Implementation of the Conservation Strategy for Tahoe Yellow Cress (*Rorippa subumbellata*)

2006 Annual Report
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EXECUTIVE SUMMARY

Tahoe yellow cress (*Rorippa subumbellata* Roll.) is a rare plant species endemic to the shores of Lake Tahoe in California and Nevada. Ongoing threats to the species lead to development of the Conservation Strategy (CS) for Tahoe yellow cress (Pavlik *et al*. 2002a) that was finalized in 2003 through a memorandum of understanding / conservation agreement (MOU/CA) with 13 signatories. The CS identifies goals and objectives to meet the recovery needs of the species. Along with the research agenda and other associated activities identified in the conservation strategy, implementation within an effective adaptive management process will assist land and resource managers in making informed, practical decisions by filling in data gaps and providing an ever increasing and more reliable knowledge base.

The overall intent of the CS is to preclude the need to list Tahoe yellow cress under the Endangered Species Act (ESA) through restoration of a self-sustaining metapopulation dynamic. Such a dynamic should allow the species to persist in sandy beach habitat around Lake Tahoe despite periodic high water levels and human-related impacts (Pavlik *et al*. 2002a). A metapopulation dynamic refers to a population structure where some subpopulations persist over long periods of time while others come and go through the processes of local colonization and extirpation. Achieving a positive dynamic (e.g. colonization events outnumber extirpation) requires understanding the species through surveys and research that directly supports management and restoration activities. Tahoe yellow cress presence is cyclical and mostly related to fluctuations in lake elevation. Low lake elevations (< 6,225 ft Lake Tahoe Datum [LTD] expose large quantities of suitable habitat and can, therefore, support a greater number of occupied sites than high lake elevations. In addition, recreation is more dispersed at low lake elevations and potential impacts to the species are reduced.

The status of the population has been monitored in annual field surveys that date back to 1978.The past three years have seen the greatest number of occupied sites ever, with 47 of the 62 named sites supporting Tahoe yellow cress. In 2006, during the annual survey period the first week of September, the lake level (6,228 feet LTD) was three feet higher the previous year. Earlier in June, the lake reached the maximum permissible elevation (6229.1 ft) established by Federal Court decree. Consequently, the number of occupied sites was cut nearly in half to 24 and these sites supported less than one quarter of the stems from the previous season. Nevertheless, for the fifth consecutive year, Tahoe yellow cress is at Level 1 of the Imminent Extinction Contingency Plan as defined in the CS (Pavlik *et al*. 2002a). Level 1 is indicative of a stable or increasing population trend.

The high lake level inundated long stretches of beach around the entire lake and eroded shoreline. A strong storm in January 2006 caused widespread flooding, massive erosion at creek mouths, and the deposition of huge amounts of sediment. Almost 60% of the occupied sites were associated with a creek mouth. Taylor Creek, Blackwood Creek, and the mouth of the Upper Truckee River supported the vast majority of all stems in 2006. All of the creeks flooded in the early January storm except for Ward Creek, which is confined by concrete at the mouth. Half of the occupied Tahoe yellow cress sites occurred on lands managed by public agencies and half on private lands. Although public sites

supported the majority (67%) of the counted stems, it appears that higher lake elevations shift some of the burden of protection from the public agencies to private homeowners.

Agency conservation activities and management made great progress during 2006. This year marked the first year that the Friends of Tahoe yellow cress Stewardship Program received dedicated funding and the involvement of new members of the Adaptive Management Working Group (AMWG).Annual agency staff time and expenditures on conservation and management activities specific to Tahoe yellow cress decreased by about 600 hours over the last year from 3,047 to 2,400 hours. However, staff time for the annual survey was significantly reduced due to the amount of submerged shoreline. The AMWG completed Site-specific Information Sheets for 29 of the 62 known and potential sites. The purpose of the information sheets is to provide a comprehensive repository of information pertaining to Tahoe yellow cress for all named locations for use in project review on both public and private lands in the shorezone. Public agencies are using the Information Sheets to develop Site-Specific Management Plans by expanding the recommendations section.

The AMWG updated the five-year management plan that guides all activities related to Tahoe yellow cress conservation to include 2005-2009 (the previous year is always included for reference). In 2006, the total cost contributed by each agency for all staff time and materials amounted to $127,854, including $24,532 for the genetic work by the National Forest Genetics Electrophoresis Lab in fiscal year 2006 that was completed in January. Also in 2006, a congressional earmark for Tahoe yellow cress to the US Fish and Wildlife Service was used to contract with BMP Ecosciences to conduct outplanting research and participate in the AMWG process. The Bureau of Reclamation awarded $70,400 to the Lake Tahoe Environmental Education Coalition of the University of Nevada Cooperative Extension to further develop the Stewardship Program and develop educational outreach materials. The Nevada Division of State Parks contributed $11,000 in Lake Tahoe license plate funds to the effort. The Round 6 proposal for Sierra Nevada Public Lands Management Act funding was accepted and $350,000 was awarded to the LTBMU. Approximately $100,000 will be available in 2007 and $100,000 in 2008 to contract to BMP to conduct further research. The remaining $150,000 will be utilized by the LTBMU to support USFS staff time, and other products specified in the SNPLMA. The California Department of Fish and Game is supporting restoration mitigation research with $48,000 in Section 6 funds that has been contracted to BMP Ecosciences.

The past three annual reports (2003-2005) have included a detailed summary of all ongoing research activities since achieving the goals of the CS require research that directly supports management and restoration activities. To date, experimental reintroduction and restoration outplantings have included the greenhouse propagation of Tahoe yellow cress and the installation of over 7,500 container-grown plants at 11 sites around the lake. Results from all 2006 research activities will be presented to the AMWG in a separate technical report, the sixth in the series, titled *Implementation of the Conservation Strategy for Tahoe yellow cress VI. Experimental Reintroductions, Year Three.*

1.0 INTRODUCTION

Tahoe yellow cress (*Rorippa subumbellata* Roll.) is a low-growing, perennial species endemic to the shores of Lake Tahoe in California and Nevada. The species was listed as endangered by the State of California in 1982 (California Fish and Game Code 2050 *et seq.*) and is considered endangered throughout its range by the California Native Plant Society (CNPS 2001). Tahoe yellow cress is state-listed as critically endangered in Nevada (Nevada Revised Statutes [NRS] 527.260 *et seq.*), and is considered threatened by the Nevada Native Plant Society (Nevada Natural Heritage Program [NNHP] 2001). In 1999, the U.S. Fish and Wildlife Service (USFWS) identified Tahoe yellow cress as a candidate species for listing under the Endangered Species Act of 1973, as amended (ESA), indicating sufficient information on biological vulnerability and threats are available to support a listing proposal (64 FR 57533).

Field surveys have been conducted for Tahoe yellow cress since 1978, making the dataset one of the most comprehensive for any endangered plant in the U.S. and possibly the world. In response to low numbers of occupied sites between 1995 and 1999, a Technical Advisory Group (TAG) was formed to develop and implement a conservation strategy (CS) and memorandum of understanding / conservation agreement (MOU/CA) for Tahoe yellow cress (Pavlik *et al*. 2002a). The CS determined that the number of Tahoe yellow cress occurrences around the lake correlates directly with fluctuating lake levels. Wide expanses of beach are available for colonization and the number of occupied sites is generally high when the lake is low (with an elevation between 6,220-6,224 feet Lake Tahoe Datum [LTD]). During high water periods (greater than 6,226 ft LTD), less habitat is available and the number of occupied sites declines. As less habitat becomes available, pressure from recreation intensifies in the remaining habitat and this combination poses a threat to the long-term, continued persistence of Tahoe yellow cress. The overall intent of the CS is to preclude the need to list Tahoe yellow cress under the ESA through restoration of a self-sustaining metapopulation dynamic that allows the species to persist in sandy beach habitat around Lake Tahoe despite high water levels and human-related impacts.

One goal of the CS is that all signatories will implement an interagency adaptive management framework. A specific objective under that goal is to produce at least 6 years of annual reports that document all conservation activities and provide all necessary data for decision-making within the adaptive management framework. This is the sixth annual report completed since 2001. Section 2 of this report presents results from the annual lake-wide survey. One of the key tools for making management decisions is a spreadsheet which contains presence/absence data dating back to 1978 called Appendix C (named to maintain continuity with past annual reports). Tahoe yellow cress has been documented at a total of 62 sites around the lake at some point in history. The greatest number of sites occupied in one year occurred in both 2004 and 2005 with 47 occupied sites.

Sections 3-5 of this report present three important milestones in agency conservation activities and management. Section 3 discusses the achievements of the Friends of Tahoe yellow cress Stewardship Program. This year marked the first year that the program received dedicated funding and the involvement of new members of the Adaptive Management Working Group (AMWG). Section 4 lists the 2006 membership of the AMWG and presents the progress on the development of Site-specific Information Sheets that contain comprehensive information on all 62 known and

potential sites. Section 5 presents the allocated funding sources for implementation of the Conservation Strategy and the five-year management plan that guides all activities related to Tahoe yellow cress conservation.

The past three annual reports (2003-2005) have included a detailed summary of all ongoing research activities, including the propagation of container-grown Tahoe yellow cress, experimental reintroductions, restoration outplantings, genetic evaluations, and lab experiments. Results from all 2006 research activities will be presented to the AMWG in a separate technical report, the sixth in the series, titled *Implementation of the Conservation Strategy for Tahoe yellow cress VI. Experimental Reintroductions, Year Three.*

2.0 2006 FIELD SURVEYS

2.1 METHODS

2.1.1 SITE NAMES

Data on the number and location of occupied TYC sites around Lake Tahoe has been critical for making management decisions for the species. Appendices D and E of the CS presented occurrence and stem count data for a total of 51 known, historical, and potential native Tahoe yellow cress habitat sites for the years 1978-2000 (Pavlik *et al*. 2002a). These tables were subsequently combined into one comprehensive spreadsheet that has been called Appendix C since 2003 (located in this report). Although the number of named sites has fluctuated, in 2005, Appendix C was consolidated to 62 site names, reflecting some modifications of the 51 original site names and additional new sites. The Nevada Natural Heritage Program (NNHP) conducted further consolidation and review in 2006 and determined that there were many inaccuracies in Appendix C in the historical data for the USFS sites on the south shore. For instance, it was not always possible to tell if plants occurred within an enclosure or not. Enclosures are generally tracked separately, but NNHP recommended that enclosure data for Baldwin Beach, Tallac Creek, and Taylor Creek be combined with the larger site data into a single site for future ranking purposes.

