

COMMENTS TO INCLUDE THE SAN FRANCISCO GARTER SNAKE (*THAMNOPHIS  
SIRTALIS TETRATAENIA*) IN APPENDIX I TO THE CONVENTION ON INTERNATIONAL  
TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA



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INSTITUTE

*Building a healthy and sustainable global community for people  
and the plants and animals that accompany us on Earth*

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Wild Equity Institute formally requests that the United States Fish and Wildlife Service include the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) (“SFGS”) in its proposals to amend Appendices I and II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (“CITES”) at the upcoming sixteenth meeting of the Conference of the Parties (“CoP16”).

These comments are in response to a request by the Fish and Wildlife Service for information and recommendations on animal and plant species that should be considered as candidates for the forthcoming United States proposals to amend the Appendices.<sup>1</sup> Although the snake is a subspecies as recognized by the International Code of Zoological Nomenclature, it is a valid candidate for inclusion in the Appendices because the term “species” is defined in CITES as “any species, subspecies, or geographically separate population thereof.”<sup>2</sup> The proposed action addresses a serious wildlife trade issue that the United States is experiencing as a range country for a species in trade, namely the SFGS.

These comments request that the United States propose to include the SFGS in Appendix I to CITES at CoP16. Appendix I includes species threatened with extinction that are or may be affected by trade.<sup>3</sup> In the alternative, the comments suggest that the United States propose to include the SFGS in Appendix II to CITES, which includes species that are not presently threatened with extinction, but may become so if their trade is not regulated.<sup>4</sup> In either case, the comments suggest much needed international monitoring and protection for the SFGS to prevent further population decline and encourage the species’ recovery.

Wild Equity Institute is a non-profit organization based in San Francisco, California. The Institute unites the grassroots conservation and environmental justice movements into a powerful force that builds a healthy and sustainable global community for people and the plants and animals that accompany us on Earth. Wild Equity accomplishes this by working on projects that highlight and redress the inequitable relationships across our human communities while improving our relationship to the lands in which we live. Wild Equity brings this action on its own institutional behalf and on behalf of its members, board, and staff who regularly enjoy observing and studying the San Francisco garter snake.

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<sup>1</sup> 76 Fed. Reg. 34746 (June 14, 2011).

<sup>2</sup> 50 C.F.R. § 23.5.

<sup>3</sup> 50 C.F.R. § 23.4(a).

<sup>4</sup> 50 C.F.R. § 23.4(b).

## Executive Summary

The San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) (“SFGS”) is arguably the most imperiled snake in North America. The SFGS was identified as an endangered species under United States law in 1967,<sup>1</sup> and was one of the first species protected under the U.S. Endangered Species Act in 1973. The SFGS remains dangerously close to extinction today.

The SFGS is also one of the most beautiful snakes in North America. Because of its vibrant red, black, and turquoise colors and rare species status, it is a highly sought-after prize for serpent enthusiasts. Unfortunately, as explained below the SFGS’ Endangered Species Act protection has not been enough to prevent unregulated trade of the species beyond the borders of the United States. The SFGS has been illegally collected for decades throughout its historic range, and the recovery of the species remains threatened by lack of international protection and rising demand among collectors, particularly in Europe and Canada.

The SFGS is a subspecies of the common garter snake (*Thamnophis sirtalis*). The common garter snake is the most widely-ranging reptile in the United States, occurring from coast to coast. Several subspecies are recognized; of these SFGS has the most restricted range. It is endemic to the San Francisco Peninsula, almost entirely within San Mateo County. The SFGS frequents marshes, sloughs, and ponds, particularly where there is dense vegetative cover along the shoreline.

Because of the SFGS’ reclusive nature, it has been difficult for scientists in the field to gain an adequate understanding of the population and demography of the SFGS. Although there is insufficient data to determine precise population numbers, decades worth of studies show that SFGS populations have suffered declines due to various threats over the years and remain at risk today.

The primary threat to the species is habitat degradation, mainly as a result of urban development, expanded human recreational use, and agricultural practices. Declining habitat quality affects both the SFGS directly and its prey, particularly the California red-legged frog, which is listed as threatened under the Endangered Species Act. Other threats include disease, predation, and illegal collecting. Although there have been recovery efforts at some population sites, few have had successful results.

