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Reptiles and Amphibians in Deep Canyons: The Big Jacks and Little Jacks Creek Drainages of Owyhee County, Idaho

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INTRODUCTION

Many of the reptiles and amphibians that live in southern Idaho can be found in the canyons of Owyhee county. However, of the few studies on reptiles and amphibians that have been conducted in Owyhee county (Diller 1981, Munger et al.1993, 1994, Beck 1994) none have been conducted in the deep canyon areas, such as Big Jacks and Little Jacks Creeks. These canyons, which can reach a depth of 400 meters, contain habitat suitable for many native reptiles and amphibians. However, it is presently unknown whether canyons represent a hot spot of herpetological diversity, and therefore are worthy of protection, or whether they are relatively depauperate, or are somewhere in between. This study will examine the diversity and abundance of reptiles and amphibians in deep canyons of Owyhee County, and should therefore provide a model for other similar areas in Southern Idaho. For the purposes of this report, all areas within the Big Jacks and Little Jacks Creeks drainages will be referred to as the "study area". The term "herp" is used in this report to collectively refer to reptiles and amphibians.

Of the species potentially found in the study area the Spotted Frog is listed by the U.S. Fish and Wildlife Service (USFWS) as a candidate species, the Idaho Department of Fish and Game (IDF&G) as a species of special concern A (priority species), and by the Bureau of Land Management (BLM) as a sensitive species. The Northern Leopard Frog and the Mojave Black-collared Lizard are listed by the BLM as sensitive, and by IDF&G as a species of special concern A. The Western Toad is listed as an IDF&G species of special concern C (undetermined status) and by the BLM as sensitive. The Western Ground Snake, and the Longnose Snake are listed by IDF&G as species of special concern B (peripheral species).

This study was designed primarily as a survey to determine presence or absence of reptiles and amphibians of the deep canyons of the Big Jacks and Little Jacks creek drainages, and to provide baseline data for future studies. In addition, we collected data to determine movement patterns of snakes in the vicinity of Parker Trail on Big Jacks Creek.