2.1.2 SITE RANKING

The CS established site rankings for the purposes of identifying conservation, restoration, and management priorities. Based on the index of viability scores, sites were ranked as Core, High, Medium, and Low priority sites. (For a detailed discussion on site ranking methods and results, refer to page 53 of the CS.) In 2003, the TAG revised the site rankings in Table 13 of the CS to incorporate additional data collected since 2000. The revised rankings of 2003 better reflect the metapopulation dynamics of the species through two complete high and low water cycles. Consequently, the TAG will maintain the 2003 site rankings into the future until another complete high/low water cycle occurs. Unranked sites will be ranked as minimum data analysis requirements are met. A total of 39 sites are ranked: 10 Core, 6 High, 13 Medium, and 9 Low. No additional sites met the minimum ranking criteria in 2006.

2.1.3 DATA COLLECTION

The 2006 lake-wide survey for Tahoe yellow cress was conducted on September 5-8, 2006. Participants included: Jody Fraser, Cecilia Reed, and Stu Osbrack (U.S. Forest Service [USFS]); Daniel Burmester, Curtis Hagen, and Susan Levitsky (California Department of Fish and Game [CDFG]); Tamara Sasaki, Scott Scheibner, and Nancy Lozano (California Department of Parks and Recreation [CDPR]); Eric Gillies (California State Lands Commission [CSLC]); Harry Spanglet and Mike Bradbury (California Department of Water Resources[DWR]); Rita Whitney and Jessica Schwing (Tahoe Regional Planning Agency[TRPA]); Meri McEneny (private); and Alison Stanton and Alice Miller (BMP Ecosciences).

The 17 participants were divided into 5 teams and allocated a portion of the 62 sites and a set of annual field survey forms developed by NNHP. Datasheets were pre-printed with the site name, ownership, legal access, and previous plant occurrence information, and each was accompanied by a map delineating the site boundaries. Boats were provided by three agencies (CDFG, DWR, TRPA) to access shoreline that had been inundated for most of the season. At a site, team members covered the entire width of exposed beach, from waters edge to the backshore. If the site was inundated, the boat approached the site and traveled along the shoreline to assess any exposed habitat. Disturbance, including inundation, and search effort were recorded at both occupied and unoccupied sites. Search effort is defined as the amount of person minutes spent actively searching for and/or collecting data on Tahoe yellow cress. Any modifications to existing site boundaries were delineated using Global Positioning System (GPS) technology.

In 2005, the data collection protocol beyond general site land use and impacts was modified to separately address ranked and unranked sites. For ranked sites, the annual field survey form (Appendix A) was simplified to focus on the presence and abundance of Tahoe yellow cress, including proportional estimates of phenological stage (juvenile, senescent, flowering, fruiting). Data fields on the physical and biological attributes of the site were eliminated. In 2006, the abundance categories developed in 2005 were eliminated and all above ground stems were tallied.

For unranked sites, data collection protocols and survey forms established in 2004 were utilized (Appendix B). At occupied sites surveyors recorded GPS data for each Tahoe yellow cress "cluster" (defined as a group of plants that occur within a 21 ft diameter of each other) and recorded physical and biological attributes. Biological attribute data included the actual or estimated number plants, actual or estimated number of plants in each phenological stage, and minimum and maximum rosette diameter. Physical attributes were recorded for each cluster including distance to lake, substrate/soil composition, and percent cover of associated plant species. All annual survey forms, including GPS data, were provided to NNHP for addition to the statewide sensitive species and GIS database and are available upon request.

2.2 RESULTS

A total of 61 sites were surveyed during the first week of September 2006 and Tahoe yellow cress was documented at 24 sites. Only one named site was not surveyed because permission to access was not granted. The lake level during the survey period increased three feet from the previous

season from 6,224.8 ft to 6,228.2 ft (LTD). A peak lake elevation of 6229.1 ft was recorded in late June that was sustained through July. This level is the maximum permissible elevation established by Federal Court decree. The last time the lake reached maximum elevation was during the period between 1996 -2000 when it filled up every year. The number of occupied sites reached the lowest ever in 1995 and 1996 with only 9 sites (according to the 2003 naming convention). Figure 1 shows the cyclic relationship between the number of occupied sites and lake elevation.

The high lake level inundated long stretches of beach around the entire lake and eroded shoreline. A strong storm in January 2006 caused widespread flooding, massive erosion at creek mouths, and the deposition of huge amounts of sediment. At Upper Truckee East, the flooding caused two breaches in the barrier beach. On the east end of the beach, Trout Creek caused a breach 5 meters wide and 1 meter deep that effectively cut off foot traffic from the shoreline for the entire season. To the west, a larger breach (10 meters wide and at least 3 meters deep) occurred in the same location as in 1997 where a portion of the Upper Truckee and Trout Creek meander together. The beach, nearly 200 meters wide in 2004 when the water was at 6224 ft, completely disappeared. Plants were observed being pulled from the ground and washed into the lake and wave action eroded the stabilized sedge and rush meadow.

Similar impacts were observed at other sites around the lake. Flooding at both Taylor and Tallac Creeks brought portions of the enclosure fences into the water and submerged sections with sediment. The enclosure erected in 2005 at Hidden Beach for outplanting efforts was reduced to a twisted mass of fencing, woody debris, and trash. At Sand Harbor, the fencing was retracted to a fraction of its former size and at Zephyr Cove the permanent enclosure had to be removed.

The high lake level inundated all but one of the previously occupied sites in the northern two quartiles of the lake. Ward Creek, the remaining northern site, is lined with concrete along its approach to the lake, so it experienced less flooding. Blackwood Creek and Tahoe Pines on the west shore, and Logan Shoals on the east shore, all supported plants, otherwise Tahoe yellow cress was concentrated on the south shore from Tallac Creek to Edgewood Golf Course. The map in Figure 2, developed by NNHP, shows the locations of all 62 named sites and Tahoe yellow cress presence or absence for each site.

