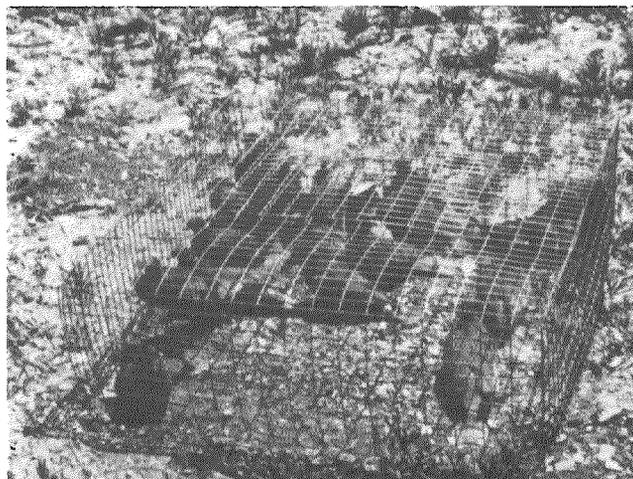


Fig. 8. Funnel trap with pigeons, Apache City. (Photo by W. Carpenter)

small amounts of grain should again be placed in the funnel. Care should be taken to fasten the top removal door after removal of all birds. With only a few birds in a trap, especially for long periods or with disturbance, the carpal area of the wing may become battered. Bleeding in this area is only a minor injury and the birds can safely be banded, released, and expected to survive. If predators are attracted to the trap site and losses are continually experienced, use of funnel traps should be discontinued.

Drop traps

Drop traps used were similar to those developed by F. J. Ward of Pebble Beach, California. They were 10-20 ft long, approximately 4 ft wide, and 2 ft high (Fig. 9). The frame of the trap was made of 1/4- or 3/8-in. reinforcing steel bars welded at the ends with stabilizing bars welded between the outer frames, usually at intervals of 1/4-1/3 of the length, depending upon size. The frame was covered with sponge rubber to prevent injury to the pigeons, with 1/4- or 1/2-in. mesh nylon netting stretched over the sides, top, and ends of the trap. Removal entrances into the top of the trap were at both ends and were slits in the netting that were laced together with soft wire, cord, leather strips, or zippers. In areas where drop traps were used sites small enough to be covered by the trap were baited in a narrow strip and checked until pigeon use was observed. The trap was then set in place over the bait, with the trap being supported about 6-8 in. above the ground by four 2- x 4-in. blocks, one positioned under each corner. A cord, varying in length, depending upon distance necessary to keep the observer hidden, was tied directly to one end of the trap. Thus, once birds were under the trap a pull of the cord resulted in the trap falling off the four blocks onto the ground. Pigeons captured are removed from the trap, placed in holding cages or burlap sacks, and the trap is reset. In resetting the trap, care must be taken to keep the grain in a strip in the center of the trap and to remove all feathers in the immediate area.



Fig. 9. Drop trap, Pebble Beach, California.

Cannon nets

Cannon-projected nets, as described by Dill and Thornsberry (1950) and Dill (1969), were used most frequently and successfully in the 1969-1975 period. All nets were used with three projectiles (one at each end and one in the center), with one net 30 x 75 ft (1 1/2-in. mesh) and four nets 30 x 60 ft (1 1/4-in. mesh). Nets with mesh larger than 1 1/4 in. are not recommended due to extreme entanglement of pigeons. Nets should be dyed to obtain a light brown color. Once pigeons are attracted to a baited site suitable for use of a cannon net, the net should be placed in position (Fig. 10). A net (in folded position) may be placed along the baited area for several days to habituate the birds to it, but this does not appear to be overly important. Nets should be placed to project with the prevailing wind, which is normally the opposite direction that the pigeons will flush. When the operator does this, nets, when projected, are not caught by the wind, thus preventing the escape of the pigeons.

The back edge of the net is held down by five stakes which are driven into the ground through eyed, rubber shock cords attached to the net. Location of the stakes is important in controlling the distance the net is projected. It is best to drive two additional stakes at the outer edge of the bait to help the observer ascertain if the birds are concentrated on the bait and to anchor the outer edge of the net once it has been fired over the pigeons. Placement of the cannons, cannon holders, and plates is immediately behind the center of the net, with the end cannons aimed at the two outer corners of the net (when fully extended) and the center cannon aimed at the center of the net (when fully extended). Cannon holders and plates should be dug in and driven solidly into the ground to prevent them from moving when the cannons are discharged. The holders should be partially buried. Once the cannon holders are in place, unloaded cannons should be aimed so the projectiles on the net will be approximately 5-6 ft high when the net is projected and fully extended. This is exceedingly important, for if cannons are aimed too low, many birds can be killed or maimed. Similar mishaps may occur if pigeons are feeding within 2-3 ft of the net when it is projected; thus the need to keep bait several feet away from the front of the net.

Once the net is arranged and the cannons are properly aimed, the tube is lubricated with graphite, the projectiles are placed into the cannons, and black powder charges are placed in the base of each cannon. To prevent shorting, the insulation on the lead wires must not be damaged as the cannons are placed in the holders. The operator must be careful at this point to stay behind the cannon and the net. In case of a misfire or premature detonation, the operator will not be injured if this procedure is followed. Once the cannons are loaded and a circuit established by connecting individual wires from each charge, the detonation wire should be unrolled, with one end being tied around a stake near the center cannon emplacement and the other end some



Fig. 10. Cannon net and baited site, Bear Creek near Evergreen.

distance away where the observer can detonate the charges from concealment. Prior to attachment of the wires from the charges to the detonator wire, the operator should make sure that no power source is attached at the firing point. Cannons normally should not be left charged overnight. When this is not possible due to early feeding of pigeons, plastic bags tied over the muzzle of the cannons and holders will prevent moisture from ruining the charges. After complete setup of the cannon net, and before discharge, a galvanometer should be used at the firing point to ensure that the circuit is complete.

Once 30 or more pigeons are on the bait and not flying to and from the bait, the operator should discharge the cannons, projecting the net over the feeding pigeons, with a blasting machine or by touching the wires to a battery or other power source. It is important that the net not be fired when birds are landing on the bait or flushing, to prevent mortalities and/or injuries as much as possible. Proper timing of the detonation is most important in pigeon trapping. After firing the net the trapper and at least one helper should hurry directly to the net to make sure it is fully spread, and to fold under the fringes to ensure that birds do not escape along the edges. Speed is important at this time, especially if large numbers of birds

have been caught (Fig. 11). A two-man crew can easily remove over 100 birds from the net in less than 30 min. Ideally, less than 100 birds should be caught in one firing of a cannon net, with 30-80 birds being reasonable numbers to attempt to catch. When smaller numbers are caught in each attempt, mortality due to heat prostration, net injury, and handling is minimized.

