Distribution and Status of Strecker's Chorus Frog (*Pseudacris streckeri streckeri*) in south-central Kansas.

(Kansas Fish and Game Commission Contract #48)

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Strecker's chorus frog (Pseudacris streckeri streckeri) was discovered in Kansas in 1977 (Stegall, 1977) and documentation of voucher specimens quickly followed (Gray, 1978; Rundquist et al., 1978; Collins, 1979). The most recent treatment of P. s. streckeri in Kansas is Collins (1982). This report updates the status of P. s. streckeri in Kansas based on ongoing observations since the initial discovery of the species. Fieldwork in 1982 was supported by a grant from the Kansas Fish and Game Commission, KFGC Contract #48.

Dates and duration of breeding congregations.-- P. s. streckeri is the earliest breeding frog in Kansas, commencing breeding activity with the first warming trends of late winter. Choruses are easily recognized by the cacophony of rapidly repeated, single bell-like notes. Collins (1982) reported a breeding span of November to May, based on the entire range of the species. The earliest date P. s. streckeri was observed calling in Kansas was 21 February. In 1982, consecutive daytime temperatures of 60+ degrees F occurred in early February and numerous potential breeding sites were available due to snowmelt. Under these conditions, P. s. streckeri began calling after sunrise as temperatures rose, calling most intensely in the afternoon. Chorusing continued into the early evening, but gradually diminished and finally ceased entirely as temperatures dropped into the forties. Breeding activity in 1982 ceased altogether with the return of subfreezing temperatures in late February and early March. By 16 March, however, warmer temperatures had returned and P. s. streckeri was chorusing strongly with temperatures remaining above 50 degrees F well after dark. By this time, P. s.

streckeri had been joined at breeding sites by the plains leopard frog (Rana blairi) and western chorus frog (Pseudacris t. triseriata), and numerous amplectant pairs and egg masses of all three species of amphibian were apparent. Presumably due to continued favorable weather conditions, breeding activity for P. s. streckeri in Kansas in 1982 continued unabated through the second week of April. A few calling males were noted on April 13. Pseudacris t. triseriata was still calling on this date, but the largest choruses in the area now consisted of cricket frogs (Acris crepitans) and Woodhouse's toads (Bufo woodhousii). Great Plains toads (Bufo cognatus) had also occupied breeding sites by this time. A survey on 17 April failed to locate any adult P. s. streckeri at known breeding sites.

Pseudacris s. streckeri exhibits some plasticity in the commencement and cessation of its breeding activity, beginning reproductive activity with the earliest warming trends concommitant with sufficient moisture. The first specimens collected in 1977 were taken on 30 April, but had been heard chorusing at least a week prior to this date. In 1980, full choruses were noted on 5-6 April; in 1978 the earliest observation of chorusing was not until 3 April. Rundquist et al. (1978) reported calling on 13 May, the latest date that reproductive activity of P. s. streckeri has been reported in Kansas.

Bragg (1950a) recorded reproductive data on P. s. streckeri in adjacent Oklahoma (primarily Cleveland County) over a thirteen year period. His earliest observation of a breeding congregation was 1 January and his latest observation was 21 May, with the greatest number of observations being in April. He observed P. s. streckeri breeding

after 15 May only three times out of a total of 164 observations. In addition, he noted the failure of males to call at all during exceptionally dry years. In 1981, attempts to verify reproductive activity of P. s. streckeri at any of the known locales in Kansas were unsuccessful and it is assumed that the species did not reproduce at all in Kansas that year due to insufficient rainfall.

On 17 April, a site where large afternoon choruses of P. s. streckeri had been observed a month previously was revisted (Figs. 3 & 4). The amount of water at the site had shrunk considerably. No adults or eggs were discovered. A series of tadpoles (KU 192262) taken at this time ranged from developmental stages 25-36 (of Gosner, 1960). Bragg (1942) described the eggs and tadpoles of P. s. streckeri and estimated the age at metamorphosis to be about two months.

Sites of breeding congregations.-- The initial site of collection of P. s. streckeri in Kansas was a small pond in a pasture bordering Bluff Creek SW of Anthony in Harper County (Fig. 7). Although originally reported as being 2 km W and 0.9 km S of Anthony, this locale is actually located in Section 2, Township 34 S, Range 7 W. Since its initial discovery, this site has been used intermittently for breeding by P. s. streckeri.