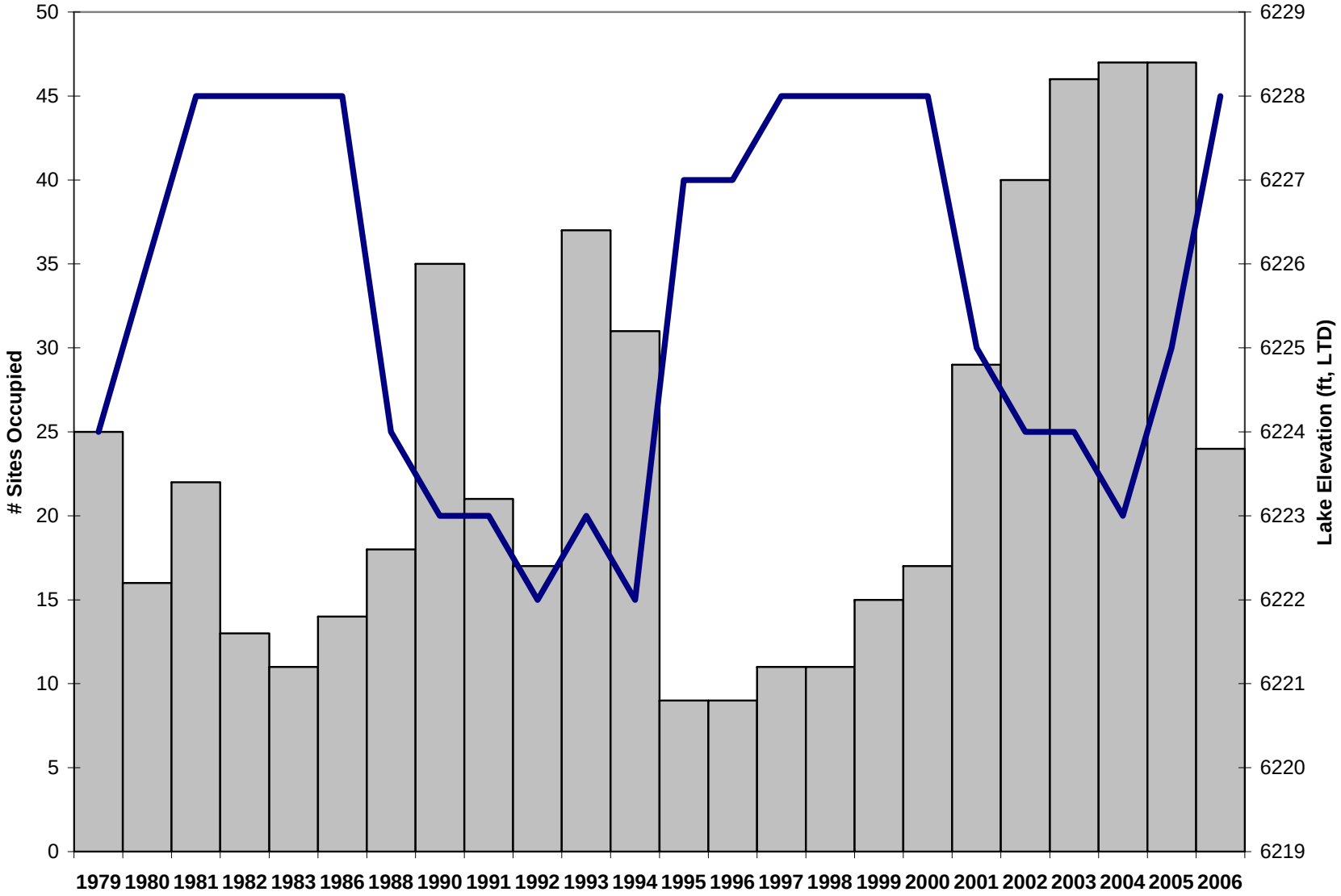
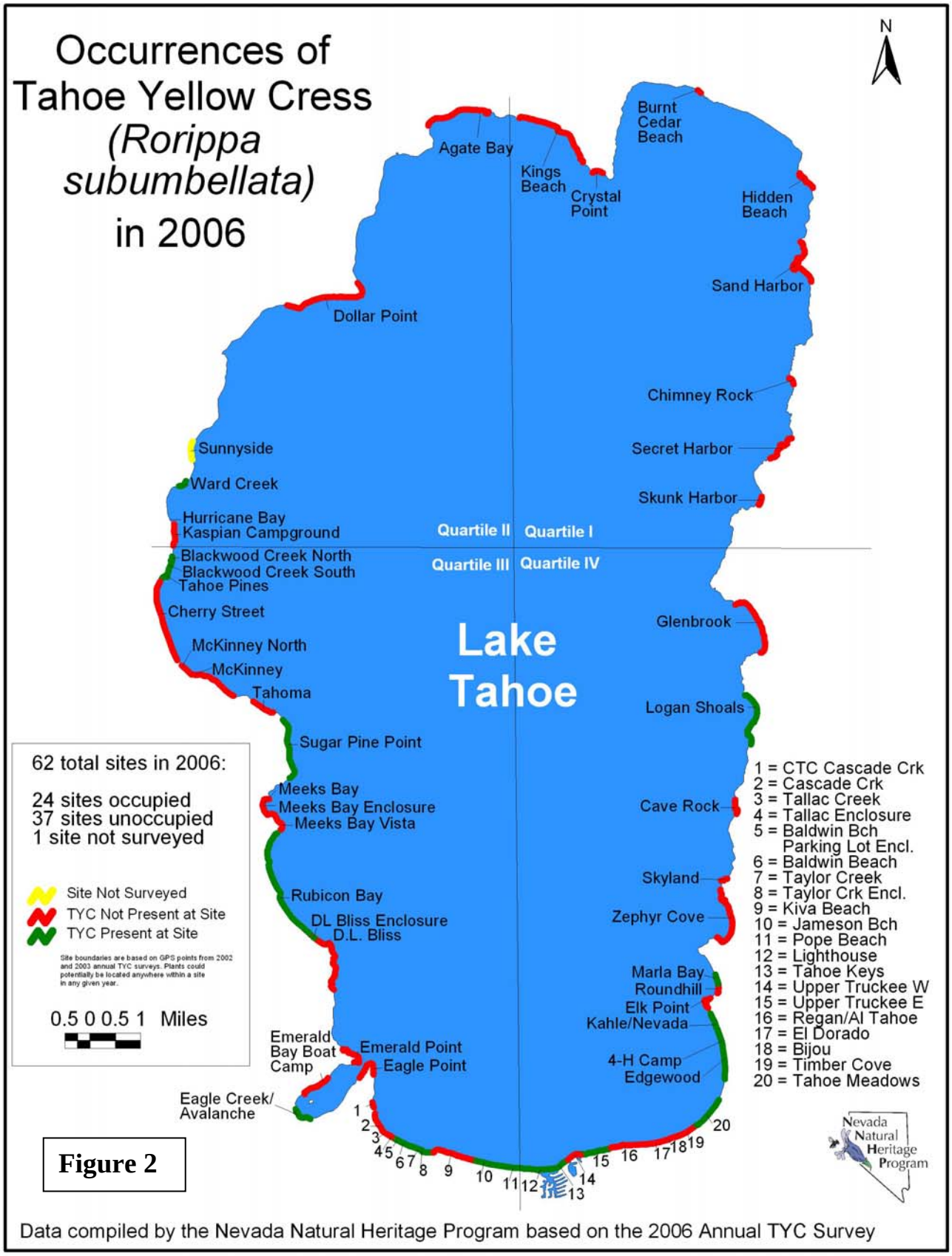


Figure 1. Lake level and number of Tahoe yellow cress sites occupied by survey year (solid blue line = lake level LTD)


Occurrences of
Tahoe Yellow Cress
(Rorippa subumbellata)
in 2006
N
Burnt Cedar Beach
Agate Bay
Kings Beach
Crystal Point
Hidden Beach
Sand Harbor
Dollar Point
Chimney Rock
Sunnyside
Secret Harbor
Ward Creek
Skunk Harbor
Hurricane Bay
Kaspian Campground
Quartile II
Quartile I
Blackwood Creek North
Blackwood Creek South
Tahoe Pines
Quartile III
Quartile IV
Cherry Street
Glenbrook
Lake Tahoe
McKinney North
McKinney
Tahoma
Logan Shoals
Sugar Pine Point
Meeks Bay
Meeks Bay Enclosure
Meeks Bay Vista
Cave Rock
Skyland
Rubicon Bay
DL Bliss Enclosure
D.L. Bliss
Zephyr Cove
Marla Bay
Roundhill
Elk Point
Kahle/Nevada
Emerald Bay Boat Camp
Emerald Point
Eagle Point
4-H Camp
Edgewood
Eagle Creek/ Avalanche
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
62 total sites in 2006:
24 sites occupied
37 sites unoccupied
1 site not surveyed
Site Not Surveyed
TYC Not Present at Site
TYC Present at Site
Site boundaries are based on GPS points from 2002 and 2003 annual TYC surveys. Plants could potentially be located anywhere within a site in any given year.
0.5 0 0.5 1 Miles
1 = CTC Cascade Crk
2 = Cascade Crk
3 = Tallac Creek
4 = Tallac Enclosure
5 = Baldwin Bch Parking Lot Encl.
6 = Baldwin Beach
7 = Taylor Creek
8 = Taylor Crk Encl.
9 = Kiva Beach
10 = Jameson Bch
11 = Pope Beach
12 = Lighthouse
13 = Tahoe Keys
14 = Upper Truckee W
15 = Upper Truckee E
16 = Regan/Al Tahoe
17 = El Dorado
18 = Bijou
19 = Timber Cove
20 = Tahoe Meadows
Nevada Natural Heritage Program
Figure 2
Data compiled by the Nevada Natural Heritage Program based on the 2006 Annual TYC Survey

For the second year in a row since the CS, survey effort, in terms of person minutes, decreased by over two-thirds (Table 1). Surveyors spent 2,419 minutes (40 hours) compared to 6,831 minutes (140 hours) in 2005. The large reduction is search effort was due to the fact that many sites were inundated so that a search effort of 5 or 10 minutes was all that was required to determine that Tahoe yellow cress habitat was not present. Stem counts were lower by more than 80%. Approximately 4,560 stems were counted or estimated compared to 25,384 in 2005.

Table 1. Stem counts and survey effort for 62 Tahoe yellow cress sites in September 2006 (NA = not available, NS = not surveyed, X= not surveyed, but plants known to be present).

SITE NAME	Rank	# Stems	Survey minutes
Sunnyside	UNRANKED	0	NS
Ward Creek	HIGH	147	100
Kaspian Campground	UNRANKED	0	40
Blackwood North	CORE	21	45
Blackwood South	CORE	667	150
Tahoe Pines (Fleur Du Lac)	UNRANKED	2	15
Cherry Street/Tahoe Swiss Village	LOW	0	75
McKinney North/Shores	UNRANKED	0	30
McKinney Creek	LOW	0	10
Tahoma	LOW	0	10
Sugar Pine Point State Park	UNRANKED	12	30
Meeks Bay	HIGH	0	55
Meeks Bay Enclosure (+ 1 new encl)	UNRANKED	0	20
Meeks Bay Vista	UNRANKED	0	10
Rubicon Bay	MEDIUM	11	80
DL Bliss Enclosure	MEDIUM	1	5
DL Bliss State Park	UNRANKED	0	40
Emerald Point	MEDIUM	0	45
Emerald Bay Boat Camp	MEDIUM	0	10
Eagle Creek/Avalanche	HIGH	71	49
Eagle Point	MEDIUM	0	10
CTC Cascade Creek	UNRANKED	0	10
Cascade Creek	HIGH	0	15
Tallac Enclosure	CORE	90	40
Tallac Creek (outside Enclosure)	CORE	0	50
Baldwin Beach	MEDIUM	19	80
Baldwin Bch Parking Lot Encl	UNRANKED	213	40
Taylor Creek Enclosure	CORE	664	80
Taylor Creek	UNRANKED	2	5
Kiva Beach/Valhalla	LOW	0	40
Jameson	UNRANKED	13	30
Pope Beach	LOW	40	120
Lighthouse	CORE	99	20
Tahoe Keys	MEDIUM	150	40
Upper Truckee West	CORE	0	45
Upper Truckee East	CORE	1872	150

SITE NAME	Rank	# Stems	Survey minutes
Regan/Al Tahoe	LOW	0	5
El Dorado Beach	LOW	0	5
Bijou (Timber Cove Lodge)	UNRANKED	0	10
Timber Cove	MEDIUM	0	20
Tahoe Meadows	CORE	61	90
Edgewood	CORE	257	60
4-H Camp/City Pump House	MEDIUM	5	10
Kahle/Nevada	HIGH	82	30
Elk Point	UNRANKED	0	10
Roundhill	UNRANKED	0	20
Marla Bay	UNRANKED	11	10
Zephyr Cove	HIGH	0	60
Skyland	UNRANKED	0	10
Cave Rock	MEDIUM	0	10
Logan Shoals/Vista	MEDIUM	50	20
Glenbrook	MEDIUM	0	40
Skunk Harbor	UNRANKED	0	45
Secret Harbor	MEDIUM	0	90
Chimney Rock	UNRANKED	0	60
Sand Harbor	LOW	0	60
Hidden Beach	UNRANKED	0	10
Burnt Cedar Beach	UNRANKED	0	10
Crystal Point	UNRANKED	0	10
Kings Beach	UNRANKED	0	15
Agate Bay	UNRANKED	0	15
Dollar Point	LOW	0	100

Ranked sites supported the majority of stems (94%) and required the majority of the search effort (80%) (Table 2). Core sites supported 82 percent of all stems, compared to only 32% in 2005. The remaining plants were relatively evenly distributed among High and Medium priority sites and Unranked sites with 7, 5, and 6%, respectively. Only one low priority site was occupied (Pope Beach) that supported only 40 stems.