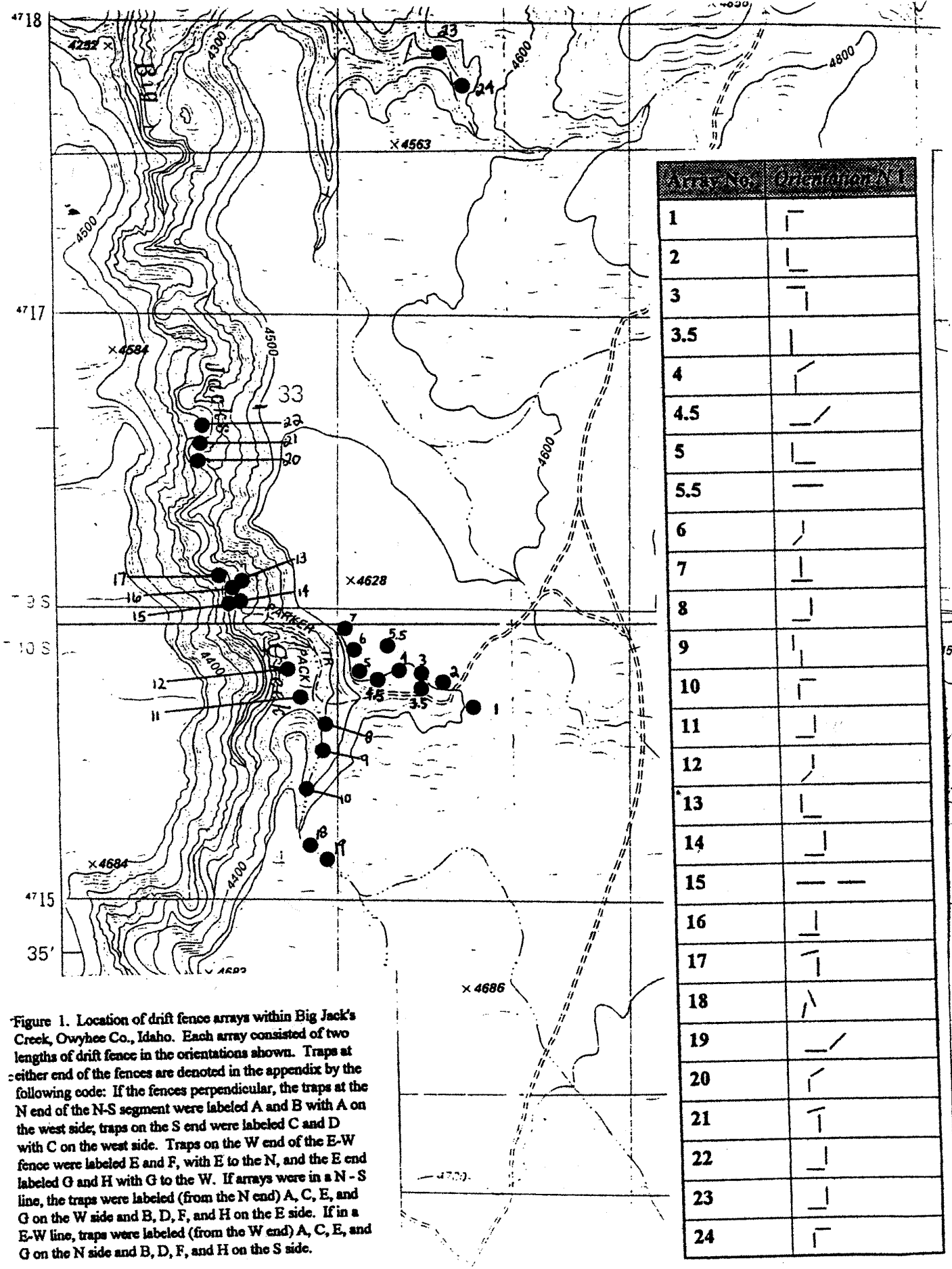
METHODS AND MATERIALS

Two methods of determining presence of herps were utilized; drift fences in conjunction with funnel traps, and visual encounter searches. These two methods were employed in four regimes: upland, rim, midslope/ draws, and canyon bottom. The upland regime was not actively surveyed. Reptiles found in this regime were, therefore, incidental to the study, and included road sightings (both dead and alive) and reptiles that were seen while traveling within the study site. Rim sightings included animals encountered within 100 m of the rim, including those captured in drift fence arrays. Mid-slope sightings were characterized by draws, talus benches, and other suitable habitat that was below the cliff that defined the rim regime, but did not include talus that actually emerged onto the canyon bottom. Some areas of extremely steep canyon walls did not have a mid-slope regime. The canyon bottom was defined to include all sand bars, and talus or dirt that actually emerged onto the floor of the canyon.

Drift Fence installation and construction: Twenty seven drift fence arrays were placed in and near Big Jack's Creek Canyon, as shown in Fig. 1. Drift fences were constructed of two sections of material, either construction grade silt fence or strips of sheet metal flashing. Forty-three sections were constructed of steel flashing, each section used a piece 21" wide by 25' long. The edge of each section was buried a minimum of six inches underground. On plateaus and windy slopes the bottom four inches was bent over before burying to keep the fence from blowing out of the ground. Steel fencing was installed in a trench that was no deeper than six inches and only wide enough to fit the steel in with the bottom four inches bent at a right angle to the fence (Fig. 2). Eight sections were constructed of silt fence, each section was twenty-five feet long by three feet wide with a two by two wooden post at each end and two spaced evenly between the end posts. The posts were driven into the ground at angles so they only contacted the fence at the top. Three foot long strip lathe was used to brace cloth that sagged due to uneven ground. Twenty-seven arrays were erected, 25 of which were comprised of 2 sections and the remainder of one twenty-five foot section of steel fence each. Of the twenty-seven arrays, eight were comprised of one section of steel fence and one section of silt fence, with the objective of determining whether or not there was a difference in effectiveness of each type of fence.