Between 1978 and 1980, eleven additional; breeding sites were located, all within the area south and west of Anthony. In 1981, no breeding congregations were located, but due to favorable weather conditions the number of breeding sites located in 1982 was doubled, including discovery of a site on the Harper-Barber County line. To

date, no locales have been located east of Anthony of south of FAS Road 1381.

Breeding sites for P. s. streckeri are usually shallow, temporarily flooded areas in or near pastures or agricultural fields. These sites exhibit the following characteristics: 1) water at the site is relatively unpolluted, 2) fish predators are absent, and 3) water is sufficiently available to support the growth of some vascular water plants. Elsewhere in its range, P. s. streckeri also breeds in standing water in creek arms and river sloughs (Burt, 1936; Wright and Wright, 1949; Bragg, 1950b), although this habit has yet to be observed in Kansas.

Recommendations for conservation.-- Pseudacris s. streckeri is an ecologically unrestricted species of relative abundance (Bragg, 1950; Smith 1966). In Kansas, as in much of its range, it is largely campestral. Adults are difficult to locate when not congregated at breeding sites and probably spend significant amounts of time underground. Harper County, the main area in Kansas from which P. s. streckeri is presently known, is extensively utilized for large scale agricultural operations and little, if any of its area could properly be considered undisturbed habitat. In less disturbed areas of Oklahoma (especially Woodward and Major Counties), P. s. streckeri is locally abundant. In all likelihood, the presence of P. s. streckeri in Kansas represents invasion of the species at the periphery of its range into suitable habitat. There is some indication that P. s. streckeri in Kansas is associated with drainage systems in Harper County (see map)

and mesic habitat ajoining creek bottoms may be utilized as corridors for immigration. Whether the Kansas population represents a permanent range extension or a peripheral fluctuation in range size under favorable conditions is not known, and may in fact be contingent on large scale climatic factors. If favorable conditions persist, additional records of P. s. streckeri may be expected from Harper County, Barber County (exclusive of the Red Hills proper), and possibly Sumner County.

Collins (1980) recommended that P. s. streckeri be designated an endangered species in Kansas, primarily due to the extremely low density of individuals ocurring in the state. Although overall densities remain low, a decline in known populations or a decrease in a historically larger range in Kansas is yet to be demonstrated. However, due to 1) the low density of P. s. streckeri in Kansas, 2) its limited distribution in an area in which pesticide use is common, 3) the potential disruptive effect of adverse weather conditions on its yearly breeding cycle, and 4) the susceptabilty of breeding sites to human manipulation, I concur with Collins' (1980) recommendation that P. s. streckeri be designated an endangered species in Kansas and its presence continued to be monitored. In addition, it is recommended that landowners holding known breeding sites be advised of the importance of these sites to the continued presence of P. s. streckeri in Kansas and encouraged to maintain them in a condition suitable to their use as breeding sites.

Acknowledgments

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Appendix A

Voucher specimens of Strecker's chorus frog (Pseudacris streckeri streckeri) from Kansas. KU = University of Kansas Museum of Natural History.

KU 174370-371. Harper County: 2 km W and 0.9 km S Anthony. 30 April 1977. E. Stegall, D. Grow, E. Byrne, and P. Gray.

KU 192219. Harper County: ca. 1.5 km N Anthony Power Plant along Bluff Creek. 28 April 1982. L. Miller and K. Morgan.

KU 192268-273, KU 192261 (lot of eggs). ca. 2.5 mi SW Anthony off Hy. 179 near Anthony Water Works. 16 March 1982. P. Gray and E. Stegall.

KU 192262 (lot of tadpoles). Barber County: just W Harper County line in roadside ditch along Rts. 2/14. 17 April 1982. P. Gray and K. Irwin.

Appendix B

Field notes of PG.

(KU 185986-993)
4-11 Hyla chrysoscelis.
P.G., C.V. Calling and amplecting pairs. Roadside Ditch.

(KU 185994-996)
12-14 Pseudacris t. triseriata.
P.G., C.V. Calling ♂♂. Roadside ditch.

(KU 185999-983)
15-19 Bufo w. woodhousei.
P.G., C.V. Roadside ditch and road. Calling and amplecting pairs.

U.S.A.: Kansas: Comanche Co: Coldwater, 22.2 km E on U.S. 160.
23 May 1980

(KU 185998)
20 Sistrurus c. tergeminus.
P.G. and Linda Gerken. D.O.R.