Table 2. Stem count and survey effort in the 2005 annual survey by ranking category.

ranking	N	# stems	# survey minutes
CORE	10	3731	730
HIGH	6	300	309
MEDIUM	13	236	460
LOW	9	40	425
UNRANKED	24	253	495

The number of stems counted at each site was classified into 8 abundance categories (Figure 3). The number of unoccupied sites rose dramatically from only 9 sites in 2005 to 36. As in the past two years, the majority of sites (11) had fewer than 50 stems. Only three sites supported over 500 stems

each and only one of these had a stem count that exceeded the Minimum Viable Population (MVP) size of 1,200 stems. According to the CS, a population with 1,200 stems has a 90% probability of persisting over the next 20 years. The average number of stems at a site was 74, but a median could not be calculated because 58% of the sites were not occupied. In comparison, the median number of stems rose from 18 in 2004 to 54 stems in 2005.

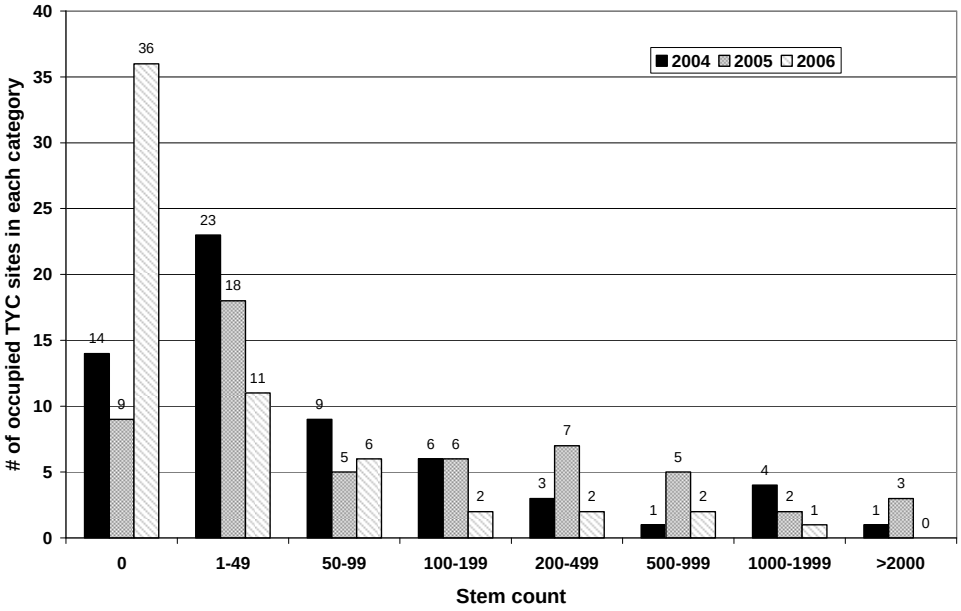


Figure 3. The number of Tahoe yellow cress sites in 8 stem count abundance categories in 2004 -2006.

As in previous years, Tahoe yellow cress was observed in a variety of substrates during the survey. Based on the comprehensive shorezone assessment conducted by TRPA in 1993 and 1994, suitable habitat is considered to be composed of at least 30 percent sand. Plants were frequently found in and among wood and pine needle debris in the beach wrack deposited at the high water line. At Upper Truckee East, plants were discovered sprouting on the edge of the eroding meadow, sometimes hanging by a few roots. Seedlings were also observed sprouting on the steep banks of a large depression at Edgewood that was created by flooding from the golf course. One seedling had germinated on a partially buried pine cone on the beach.

Almost 60% of the occupied sites were associated with a creek mouth. Table 3 lists the 14 sites and the associated creek. Taylor Creek, Blackwood Creek, and the mouth of the Upper Truckee River supported the vast majority of all stems in 2006. All of the creeks flooded in the early January storm except for Ward Creek, which is confined by concrete at the mouth. The creeks that have some culverts, such as Burke Creek and Edgewood Creek did not flood severely, while the larger creeks like Tallac and Talyor experienced large amounts of erosion that sent many established Tahoe yellow cress into the water. The creek at Tahoe Meadows and McFaul Creek at Marla Bay do not flow year round- both were cut off from the Lake by the time of the annual survey in September. With the exception of Lighthouse, all of the Core sites are located near the mouth of a creek.

Table 3. The 14 occupied sites associated with creeks in 2006.

SITE NAME	Ownership	Rank	# Stems	Creek Name
Blackwood North	Private	CORE	21	Blackwood
Tahoe Meadows	Private	CORE	61	???
Tallac Enclosure	USFS	CORE	90	Tallac
Edgewood	Private	CORE	257	Edgewood
Taylor Creek Enclosure	USFS	CORE	664	Taylor
Blackwood South	Private/Placer Co	CORE	667	Blackwood
Upper Truckee East	CTC	CORE	1872	Upper Truckee
Eagle Creek/Avalanche	CA State Parks	HIGH	71	Eagle
Kahle/Nevada	USFS	HIGH	82	Burke
Ward Creek	Private	HIGH	147	Ward
4-H Camp/City Pump House	UNR/City	MEDIUM	5	Burke
Taylor Creek	USFS	UNRANKED	2	Taylor
Marla Bay	Private	UNRANKED	11	McFaul
Sugar Pine Point State Park	CA State Parks	UNRANKED	12	General

Half of the occupied Tahoe yellow cress sites occurred on lands managed by public agencies and half on private lands (Figure 4). Public sites accounted for 67% of the counted stems, private for 18%, and the one occupied site under mixed public/private ownership for 14%. However, the ownership of Blackwood South is in litigation between Placer County and a private entity and the site is not currently under public management, so the proportion of stems on private sites is more accurately 33%.

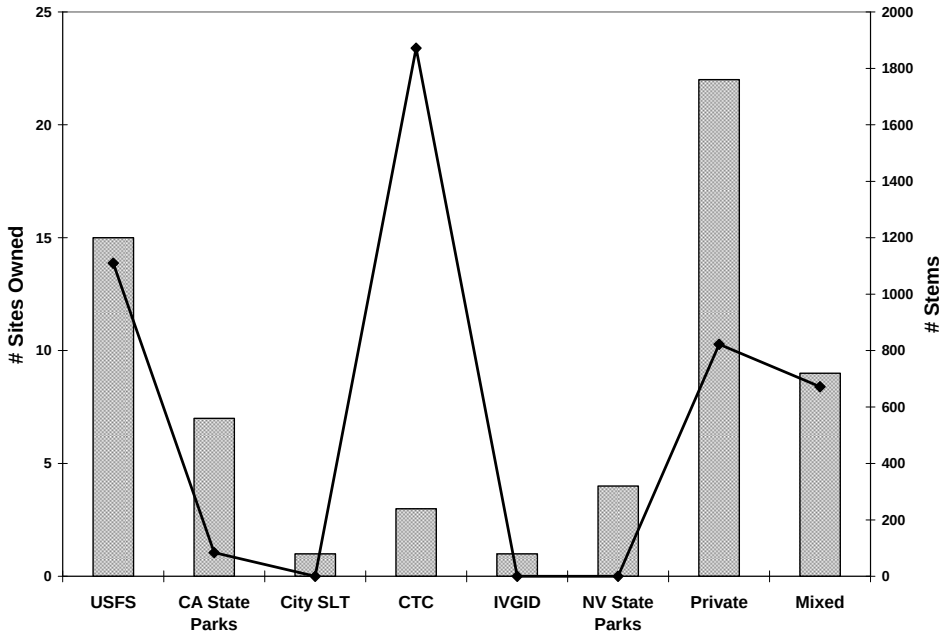


Figure 4. Site ownership (bars) and stem counts (line) for all 62 Tahoe yellow cress sites in 2006.

Flooding and high lake level caused the greatest amount of disturbance to all sites, regardless of ownership. The most common recorded disturbances recorded in lower water years -- footprints, trash, boat dragging, beach raking -- were still in evidence on exposed beaches. Canada geese were observed grazing and trampling Tahoe yellow cress alongside other vegetation. At the western breach of the barrier beach at Upper Truckee East, geese had taken over an exposed patch of sandy beach along the new water course that would have likely been colonized by Tahoe yellow cress (the surface of the sandy patch was nearly one hundred percent goose excrement).