Funnel Traps: Funnel traps were constructed of aluminum window screen. A piece of screen was cut 24" on one side and 20" on the other. This piece was rolled into a cylinder 24" long and stapled together with household staples. One end of the cylinder was flattened, folded over, and clipped with clothespins. To make the funnel, a half circle was cut from the same material as the body and rolled into a funnel with a diameter of 22cm at the widest point. The point end of the funnel was cut off to make a hole that was about 3cm across. This funnel was inserted into the open end of the cylinder and stapled in place with the small hole inside the trap (Fig. 3). On each section of drift fence were placed four funnel traps, two on either side of each end of the fence. Each funnel trap was placed tightly against and parallel to the fence with the opening facing the center of the section of drift fence as in Fig. 3. A dirt ramp was constructed into the opening of the funnel trap to keep reptiles from passing underneath the trap and to help guide them into the trap. To give reptiles a place of refuge from the sun, a piece of cardboard was placed inside each trap and a shade of wood, cardboard, or branches was placed over the top.

Site Selection: Arrays were placed, when possible, at the junction of habitat types within each regime because of the greater likelihood of finding reptiles there that were moving between habitat types to forage. Arrays were placed in the regime defined for rim, mid-slope, and bottom of the canyon. Placement of the drift fence arrays was decided on site and on a per-array basis. Positioning of the arrays was based on practical placement with regards ease of installation, and presence of appropriate habitat.



Array No.	Orientation A-1
1	⌜
2	⌞
3	⌝
3.5	|
4	⌜
4.5	⌟
5	⌞
5.5	—
6	⌝
7	⌞
8	⌝
9	⌝
10	⌜
11	⌝
12	⌝
13	⌞
14	⌝
15	— —
16	⌝
17	⌝
18	⌝
19	⌟
20	⌜
21	⌝
22	⌝
23	⌝
24	⌜

Figure 1. Location of drift fence arrays within Big Jack's Creek, Owyhee Co., Idaho. Each array consisted of two lengths of drift fence in the orientations shown. Traps at either end of the fences are denoted in the appendix by the following code: If the fences perpendicular, the traps at the N end of the N-S segment were labeled A and B with A on the west side, traps on the S end were labeled C and D with C on the west side. Traps on the W end of the E-W fence were labeled E and F, with E to the N, and the E end labeled G and H with G to the W. If arrays were in a N - S line, the traps were labeled (from the N end) A, C, E, and G on the W side and B, D, F, and H on the E side. If in a E-W line, traps were labeled (from the W end) A, C, E, and G on the N side and B, D, F, and H on the S side.

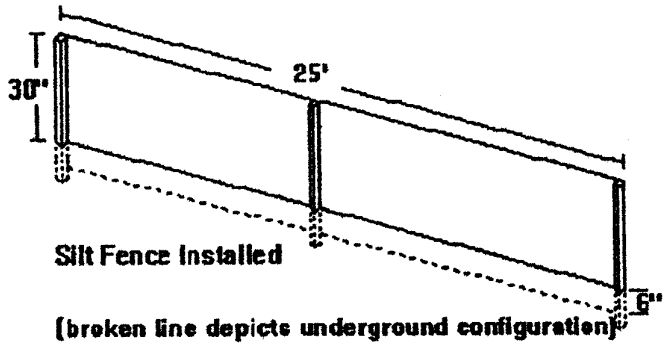


Figure 2a. Configuration of silt fence installation.