In order to enhance conservation for this unique animal, the SFGS must be added to Appendix I to the Convention on International Trade in Endangered Species (CITES), which includes species threatened with extinction that are or may be affected by trade. It is clear that the snake, a species already threatened with extinction, has been and continues to be affected by international trade.

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<sup>1</sup> 32 Fed. Reg. 4001 (March 11, 1967).

## I. POPULATION

### A. Description and Population Size

The SFGS has a burnt orange head, greenish-yellow dorsal stripe edged in black, bordered by a black stripe with a usually continuous red stripe, and a belly varying from greenish-blue to blue. They mate in the late winter to early spring, and the young are born in summer to early fall. They are live-bearing at birth and with young ranging from 5 to 8 inches in length and the same coloration as adults. Clutch sizes vary with the size of the female as well as the year, but generally range from 8 to 20 young. Adults grow to a length of 2-3 feet.<sup>2</sup>

It is difficult to assess precise numbers because there is little data on population trends and demographic features. SFGS are difficult to locate, observe, and capture. Some field work has attempted to determine population at certain population sites, primarily through trapping studies. Although these studies used different collecting techniques and sample design making it difficult to draw comparisons across time and location, the overall trend since the early 1980's indicates a decline in population in most areas.<sup>3</sup>

In the absence of statistically significant data, population trends can be inferred from habitat quality and quantity. In the case of the SFGS, degradation of suitable habitat has been thoroughly documented throughout its range, and continues to occur today.

### B. Population Trend<sup>4</sup>

The snake's limited historic range extended from North of the San Francisco-San Mateo county line along the base of the Santa Cruz mountains down to Ano Nuevo State Reserve, the Southern-most location the snake has been found. Contrary to its name, the snake was not historically found in the city and county of San Francisco. SFGS are associated with permanent or nearly permanent bodies of water, usually marshy areas of shallow water and heavily vegetated shores and where there are dense frog populations.<sup>5</sup> They will generally wander long distances to suitable breeding ground, and have been known to occur in upland grasslands, which are important for winter retreats.

According to the 1985 Recovery Plan and the 2006 5-Year Review, there are currently six significant population sites including the West of Bayshore property (San Francisco International Airport ("SFO")), San Francisco State Fish and Game Refuge property (San Francisco Public Utilities Commission), Laguna Salada/Mori Point

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<sup>2</sup> JOHN M. BRODE, FIVE-YEAR STATUS REPORT: SAN FRANCISCO GARTER SNAKE 3 (1990).

<sup>3</sup> U.S. FISH AND WILDLIFE SERVICE, SAN FRANCISCO GARTER SNAKE (*THAMNOPHIS SIRTALIS TETRATAENIA*), 5-YEAR REVIEW: SUMMARY AND EVALUATION 5-9 (Sept. 2006).

<sup>4</sup> Much of this information can be found in the SFGS 2006 5-Year Review.

<sup>5</sup> Sean J. Barry, Investigations on the Occurrence of the San Francisco Garter Snake at the Stanford Linear Accelerator Center (Sept. 1976), available at <http://www.slac.stanford.edu/cgi-wrap/getdoc/slac-tn-76-005.pdf>.

property (City of San Francisco/National Park Service), Pescadero Marsh and Ano Nuevo State Reserve properties (California State Parks) and Cascade Ranch property (private land owner). Many other smaller populations do exist, but these six form the basis for long-term species recovery plans.

The West of Bayshore population, which was once thought to be the largest SFGS population, is one of the few sites with enough data to discern a population trend. Scientists trapped 695 individuals at the site between 1983 through 1985. By the mid-1990s, there were reported trappings of 179 individuals from the same location.<sup>6</sup> Because of differences in collecting techniques and sampling design, the two studies are not easily comparable. However, all factors considered, the significant discrepancy in the number of snakes captured indicated a decline in the population during that time. More recently, scientists have estimated a growing population at the West of Bayshore site despite the small amount of upland habitat available to the SFGS.<sup>7</sup> It is possible that the numbers have increased at this site due to recovery efforts.