The widespread inundation eliminated most vegetation and so non-native plant species were uncommon. However, Eurasian watermilfoil (*Myriophyllum spicatum*) was discovered rooted on the beach at Avalanche in Emerald Bay. Eurasian watermilfoil (EWM) is a perennial, submersed, aquatic plant that roots in the sediment. It is a serious weed that disperses by fragmentation and forms large mats that reduce light penetration, changes water chemistry and water flow, outcompetes native plants, and hinders boat navigation. The rooting of fragments on the beach out of the water is not a common occurrence and it is not likely to survive and pose a direct threat to Tahoe yellow cress growing in the vicinity. However, there is a significant infestation in Emerald Bay that could cause more serious impacts if it moves into Eagle Creek and is allowed to persist. In order to control the EWM in Emerald Bay, the CSLC (owners of the underwater lands that CDPR leases for the underwater park) implemented a diver assisted suction removal of EWM infestations in Emerald Bay in 2005 and 2006. The largest infestation is adjacent to the Avalanche Beach site beneath the water surface at approximately 6,220 ft. to 6,224 ft. (LTD). With high water occurring in 2006 (6,229 ft.), the infestation began encroaching into the shallower water towards the shore (> 6,224 ft.). To prevent the possibility of the EWM encroaching on the beach, the CDPR implemented a pilot hand removal program in 2006. The CSLC anticipates continuing diver assisted suction removal of EWM in 2007 to attempt to eradicate the infestation near Avalanche Beach.

2.3 DISCUSSION

The 2006 annual survey for Tahoe yellow cress was the 24th survey that has been conducted since 1978. All but one of the 62 named sites was surveyed, but many sites were surveyed by boat since the lake water level was so high. Lake Tahoe was three feet higher during the survey period in 2006 than it was in 2005, rising from nearly 6,225 ft to over 6228 ft. Consequently, the number of occupied sites was cut in half and supported less than one quarter of the stems from the previous season. Only one site, Upper Truckee East, supported more than 1,200 stems and only two other sites had more then 500 stems. Of the 10 Core sites, 8 were occupied and these supported 82% of the total stems. The unoccupied Core sites were at Upper Truckee West, where there was intense recreation pressure and a severely eroded shoreline, and outside the enclosure at Tallac, where plants from the previous season were likely washed away when the creek flooded.

Of the 24 occupied sites, 50% were on private land. In contrast, only 33% were on private lands in 2004 and 2005 when there was an all time high occupancy of 47 sites. Therefore, it appears that higher lake elevations shift the burden of protection from the public agencies to private homeowners.

The presence of 8 Core sites puts Tahoe yellow cress at Level 1 of the Imminent Extinction Contingency Plan defined in the CS (Pavlik *et al*. 2002a). Level 1 is indicative of a stable or

increasing population trend while Level 4 indicates critically low site occupation. The criteria for each level are based on the presence of a minimum of six Core sites, which was chosen as the low threshold for the species because the lowest number of sites ever occupied in one year was only 7 during 1995 to 1996. However, with the re-organization of site names the lowest threshold became 9 sites and the re-ranking in 2003 increased the number of Core sites to 10. The status of Tahoe yellow cress is more likely to remain at Level 1 because of these changes, but sustained high lake elevation for the next few years could decrease the number of occupied Core Sites to 5 or 6. With only 38% of the named sites occupied this year, losing two Core sites next year would make for Level 2 conditions.

Level 2 conditions recommend the following actions, subject to review by the Executive committee:

1. New shorezone structures or shorezone alteration will only be permitted if a detailed survey has been conducted between June 15 and September 30, and the parcel in question is not listed as occupied or potentially suitable habitat in the 1993 shorezone survey;
2. all known core and high priority restoration sites will be fenced to restrict access. (All required permits will be obtained in a timely manner.);
3. all core sites on public lands that do not support Tahoe yellow cress at such time will be fenced to allow for recolonization;
4. propagation and reintroduction efforts will be expanded and outplanted areas will be protected; and
5. the extent of area for each population will be defined in the development of the site-specific management plans, or without such a plan, the area will be defined as the beach from meanlow water level to the backshore, and 50 ft (15.24 m) on each side of the population as measured from the most remote individuals.

2.4 PHOTOS

3.0 FRIENDS OF TAHOE YELLOW CRESS STEWARDSHIP PROGRAM

The Stewardship sub-committee was pleased to work with the University of Nevada Cooperative Extension office to develop a program to take the message of how to conserve TYC to different sectors of the public. Leslie Allen, of UNCE, wrote and was successful in receiving a grant of over $100,000 from the US Bureau of Reclamation to conduct the work identified by the AMWG through the subcommittee. The program will focus on developing educational materials and methods to educate lake front landowners and landowner neighborhood groups around the lake about TYC and how they can be stewards in protecting the plant. Work with other visitors to the lake and businesses will follow.

Prior to beginning use of these funds, Nevada Environmental License Plate funds were directed to develop the following deliverables in 2006:

- A tri-fold brochure for use with private landowners
- A tourist rack card, a foreshortened version of the tri-fold, for broader public education opportunities

4.0 2006 AGENCY ACTIVITY REPORTS

In collaboration with the TAG, the CTC developed an Agency Activity Report form in 2004 to assist management agencies in describing the following activities: Site-specific conservation activities for each Tahoe yellow cress location undertaken during the previous growing season; general Tahoe yellow cress conservation activities (i.e., public outreach, consultation, TAG participation, etc.); significant disturbances to the species or its habitat and subsequent response; planned Tahoe yellow cress conservation activities anticipated for the upcoming year; and all shorezone projects undertaken within potentially suitable Tahoe yellow cress habitat. Agency Activity Report forms for 2006 are supplied in Appendix G.

The CS requires a brief summary of annual agency staff time and expenditures on conservation and management activities specific to Tahoe yellow cress. Table 4 provides the hourly breakdown of staff time for each agency for 2003-2006. The number of staff hours decreased by about 600 hours over the last year from 3,047 to 2,400 hours. Staff time for the annual survey was significantly reduced due to the amount of submerged shoreline. The total cost contributed by each agency for all staff time and materials amounted to $127,854, including $24,532 for the genetic work by the National Forest Genetics Electrophoresis Lab in fiscal year 2006 that was completed in January. Other contracted amounts are discussed in Section 5.

Table 4. Summary of agency hours spent on Tahoe yellow cress related activities during from 2003-2006 (* Combined hours for NDSP and NDF)

Agency/Year	2003	2004	2005	2006
TRPA	150	326.5	200	No report
USFWS	400	390	70	60
USFS	1,168	516.5	980	1,240
NDSP*	132	189	No report	116*
NDF*	304	144	89	
NNHP	160	95	175	190
CDFG	272	325	334	380

Agency/Year	2003	2004	2005	2006
CDPR	403	218	358	233
CTC	1,024	140	606	No report
CSLC	400	224	235	181
TLOA	100	48	No report	No report
Total	**4,109**	**2,616**	**3,047**	**2,400**

4.1 AMWG MEMBERSHIP

The Executives approved the formation of the Adaptive Management Working Group (AMWG) at the Executive meeting in November, 2005. All members of the Technical Advisory Group (TAG) transitioned to become members of the AMWG. The TAG now operates as a Subcommittee of the AMWG and consists of AMWG members with interest and expertise in technical topics. The 2006 AMWG members are in Table 5. Although they are not signatories on the MOU, both NRCS and UNCE were active participants in 2006. High staff turn-over in 2006 has resulted in one position being vacant at TRPA for several months and the Forest Botanist position at the LTBMU will likely remain unfilled for most of 2007.

Table 5. Membership of the Tahoe yellow cress Adaptive Management Working Group (AMWG) in 2006.

Agency or Entity	**AMWG Representative** (*denotes TAG rep)
TRPA	Eileen Carey, Vegetation Program Manager* (position vacated in September)
USFWS	Steve Caicco, Botanist
USFS LTBMU	Jody Fraser, Forest Botanist* (position vacated in October) and Shana Gross, Sensitive Plant Coordinator* (permanent seasonal from May-Oct)
NDSP	Peter Maholland, Conservation Staff Specialist
NDF	Roland Shaw, Forester
NNHP	Jennifer Newmark, Program Biologist*
CDFG	Susan Levitsky, Staff Environmental Scientist
CDPR	Tamara Sasaki, Environmental Scientist
CTC	Peter Maholland, Wildlife Program Coord. (position vacated in August)
CSLC	Eric Gillies, Staff Environmental Scientist *
TLOA	Jan Brisco, Executive Director
BMP ECOSCIENCES	Bruce Pavlik, Principal and Alison Stanton, Research Botanist*
NRCS	Jane Schmidt
UNCE	Leslie Allen, Environmental Education Coordinator

4.2 SITE-SPECIFIC INFORMATION SHEETS

The CSLC, in consultation with the AMWG, developed a Site-Specific Information Sheet in 2005 (see the template in Appendix E). General information in the Information Sheet includes the site location, ownership, viability index, priority rank, and whether the site is a TRPA threshold site. The form also includes important information for management: site description, survey history,

population and ecological characteristics, potential threats/concerns. Finally, the forms include descriptions of past and current activities and include recommendations for future management. The purpose of the Information Sheets is to provide a comprehensive repository of information pertaining to Tahoe yellow cress for all named locations. This format fulfills the intent of Appendix J in the CS, Proposed Actions for Core and High Priority Sites, and expands the number of sites to include private lands. The information will be useful for project review on both public and private lands in the shorezone. The public agencies are using the Information Sheets to develop Site-Specific Management Plans by expanding the recommendation section. Information Sheets for private lands could be used to develop a management plan in the future if mitigation or other circumstances required.

A total of 58 named sites have been assigned to AMWG members to complete the site- specific information sheets prior to review by the group. Final approved forms are submitted to Eric Gillies, CSLC, for inclusion in a comprehensive file that will be periodically updated. The CSLC is taking primary responsibility for completing Information Sheets for private lands. To date, information sheets for 29 sites have been completed and 2 are in draft. However, most of these have not been reviewed by the AMWG. The list of Site-Specific Information Sheet assignments and status is in Appendix F.

5.0 FIVE YEAR MANAGEMENT PLAN

The signatories of the CS MOU developed a list of initial management and monitoring responsibilities (Table 14 in the CS). In 2005, the AMWG modified the format and content of Table 14 to produce a 5 Year Management Plan to guide all activities related to Tahoe yellow cress conservation. The plan is partitioned into six sections: Budget; Management; Regulation; Research; Restoration; Stewardship. Each section specifies actions and the entities responsible for a 5 year period. Each year's plan will always include the previous year for reference, the plan for the current year, and projected actions for the subsequent three years. Therefore, the 2006 plan contains actions from 2005-2009; a brief summary is below. The complete plan is in Appendix D.