U.S.A. Kansas: Harper Co: Anthony, Anthony Water Works ca. 2.5 mi SW Anthony off Hy. 179.
16 March 1982

(KU 192265-267)
21-23 Acris crepitans blanchardi.
P.G. & Linda Gerken. Taken during day from Bluff Creek in back of Water Works.

(KU 192274)
4 Pseudacris t. triseriata.
P.G. One of several calling ♂♂ from very shallow pasture pond just E. of Water Works.

U.S.A. Kansas. Harper Co: Anthony, Anthony Water Works ca. 2.5 mi SW Anthony off Hy. 179. 16 March 1982

(KU 192268-271)
X 25-28 Pseudacris streckeri.
P.G. & Eddie Stegall. 4 ♂♂; same site as PG # 24.

(KU 192272-273)
X 29-30 Pseudacris streckeri.
P.G. Amplectant pair. Same site as PG # 25-28.

(KU 192261)
X 31 Pseudacris streckeri.
Lot of eggs from PG # 29 & PG # 30.

(KU 192275)
32. Rana blairi.
P.G. Amplectant ♀; ♂ escaped after 24 hrs. Same site as streckeri.

(KU 192263)
33 Rana blairi.
Lot of eggs from PG # 32 & ♂.

U.S.H. KANSAS. HARPER-BARBER Co. LINE, HYWY. 2 & 14, ROADSIDE DITCH.

17 APRIL 1982

(KU 192262)
34 Pseudacris streckeri.
Lot of tadpoles.
PG & Kelly Irwin

U.S.A. KANSAS. COMANCHE Co: SOUTH CENTRAL COMANCHE Co.

17 APRIL 1982

(KU 192280)
35 Lampropeltis getulus holbrooki.
P.G. & Kelly Irwin

(KU 192282-283)
36-37 Sonora semiannulata.
P.G. & Kelly Irwin

U.S.A. KANSAS. BARBER Co: 3.2 mi W GYP HILL ROAD, EAST CEDAR CREEK.

17 APRIL 1982.

(KU 192284-288)
38-42 Sonora semiannulata.
P.G. & Kelly Irwin

(KU 192289)
43 Tantilla n. nigriceps.
P.G. & K.I.

(KU 192276-278)
44-46 Hypsiglena torquata jani.
P.G. & K.I.

(KU 192281)
47 Lampropeltis getulus holbrooki.
P.G. & K.I.

(KU 192279)
48 Lampropeltis triangulum gentilis.
P.G. & K.I.

U.S.A. KANSAS. COMANCHE Co.: 4.1 mi W COMANCHE-BARBER Co. LINE ON HYWY. 160.

17 APRIL 1980

(KU 192264)
49 Ambystoma tigrinum mavortium.
T.G. & K.I. In well.

U.S.A. KANSAS. CHASE Co: BETWEEN CASSODAY AND EMPORIA OFF TURNPIKE.

18 APRIL 1980

(KU 192290-291)
50-51 Tropidoclonion lineatum.
P.G. & K.I.