The SFGS population at Laguna Salada/Mori Point is thought to have decreased and recovery of the species continues to face challenges. This population was once thought by scientists to be the purest based on its overall morphology. SFGS distribution in the area may have been reduced by off-highway vehicle activity, collecting, and illegal trash dumping during the 1980s.<sup>8</sup> However, in recent years these adverse activities have been greatly reduced due to actions taken by the National Park Service, which owns and manages the area around Mori Point. Activities at a golf course (Sharp Park) around Laguna Salada present an ongoing threat to the SFGS. Lawn mowing at Sharp Park golf course has been known to kill SFGS. Additionally, scientists have discovered that the golf course's water pumping station at Laguna Salada causes CLRF egg masses to be exposed and then desiccate, greatly affecting the availability of food for the SFGS.

SFGS populations at the San Francisco State Fish and Game Refuge are somewhat stable and experience higher quality habitat than at other sites. However, the snake could face challenges at this site in the future if land management changes. Currently the land is owned and managed by the San Francisco Public Utilities Commission. The land has mostly been protected from human use, but an extensive trail system is currently being considered in addition to the few trails that already exist. This will lead to further human disturbance and disrupt the stability of the SFGS population in the area. The Public Utilities Commission and the Fish and Wildlife Service discussed the possibility of developing a habitat conservation plan several years ago, but that project has not yet been initiated.

The SFGS at Pescadero Marsh, another relatively large population, has also experienced a decline due to poor land management leading to inadequate habitat conditions including saline inundation. Although recovery efforts have improved the conditions in some areas, much of the marsh habitat remains unsuitable for supporting a

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<sup>6</sup> 5-Year Review at 5.

<sup>7</sup> Tetra Tech, *Sharp Park Conceptual Restoration Alternatives Report* 51 (Nov. 2009).

<sup>8</sup> 5-Year Review at 6.

significant population increase. The habitat is particularly difficult for the SFGS's prey, such as frogs, to survive in.

Ano Nuevo State Reserve is another historically large population site for the SFGS based on scientific studies in the late 1980's. Although scientists found low numbers of SFGS prey within the headquarters pond, they found that high quality habitat in the upland areas did support larger numbers of prey and was most likely the main contributing factor to the higher SFGS population densities. There have been efforts to strengthen the habitat quality and encourage proliferation of the species in the area over the last several years. It is unknown whether these efforts have been successful.

Very little data exists on the population at the Cascade Ranch property, the only private land housing one of the six significant populations. While a camping resort was being developed on land adjacent to SFGS habitat, there were ongoing recovery efforts for the snake on-site. A 5-year monitoring program was established in collaboration with the land owner, which produced information that SFGS population was being adequately supported and there were a few sightings in 2005. However, construction of Highway 1 may prevent the snake from being able to move between its habitat at Cascade Ranch and the breeding ponds at Ano Nuevo State Reserve.

## II. THREATS TO THE SPECIES

### A. Habitat Degradation

The SFGS has experienced loss of suitable habitat largely due to urban development. Commercial, residential, and industrial development has caused fragmentation leading to the alteration and isolation of habitats, which is the primary threat to the SFGS in the wild.<sup>9</sup> Road and utility building, agricultural conversion, continued heavy grazing of cattle on feeding ponds and retreat sites, stream and creek channelization, and removal of emergent riparian vegetation all contribute to the SFGS' decline.

Development projects often do not implement proper management techniques and end up in conflict with the needs of the SFGS. These kinds of conflicts can be very expensive and time consuming for developers. For instance, in 2000 construction on an airport extension for the Bay Area Rapid Transit (BART) was halted when an individual SFGS was found dead.<sup>10</sup> The construction delays lasted 2-3 weeks and cost the transit district over one million dollars, and in the end several more individual snakes were killed.<sup>11</sup> This is just one example of the many problems with development practices that slow the species' recovery.

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<sup>9</sup> 1990 FIVE-YEAR STATUS REPORT

<sup>10</sup> Michael Cabanatuan, *BART-to-SFO work delayed / Squashed endangered garter snake quashes progress on extension*, SFGATE (May 11, 2002), available at [http://articles.sfgate.com/2002-05-11/bay-area/17542678\\_1\\_garter-snake-bart-extension-extension-project](http://articles.sfgate.com/2002-05-11/bay-area/17542678_1_garter-snake-bart-extension-extension-project).