The AMWG will develop details of the plan at quarterly meetings and the plan will be implemented within the adaptive management framework specified in the CS. The budget for implementation of the CS for the period from 2005-2009 is presented in Table 6. A total amount of $285,000 was allocated for outplanting and restoration research, genetic research at the NFGEL, and USFS staff time in 2005. In 2006, a congressional earmark for Tahoe yellow cress to the US Fish and Wildlife Service was contracted to BMP Ecosciences to conduct outplanting research and participate in the AMWG process. The Bureau of Reclamation awarded $70,400 to the Lake Tahoe Environmental Education Coalition of the University of Nevada Coorperative Extension to further develop the Stewardship Program and develop educational outreach materials and the Nevada Division of State Parks contributed $11,000 in Lake Tahoe license plate funds to the effort. The Round 6 proposal for Sierra Nevada Public Lands Management Act funding was accepted and $350,000 was awarded to the LTBMU. Approximately $100,000 will be available in 2007 and $100,000 in 2008 to contract to BMP to conduct further research. The remaining $150,000 will be utilized by the LTBMU to support USFS staff time, and other products specified in the SNPLMA. The California Department of Fish

and Game is supporting restoration mitigation research with $48,000 in Section 6 funds that has been contracted to BMP Ecosciences.

The AMWG will participate in most management activities specified in the plan while the TAG will be primarily responsible for implementing research and restoration, data management, and making technical recommendations to the AMWG. Actions in the plan that pertain to regulations will seek to integrate TYC conservation activities into basin-wide planning efforts such as the Pathway 2007 Regional Plan Update, the TRPA Shorezone EIS, and interagency shorezone project review. Finally, the Stewardship elements will address educational and outreach needs for the public and agency staff.

Table 6. Budget for implementation of the TYC Conservation Strategy for the years 2005-2009, as presented in the AMWG 2005 Five Year Management Plan.

Action	Entity	2005	2006	2007	2008	2009
Budget						
Implement CS						
	FWS		$100,000 Congressional earmark	Congressional earmark continued		
	BOR	$150,000		$70,400 Stewardship		
	NDSP	$20,000 Lake Tahoe License Plate Funds	$11,000 Lake Tahoe License Plate Funds			
	CTC	$15,000 for 2004 annual report				
	USFS	$100,000 Round 5 SNPLMA	$350,000 Round 6 SNPLMA awarded	$100,000 Round 6 SNPLMA contracted	$100,000 Round 6 SNPLMA to contract	
	CDFG		$24,000 section 6 mitigation research	$24,000 section 6 mitigation research		

5.1 RECOMMENDATIONS FOR 2007

The 5 Year Management Plan guides all activities related to Tahoe yellow cress conservation and so the recommendations for 2007 are partitioned into the six sections of the plan: Budget; Management; Regulation; Research; Restoration; Stewardship.

5.1.1 BUDGET

Available funding for 2007 amounts to approximately $200,000, not including staff or materials costs of the LTBMU or other agencies.

- Any remaining amount on the USFWS contract with BMP Ecosciences should be expended in early 2007 and the contract closed.
- The contract between the LTBMU and BMP for the SNPLMA funding needs to be established as early as possible to achieve the objectives outlined in the Task Order for the contract approved by the AMWG.
- The additional contract between the CDFG and BMP will be continued in 2007 to conduct mitigation-oriented research and the contract may need to be extended due to the high lake level and the limited availability of plant materials.
- The contract between BOR and LTEEC/UNCE should be fully implemented to advance the goals and objectives of the Stewardship Program.
- Opportunities for funding beyond 2008 should be investigated and pursued.

5.1.2 MANAGEMENT

Much of the management activities of the last past 3 years have focused on implementing the research agenda. Management in 2007 represents a transition from the research phase to an active restoration phase that may require modifications in land use planning strategies. In some instances, intra-agency conflicts have emerged and created some tension between resource and recreation interests, especially at the LTBMU. In addition, the higher lake level in 2006 shifted the proportion of occupied sites to be equally distributed among public and private entities. Two specific management recommendations for 2007 are:

- Implement intra-agency coordination meetings to develop land use planning for Core and high ranked sites.
- Secure access to private sites for future surveys and potential restoration implementation.

5.1.3 REGULATION

- Continue coordination between the AMWG and the Interagency Shorezone Review Committee on project application review.
- Continue to provide comments on the Pathway 2007 Regional Plan Update.

5.1.4 RESEARCH AND RESTORATION

Continue to implement the Key Management Question framework to guide research and fill in critical gaps of our understanding of TYC restoration. The following deliverables are specified in the SNPLMA R6 Task Order with BMP Ecosciences:

- Produce technical report on the Expanded Analysis of the 2003-2006 Experimental Reintroductions
- Develop site-specific restoration prescriptions and install container-grown TYC at up to 14 Core and High Priority sites
- Produce technical report on methods and results of 2007 Restoration Outplanting
- Submit 5 progress reports to AMWG
- Prepare 3 manuscripts for publication:
    - Developing a Conservation Strategy for Tahoe Yellow Cress (*Rorripa subumbellata*): I. Using Long-term Monitoring to Characterize Metapopulation Dynamics

II. Accommodating Metapopulation Dynamics with a Framework for Restoration and Adaptive Management
III. Experimental Reintroductions

- Coordinate with UNR on the development of microsatellite DNA analysis techniques

5.1.5 STEWARDSHIP

Continue outreach and develop materials for public education and private land owner participation in conservation activities.

- A tri-fold brochure for use with private landowners
- A tourist rack card, a foreshortened version of the tri-fold, for broader public education opportunities

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7.0 APPENDICES

Appendix A: 2006 Annual Field Survey Form for ranked sites

TAHOE YELLOW CRESS *(Rorippa subumbellata)* FIELD SURVEY FORM FOR RANKED SITES

Survey date: _____

Surveyor: _____ Affiliation: _____

Email: _____ Telephone: _____

LOCATION (attach copy of quad map showing boundaries and pictures taken)

Site name: _____

USGS quad: S. Lake Tahoe Emerald Bay Meeks Bay Homewood Tahoe City Kings Beach Marlette Lake Glenbrook

County: El Dorado Placer Washoe Carson Douglas **Site ownership:** Private State Federal City/Local

Legal access: _____

TYC Present? Yes No Actual Number of Plants: _____

Number of plants within cluster_____ Actual Number or Estimated Percentage in each phenological stage (circle one)

Juvenile: _____ Senescent: _____ Flowering: _____ Fruiting (may also be flowering): _____

Amount of person minutes spent in search? _____

Previous plant occurrence? Yes No Date plant last observed: _____

SITE BOUNDARY OR CLUSTER (individual clusters are equal to TYC that is within 13 m radius): (record additional clusters on back or on additional data sheets)

GPS Coordinates taken: (UTM NAD 27, Zone 11) – be specific about where the coordinates are from (centroid, endpoints, cluster, etc.)

Easting: _____ Northing: _____ Location: _____

Easting: _____ Northing: _____ Location: _____

Easting: _____ Northing: _____ Location: _____

Easting: _____ Northing: _____ Location: _____

LAND USES, IMPACTS, AND MANAGEMENT RECOMMENDATIONS

Cover of footprints within patch: <5% 5-25% 26-50% 51-75% >75%

Note vegetation removal, trash, recreational impacts, vandalism and/or other impacts:

_____

_____

_

Enclosure effectiveness: good fair poor Comment: _____

Possible management actions and other notes:

Appendix B: 2006 Survey Protocols for Tahoe Yellow Cress Annual Surveys

For following protocol refers to the data sheet for unranked sites. For ranked sites, use the field form for ranked sites. Stems may be estimated at ranked sites and assigned an abundance category.

1-Survey Date: Date of on the ground survey work

2-Surveyor/E-mail/Affiliation/Telephone: At least list survey leader with their contact information (normally person who has conducted surveys in past); ideally list all participants and contact info. Contact information is very important to include in case questions arise about the survey data.

3-Location: This information will be filled out prior to survey for all known sites. When a new site is found fill out the information for Site name, Site ownership and Legal access.

4-TYC Present: Circle appropriate response after surveying site.

5-Actual number of stems, or estimated stems: After surveying the site this should be a total (or estimate when there are too many plants to count) of all the clusters found at each site.

6-Amount of person minutes spent in search: Total the time spent on each site, by each individual.

7-Previous plant occurrence: On site with a previous occurrence this will be filled out prior to the survey using the information from past surveys that is stored at NV natural heritage.

8-Date plant last observed: On site with a previous occurrence this will be filled out prior to the survey using the information from past surveys that is stored at NV natural heritage program (NNHP).

9-Cluster: If two clusters are separated by less than 13 m, consider them one cluster. For TYC clusters separated by a distance greater than 13 m, they should be treated as two separate clusters. Use exact measurement, if you can pace it off this is okay just be sure you and your team members are correct in pacing. Refer to 10-GPS coordinates below for additional information about working with and about the logic behind the cluster definition. Page one has space for the first cluster only. Space for clusters two and three can be found on page two, any additional clusters can be found on the additional cluster page; please fill in the cluster number in the blank after cluster.