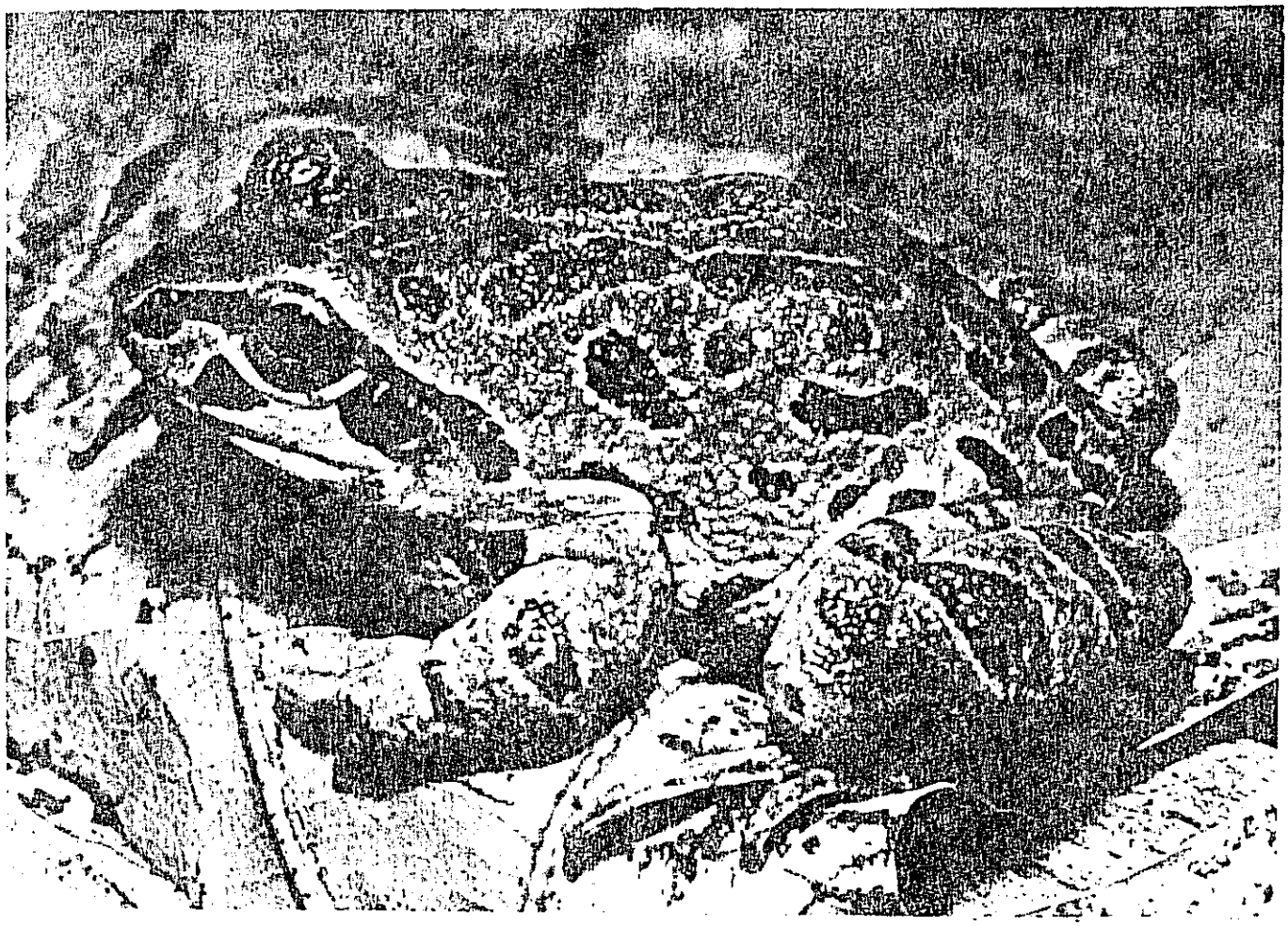
