

file

THE STATUS OF THE ENDANGERED SAN FRANCISCO GARTER SNAKE

Thamnophis sirtalis tetrataenia

ON THE LEVINSON PROPERTY, BRISBANE, CALIFORNIA

A Report Prepared For

Golden Eagle Resources Group
1550 Bryant Street
San Francisco, CA 94103

By

Dr. Samuel M. McGinnis
Biological Consultant
9699 Melton Road
Manteca, CA 95336

July 18, 1990

RECEIVED

JUL 25 1990

Plan. Dept. Brisbane

BACKGROUND

The endangered San Francisco garter snake (SFGS) was once an abundant reptile in the many small marshes and ponds which once occupied the inland portions of the San Mateo County bay shore area. Extensive development over the past century has eliminated nearly all such habitats, and only a large parcel of seasonal marshes and drainage canals has been incidently preserved as part of the land holdings of San Francisco International Airport. This area in Milbrae, known as the "SFO Habitat Site", now contains the only substantial population of the SFGS in the world.

Given this example of survival of the endangered snake in a remnant section of marshland, the possibility exists that there may be other smaller "island populations" in the greater Milbrea - Brisbane area. One such site is the small seasonal marsh and permanent canal segment located west and south of the PG&E substation on Bayshore Boulevard in Brisbane. The Main Street edge of PG&E property contains a ditch which holds water throughout the year (Figure 1). Although much debris is usually present in the water, good shoreline vegetation cover and a large Pacific tree frog population make this an acceptable habitat for the SFGS.

The canal segment on Parcel One the Levinson Property also had a well vegetated shoreline over most of its course at the beginning of the study (Figure 2). At that time there was also a continous flow of water in the canal. The seasonal marsh on the northern portion of Parcel One was nearly dry in early April, 1990, but was temperarily recharged in late May by an unseasonal heavy rain.

When these habitat segments were combined and scored using the 12 point SFGS feeding habitat evaluation system developed for the California Department of Fish and Game (McGinnis, 1988), a score of 8 was achieved. This indicates that although this site falls short of the prime habitat for the endangered snake, it could exist on a permanent basis here. The purpose of this study was to document through trapping and visual observation the presence or absence of the SFGS at the Parcel One Levinson property site.

METHODS AND MATERIALS

A trapping system developed by Fitch, 1951, and modified by McGinnis, 1988, was employed in this study. Seven traplines, each composed of a 24 to 32 foot long and one foot high drift fence with a funnel trap at either end were installed. Three were positioned in the shoreline cover along the canal in Parcel One and another three in the seasonal marsh area. One additional line was situated along the canal segment west of the PG&E station because of the large Pacific tree frog population there.

In this trapping system each funnel half on each side of a drift fence end acts as an independent trapping unit. Thus a total of 28 fennel-fence units were in place from April 3 through July 10, 1990. It should be noted that the trapping period is one week longer than the three month period proposed at the beginning of

the study in order to buffer a week of disturbance at the site which will be discussed later.

Traplines were checked at two day intervals at which time a visual survey of the marsh and all canal shoreline areas was made. All snake captured were identified and marked for individual recognition by clipping the edge of a specific ventral scale. They were then released near the point of capture. During the visual surveys, the canal areas were closely inspected for the presence of frogs and tadpoles, and the distribution of this primary food of the SFGS was plotted over the weeks of the study.

RESULTS AND DISCUSSION

The most significant result of this study was that no SFGSs were either trapped or observed on the study site during the 13 week survey period. This survey effort was in excess of 2,500 trap days, with one trap day equal to one funnel half - drift fence end unit in place for a 24 hour period. During a two year survey of 52 possible SFGS habitats in San Mateo County (McGinnis, 1988), trapping efforts of this magnitude in small habitat areas always produced SFGSs when they were present.

Supporting this negative find concerning the SFGS was the capture of 11 western yellow-bellied racers on the Parcel One site. This snake is similar to the SFGS in that it is a diurnal sight-hunting predator which includes frogs and tadpoles in its diet. Unlike the SFGS, it shifts readily to other prey such as small mice, lizards, and large insects when the frog food resource is scarce or temporarily unavailable. It is often the case that marginal SFGS habitats are dominated by the western yellow-bellied racer, and one current theory is that its presence in the absence of an abundant frog population provides too much competition for the SFGS. This appears to be the case on this study site, for although the PG&E canal segment supports a good population of the Pacific tree frog, the canal ditch on Parcel One does not. In addition, no tree frogs were observed in the seasonal marsh area. However, it should be noted that in this third consecutive drought year this and other seasonal wetland sites cannot provide the nursery habitat for tadpoles that they do during normal or wet years.

The other factor which may account for the absence of the SFGS at this site is the absence of its other preferred food item, the red-legged frog. Unlike the Pacific tree frog which is abundant only in spring and then estivates during the hot summer months, the red-legged frog is a resident of permanent water habitats where it is available to predators from early spring through late fall. It serves as an important buffer food which carries the SFGS through periods of tree frog scarcity, and thus most habitat sites which support this snake contain populations of both frog species.

This otherwise complete study was marred by one event which should be reported in the interest of completeness. In early May workmen from the Yamas Construction Company installed a large drain pipe perpendicular to the canal ditch on Parcel One. In the process they removed a considerable amount of shoreline

vegetation and covered other areas with mud removed from the ditch. They also blocked the ditch with earth dikes on either side of the new drain entrance so that the only water flow in the ditch was caused by that which seeped through these dams. The California Department of Fish and Game and the U.S. Fish and Wildlife Service take a dim view of such habitat disruption before or during the course of a study directed towards establishing the presence or absence of an endangered or threatened species. Given the fact that traplines were in place one month before this disturbance and remained for two months after the week which was biased by the construction activities, I personally believe that if SFGSS were present here one or more still would have been captured. However, final judgement on this point will have to lie with the above protection agencies. A set of colored slides of this disturbance are available upon request, and viewing of these or a site visit by representatives of these departments may be necessary before certification of this study is made.

CONCLUSIONS

1. Although the Parcel One site on the Levinson Property has the minimal habitat features to support the SFGS, none were either captured or seen during a 13 week study period in spring and early summer, 1990.
2. The untimely disruption of a segment of the permanent aquatic habitat on Parcel One during the first half of the study leaves open the possibility that a small population of SFGSS may have escaped detection.

LITERATURE CITED

- Fitch, H.S. 1951. A simplified type of funnel trap for reptiles. *Herpetologica* 7: 77-88.
- McGinnis, S.M. 1988. Distribution and feeding habitat requirements of the San Francisco garter snake. California Department of Fish and Game, Sacramento.



Figure 1. The permanent ditch habitat on the western edge of the PG&E property north and adjacent to the Parcel One site. Despite its littered nature, this pool supports a breeding population of the Pacific tree frog.



Figure 2. A segment of the ditch/canal habitat on the Parcel One site before before construction activities altered it.



Figure 3. The seasonal marsh on the Parcel One site. All standing water was gone from this area by early April, 1990, but it was briefly recharged in late May by a heavy rain.