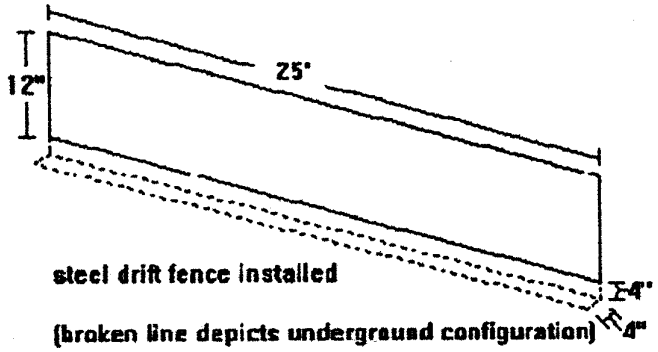


Figure 2b. Steel drift fence installation configuration.

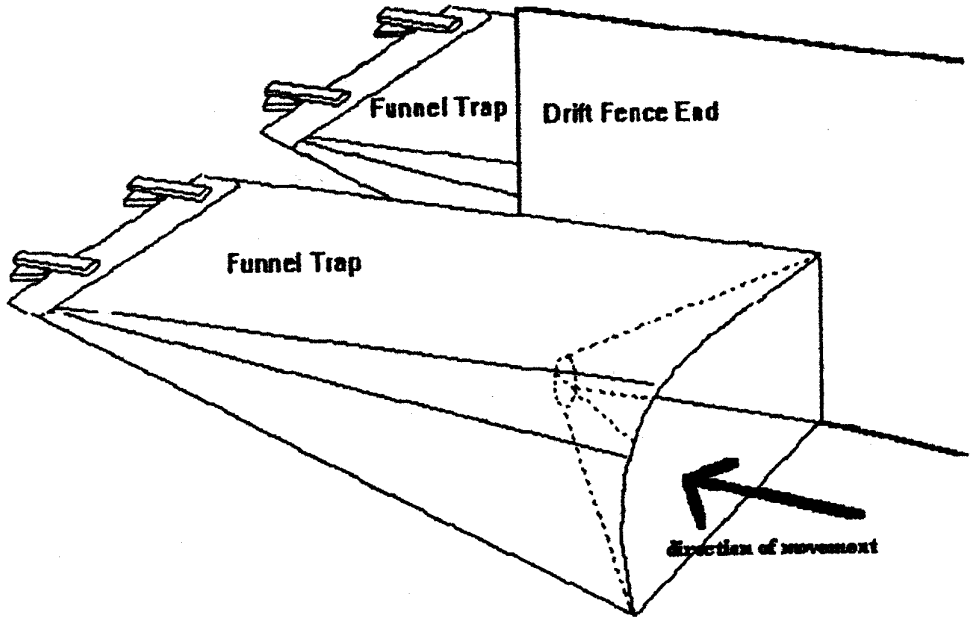


Figure 3. Position of traps on the drift fence end.

Monitoring: The arrays were checked on a three day rotating basis to avoid casualties. Each trap was removed and thoroughly examined for the presence of animals. If a snake was caught in the trap, it was removed and sex:, length, and species were recorded. Each snake within as km radius of Parker Trail was marked with a unique number so it could be identified if recaptured. The marks were made on the ventral scales in the rear third of the snakes body. Scales were clipped to flank the number of unclipped scales for each digit of the marked number. For example, three clipped scales with three unclipped scales between the first two clipped scales and four between the second and third clipped scales would constitute number thirty-four. Lizards that were caught in traps were not marked, but all other data was recorded as for snakes. Animals other than reptiles or amphibians (e.g., birds and mammals) were released and no data was taken other than noting their presence in the trap.

Visual Searches: Visual searches consisted of selecting a section of canyon within the Big Jacks and Little Jacks Creeks drainages that was reasonably accessible, and hiking that section looking for reptiles. While performing visual searches, rocks and other surface debris were turned. All reptiles that were captured were sexed and sized, but not marked unless they were within 5 km of the drift fence arrays. Survey areas outside the trapping area were only surveyed once. All habitat that was disturbed when performing a visual search was replaced as close to its original condition as possible. When we encountered a skin from a reptile, it was identified to species, and recorded as a capture but note was made that it was a skin. We also noted the cloud cover, temperature in Celsius, time, location, and any distinguishing features of the reptiles encountered.