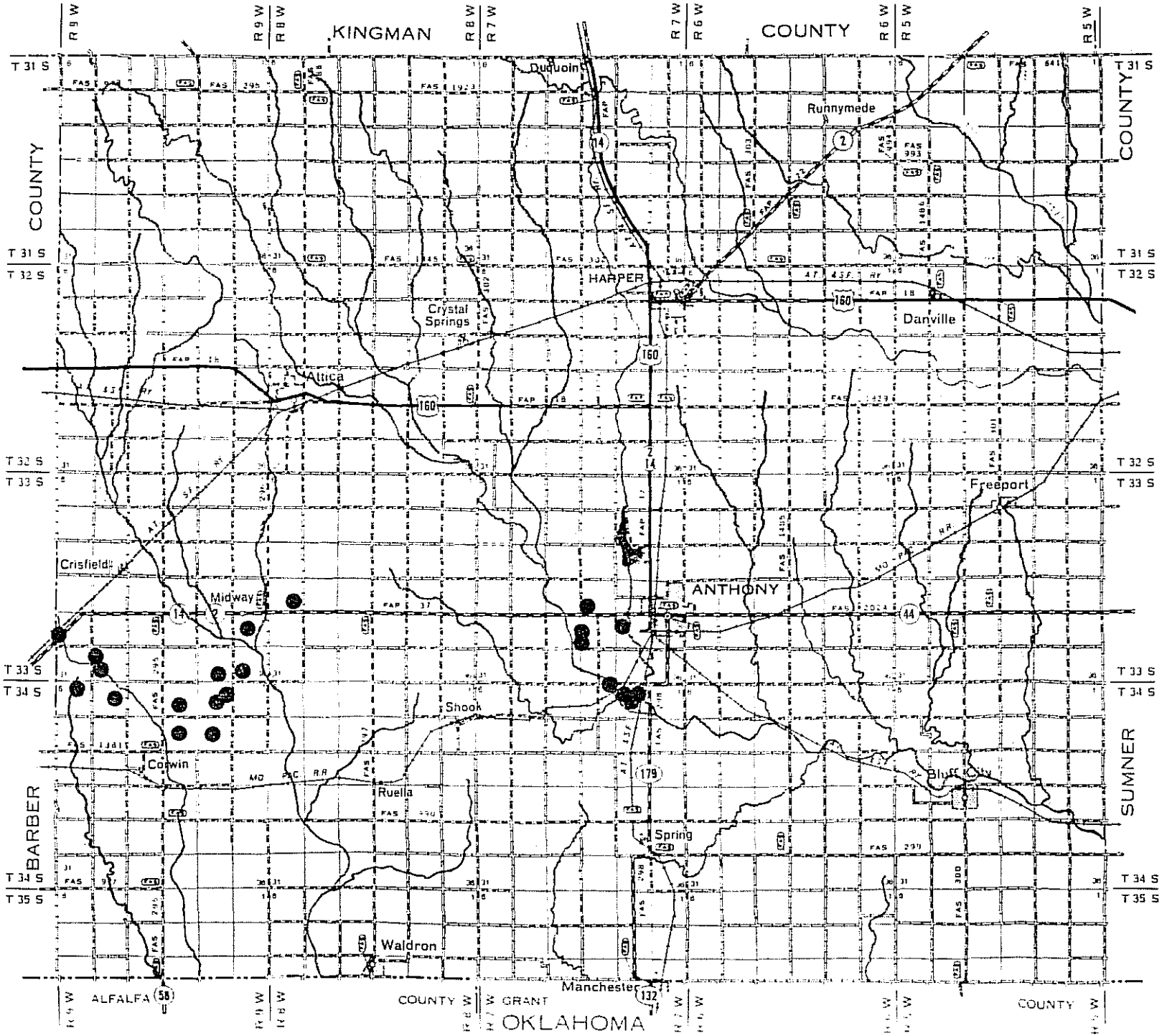