If less than 100 pigeons were captured in one attempt, after the birds have been placed in holding boxes or damp burlap bags and placed out of the sun, and all feathers have been removed from the immediate trap site, the cannon net should be reset. Removal of feathers and rebaiting, if necessary, should be accomplished prior to reloading of the cannons. If more than 100 birds are caught at one time, they should be processed and released prior to resetting the net unless sufficient manpower is available to do both. Captured pigeons should be removed from the immediate area of the trap site for processing and banding. This allows other pigeons to congregate near the trap site and frequently results in several trapping attempts during the day. Since different groups of pigeons feed at different times of the day, the probability of capturing the same pigeons more than once in the same day is slight.



Fig. 11. Cannon net and pigeons, Ft. Garland.

From 1969 through 1975, 24,068 band-tailed pigeons were newly banded at 53 locations in Colorado (Table 1). It is obvious from inspection of this table that numbers trapped and banded at each site varied. Frequently, more pigeons were trapped than were ever observed at one time, while at other sites, such as at Montrose, many more pigeons were observed than were trapped. In general, at least two to three times as many pigeons can be trapped in a short period than are observed feeding at one time at the site. This is because males and females, when nesting, feed at different times of the day.

Handling Pigeons

Upon capture, pigeons should be removed from traps or cannon nets as soon as possible, to prevent undue stress and heat prostration. Pigeons should be removed by placing one's hand over the back and both wings at the base of the neck, firmly grasping the bird so it cannot flap its wings. Care should be taken to avoid grasping the tail feathers, as they are easily lost. Once removed from the trap or net, pigeons should be placed in holding cages or burlap sacks and placed in the shade until time of processing and banding. Holding cages can be of any size up

to 2 ft x 2 ft x 16 in. high. Cages should be well ventilated, and not more than 20 pigeons should be placed in each. If burlap sacks are to be used, those with coarse mesh should be selected with no more than 10 birds placed in each sack. If more than 30 birds are caught at one time and air temperatures are 70 °F or above, burlap sacks to be used should be dampened prior to the capture attempt. This results in a moist, somewhat cooler environment for captured birds. While care in handling pigeons will reduce feather loss, feathers of pigeons are lightly attached and many will be lost in normal trapping and handling operations. This is not of great concern, unless wing primaries and tail feathers are accidentally removed due to improper handling and removal from traps, nets, burlap sacks, or holding cages. It is exceedingly important that, after each use of cages or sacks, all feathers are removed from within so that pigeons do not ingest them and suffocate the next time the cages or sacks are used.

Some mortality is to be expected when trapping wild animals. In trapping pigeons from 1969 through 1975, mortality associated with trapping was normally below 2 percent (less than 1 percent with drop traps), although up to 5 percent of the trapped birds were occasionally lost. Mortality can be greatly reduced and kept at a minimum by taking care in aiming the cannons, closely observing the pigeons feeding on the trap site to ensure that none will be hit by projectiles or the net when the cannons are

TABLE 1—Numbers of band-tailed pigeons banded in Colorado, by location and year, 1969–1975

County and area	Numbers banded						Totals	
	1969	1970	1971	1972	1973	1974		1975
Archuleta								
Arboles				262	64	46		372
Cat Creek				122				122
Boulder								
Niwot		366	264	209	182	120	148	1,289
Chaffee								
Missouri Park		158	326		134	73		691
Salida	524							524
Sand Park					102			102
Clear Creek								
Pine Valley						44		44
Bear Creek	70	81	62	37	32	35		317
Costilla								
Ft. Garland			669	320	169	239		1,397
Custer								
Wetmore				315				315
Douglas								
Sedalia						24		24
Eagle								
Avon			184	21	123			328
Basalt					36	124		160
Gypsum					86	89		175
El Paso								
Air Academy			19					19
Chipita Park				146	257			403
Manitou Springs			322	107				429
Woodmen Valley			104	3	243	17		367
Fremont								
Hardscrabble Creek				122				122
Garfield								
Carbondale				340				340
Huerfano								
Apache Junction	150							150
LaVeta			945	861	265	55	78	2,204
Jefferson								
Aspen Park		55	110	45		22		232
Bergen Park		30						30
Deer Creek	23	21						44
Evergreen		12	33	371	98	229		743
Marshdale		142						142
La Plata								
Bayfield		498	153	21		190		862
Durango	340	338		875	446			1,999
Hesperus					19			19
Perins Peak				38				38
Larimer								
Estes Park		14		128	69	111		322
Glen Haven				126				126
Las Animas								
Hoehne						231		231
Mesa								
Collbran						69		69
Molina						69		69
Unaweep Canyon			163	281	24	102		570
Montezuma								
Dolores		291						291
Stoner		101	15	107	88	88		399
Montrose								
Montrose				936	93	430		1,459
Sanborn Park		120		524	138			782
Pitkin								
Aspen						119		119
Prince Creek				37				37
Sopris Creek				13				13
Woody Creek				92	47	114	18	271
Pueblo								
Beulah			59	244				303
Rye	158	98						256
Rio Blanco								
Buford		58			82	9		149
Little Beaver Creek					101	70		171
Rio Grande								
Del Norte		170	263		251	405	28	1,117
Monte Vista	405	750	66	554	460	204	116	2,555
South Fork						107		107
Teller								
Woodland Park			192	231	118	108		649
Totals	1,600	3,292	4,006	7,251	3,537	3,960	422	24,068

discharged, promptly checking the net after firing to keep it fully extended, prevention of bunching of the pigeons in the corners and along the edge that is staked tight, properly removing birds from the traps, nets, bags, and cages, and properly storing the cages or bags containing pigeons in the shade prior to banding and release. Traffic and disturbance by dogs or cats around the area where pigeons are being held prior to banding and release should be avoided. Experience has shown that mortality is greatly increased when persons who are curious or want to be helpful drive vehicles close to the trap (possibly running over cages and sacks containing pigeons) or approach with their domestic pets. Attention must be focused on the pigeons to get them banded and released in the shortest time possible, prior to philosophical or other discussions with interested people about what is being done.

Frequently a few pigeons will be unable to fly after release. This inability to fly may be due to heat prostration, shock, or actual injury. These pigeons will frequently be able to fly within a day or two if given a chance to recuperate. Therefore, secure, well-ventilated cages capable of holding up to 6-8 birds should be available so that injured birds can be retained. Frequently these cages can be mounted on a vehicle where they will be convenient for the trapper. Such cages should be sheltered from the sun and rain and have food and water containers that are firmly held in place. Pigeons placed in these cages should be examined daily to see if they are ready for release. These pigeons should not be released with bands unless they are recaptures from previous trapping. Pigeons with broken wings cannot be rehabilitated, so these birds should be dispatched and the carcasses buried. At times, it may be feasible to amputate the broken wing at the next joint, with the individual bird being retained as a decoy or being donated to a recognized zoo. Birds lost in trapping operations can be donated to museums, saved for various studies such as reproductive phenology, food habits, etc., or buried. If carcasses are to be saved they should be clearly labeled as to date and location, placed in plastic bags, and refrigerated until they can be frozen for indefinite storage.