<sup>11</sup> *Id.*

Land management also affects the SFGS' prey. The snake preys on frogs including the Pacific tree frog and the California red-legged frog (CRLF), and is not found where amphibian prey is absent.<sup>12</sup> The CRLF, California's largest native frog, is itself listed as "threatened" under the Endangered Species Act due to substantial decline in its population. The CLRF has been lost from about 70% of its range.<sup>13</sup>

Ongoing management practices in SFGS habitat areas are often inadequate. For instance, restoration efforts at Pescadero Marsh failed because of saline inundation after poor planning. Flood control, increased used of artificial ponds for irrigation, and the dredging of waterways can all contribute to habitat degradation as well. Also, agricultural practices such as field plowing and pesticide application can cause decreasing suitability of wetland habitat and upland areas. In connection with a growing human population, agriculture and urban areas are continuing to expand around the San Francisco Peninsula, putting the SFGS at further risk of decline.

Human population growth also results in expansion of recreational opportunities. Although there are some recreational activities that do not present much of a threat to the SFGS such as jogging and hiking, other activities such as off road vehicles and bicycling can have an impact on the habitat and on the species directly.<sup>14</sup> For instance, at least one individual SFGS has been known to be killed by a bicycle.<sup>15</sup> However, inadequate regulation and lack of park resources to implement proper law enforcement make it difficult to restrict these activities. Additionally, increased presence of golf courses can have a negative impact through regular maintenance. For instance, the use of high concentrations of chemicals can affect the water quality, and thus cause harm to the SFGS and its prey, such as the overuse of phosphorous in golf course ponds in Solano County that resulted in the deaths of numerous CLRFs.<sup>16</sup> And, as mentioned above, water-pumping and lawn-mowing at Sharp Park golf course has been known to cause CLRF and SFGS fatalities.<sup>17</sup>

## B. Other Threats

Other factors that contribute to the snake's decline include disease, predation, and illegal collecting. The chytrid fungus (*Batrachochytrium dendrobatidis*) is a potentially deadly parasite that impacts the SFGS' amphibian prey.<sup>18</sup> Affects from climate change have increased the size and severity of chytrid outbreaks in recent years. An outbreak of chytrid can spread rapidly, potentially extirpating entire cohorts of amphibians. Without adequate food sources, such an event could lead to catastrophic declines in the sensitive

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<sup>12</sup> 5-Year Review at 9.

<sup>13</sup> U.S. FISH AND WILDLIFE SERVICE, RECOVERY PLAN FOR THE CALIFORNIA RED-LEGGED FROG (*Rana aurora draytonii*) (May 2002).

<sup>14</sup> 5-Year Review at 17.

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

<sup>18</sup> 5-Year Review at 21.

snake populations range-wide. These problems continue to impact the species and impede its recovery.

Predators include avian species such as crows, hawks, egrets, and herons, weasels and large-mouth bass. Bullfrogs have also been known to be potential predators of SFGS young, but they also serve as an occasional food source for adult SFGS. Bullfrogs also prey upon Pacific tree frogs and CRLFs, another food source for the SFGS.

Additional threats include invasive species, reservoir topology and hydrology, vehicular strikes, hybridization with the Red-sided garter snake, and interspecific competition with congeners (other *Thamnophis* species and subspecies).

### III. RECOVERY EFFORTS

In 1985, a recovery plan was developed by the United States Fish and Wildlife Service. The plan promoted further habitat and population studies on the snake, development and implementation of habitat management plans, the undertaking of law enforcement and public awareness efforts, identification of objectives, and integration of those objectives into local land-use planning. However, very little substantial demographic data has been published since the plan was introduced. In addition, management plans for the snake around the San Francisco Peninsula, one of the most densely populated areas in the United States, has been inadequate and unsuccessful.

When the recovery plan was developed, little was known about the SFGS' preferred habitat. Now, the snake is better understood and it is known that grassy uplands and shallow marshlands provide essential habitat for the snake. There have been some conservation efforts at several of the main habitat sites. For instance, there have been wetland restoration efforts at Pescadero Marsh. Also, recovery actions at Cascade Ranch included the establishment of a 200-foot easement around the Whitehouse Road Pond, an area with suitable SFGS habitat, as well as hydroseeding and other habitat improvement practices.<sup>19</sup> Prescribed burns have been implemented at several of the significant population sites, with some promising results, particularly at the Ano Nuevo State Reserve where trappings showed an increase in SFGS after a prescribed burn in 2004.<sup>20</sup> However, the disparity in numbers before and after the burn could also have been a result of different trapping techniques. Studies are still being conducted to assess the impact of the burns.