Fig. 1.--*Pseudacris streckeri streckeri* from Kansas. Photograph by JTC.

Fig. 2.--Distribution of breeding sites of *P. s. streckeri* in Kansas.


KINGMAN COUNTY
BARBER COUNTY
SUMNER COUNTY
ALFALFA COUNTY
GRANT COUNTY
OKLAHOMA
R9W
R8W
R7W
R6W
R5W
T31S
T32S
T33S
T34S
T35S
Duquoin
Runnymede
HARPER
Crystal Springs
Danville
Attica
Freeport
Crisfield
Midway
ANTHONY
Shook
Corwin
Ruella
Spring
Blue City
Waldron
Manchester
160
14
2
44
179
132
58

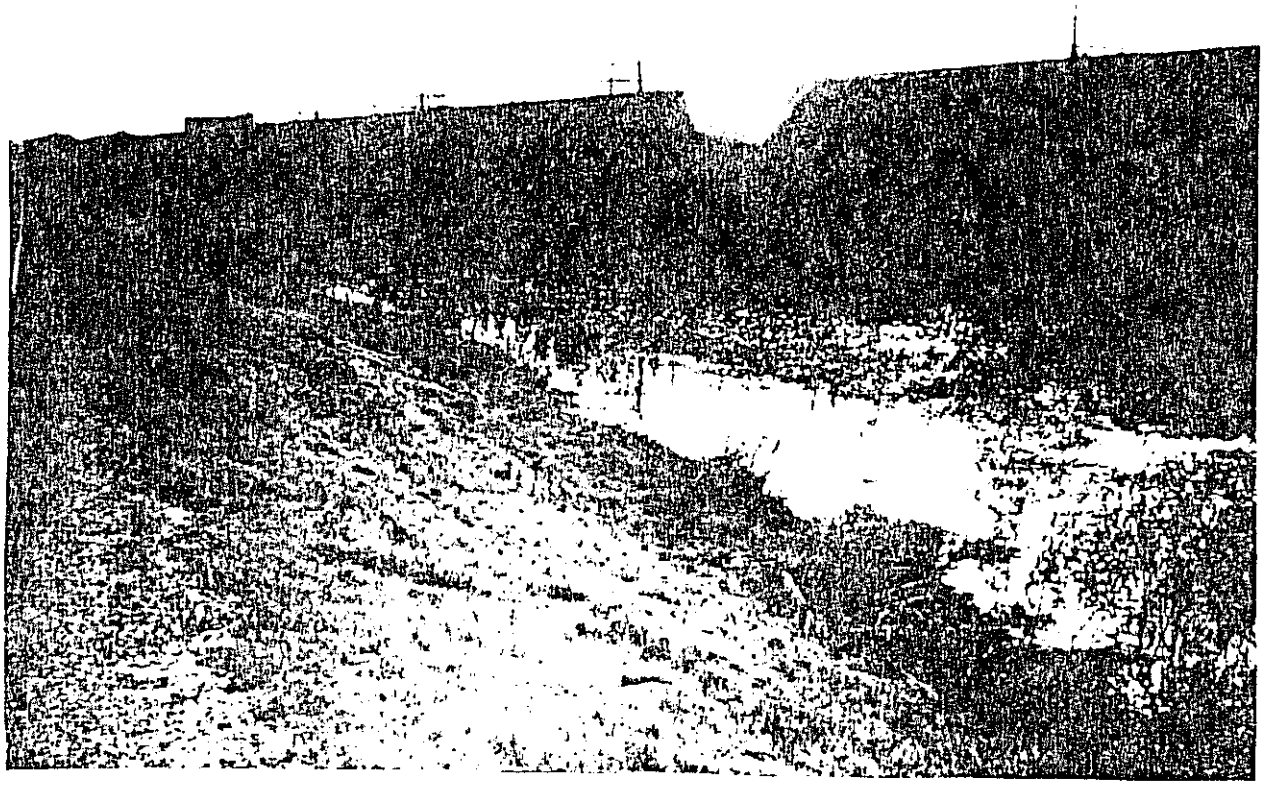


Fig. 3.--Breeding site of *P. s. streckeri* on Barber-Harper County line, taken 16 March 1982.