Visual searches of Big Jacks Creek consisted of areas south of the Cottonwood/Big Jacks Creek confluence three miles and north of the Cottonwood/Big Jacks Creek confluence to the Wickahoney Creek confluence. We also conducted visual encounter searches for 1/4 mi north and south ofwhere Big Jacks Creek crosses Battle Creek road. We surveyed Cottonwood Creek from Cottonwood Springs to the Big Jacks Creek confluence. We surveyed a one mile section of Big Jacks Creek, five miles south of the Big Jacks/Little Jacks Creek confluence.

The confluence of Big Jacks/Little Jacks Creek was surveyed extensively as well as tributaries in the vicinity and surrounding hills. This area was visited on three occasions because of the frequency that we passed through on our way to other sections of the creeks. The bench above the confluence was searched as well as Rattlesnake Creek which drains the bench into Little Jacks Creek.

Little Jacks Creek was surveyed in fewer places because of limited access points. We surveyed a one mile section of the creek near OX Reservoir and approximately two miles south of the confluence with Big Jacks Creek. We also surveyed approximately one mile of Little Jacks Creek on either side of the Rattlesnake Creek confluence, and a one mile section beginning approximately two miles south of the Rattlesnake Creek confluence.

In addition to the main creeks we conducted visual encounter surveys in other areas that contained apparently good habitat for herps. Most of these areas fell along roads that travelled parallel to the main creeks. The areas that we visited on these occasions were: Hole in Rock, Big Horse Basin Gap, Rattlesnake Gulch, Wickahoney, Whites Reservoir, Mud Flat Road and Shootly Cutoff Road.

RESULTS

A total of 623 reptiles were encountered during the course of the study. Two hundred eighty-five reptiles were caught in the rim regime, 53 were caught mid-slope, and 116 were caught on the canyon bottom. The remaining 169 reptiles were incidental to the study.

Snakes:

Six species of snakes were found in the canyons of the study area: Gopher Snakes, Western Whipsnakes, Western Rattlesnakes, Night Snakes, Western Terrestrial Gartersnakes, and Western Racers. An additional two species that were found incidental to the study: Western Ground Snakes, and Longnose Snakes. Snakes were found in approximately the same numbers on the rim as in the canyon bottoms. Only a small percent of the snakes found were found mid-slope (Fig. 4). Snakes amounted to about one third of all reptiles caught on the rim, as did snakes caught mid-slope. Snakes accounted for about 80% of all reptiles caught on the canyon bottom. Eighty-nine snakes were marked within 5km of Parker Trail. A total recapture count of each species appears in Fig. 5.

Lizards:

Seven species of lizards were found in the canyons surveyed; Side-blotched lizards, Western Fence lizards, Desert Horned lizards, Short Horned lizards, Longnose Leopard lizards, Western Whiptails, and Western Skinks. One additional species was found incidental to the study, the Mojave Black-collared lizard. Lizards comprised about 70% of the reptiles found on the rim, and two-thirds of those reptiles found mid-slope. Lizards accounted for only about 20% of the reptiles found on the canyon bottom; lizards were found almost strictly on the rim (Fig. 6).

Amphibians:

There was only one species of amphibian found in the study area, Pacific Tree Frog, which was identified by Jim Munger, by call. All others were incidental to the study. This frog accounted for one percent of all herps found on the canyon bottom.