10-GPS Coordinates: The preferred reading should be in Nad 27, zone 11, if you do not take a reading in this zone or datum make sure you indicate where it was taken. Because the site boundaries have been established, surveyors are only responsible for GPSing TYC clusters/individuals. Most of the GPS units we will be using are only accurate to within 3 to 9 meters (m) and for NNHP Biotics an error within about 6.5 m is acceptable. Therefore, for example, if you find a cluster that is less than 6.5 m in diameter, simply take a central point. For one cluster with a diameter larger than 6.5 m, endpoint or corner coordinates can be taken. If two clusters are separated by less than 13 m, consider them one cluster and either take one point on each of the outer edges or one central point. For TYC clusters separated by a distance greater than 13 m, they should be treated as two separate clusters, and GPS coordinates should be obtained for each cluster (either end points or central points). NNHP will keep track of these clusters, but they will be subsets of the overall population at that site. **It is critical to indicate what and where particular coordinates are from and if they are central points or endpoints in order to ensure proper data interpretation!** Drawing pictures is helpful as well. Additionally, if you take multiple points for clusters and outlying individuals within a site, document what data you have taken and how it should be interpreted by NNHP.

11- Number of plants in cluster__ Actual Number or Estimated Percentage in each phenological stage (circle one). Juvenile: _____ Senescent: _____ Flowering: _____ Fruiting (may also be flowering): _____ Min. Rosette Diameter (cm): _____ Max. Rosette Diameter (cm):

Record the actual or estimated number of plants within the cluster then circle actual number if you count each individual plant within the cluster or estimated percent if you estimate the phenology of the cluster. Then recorded the number/percent in each of the phenological stages.The last thing in the box is the min. and max. rosette size within the cluster.

12-Elevation/Lake Level: This information will be filled in by NNHP after the survey. If you know the information you can fill it in.

13-Distance to lake water line (meters): Measure meters to Lake Tahoe for each cluster. If there is another body of water closer note this also.

14-Sketch beach profile: Sketch the beach profile and any dominate markers that help to identify the site. Either draw in space provided or use back site of map. If have time, it is nice to also include a map of the locations of each cluster.

15-Substrate/soils: The size for each type of substrate is based on USDA's *Comparison of size particle classes* from the Field Book for Describing Sampling Soils version 2.0. Give a percentage to each category of substrate (make sure this adds up to 100%) for the area within the cluster to 0.3 meters outside of it. If you are unsure use a ruler to measure the substrate until you get a feel for it. It is also a good idea to do the first percentage estimate with the group to try to calibrate everyone into the percentage estimates.

16-Total Vegetation % cover: This is a measurement of how much % cover of vegetation is within each cluster to 0.3 m away from cluster.

17-Associated vegetation: Include any vegetation found within the cluster, include species when possible. Then include the percent cover of each of the species within the cluster; this should add up to 100%. Don't forget to include TYC.

18-Non-native species: Circle yes or no if there are any non-native species found within the cluster. Identify the non-native species with an * next to their names.

19-Land use and impacts: This data is for the whole site, not individual clusters.

20-Cover of footprints/Impacts to site: Record everything that you see within the site, especially if found within actual clusters.

21-Management actions/other notes: Use this for any suggestions or notes about abnormalities, for example, if a cluster of TYC is growing on a 50% slope recorded that information here.

Appendix C: Presence (X) and Absence (0) of Tahoe Yellow Cress (1978-2006)

(see separate file Appendix C.xls)

Appendix D: Five Year Management Plan (2005-2009)

Action	Entity	2005	2006	2007	2008	2009
Budget						
Fund CS						
	FWS		$100,000 Congressional earmark	Congressional earmark continued		
	BOR	$150,000		$70,400 Stewardship		
	NDSP	$20,000 Lake Tahoe License Plate Funds	$11,000 Lake Tahoe License Plate Funds			
	CTC	$15,000 for 2004 annual report				
	USFS	$100,000 Round 5 SNPLMA	$350,000 Round 6 SNPLMA awarded	$100,000 Round 6 SNPLMA contracted	$150,000 Round 6 SNPLMA to contract	
	CDFG		$24,000 section 6 mitigation research	$24,000 section 6 mitigation research		
Management						
AMWG meetings	AMWG	x	x	x	x	x
Establish adaptive management coordination process	AMWG		x			
Conduct intra-agency conservation coordination meetings for core sites	AMWG & Agency staff			x	x	x
Annual Executive meeting	Executive Committee	x	x	x	x	x
Annual survey	AMWG and partners	x	x	x	x	x
standardize data collection protocol	AMWG	x				

Action	Entity	2005	2006	2007	2008	2009
Develop survey protocols that detect meta-pop dynamic	AMWG		x	x		
standardize datasheets	NNHP, TAG	x				
TYC database and data dictionary	NNHP, TAG	x	x	x	x	
incorporate TYC database into TIMMS real-time database (site specific info?)	TRPA	x?	x	x	x	x
Add emergency fencing for high water protection (per imminent extinction plan) to all agency MOUs with TRPA	TRPA; USFS; CDPR; NDSP; CTC		x			
Annual report	BMP Ecosciences	x	x	x	x	x
Secure access to private lands for surveys and possible restoration	AMWG		x	x	x	
Appropriately sign all enclosures	USFS, DFR, NDP, CSLC		x		x	
Develop Site-Specific Information Template to replace Appendix J	CSLC	x				
Do Site-Specific Information for private sites	CSLC; Stew subcomm	x	x	x		
Assist private stakeholders in drafting management plans			x	x	x	x
Do Site-Specific management plans for public sites	AMWG	x	x	x		
Update Site Rankings	TAG	x	x			
Non-experimental Enclosure maintenance						
Meeks	USFS	x	x	x	x	x
Baldwin	USFS	x	x	x	x	x
Taylor	USFS	x	x	x	x	x
DL Bliss	CDPR	x	x	x	x	x
DL Bliss re-build fence and install TYC for educational purposes	CDPR	x	x			
Upper Truckee East	CTC	x	x	x	x	x

Action	Entity	2005	2006	2007	2008	2009
Investigate private land acquisition opportunities	CTC; USFS	x	x	x	x	x
Regulation						
TRPA Shorezone EIS	TRPA; AMWG review	x	x	x		
Review Environmental docs for public projects (BOR, DWR, TROA, EIS/EIRs)	AMWG	x	x	x	x	x
Review private landowner requirements in project review	AMWG, TLOA, TRPA	x	x	x	x	x
Coordinate w/ Interagency Shorezone Review Committee on project application review	TRPA; CSLC; CDFG; NDSL	x	x	x	x	x
P7 Environmental Threshold Review	TRPA;BMP Ecosciences; TAG	x	x	x	x	
Determine experimental plant status re TRPA code			x	x	x	
Assess species' listing status	FWS; CDFG	x	x	x	x	x
Research						
Address KMQ framework in experimental designs	BMP Ecosiences	x	x	x	x	
Greenhouse propagation	USFS;NDF	x	x	x	x	x
Nursery oversight	BMP Ecosciences	x	x	x	x	x
Soil analysis report	USFS; BMP Ecosciences		x			
Germination ecology studies	UCD; TAG	x				
Mitigation/translocation feasibility pilot year 1 with 03 and 04 cohort	BMP Ecosciences	x				
Mitigation/translocation feasibility experiment year 2 with 03, 04 and 05 cohort	BMP Ecosciences		x	x	x	x

Action	Entity	2005	2006	2007	2008	2009
Experimental Enclosure - plant installation and maintenance						
Taylor (permanent fence)	USFS	x	x	x	x	
Taylor (temporary fence)	USFS	x				
Nevada (perm)	USFS	x	x	x	x	
Nevada (temp)	USFS	x	x	x	x	
Zephyr Cove (perm)	USFS	x	x			
Zephyr Cove (temp)	USFS	x	x			
Sand Harbor	NDSP	x	x	x	x	
Pope (temp fence)	USFS	x	x	x	x	
Ebright (temp)	USFS	x	x		x	
Hidden Beach (temp)	NDSP	x	x	x		
Avalanche (temp)	CDPR	x				
Experimental monitoring- demographic and disturbance						
Taylor	USFS; BMP Ecosciences	x Yr3	x Yr4	x	x	
Upper Truckee East	CTC; BMP Ecosciences	x Yr2	x Y3	x	x	
Nevada	USFS; BMP Ecosciences	x Yr2	x Yr3	x	x	
Zephyr Cove	USFS; BMP Ecosciences	x Yr3	x Yr4	x	x	
Sand Harbor	NDSP; BMP Ecosciences	x Yr 3	x Yr4	x	x	
Pope	USFS; BMP Ecosciences	x Yr1	x Yr2	x	x	
Ebright	USFS; BMP Ecosciences	x Yr1	x Yr2	x	x	
Water relations monitoring	BMP Ecosciences	x	x			
Write Research report	BMP Ecosciences	x	x	x	x	
Develop microsatellite DNA techniques	UNR		x	x	x	
Apply microsatellite results to management problems	UNR; BMP Ecosciences			x	x	
Restoration						
Translate research results into restoration prescriptions	TAG			x	x	x
Test prescriptions at multiple sites	TAG			x	x	x

Action	Entity	2005	2006	2007	2008	2009
Large scale propagations for restoration purposes	TAG			x	x	x
Enhance Core populations to meet MVP	TAG				x	x
Enhance High priority populations to meet MVP	TAG				x	x
Implement new survey protocol to detect metapopulation dynamic	TAG				x	x
Stewardship						
Create education materials for public	AMWG w/UNCE		x	x		
TYC identification aids	AMWG		x	x		
Prep school materials	UNCE			x	x	
Prep brochures		x	x	x	x	
Tri-fold	CSLC				x	
Tourist Rack Card	UNCE			x		
Launch "Friends of TYC" group	TLOA & AMWG	x	x	x	x	
Determine signage & fencing	AMWG & TRPA	x		x		
Develop "Pledge of Support"	CDFG w/AMWG	x	x	x	x	
Develop "Thank You's"	AMWG		x	x		
Conduct thank you event	AMWG & UNCE					x
Identify partners to sponsor actions	TLOA & AMWG		x	x	x	
Work with visitor bureaus & motels to distribute info	TLOA & AMWG		x	x	x	x
Conduct education forums for landowners, contractors, etc	UNCE, TLOA & AMWG		x	x	x	x
Contract with University extension	AMWG		x	x	x	
Report on successes in conserving TYC	AMWG		x	x	x	x

Appendix E: Tahoe Yellow Cress Site-Specific Information Sheet Example

Tahoe Yellow Cress Site-Specific Information: Dollar Point (934)

Prepared by: Eric Gillies, California State Lands Commission (CSLC), in collaboration with the Tahoe Yellow Cress Technical Advisory Group (TAG)

Date: May 10, 2005 (rev. _____)

County/State: Placer County, California

Location: Tahoe City Public Utility District (TCPUD) Recreation Area (public access point), Lake Forest, The Northshore, and Dollar Point private residential areas off North Lake Blvd (Highway 28) northeast of Tahoe City

Ownership/Management: Private (approx. 12 individual parcels) and TCPUD

Contact Information: Eric Gillies, CSLC, (916) 574-1897, gilliee@slc.ca.gov

Meets Ranking Criteria: Yes, surveyed 14 consecutive years with 2 NS events (Table 1)

Viability Index and Rank: unranked (2000); -8, Medium Priority Restoration Site (2004)

Lake Elevation Persistence: Low only

TRPA Threshold Site: No. The site should count toward maintaining a minimum number of populated sites (26 sites); however, if conducting a threshold attainment evaluation during a high water year (>6224 ft LTD), the population would not be persistent due to inundation.