Recently, after several years of BART extension construction around the airport that impacted the SFGS, the Fish and Wildlife Service and SFO agreed to partner to improve SFGS habitat at the West of Bayshore property to increase the number of snakes at the site.<sup>21</sup> In 2008, SFO began the project that included redesigning two urban storm

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<sup>19</sup> 5-Year Review at 9.

<sup>20</sup> Halstead at 42; 5-Year Review at 8.

<sup>21</sup> Julia Scott, *Imperiled snake to get habitat makeover*, SANBRUNOBART.COM (June 26, 2008), available at <http://www.sanbrunobart.com/news/2008/06/26/imperiled-snake-to-get-habitat-makeover>.



water canals that also serve as important habitat for the San Francisco garter snake. The construction included dredging several miles worth of canals that provide flood control for the airport while creating suitable snake habitat consisting of burrows, swimming holes and hunting sites for prey.<sup>22</sup>

Recovery actions at Sharp Park and Mori Point have included the enhancement and creation of several ponds in 2004 intended to boost CLRFB breeding. Studies into the wetland enhancement project at Mori Point have shown an increase in CLRFB and SFGS populations.<sup>23</sup> Proposals to further restore those areas are in play. For instance, there is an effort underway to convert the golf course at Sharp Park to suitable habitat for the SFGS and CLRFB. That effort is supported by a 2011 restoration study for Sharp Park prepared by experts on coastal lagoon ecosystems.<sup>24</sup> The report provided an 18-month assessment of Laguna Salada and Sanchez Creek recommending a complete restoration of the area.

The 1985 recovery plan had proposed that conservation agreements be signed with each of the land owners controlling the lands containing the six significant populations identified in the plan. But no agreements have been completed and the additional populations proposed in the recovery plan have not been identified. These recovery efforts are extremely important to the SFGS populations. However, few that have been implemented have been successful or the results are unknown in the absence of studies. The SFGS is still at risk as the human population in the surrounding urban areas continues to grow.

#### IV. INTERNATIONAL TRADE

Collecting and international trade, particularly in Europe and Canada, remains a threat to the SFGS.<sup>25</sup> The vibrant color and appeal of keeping a rare species make the snake attractive to potential buyers. Because of the robust SFGS trade and high demand internationally, poaching in its natural habitat is a continuing threat. Those who participate in the trade, as evidenced by an interview with a Canadian breeder on a garter snake website, continue to perpetuate the false notion that these snakes are not in danger of extinction. This proposition has long been disproven by scientific studies that show population decline. The breeder in the interview reveals that the fact the snake is only protected in the United States and *not* by CITES is a benefit to the trade, stating “as soon as specimens are across that country’s border, anything goes — and does!”<sup>26</sup>

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<sup>22</sup> *Id.*

<sup>23</sup> Karen Swaim, *Status of the San Francisco Garter Snake (Thamnophis sirtalis tetrtaenia) at Pacific Quarry, San Mateo, California* 20 (Feb. 27, 2007).

<sup>24</sup> Peter Baye & Dawn Reis, *Conceptual Ecosystem Restoration Plan and Feasibility Assessment: Laguna Salada, Pacifica, California* (Feb. 9, 2011).

<sup>25</sup> Joe Eaton, *San Francisco's Patron Snake*, FAULTLINE (Sept. 12, 2002), available at <http://www.faultline.org/fmag/place/2002/09/sfgarter.html>; Phil Blais & Jonathan Crowe, *The San Francisco Garter Snake in Canada*, GARTERSNAKE.INFO (June 4, 2004), available at [http://www.gartersnake.info/articles/the\\_san\\_francis.php](http://www.gartersnake.info/articles/the_san_francis.php).