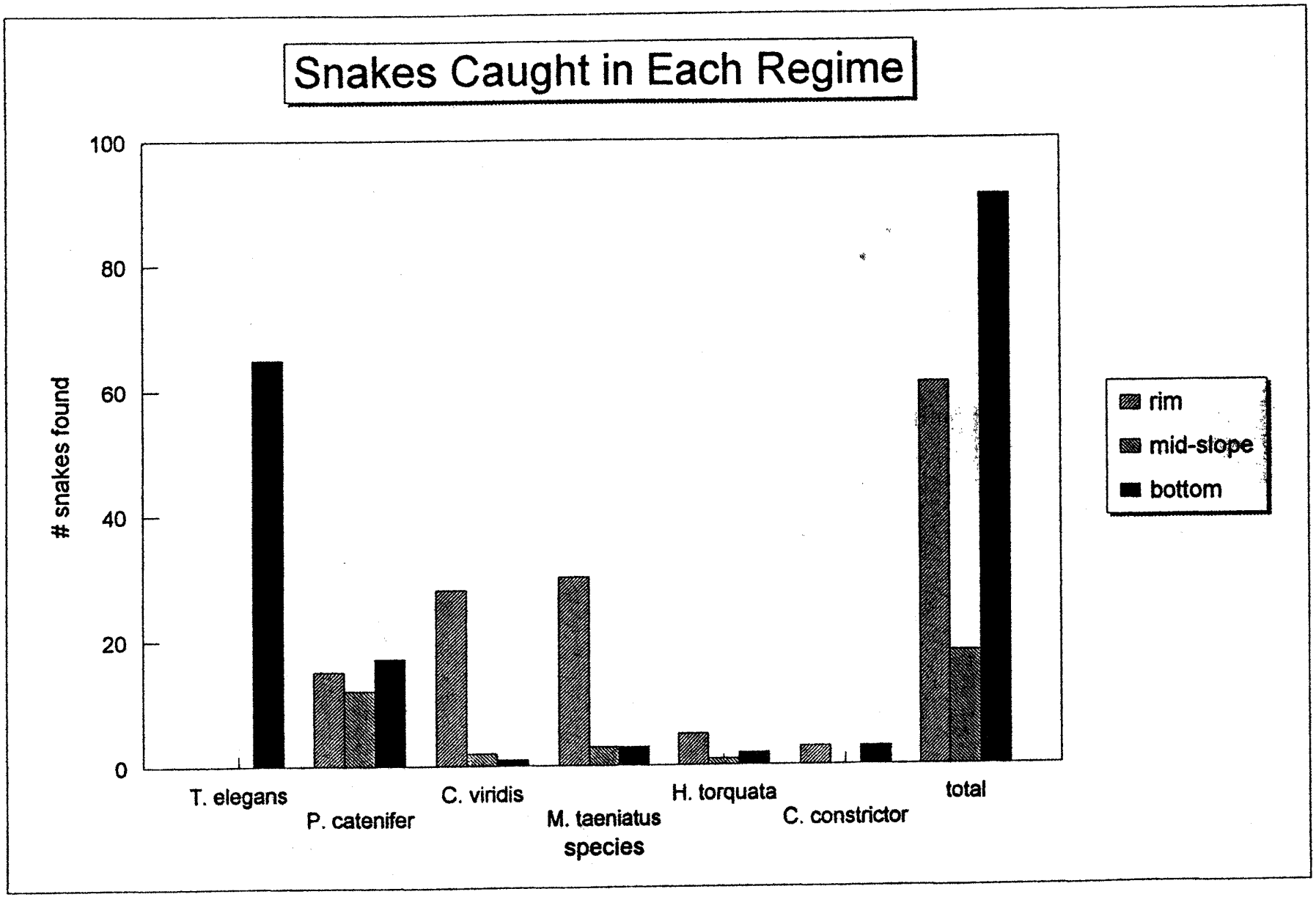

Snakes Caught in Each Regime
100
80
60
40
20
0
snakes found
rim
mid-slope
bottom
T. elegans
P. catenifer
C. viridis
M. taeniatus
H. torquata
C. constrictor
total
species

Figure 4.