Banding

Before banding takes place, a federal banding subpermit is needed from the state master permittee. In addition, a state banding permit available from the Chief Law Enforcement Officer is required. Band-tailed pigeons require a size-5 leg band, and since they are migratory birds must be banded only with U.S. Fish and Wildlife Service bands. These are provided free of charge by the U.S. Fish and Wildlife Service through the person in charge of the migratory game bird master banding permit for the Division of Wildlife. Bands and banding forms should be requested at least 1 month in advance of

planned trapping operations. Normally, bands are received pre-opened on plastic tubes. They should be used in sequence, starting from the lowest numbered band. It is exceedingly important that the recorder write down the age and sex called out by the bander for individual pigeons as the band is being placed on the bird. Routine checking of band numbers with the bander at intervals of five bands is desirable.

When a pigeon is removed from a holding cage or bag, both legs should be examined for bands. If previously banded, the number should be recorded on a recapture sheet along with age, sex, and date of recapture. Care should be used in recording all digits of the band number, with the recorder reading the number back to the bander as a check. If the bird is unbanded, age should be determined (next section), and the band placed on the left leg of immatures (HY) and on the right leg of adults (AHY) or subadults (SY). Some banders use needle-nose pliers, while others use regular pliers or banding pliers, to affix the band. Whichever tool is desired, it is important to not overlap the edges of the band or to leave exposed or irregular edges. On the bird, the band should appear as a smooth ring or be slightly flattened on one side with no exposed edges that could catch on foliage, sticks, etc. Bands must be able to rotate fully on the leg to prevent uneven wear, causing illegible numbers. Band spreaders should be available to help straighten overlapped or otherwise improperly applied bands. As banding forms are completed they should be closely examined for completeness and legibility and returned to the person responsible for the master permit, along with exact locations of banding sites. If forms are not completely filled, and additional banding is not to be accomplished in that year, the forms and the remaining bands should be returned. All banding forms, unreadable bands, and recapture forms must be sent to the master permittee for forwarding to the Bird Banding Laboratory prior to the opening day of the hunting season.

Identification of Age and Sex

Methods used to ascertain age (Silovsky et al. 1968) and sex (Miller and Wagner 1955) of band-tailed pigeons have been published. Methodology presented in this report is that developed in Colorado, primarily through work of project personnel and White (1973). While this methodology relates primarily to pigeons trapped in Colorado, it also is reliable for birds trapped or otherwise obtained in the May-through-October period anywhere pigeons may occur.

General

Band-tailed pigeons are large (14-16 in. in length) forest-dwelling birds which appear to be gray or blue-gray with no white coloration visible in flight. Adults of both sexes have a white crescent on the

dorsal aspect of the neck immediately anterior to a metallic iridescent nape. The legs, feet, and bill, excluding the black tip of adults, are yellow; immatures have gray to pale-yellow feet and legs, and pale-yellow bills with a black tip. Tails of bandtails are square with a wide gray band bordered by black. Rock doves (*Columba livia*) can be easily distinguished from band-tailed pigeons as they have a dorsal white area anterior to the base of the tail, the undersurface of the primaries is light, and the feet, legs, and bill are pink to red. Other common species of columbids north of Mexico can be separated from bandtails based on size (smaller), pointed tail (mourning doves, *Zenaida macroura*), and white on the shoulder of the wing (white-winged doves, *Zenaida asiatica*). In this discussion, primaries are numbered proximally (1) to distally (10) while secondaries are numbered from distal (1) to proximal (10).

Key to age and sex of band-tailed pigeons

- 1a. Some or all wing coverts tipped with white, reddish, or pale brown; all or some juvenile secondaries present
(Figs. 12 and 13) HY/SY 2
(Juvenile secondaries are shorter, narrower, and more pointed than the broad square secondaries of adults.)
- 1b. Coverts without white, reddish, or pale brown tipping; no juvenile secondaries present; head and breast pink to brown; neck crescent usually pronounced (Fig. 14)..... AHY..... 3
- 2a. Some or all coverts tipped with white, reddish, or pale brown; all juvenile secondaries present; primary molt not greater than P6 (Fig. 15). Sex of immature pigeons molting past P2 can normally be ascertained HY 3
- 2b. Some but not all coverts tipped with white, reddish, or pale brown; at least secondary 1 or 2 is adult, primary molt P6 or greater
(Fig. 16)..... SY..... 3
- 3a. Breast, neck, and top of head bright pinkish to purplish Male
- 3b. Breast, neck, and top of head dull brownish to gray-brown or pinkish brown Female

Molts

Juvenile plumage is almost complete by 40 days of age; feathering at the base of the nares may continue (rarely) until 70 days post hatching. Replacement of juvenile primaries is initiated at about 47 days of age and is completed by 318 days of age. Molt of juvenile secondaries initiates at about 150 days of age and continues until about 340 days post hatching. Replacement sequence of juvenile primaries and secondaries allows calculation of age and hatching dates for birds caught before their first winter or first migration. Replacement of juvenile feathers starts at about 45 days of age and continues up to 340 days (White 1973). Adults have one annual post-nuptial molt, usually starting at

cessation of breeding in late August or September. Bandtails may breed at any time of the year; thus, immatures and molting adults may be found at any time. Suspension of molt commonly occurs during migration and in winter and complicates separation of SY's and HY's from October through April.

With the above criteria sex can be reliably ascertained for about 95 percent of all birds handled, but color gradient makes separation of sexes of some birds difficult. Where doubt arises, the sex should be listed as unknown.

Generally, trapping should not be conducted when it is raining or the vegetation is wet, for age and sex identification of wet birds can be difficult. In these situations, many of the pigeons banded may be classified as unknown age and unknown sex. Wing feathers of wet pigeons can be rapidly dried by holding them in warm air from a vehicle's heater fan or in front of a vent of a forced-air furnace. Once wing feathers are dry, age can usually be reliably ascertained.



Fig. 14. Wing of adult (AHY) band-tailed pigeon.



Fig. 12. Immature (HY) pigeon with suspended molt at P2.