<sup>26</sup> *Id.*



A United Kingdom snake collector has an SFGS in captivity.  
(<http://www.gartersnake.co.uk/tetra5.htm>)

Although the amount of illegal collection of the snake is unclear, it is generally believed by scientists and park employees that illegal take has been a threat to the species since the 1970's at several of the significant population sites and continues to be a threat today.<sup>27</sup> This is particularly true for more accessible area such as Sharp Park.<sup>28</sup> There is limited law enforcement in areas where the snake can be found, and thus more incentive to take the snake illegally. Illegal collection is pursued by amateur herpetologists as well as snake enthusiasts and dealers.<sup>29</sup>

The high demand for these snakes is demonstrated by an incident in 2000, when a person broke into a cage at the San Francisco Zoo and stole an individual SFGS. In early September, a popular SFGS named Sarah was discovered missing from her home in the Children's Zoo. Someone had broken into the enclosure and taken the snake. The Director of the Zoo's Animal Resource Center stated at the time that "[w]hoever took her is very knowledgeable, very calculated. I'd bet this snake is heading out of the country."<sup>30</sup>

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<sup>27</sup> 1990 FIVE-YEAR STATUS REPORT at 2; 5-Year Review at 20; Halstead at 42; *San Francisco Garter Snake*, Golden Gate National Parks Conservancy, available at <http://www.parksconservancy.org/our-work/park-stewardship/species/san-francisco-garter-snake.html> (last visited July 20, 2011); *San Francisco Garter Snake *Thamnophis sirtalis tetrataenia**, STANFORD.EDU, available at <http://hcp.stanford.edu/snake.html> (last visited July 20, 2011).

<sup>28</sup> Karen E. Swaim, *Sharp Park Wildlife Surveys and Special Status Reptile and Amphibian Restoration Recommendations* 9 (Dec. 4, 2008).

<sup>29</sup> 5-Year Review at 5, 6.

<sup>30</sup> Carolyn Jones, *Endangered Snake Stolen From S.F. Zoo*, SFGATE (Sept. 2, 2000), available at [http://articles.sfgate.com/2000-09-02/news/17659526\\_1\\_san-francisco-garter-snake-zoo-officials-zoo-s-general-curator](http://articles.sfgate.com/2000-09-02/news/17659526_1_san-francisco-garter-snake-zoo-officials-zoo-s-general-curator).

It was estimated on one serpent breeding website that a person can receive in excess of \$1,500 for the sale of one individual snake.<sup>31</sup>

San Francisco garter snakes were absent from North America zoos from 2003 until 2005, when the San Francisco Zoo reintroduced the snakes back into the zoo.<sup>32</sup> The reintroduction of the SFGS into American zoos is part of a plan to recover the species, of which the first part is to restore habitat. The second part of the plan is to build up the captive population while habitat restoration projects for wild populations progress. To do this, the Fish and Wildlife Service must import the snakes from Europe, where both captive breeding programs and illicit trade flourish. For instance, the 10 juvenile SFGS brought to the San Francisco Zoo came from the Netherlands.<sup>33</sup> The availability of the SFGS in Europe is so widespread, that its native land is forced to import them. This speaks to the need for a regulatory framework to monitor trade in Europe and in other countries such as Canada, to maintain adequate captive breeding programs and prevent widespread trade among collectors that leads to illegal collecting in the wild within the United States to avoid inbreeding.

Further, given the unregulated nature of the international trade, it is difficult to trace lineage, and the breeding may enhance specific traits for physical beauty that are deleterious for a wild animal. Inbreeding is a problem in the European trade, and thus the snakes there are genetically deteriorating. These problems will only get worse. A snake enthusiast suggested on a garter snake website that the more genetic problems breeders have outside the United States, the more breeders will want genetically pure individuals from the wild.<sup>34</sup> Indeed, according to another snake enthusiast, fresh genetic stock of the SFGS was available as recently as between 2005 and 2006.<sup>35</sup>

That same garter snake website hosts forum discussions where many online users continually request advice on purchasing, collecting and owning SFGS in the United States and abroad.<sup>36</sup> A recent discussion on this site confirm that without CITES protection, trade outside the United States continues to flourish and illegal collection within the United States is still occurring.<sup>37</sup> It is likely that more thorough searches of these collector websites will unearth ample information supporting the notion that without CITES protection, the wild population SFGS will remain at risk of illegal poaching.

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<sup>31</sup> Ball-Pythons.net Forum Discussion (Feb. 21, 2010- Feb. 24, 2010), *available at* <http://ball-pythons.net/forums/showthread.php?113573-San-Francisco-Garter-Snake-in-captivity>.

<sup>32</sup> U.S. Fish and Wildlife Service, *San Francisco garter snake returns to its namesake city*, FWS.GOV, *available at* [http://www.fws.gov/sacramento/ea/feature\\_stories/SFGS\\_returns\\_mediaevent.htm](http://www.fws.gov/sacramento/ea/feature_stories/SFGS_returns_mediaevent.htm) (last updated May 29, 2008).