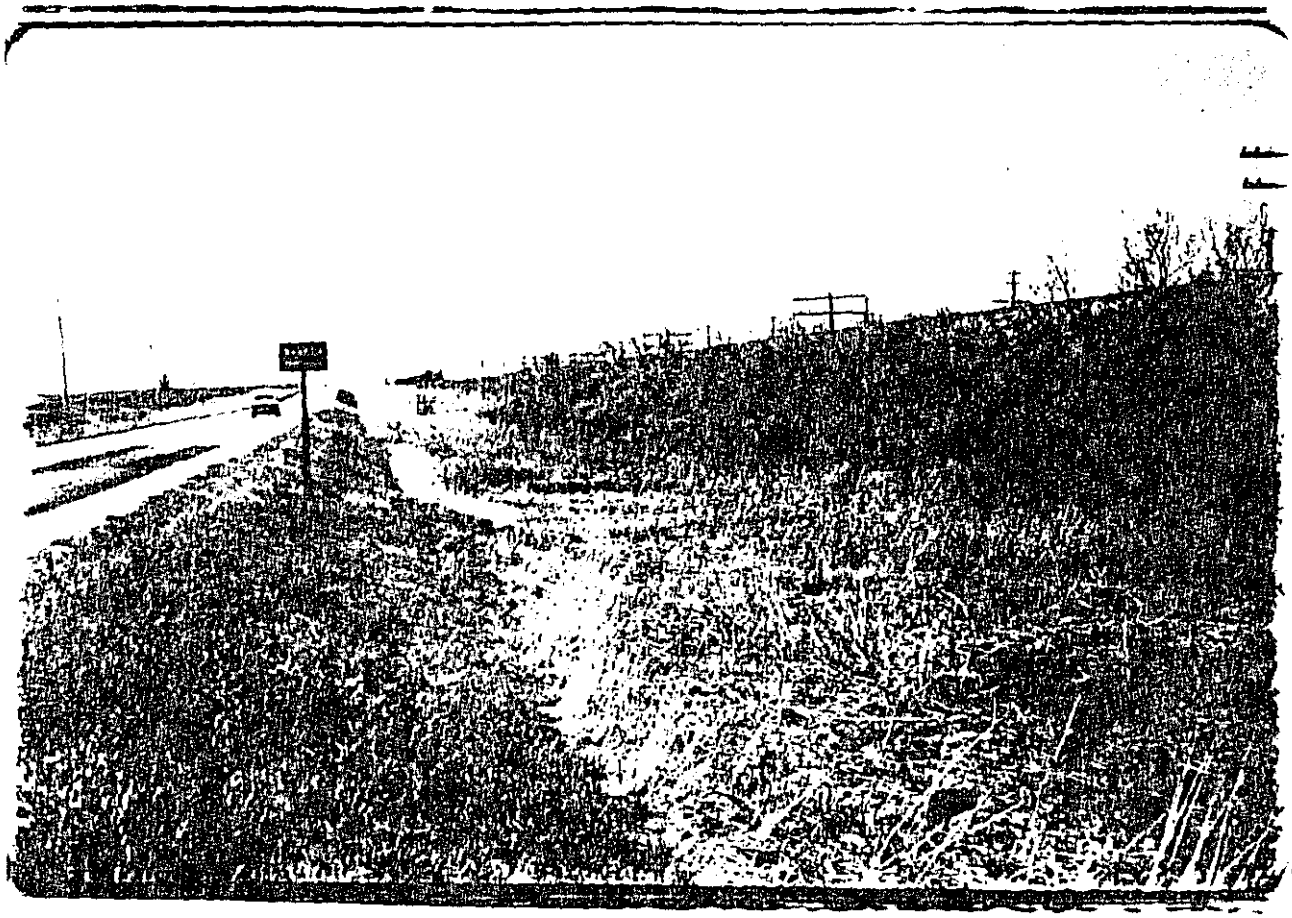


Fig. 4.--Same site as Fig. 3, taken 17 April 1982.