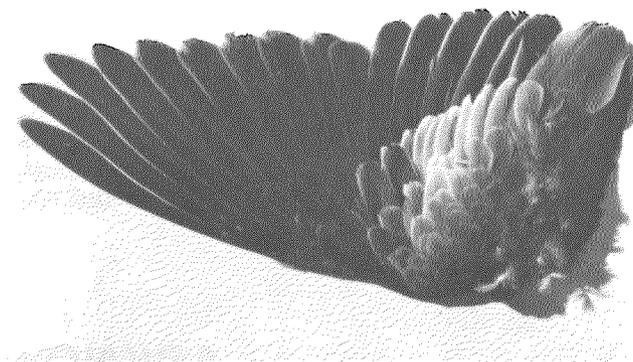


Fig. 15. Wing of 0 primary molt immature (HY) band-tailed pigeon.

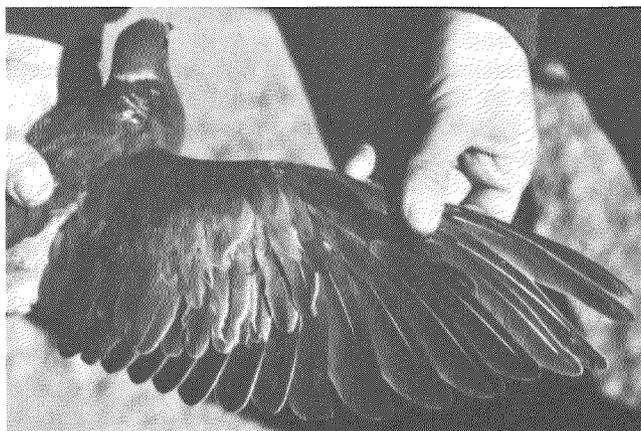


Fig. 13. Subadult (SY) pigeon molting P6.

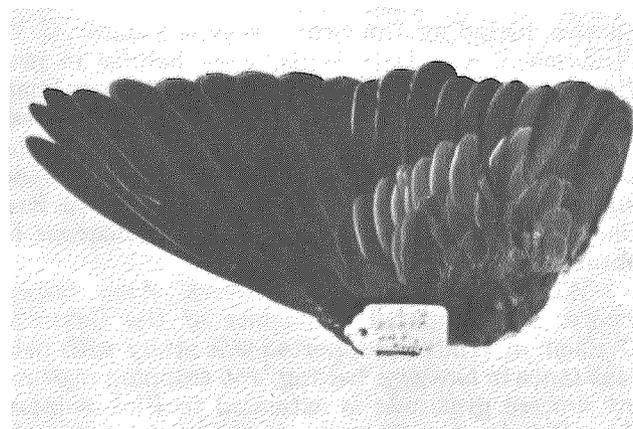


Fig. 16. Wing of subadult (SY) band-tailed pigeon with secondaries 1-3 new adult and 4-7 old juvenile.

RECOMMENDATIONS

Band-tailed pigeons in Colorado can be easily managed. Management can be through manipulation of grain crops on state-owned or -controlled properties, monitoring hunter numbers, pressure, and harvest through use of a free required permit and a questionnaire survey, and monitoring changes in recovery rates of specific subflocks of pigeons in Colorado (Braun 1972). Only the last tool will be covered here.

1. One person should be designated as responsible for pigeon trapping and banding activities in each of the four Division regions.
2. At least 19 subflocks of pigeons occur in Colorado, of which only three contribute 70 percent of the pigeon harvest in normal years. Approximately 500 pigeons should be banded every year in these localities, with the following distribution of bandings:

Durango-Bayfield	200 pigeons
Monte Vista-Del Norte	200 pigeons
LaVeta-Fort Garland	100 pigeons
3. Pigeons at six other sites should be banded in alternate years because they are important harvest sites in some years (Montrose-Sanborn Park, Dolores-Stoner, Salida) or are located close to human population centers and could

be easily over-harvested. Distribution of bandings by locality is as follows:

Montrose-Sanborn Park	200 pigeons
Salida	100 pigeons
Dolores-Stoner	100 pigeons
Evergreen	100 pigeons
Niwot-Estes Park	100 pigeons
Woodmen Valley-Woodland Park	100 pigeons

4. Pigeons seasonally resident in other subflock areas can be safely disregarded in most years as they provide few recoveries and are somewhat removed from concentrations of hunters. Conditions could change; thus, attempts to band 100 pigeons in each locality in a given year should be conducted opportunistically at 3- to 5-yr intervals. These subflocks are:

Trinidad	Arboles-Pagosa Springs
Aspen-Basalt	Avon-Edwards
Carbondale	Meeker-Buford
Unaweep Canyon	Collbran-Molina
Gypsum-Eagle	Rye-Beulah-Wetmore
5. Calculation of recovery and mortality rates should be routinely conducted every year for the three most important subflocks and at 3- to 5-yr intervals for other subflocks.

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APPENDIX

BAND-TAILED PIGEON FEEDING AND TRAPPING AREAS, 1969-1975

Known feeding areas and former trap sites in Colorado are presented in this Appendix. Locations are arranged by county. Coordinates are given for all banding sites utilized during the 1969-1975 period.

Archuleta County

Arboles—Turn southeast off of Colorado Highway 151 toward entrance to Navajo Lake. Pigeons feed in grainfields along road and at granaries at Seibel Ranch (37° 01', 107° 25') southwest of road into Navajo Lake Recreation Area.

Pagosa Springs—Pigeons feed in corrals at Radcliff Ranch along U.S. Highway 160 about 12-13 mi southwest of town and in grainfields south of U.S. Highway 160 about 13 mi southwest of town (37° 13', 107° 13') and along Cat Creek Road.

Piedra—Small grainfields along and south of U.S. Highway 160 near Piedra River have pigeons in some years.

Boulder County

Niwot—One mi northeast of Niwot on Colorado Highway 119, turn west on Oxford Road for 0.25 mi, then north about 300 yds. Pigeons feed in livestock feed storage area on west side of road on Knaus farm (40° 06', 105° 10'). Pigeons frequently feed in areas east of Colorado Highway 119 and north of Colorado Highway 52 in grain storage areas and grainfields. Any area with readily accessible grain along Left Hand Creek from the foothills to east of Colorado Highway 119 may be used by pigeons.

Chaffee County

Missouri Park—In spring, pigeons can be found feeding 1-2 mi west of the junction of U.S. Highways 285 and 50, north of highway on land owned by J. Lionelle (38° 31', 106° 06'). Pigeons also feed in grainfields 1 mi north and 1 mi west of the county road 1.8 mi west of junction of U.S. highways 285 and 50 (38° 32', 106° 08'). Feeding areas also occur in grainfields 1.5-2 mi north of U.S. Highway 50 on U.S. Highway 285 and north of first paved road east (38° 32', 106° 05').