<sup>33</sup> *Id.*

<sup>34</sup> Jürgen Chlebowy & Martin Hallmen, *The San Francisco Garter Snake* *Thamnophis sirtalis tetrataenia in Europe*, THAMNOPHIS.COM (1998), *available at* <http://www.thamnophis.com/archive/articles/artic3.htm>.

<sup>35</sup> *Thamnophis sirtalis tetrataenia - San Francisco garter snake*, GARTERSNAKE.CO.UK, *available at* [http://www.gartersnake.co.uk/mycollection.htm#Thamnophis\\_sirtalis\\_tetrataenia - San Francisco garter snake](http://www.gartersnake.co.uk/mycollection.htm#Thamnophis_sirtalis_tetrataenia_-_San_Francisco_garter_snake) (last visited July 28, 2011).

<sup>36</sup> Thamnophis.net Forum Discussion (Jan. 28, 2011 – July, 2011), *available at* <http://www.thamnophis.com/forum/general-talk/8088-san-francisco-garters.html>.

<sup>37</sup> *Id.* at June 23, 2011 user posts.

If the SFGS is not protected through CITES, the international trade of this species will continue to grow and affect the species. Individual snakes will continue to be taken from the wild and the plight of the species will continue to be ignored. The protections afforded by including the snake in Appendix I will prevent further deterioration of the species through trade, and will encourage recovery of the species throughout its range in the United States.

## V. RATIONALE FOR INCLUSION

In order for the San Francisco garter snake to be included in Appendix I, it must meet certain biological criteria presented in Resolution Conf. 9.24 (Rev. CoP15), which states:

*A species is considered to be threatened with extinction if it meets, or is likely to meet, **at least one** of the following criteria.*

*A. The wild population is small, and is characterized by **at least one** of the following:*

- i) an observed, inferred or projected decline in the number of individuals or the area and quality of habitat; or*
- ii) each subpopulation being very small; or*
- iii) a majority of individuals being concentrated geographically during one or more life-history phases; or*
- iv) large short-term fluctuations in population size; or*
- v) a high vulnerability to either intrinsic or extrinsic factors.*

*B. The wild population has a restricted area of distribution and is characterized by **at least one** of the following:*

- i) fragmentation or occurrence at very few locations; or*
- ii) large fluctuations in the area of distribution or the number of subpopulations;*  
*or*
- iii) a high vulnerability to either intrinsic or extrinsic factors; or*
- iv) an observed, inferred or projected decrease in any one of the following:*
  - the area of distribution; or*
  - the area of habitat; or*
  - the number of subpopulations; or*
  - the number of individuals; or*
  - the quality of habitat; or*
  - the recruitment.*

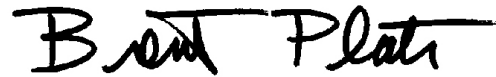
*C. A marked decline in the population size in the wild, which has been **either**:*

- i) observed as ongoing or as having occurred in the past (but with a potential to resume); or*
- ii) inferred or projected on the basis of any one of the following:*
  - a decrease in area of habitat; or*
  - a decrease in quality of habitat; or*
  - levels or patterns of exploitation; or*

- a high vulnerability to either intrinsic or extrinsic factors; or
- a decreasing recruitment.

The SFGS meets the necessary criteria as shown through the information provided above. The wild population of the SFGS is small and is characterized by an observed, inferred, and projected decline in the number of individuals and the area and quality of the habitat through various studies included in the bibliography below; it has small subpopulations (scientists have observed low numbers at various population sites, many times in the low hundreds); a majority of individuals are concentrated geographically during one or more life-history phases, and; it has a high vulnerability to intrinsic and extrinsic factors. Additionally, the wild population has a restricted area of distribution and is characterized by fragmentation and occurrence at very few locations including the six significant population sites discussed above; it has a high vulnerability to intrinsic and extrinsic factors, and; an observed, inferred, and projected decrease in the area of distribution and habitat confirmed by various scientific studies. Finally, there is a marked decline in the population size in the wild, which has been observed as ongoing or as having occurred in the past (but with a potential to resume) as well as inferred from a decrease in area and quality of habitat and a high vulnerability to intrinsic and extrinsic factors.

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