

# Giant Garter Snake Status Report

Year-end 2008

An overview of the status of the giant garter snake  
in the Natomas Basin, California

Eric Hansen

---

## SPECIES BACKGROUND

Considered the largest of the California garter snakes, the giant garter snake (*Thamnophis gigas*) was once a common inhabitant of the marshes, wetlands, and streams dominating the floor of the Great Central Valley. Unfortunately for the snake, as much as 90% of this traditional “swampland” was converted to urban and agricultural uses during the last century. The giant garter snake is now reduced to less than two-thirds of its historic range, persisting in discontinuous patches between Fresno and Butte counties. Due to this reduction and continued threats to its remaining habitat, the giant garter snake is now considered a threatened species protected by the state and federal Endangered Species Acts.

Notoriously shy, the giant garter snake prefers to spend its days sunning itself and feeding on small fishes and frogs. This timid species was described with consternation by early naturalists who found it awkward to capture and “difficult to shoot.” Charged with conserving the species, modern biologists face similar, though less archaic challenges. In fact, only a handful of the biologists who study snakes have actually enjoyed the privilege of observing this impressive snake in the wild. Fortunately, some regions continue to provide both habitat and opportunities to study and observe this dwindling species.

In areas north of Sacramento, the giant garter snake continues to make a living in the ricelands that provide the water, food, and shelter that the snake requires. Traditionally dominated by rice, the Natomas Basin supports one of the 13 giant garter snake populations surviving today. The giant garter snake is one of the Covered Species in the Natomas Basin Habitat Conservation Plan (NBHCP), which aims to minimize and mitigate harmful impacts to giant garter snakes and other Covered Species resulting from permitted urban development.

## ANNUAL MONITORING

The NBHCP and its Implementing Agreement require annual monitoring of giant garter snake and its habitat.

Using a combination of aquatic trapping and visual searching, we track the status of factors such as giant garter snake distribution abundance, and habitat each year. The main objectives of these monitoring efforts are listed below.

- To evaluate whether the conservation objectives of the NBHCP are being met.
- To detail the progress of NBHCP implementation with respect to giant garter snake and the wetland reserve system.
- To evaluate the habitat potential of mitigation lands proposed for acquisition.

- To aid in decision making for improving and adapting reserve design and management to better meet the snake’s needs.

## YEAR 2008 SURVEY EFFORT

We conducted surveys throughout the Natomas Basin during the giant garter snakes’ typical active season from mid-April to late September. Ten sets of floating aquatic traps extending one-third of a mile each were deployed at predetermined sites throughout the Natomas

Basin where they were checked every day. Three of these traplines remained in place for the duration of the season for reference; the remaining traplines were moved to new locations every two weeks. When possible, locations were trapped twice to account for seasonal variation in giant garter snake activity and movement. In all, 39 locations were sampled resulting in a total of 62,528 trap days. Visual encounter surveys were conducted three times each, approximately 6 weeks apart, at 54 predetermined locations. Captured snakes were marked with microchips providing unique identification codes, measured, and released at the point of capture.

**YEAR 2008 RESULTS**

**Basin Wide**

In 2008 we captured 250 individual giant garter snakes within the Natomas Basin. This is the largest number of giant garter snakes captured in the Natomas Basin since we began standardized surveys in 2004. Aside from a small decrease experienced in 2007, the number of individuals and overall trapping success has increased each year since 2004 (Table 1). Individuals of all ages were found, indicating that snakes are reproducing as they should. While these results are encouraging, the apparent good news is not equally distributed throughout the Natomas Basin. A summary of results at each of the Natomas Basin Conservancy’s Reserve Units is provided below.

**TABLE 1:** Seasonal Capture Results in the Natomas Basin, 2004-2008

YEAR	INDIVIDUALS CAPTURED	INDIVIDUALS TRAPPED	TOTAL TRAP DAYS	CAPTURE SUCCESS (INDIVIDUALS TRAPPED /TRAP DAY)
2004	87	82	49,127	.0017
2005	176	162	65,836	.0025
2006	241	235	63,400	.0037
2007	212	202	63,216	.0032
2008	250	245	62,528	.0039

**North Basin Reserve**

A total of 126 giant garter snakes were captured on or near Conservancy tracts within the North Basin Reserve, including 19 individuals captured within the managed marshes. While the proportion of snakes captured in managed marshes may seem low, it is actually very encouraging because it shows that snakes are moving back after the extensive maintenance and facility improvements completed in 2007.

**Central Basin Reserve**

A total of 107 giant garter snakes were captured on or adjacent to reserve tracts within the Central Basin Reserve, including 21 individuals captured within the managed marshes on the Betts-Kismat-Silva tracts where the Conservancy’s field operations are headquartered.

**Fisherman’s Lake Reserve**

Maintenance and facility improvements were conducted in the managed marshes of the Fisherman’s Lake Reserve during the first half of the summer in 2008. While the limited trapping conducted in the marshes after the work was completed did not produce any giant garter snakes, 17 individuals were captured in Fisherman’s Lake adjacent to Conservancy tracts. This is the largest number of giant garter snakes captured in the Fisherman’s Lake Reserve area since standardized surveys began in 2004, where previous numbers have ranged from one to eight snakes per year. The increase in giant garter snake captures in Fisherman’s Lake is probably a result of snakes moving out of the marshes while work was underway. While this increase is promising, giant garter snake numbers remain low in this portion of the Basin relative to the significant number described here in the past.

## **BIOGRAPHY**

*Eric Hansen is a wildlife biologist specializing in the study of threatened and endangered reptiles and amphibians. Like his father before him, Mr. Hansen is dedicated to conserving the giant garter snake and its habitat throughout the species' dwindling range. Born and raised in Sacramento, Mr. Hansen has lifelong experience in the Natomas Basin and has actively studied giant garter snakes there for the past ten years. Mr. Hansen is a member of the Giant Garter Snake Recovery Team and has organized giant garter snake monitoring for the Natomas Basin Conservancy since 2004.*

---

## **RESEARCH & EDUCATION SERIES**

The Natomas Basin Conservancy's Research & Education Series was established to promote better understanding of the biological and scientific issues associated with the Natomas Basin Habitat Conservation Plan (NBHCP). The Series seeks to serve as a resource for students, educators, the media and those interested in wildlife and the creation of habitat in the Natomas Basin of California. The Conservancy makes every attempt to make the Research & Education Series accessible to the lay public. Series reports will be published on a periodic basis.

For more information on the Conservancy and the NBHCP, visit [www.natomasbasin.org](http://www.natomasbasin.org).

You may use Series reports for personal, non-commercial use. To request reprint permission from the Conservancy, or to re-publish any of these papers, please contact the Conservancy.