Salida—Pigeons were trapped in 1974 in Sand Park (Tancik's Ranch) on Colorado Highway 291 about 4 mi southeast from its junction with U.S. Highway 285 (38° 34', 106° 02'). In 1969 pigeons were trapped immediately east of the junction of Colorado Highway 291 and U.S. Highway 50 on the east edge of Salida (38° 31', 105° 58'). Pigeons also can be commonly found feeding along lower Bear Creek about 2.5-3 mi

southeast of Salida and south of U.S. Highway 50.

Clear Creek County

Upper Bear Creek—About 0.5 mi west of Clear Creek-Jefferson counties boundary on Upper Bear Creek Road, pigeons feed on grain placed out for domestic ducks and geese on the Jon-Hill Estate (39° 38', 105° 24'). Pigeons also feed on top of a large boulder at the first residence north of the road, west of the Jon-Hill Estate, about 0.75 mi west of the Jefferson County boundary (39° 37', 105° 25'). Other known feeding sites on Upper Bear Creek are near the corrals on the Mt. Evans Management Area (39° 37', 105° 28') and at a residence at the end of the pavement and junction of the road to the Mt. Evans Management Area. At this site pigeons have been fed on the north, just across Bear Creek.

Pine Valley—Several summer and permanent residents feed pigeons in this area. Turn right (north) from Colorado Highway 74 about 0.25 mi west of the Jefferson County line and follow paved road into Pine Valley. Turn north on first road past Beaver Brook Lodge and take first road east and follow to end (39° 41', 105° 24').

Conejos County

Antonito Area—Pigeons feed in grainfields along the Conejos River from Mogote to U.S. Highway 285. Pigeons also feed in grainfields about 2 mi east of Antonito on road to Lobatos.

Romeo Area—First road south of Romeo, go west for about 1.5 mi. Pigeons roost in large trees in area and feed in surrounding grainfields.

Costilla County

Ft. Garland Area—Major feeding sites lie within an area from 2 mi west of Colorado Highway 159 to 1 mi east of Colorado Highway 159 and south of U.S. Highway 160 for 7 mi. Trap sites have been in grainfields 1.5 mi west of Colorado Highway 159 and 0.7 mi south of U.S. Highway 160 (37° 25', 105° 27'), 5 mi south of U.S. Highway 160 and 0.5 mi east of Colorado Highway 159 (37° 21', 105° 25'), 3 mi south of U.S. Highway 160 and 0.5 mi west of Colorado Highway 159 (37° 23', 105° 26'), and 7 mi south of U.S. Highway 160 and 1.7 mi east of Colorado Highway 159 (39° 19', 105° 25').

Custer County

Westcliffe Area—Small groups of pigeons commonly feed in spring in grainfields along Colfax Lane about 6 mi south of town on Haga and Kattnig Ranches. Pigeons also can be found about 5.5 mi west and 1 mi south of town.

Wetmore Area—Pigeons feed in grainfields both

east and west of Colorado Highway 67 from Greenwood to the Fremont County boundary, along the east side of Hardscrabble Creek from Colorado Highway 96 to the Fremont County boundary and east and west of Colorado Highway 96 as far as the Beulah-North Creek Road. Pigeons can occasionally be found along Colorado Highway 96 up to 2 mi east of town. A trap site was in a grainfield, 1.1 mi south of Wetmore on the west side of Colorado Highway 67 (38° 13', 105° 03').

Delta County

Austin Area—Turn north from Colorado Highway 92 and go about 1 mi, and then either east or west. Pigeons feed with livestock and in orchards in this area.

Delta Area—Pigeons feed in grainfields along the lower Transfer Road and in livestock feedlots on California Mesa south of town.

Hotchkiss Area—Pigeons are commonly observed along Leroux Creek about 9-10 mi northwest of town, approximately 8-9 mi north of Colorado Highway 92 at Lazear turnoff.

Paonia Area—Pigeons commonly feed in orchards (cherries and mulberries) just east of intersection of Colorado highways 133 and 187, about 2-3 mi east of Paonia on Red-Top Ranch, along Minnesota Creek, on Lambourn Mesa 0.5-3 mi south of Paonia, along the North Fork River in Bowie 2-3 mi east of Paonia, and just east of Dry Gulch 1 mi southeast of Paonia.

Dolores County

General—Pigeons are commonly observed along the West Fork of the Dolores River south of Dunton, along the Groundhog Reservoir Road just north of the Montezuma County boundary and in the Narraguinnep Canyon area. These pigeons are primarily feeding in grainfields located in Montezuma County.

Douglas County

Larkspur Area—Pigeons can commonly be seen in the Larkspur-Palmer Lake area feeding in oakbrush, livestock feeding areas, and grainfields.

Louviers Area—Pigeons feed in grainfields west of and along Plum Creek north to the Highline Canal where they roost in cottonwood trees.

Perry Park Area—At one time pigeons fed in the corrals at Perry Park. Some birds can be found in grainfields along West Plum Creek north of Perry Park toward Sedalia.

Sedalia Area—Pigeons feed in grainfields south of junction of Colorado highways 67 and 105 along West Plum Creek. Residents of several small developments feed pigeons in the vicinity of the firehouse about 12 mi southwest of Sedalia on Colorado Highway 67 (39° 22', 105° 07').

Eagle County

Avon Area—Pigeons feed in livestock feeding sites and granaries along the Eagle River both east (1 mi, 39° 37', 106° 30'; 2.5 mi, 39° 37', 106° 28') and west (2 mi, 39° 38', 106° 34') of town.

Eagle Area—Livestock feeding operations along Brush Creek south of town attract small numbers of pigeons.

El Jebel Area—Pigeons commonly feed in the U.S. Forest Service's Mt. Sopris Tree Nursery (39° 23', 107° 06'). Pigeons also feed on Missouri Heights on Upper Cattle Creek. From Colorado Highway 82, go east about 8.5 mi toward Cottonwood Pass along Cattle Creek, then keep right for 0.5 mi to the McNulty Ranch (39° 27', 107° 06').

Gypsum Area—Grainfields and livestock feeding areas along the Valley Road about 3-5 mi south of town attract pigeons. Pigeons were trapped in 1973 and 1974 at the K. Gerard Ranch 4 mi south of town (39° 35', 106° 57').

El Paso County

Air Force Academy—Bandtails feed at the riding stables (38° 57', 104° 51') along West Monument Creek.

Chipita Park Area—Several bird feeders in this area regularly have bandtails at their feeding stations. One residence (A. G. Norwood) at the corner of Mesa Road and Chipita Park Road selected for a trapping station regularly produced trappable numbers of birds in 1973 and 1974 (38° 55', 105° 00').