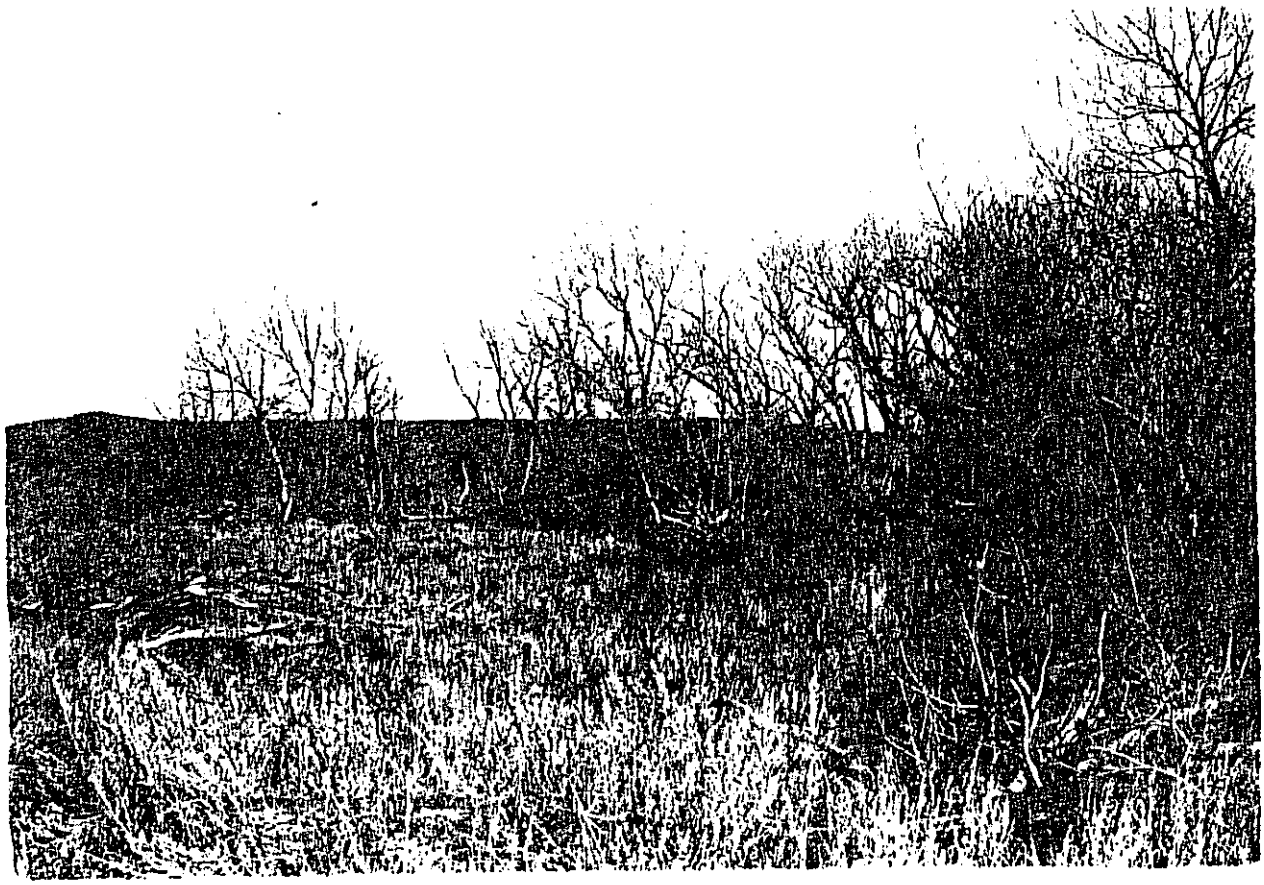


Fig. 5.--Breeding site of *P. s. streckeri* near Anthony Water Works, looking northeast.

Fig. 6.--Same site as Fig. 5, looking southwest toward Bluff Creek.

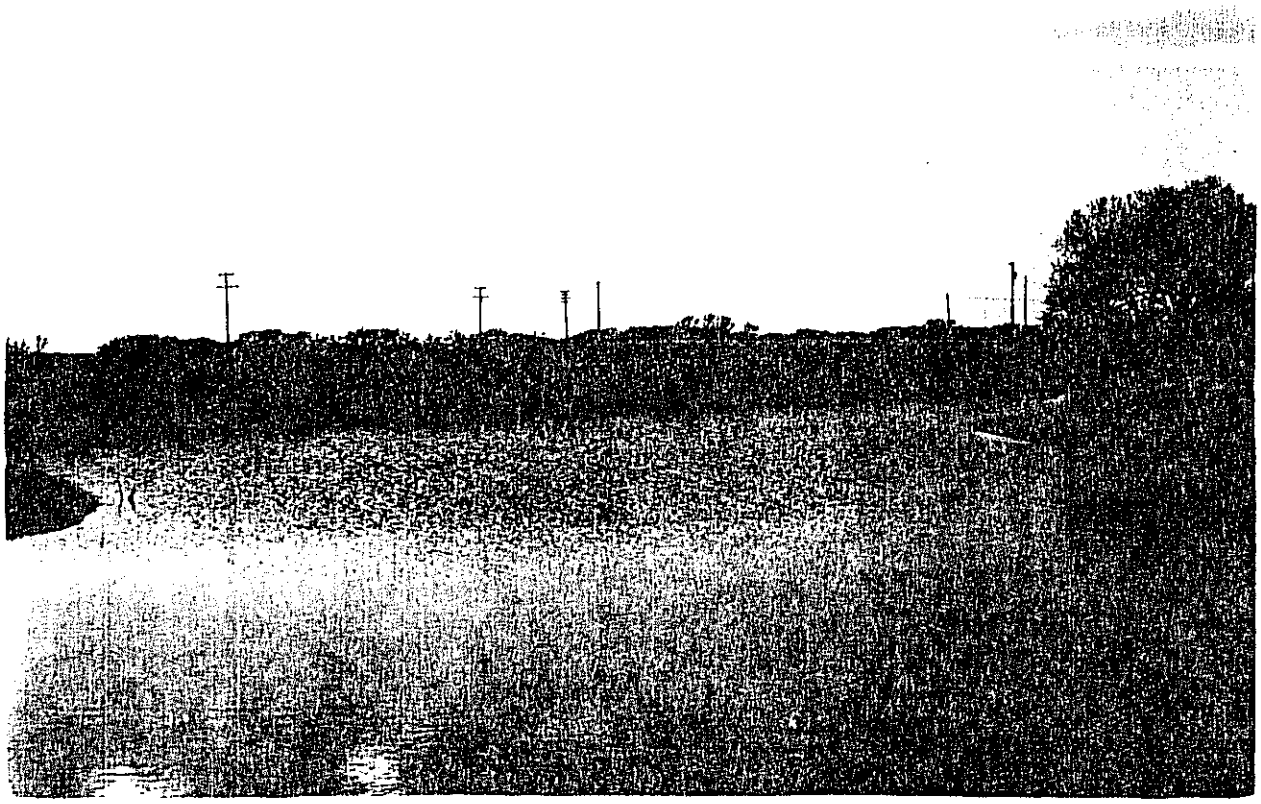


Fig. 7.--Permanent pond just west of Anthony Water Works.