Herp Survey Data 1995

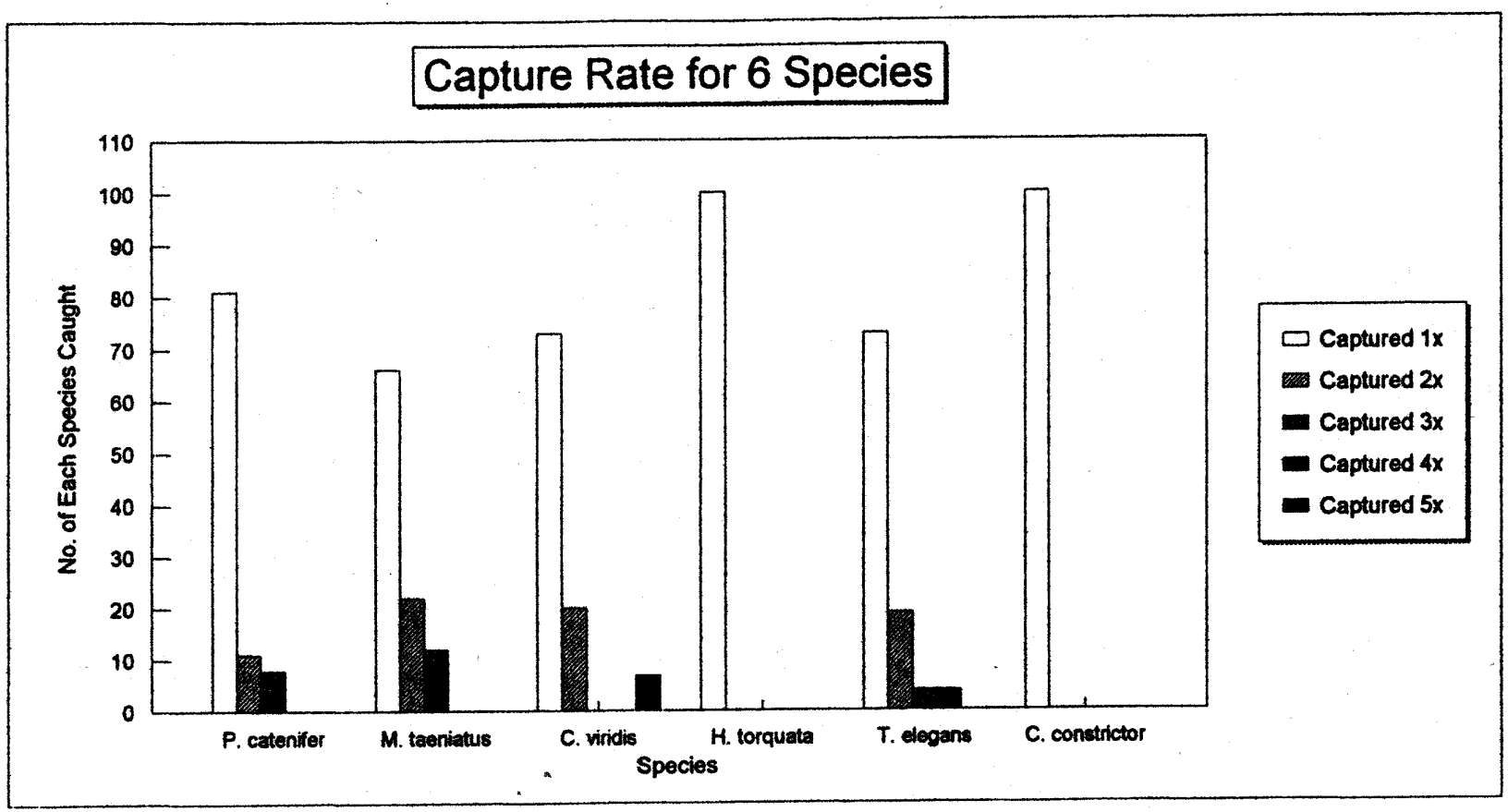


Figure 5.