Manitou Springs Area—For many years bandtails were fed in a private driveway 1 block south and ½ block east of U.S. Highway 24 on the Crystal Park Road. The private feeder at this site was uncooperative and the pigeons were successfully lured across (south) the street and trapped along a grove of conifer trees (38° 51', 104° 53').

Woodmen Valley Area—Take the Woodmen exit from Interstate Highway 25 north of Colorado Springs and go west-northwest on paved road to property of the Sisters of St. Francis. Bandtailed pigeons regularly feed with rock doves in the livestock feeding area of the dairy (38° 56', 104° 52').

Fremont County

Canon City-Florence Area—Bandtails feed in grainfields along Fourmile Creek about 6-9 mi north of Canon City and in grainfields along the Arkansas River near Florence.

Cotopaxi Area—Pigeons occur frequently along Cottonwood Creek southwest of town and Oak Creek south of town, and may feed in grainfields or livestock feeding sites in the area.

Hillside-Texas Creek Area—Bandtails are regularly observed along Colorado Highway 69 about 13 mi north of Westcliffe, but feeding sites are unknown.

Lower Hardscrabble Creek Area—In some years feeding sites extend north of the Custer County line north of Wetmore. A trap site was at the Kofeld Farm, 3 mi northeast of town (38° 17', 105° 03').

Upper Bear Creek Area—Pigeons feed in small grainfields along the creek just south of the Chaffee County line.

Garfield County

Carbondale Area—Bandtails commonly feed in grainfields and livestock feeding sites near the Crystal River hatchery (39° 22', 107° 12') and along the lower portion (up to 2 mi from Colorado Highway 133) of the Dinkle Lake Road.

Glenwood Springs—In spring, pigeons can be found feeding in newly planted grainfields in Spring Valley about 2 mi south of town and 1-4 mi east along the Red Canyon Road.

Rifle—Occasional reports of bandtails feeding in newly planted grainfields and at livestock feeding sites are received from the area along the Beaver Creek Road about 4 mi southwest of town.

Silt—Pigeons occasionally feed in grainfields along the lower West Divide Creek Road about 1 mi south, 1 mi east, and 7-8 mi south of Silt.

Grand County

Williams Fork Reservoir Area—Small numbers of pigeons feed in grainfields about 2 mi south of U.S. Highway 40 along east side of the lower Williams Fork Road. Entrance to this road is about 0.5 mi east of Parshall.

Huerfano County

Farisita-Red Wing Area—Bandtails feed in small grainfields along the Huerfano River from about 4 mi southwest of Red Wing to about 1 mi east of Farisita and along Upper Yellowstone Creek. To find Yellowstone Creek, go south about 2 mi on Colorado Highway 12 (gravel) from Colorado Highway 69 to major gravel road going west. This is the Yellowstone Creek road and small grainfields occur about 9 mi west of Colorado Highway 12.

LaVeta Area—Pigeons can be commonly found in grainfields east, south, and west of town along the Wahatoya, School Creek, Middle Creek, Goemmer Butte, and Valley Roads. Trap sites have been on the Logan, Kritzer, Davis, and Duzenach farms along Lower Wahatoya Creek southeast of town (37° 29', 104° 59'), at the Bailey farm on Middle Creek 6 mi west of town (37° 31', 105° 06'), and at the Woodring and Rohr farms about 5-7 mi east of town along the Valley Road. One of the better trap sites has been in front of the granary on the F. Rohr farm, 7.1 mi west of Lathrop State Park on U.S. Highway 160, south on Valley Road 1.3 mi, southeast on a private road for 2.5 mi, and south on a farm road for about 0.5 mi to an abandoned farmstead (37° 32', 104° 53'). Pigeons can also be found feeding where livestock are fed grain anywhere in the area, including locations along the Cucharas River south of LaVeta.

Jefferson County

General—Pigeons can be found at many different locations scattered throughout the forested foothills where they are attracted to feeding stations established for small birds. Large numbers (over 100 at a time) of bandtails can be concentrated at these residential stations through use of large amounts (up to 50 lbs per day) of cracked or whole corn. The following

listing contains past trap sites.

Aspen Park—Turn south from U.S. Highway 285 at Texaco Station and go approximately 0.5 mi to Snyder Street going east. Go east for about 0.25 mi to residence of M. Young (south side) (39° 32', 105° 17'). Go east from Aspen Park Texaco Station on U.S. Highway 285 for about 1.25 mi, stay right on Turkey Creek Road for about 0.33 mi to Granzella residence (on south) (39° 32', 105° 15'). Another site can be found if one goes east of Granzella's for about 300 yds and turns north on gravel road that connects with U.S. Highway 285. Schoolcraft residence on east side of road about halfway up hill (39° 32', 105° 15') has attracted pigeons in past.

Bergen Park Area—Pigeons have been fed near several residences at the old Rockridge Fur Farm, southeast of junction of Interstate Highway 70 and Colorado Highway 74 (39° 42', 105° 20').

Conifer Area—Go 0.5 mi southwest of post office on U.S. Highway 285, turn south on Richmond Hill Road, keep right to first residence on right (39° 29', 105° 20'). Present owner of this site is J. A. King.

Deer Creek Area—Near the mouth of Deer Creek Canyon below Phillipsburg, turn south across Deer Creek and follow gravel road through rock formations and subdivisions for about 0.5 mi until area opens up. Pigeons feed in grainfields in this area west of the South Platte River (39° 32', 105° 06').

Evergreen Area—Turn south at first road east of Texaco Station in Evergreen and follow main road to top of hill to Forest Heights. C. C. Beall (39° 38', 105° 18') has been a cooperater since 1970. At junction of Colorado highways 73 and 74 in Evergreen, go south on Colorado Highway 73 for about 0.5 mi, and go east on Little Cub Creek Road about 2 mi to Herzman Mesa. Pigeons have been fed at residence of W. Brockner. Another site can be found by turning southwest at the traffic light on Colorado Highway 73 near the old Junior High School and continuing to the right to the edge of Evergreen golf course where pigeons have been fed at the Ackerman residence (39° 37', 105° 20').

Homewood Park Area—Proceed northeast on South Turkey Creek Road from U.S. Highway 285 east of Aspen Park to the firehouse, turn south and follow the Switzers Gulch Road for about 2 mi to the M. McGillicuddy residence on the east side of the road (39° 33', 105° 11').

Indian Hills Area—Take the Indian Hills road southeast from junction with Colorado Highway 74 just east of Kittredge for about 3 mi past lake, turn right just west of County shops, take first right turn to Fuller residence.

Lookout Mountain Area—Take the Mt. Vernon Country Club exit from Interstate Highway 70 (east of Genesee Park) north and then west to the west edge of the developed area. In the past, pigeons were fed at several locations in this area.

Marshdale Area—Go south of Evergreen toward

Conifer on Colorado Highway 73 to Thimbleberry Lane and go east 0.25 mi to Baker residence. Another site is at the Cooper residence on Marshmerry Lane just north then east of the Marshdale Store on Colorado Highway 73 (39° 35', 105° 18'). A third site was at the W. Sales residence on North Turkey Creek (39° 35', 105° 16'). Take first road east from Colorado Highway 73 south of Marshdale Store and go 1.5 mi east. Residence is on the north side of the road.

La Plata County

Bayfield Area—Pigeons occur seasonally in grainfields throughout the area, especially north along the Los Pinos River. Pigeons have been trapped 2 and 3 mi southeast of town on the Crow Bar Road, on land farmed by Parish and Echols (2 mi, 37° 12', 107° 35'), and on farm of R. Rhodes of Farmington, New Mexico (3 mi, 37° 12', 107° 32'). Other trap sites were on the Conrad and Fischer farms west of the Los Pinos River and 4 mi north of U.S. Highway 160 on the Wallace Gulch Road (37° 16', 107° 36'). Pigeons also fed in grainfields 1 mi west of Gem Village on both sides of U.S. Highway 160.

Durango Area—In this vicinity pigeons most commonly can be found on Florida Mesa and along the east side of the Animas River. Pigeons have been trapped in grainfields and livestock feeding sites with location depending upon availability of grain. Trap sites have been at the Kroeger Ranch, 1 mi north of Durango on the East Animas Road (37° 18', 107° 50'); 1-2 mi south-southeast of Falfa on both sides of Colorado Highway 172 (37° 11' and 12', 107° 47'); and 2-3 mi north of the junction of U.S. Highway 160 and Colorado Highway 172 (37° 15' and 16', 107° 47'). Pigeons also can be found in small numbers at the mineral spring just north and west of the Golden Horseshoe 11 mi north of Durango and in some years in the cherry orchards along Hermosa Creek (37° 25', 107° 50'). Pigeons have also been trapped near mineralized sites along Dry Fork of Lightner Creek on the Perins Peak property (37° 19', 107° 56').

Hesperus Area—Go south 6.9 mi from U.S. Highway 160 on Colorado Highway 140, go west on gravel road for 1.6 mi (Paulek farm, 37° 12', 108° 06') to 3.8 mi (Strobel farm) on Red Mesa. At times, pigeons can also be found about 1 mi south of U.S. Highway 160 along Cherry Creek west of Hesperus.

Larimer County

Estes Park Area—In Stanley Heights pigeons have been fed at the Mueller and Gilcrest residences (40° 23', 105° 30') about 0.75 mi north of U.S. Highway 34 and 0.25 mi west across from Catholic church east of town. Pigeons also feed at the Gartner residence (40° 23', 105° 29') about 2.7 mi northeast of U.S. Highway 34 on the Devils Gulch Road. At one time, pigeons also fed in corrals at the McGregor Ranch.

Glen Haven Area—At Glen Haven post office go

west about 100 yds past bridge to first road going north, follow along the North Fork of the Big Thompson River for about 0.25 mi. Pigeons have been fed in an area of summer homes (40° 27', 105° 27').

Las Animas County

Aguilar Area—Pigeons feed in small grainfields along the Apishapa River about 5-20 mi west of town near Gulnare and further west and southwest toward Spanish Peaks property.

Stonewall-Weston Area—Pigeons are commonly seen along the North and South Forks of the Purgatoire River above Weston and may feed in corrals in the area.

Trinidad Area—Bandtails can be found feeding in feedlots and dairies east of Interstate Highway 25 along the Purgatoire River. Take exit 9 northeast on Colorado Highway 239 for 3 mi to El Moro Road, then 2.5 mi east to Myer's feedlot (37° 14', 104° 26') or 1.1 mi further east, then 1 mi south across Purgatoire River to M. Franks dairy.

Mesa County

Collbran Area—Pigeons were trapped in 1974 on property owned by Hill, 0.9 mi southeast of town on Grove Creek (39° 14', 107° 56'). Pigeons commonly occur on mesas south and west of town.

Mesa Area—Bandtails feed in grainfields 4 mi south of Mesa.

Molina Area—Turn southeast at Molina and go 1 mi to Mountain View Jersey Farm where pigeons can be found in early May. Pigeons were trapped in 1973 at W. Currier's, 2.3 mi southeast of town (39° 09', 108° 02'). Take right fork (Georgia Mesa Road) where road divides past Mountain View Dairy.

Unaweep Canyon Area—At Whitewater, go southwest on Colorado Highway 141 for 22.4 mi (Fall Creek Ranch, 38° 47', 108° 42' and 38° 47', 108° 39') and 27.4 mi (Home Ranch, 38° 45', 108° 48'). Both ranches are owned by Jerome Craig, Jr. Gerald Sutton was the contact at the Home Ranch.

Montezuma County

Dolores Area—Pigeons seasonally feed in grainfields, north, east, south, and west of town. Take road north toward Groundhog Reservoir for about 2.5 mi and look in grainfields. Pigeons were trapped in 1970 at Caldwell's, 4.1 mi east of town on Colorado Highway 145 (37° 28', 108° 25'). Other feeding sites have been along the Dolores River west-northwest of town. At Dolores River bridge west of town, turn north from Colorado Highway 145 and proceed for 5-6 mi to grainfields on Nielson and Periman (Beaver Point Road) farms.

Lewis Area—Pigeons feed in grainfields east of town and north and west of Narraguinne Reservoir.

Mancos Area—Bandtails occasionally feed in grainfields northeast and northwest of town. Particular sites are located from 1-2 mi northeast on the road to Jersey Jim Lookout, and

about 10-13 mi northwest on the Dolores-Mancos road.

McElmo Canyon Area—Pigeons can be found along the McElmo Canyon road 4-17 mi west of U.S. Highway 666 about 2.5 mi south of Cortez.

Stoner Area—Pigeons can be attracted with grain to the base of the ski area at the Stoner Alpine Lodge, 15.7 mi northeast of Dolores on Colorado Highway 145 (37° 35', 108° 19').

Montrose County

Montrose Area—Pigeons commonly feed in feedlots along the southwest edge of Montrose near the Uncompahgre River. A major feeding site has been at the Collins feedlot south of town on Chipita Drive (38° 25', 107° 52'). Other feeding areas have been in feedlots (38° 28', 107° 53') and in grainfields along Colorado Highway 90 southwest of town.

Sanborn Park—Bandtails feed in grainfields and at livestock feeding sites on the Marolf (38° 12', 108° 11'; 38° 12', 108° 12'; and 38° 13', 108° 12') and Irvine ranches. At the San Miguel River bridge east of Norwood (San Miguel County), go northwest and then northeast for about 7 mi along Clay Creek on what later becomes the Dave Wood Road. Both ranches lie north of the main road.

Ouray County

Colona Area—Pigeons at times can be found in grainfields along Billy Creek east of U.S. Highway 550 and on Miller Mesa west of U.S. Highway 550.

Park County

General—Pigeons at times feed in corrals of ranches below (northwest) of Wellington Lake (Jefferson County) to at least Estabrook.

Pitkin County

Aspen Area—Pigeons have been fed at 627 West Smuggler in the town of Aspen for several years by F. Kalmes (39° 12', 106° 49').

Capitol Creek Area—At one time pigeons were fed near the monastery south of the town of Snowmass on Capitol Creek.

Crystal River-Dinkle Lake Area—Bandtails feed in grainfields (39° 20', 107° 10') about 2 mi south and 1 mi east of the Crystal River hatchery, and along Prince Creek 3.7 mi southeast of Colorado Highway 133 on the road to Dinkle Lake.

Sopris Creek Area—Pigeons feed in grainfields and at livestock feeding sites along West Sopris Creek 2-6 mi southwest of Basalt on the Emma Road, especially at the Sopris Creek Hereford Ranch and the old Strang Ranch (39° 19', 107° 07').

Woody Creek Area—Bandtails regularly feed with horses at the C. Craig Ranch about 4 mi northeast of the Woody Creek Store on the Woody Creek Road (39° 15', 106° 50').

Pueblo County

Apache City—Pigeons feed in grainfields (37° 53', 104° 49' and 37° 56', 104° 53') primarily west of Interstate Highway 25 from Apache City exit west to Greenhorn Mountain, and

north to Davis-Greenhorn Road. Sites utilized vary with year, depending on food availability.

Beulah Area—At times, pigeons can be found feeding in grainfields along North Creek (38° 05', 104° 59') north of town, and along the Burnt Mill Road at the 3-R Ranch, 4 mi south of Colorado Highway 76 (38° 02', 104° 57').

Colorado City—Bandtails commonly occur along Greenhorn Creek at the Duell and Stewart Stables just west of Interstate Highway 25 and south of Colorado Highway 165.

Rye Area—In the past when grain farming occurred, pigeons could be found feeding west of Rye near the Park Pavilion, and at small farms 0.5-1 mi west and 1 mi east (37° 55', 104° 56'). At times, pigeons occur at the Glenin Hereford Ranch just south of Little Graneros Creek on the Hunter Road.

Rio Blanco County

Buford Area—When grain is being grown, pigeons can be found in newly planted fields 4-14 mi east of Buford along the North Fork of the White River. The small grainfield east of Missouri Creek (40° 01', 107° 33') and the corrals at the Adams Lodge 9 mi east of Buford (40° 02', 107° 28') are regular feeding sites.

Little Beaver Area—Take County Road 8 east from Colorado Highway 13 about 1 mi east of Meeker. Proceed east for 3 mi, take County Road 6 east-northeast for 6 mi and stay right. If one takes the left fork, a former trap site lies 2.3 mi east at residence south of road along Little Beaver Creek (40° 01', 107° 40'). Take right fork to the seed cleaning plant about 1.3 mi east or to Hanson's farm (1.1 mi) where pigeons have been fed for many years (40° 01', 107° 42').

Rio Grande County

Del Norte Area—Bandtails feed in grainfields throughout the area, especially along the Rio Grande River east and west of town. Major feeding areas and trap sites have been at the following locations:

R. Hanna's—4.6 mi southwest of U.S. Highway 160 on Pinos Creek (37° 38', 106° 25').

Davis'—5 mi southwest of U.S. Highway 160 on Pinos Creek (37° 38', 106° 25').

Wylie's—1.6 mi east of Del Norte Ranger Station Work Center and then north of U.S. Highway 160 (37° 40', 106° 19').

Davie's—6.5 mi west on U.S. Highway 160 on north side of highway (37° 40', 106° 28').

Bauer's—3.9 mi west on U.S. Highway 160 on north side of highway (37° 40', 106° 26').

O'Bannon's—9 mi west on U.S. Highway 160 on north side of highway (37° 41', 106° 30').

Colville's—5 mi west on U.S. Highway 160 and 1 mi north on State Bridge Road.

T. Hannah's—9 mi west on U.S. Highway 160 and 1 mi north on Granger Bridge Road (37° 41', 106° 30' and 31').

Carroll's—1 mi north of Colorado Highway 374 on 6W Road (37° 41', 106° 16').

Trujillo's—1 mi north of the Rio Grande River

at Agua Ramon Creek (37° 42', 106° 33').
Monte Vista Area—As they do near Del Norte, pigeons feed in grainfields north, west, and south of town wherever food is available. Major feeding areas and trap sites have been at the following locations:
Unknown Ownership—11 mi south on Colorado Highway 15 and 0.25 to 0.50 mi east (37° 24', 106° 08').
Johnson's—8 mi south on Colorado Highway 15, 2 mi east and 1.5 mi south.
Steffenson's—11 mi south on Colorado Highway 15 and 1 mi east.
Dump—2 mi south on Colorado Highway 15 and 2 mi west on Rock Creek Road (37° 32', 106° 10').
Unknown Ownership—2 mi south on Colorado Highway 15 and 1-1.5 mi west on Rock Creek Road (37° 32', 106° 10').
Paulsen's—West on U.S. Highway 160 to cemetery and then northwest to first farm (37° 36', 106° 12').
Monte Vista National Wildlife Refuge—6 mi south on Colorado Highway 15 (37° 29', 106° 09').

Five Mile Road—5 mi north on U.S. Highway 285, then 2-3 mi west, south of Five Mile Road (37° 38', 106° 11').

Six Mile Road—5 mi west of U.S. Highway 285 (37° 39', 106° 14'). Four mi west of U.S. Highway 285 and 0.5 mi north (37° 40', 106° 13').

Seven Mile Road (Colorado Highway 374)—3 mi west of U.S. Highway 285 (37° 40', 106° 12').

Eight Mile Road—4-5.5 mi west of U.S. Highway 285 (37° 41', 106° 14').

South Fork Area—Pigeons occur in grainfields east of town along the Rio Grande River in the vicinity of the Gerrard Bridge.

San Miguel County

Norwood Area—Pigeons feed in grainfields 1 mi east of town and 1 mi south of Colorado Highway 145 on Lone Cone Road.

Teller County

Woodland Park Area—Pigeons are regularly fed at the residences of V. Holmberg, 1207 W. Browning (38° 59', 105° 03'), and J. D. Williams who lives 4 mi north of town on Colorado Highway 67, and about 0.5 mi east within the boundary of the Pike National Forest (39° 03', 105° 04').