Site Description

The Dollar Point site has several scattered Tahoe yellow cress populations located along the approximate 1.6-kilometer shoreline reach. The shoreline reach is from TCPUD Recreation Area on the west to approximately 500 meters west of Dollar Point on the east (see attached map). Because of the great distant between the eastern and western clusters and each having different habitat characteristics, this site may warrant splitting into two. The historic population is the eastern clusters and the western clusters were first observed in 2002.

Survey History

Table 1 provides a summary of the survey history and results for the Dollar Point site. This Tahoe yellow cress site was first observed in 1991 and was observed in 1993 and 1994, which was within a

low water period. Plants were not observed from 1995 to 2001, which, except for 2001, was a high water period. The site was not surveyed in 1992 and 1999. Plants have been observed in 2002, 2003, and 2004. Surveys have occurred over one full high/low lake elevation cycle. Currently, its persistence is at 50% (6 out of 12 years).

Table 1. Tahoe Yellow Cress Annual Survey Summary – Dollar Point

Year	Lake Elev. (ft. LTD)	Survey Data	Stem Count	Comment
1991	6222	X	n/a	1st year of site record
1992	6223	NS	-	
1993	6223	X	191	1993 Shorezone Survey data
1994	6222	X	n/a	
1995	6227	0	-	
1996	6227	0	-	
1997	6228	0	-	6 year high lake elevation period
1998	6228	0	-	
1999	6228	NS	-	
2000	6228	0	-	
2001	6225	0	-	Lake elevation transition year (high to low)
2002	6224	X	10	Western cluster near TCPUD Recreation Area 1st observed
2003	6224	X	83	
2004	6223	X	315	

X = present; 0 = absent; NS = not surveyed

Population and Ecological Characteristics

During the comprehensive 1993 Shorezone Survey, 191 stems were observed. The population in 2002 had only 10 stems, which was a year following a period of high water years, 1995 to 2000, and a transition year, 2001 (Table 1). In 2004, with lake elevation falling below 6223 ft Lake Tahoe Datum (LTD), 315 stems where observed in several clusters. Presently, this site appears to persist when lake elevation is at or below 6224 ft LTD and has greater abundance when lake elevation is 6223 ft LTD and below.

The population on the west end near the TCPUD Recreation Area is typically very small with few plants (<10). The substrate has little sand (<10%) and is mostly fine to medium gravel (>85 %) on a relatively flat shoreline (1-2 % slope). Associated species include *Epilobium* spp., willow (*Salix* spp.), and *Trifolium* spp. with 20-50% total vegetative cover. The cluster's distance to the lake in 2004 (lake elevation 6223 ft LTD) was 25 to 35 meters.

The population clusters at the east end are more extensive and in different habitat. The substrate is mostly sandy and fine gravel (>85%) with larger gravels to large cobbles making up the rest of the beach substrate. Associated species include pigweed (*Chenopodium* spp.), mullein (*Verbascum thapsus*), sweet clover (*Melilotus alba*) and some willow saplings. The beach has overall low vegetation cover (10-15%) in strips paralleling the shoreline. Tahoe yellow cress has been observed within the understory of large mullein and sweet clover plants. The sandy and fine gravel beach begins to narrow and become very limited with cobbles beginning to dominate the substrate with denser weedy species such as clover (*Lotus purshianus*) as the shoreline begins to bend around the

point. The cluster's distance to the lake in 2004 (lake elevation 6223 ft LTD) was typically about 5 meters.

There is approximately 800-meter stretch of shoreline between the west and east clusters, where plants are not observed. This stretch is a steep sloping beach with no vegetation and the substrate consists of 100% fine to medium gravel. Its characteristics are very dissimilar to locations where the plants are observed and described above.

Potential Threats/Concerns (ranked in order of significance)

1. High lake elevation levels (>6224 ft LTD)
2. Recreation (beaching watercrafts and foot traffic/beach use)
3. Shoreline projects (private piers, revetment, and utility projects)

Past Activities

No Tahoe yellow cress conservation actions have occurred in the area.

Present Activities

The area has been surveyed for shorezone projects including shoreline revetment projects. In 2003, TCPUD did some sewer line repair and revetment work adjacent to some of the populations. Plants were found growing against the silt fences during the 2003 survey. Construction activities did not appear to have a detrimental effect since nearly four times the number of plants were observed in the following year. There is a moderate amount of shoreline development that can occur in or around the clusters. Shoreline project approving agencies need to ensure pre-construction surveys for Tahoe yellow cress are conducted, which is required under CSLC lease agreements; however, not all shoreline projects require a lease form CSLC, e.g., revetment projects.

Recreational use is moderate to heavy during the summer months. Temporary fencing of the clusters similarly designed at Sugar Pine Point or signage during low water years and when the plants are present may be a strategy for the area. The TAG Stewardship Subcommittee needs to strategize on how to outreach to the private landowners and have them consider entering into Voluntary Conservation Agreements.

Recommendations:

- Site will continue to be part of the annual surveys, although surveys probably do not need to occur when lake elevation is above 6225 ft LTD. This should be confirmed early into the next high water or transition period.
- Initiate outreaching efforts to the private landowners and have them consider entering into Voluntary Conservation Agreements.
- Although the site is a medium priority for restoration efforts, the site is highly susceptible to high lake levels and there would need to be support from the many private landowners.

Appendix F: Site-Specific Information Sheet progress

SITE NAME	NNHP EO NUMBER	OWNERSHIP	Preparer	DOCUMENT DATE/STATUS
Sunnyside	929	Private/Placer Co	CSLC	
Ward Creek	921	Private	CSLC	in-draft
Hurricane Bay		Private	Not assigned	N/A
Kaspian Campground	901	USFS	USFS	
Blackwood North		Private	CSLC	
Blackwood South	919	Private/Placer Co	CSLC	
Tahoe Pines (Fleur Du Lac)		Private	CSLC	in-draft
Cherry Street/Tahoe Swiss Village	937	Private	CSLC	28-Oct-05
McKinney Shores		Private	CSLC	28-Oct-05
McKinney Creek	928	Private	CSLC	28-Oct-05
Tahoma	918	Private	CSLC	
Sugar Pine Point State Park		CDPR	CDPR	11-Nov-05
Meeks Bay & Enclosure	917	USFS	USFS	
Meeks Bay Vista	910	Private	CDPR	30-Dec-05
Rubicon Bay	936	Private	CDPR	30-Dec-05
DL Bliss State Park & Enclosure	916	CDPR	CDPR	14-Dec-05
Emerald Point	924	CDPR	CDPR	30-Dec-05
Emerald Bay Boat Camp	914	CDPR	CDPR	29-Nov-05
Eagle Creek/Avalanche	915	CDPR	CDPR	30-Dec-05
Eagle Point	927	CDPR	CDPR	22-Nov-05
CTC Cascade Creek		CTC	CTC	20-Dec-05
Cascade Properties	925	Private	CTC	20-Dec-05
Tallac Creek & Enclosure	912	USFS	USFS	
Baldwin Beach	931	USFS	USFS	
Taylor Creek & Enclosure	911	USFS	USFS	
Kiva Beach/Valhalla	913	USFS	USFS	
Jameson		Private	Not assigned	N/A
Pope Beach	909	USFS	USFS	
Lighthouse	938	Private	CTC	20-Dec-05
Tahoe Keys	926	Private	CTC	20-Dec-05
Upper Truckee West	908	CTC	CTC	20-Dec-05
Upper Truckee East	907	CTC	CTC	20-Dec-05
Regan/Al Tahoe	905	Private/City SLT	CTC	20-Dec-05
El Dorado Beach	906	City SLT	CSLC	01-May-06
Bijou (Timber Cove Lodge)	903	Public	CSLC	01-May-06
Timber Cove	904	Private	CSLC	01-May-06
Tahoe Meadows	902	Private	CSLC	10-May-06
Edgewood	2	Private	USFS	
4-H Camp/City Pump House	1	UNR/City	USFS	23-Sep-06
Kahle/Nevada & Enclosure	8	USFS	USFS	
Elk Point	14	Private	TRPA	
Roundhill	9	USFS	USFS	

SITE NAME	NNHP EO NUMBER	OWNERSHIP	Preparer	DOCUMENT DATE/STATUS
Marla Bay		Private	USFS	23-Sep-06
Zephyr Cove	11	Private/USFS	USFS	
Skyland	5	Private	NDSP	in-draft
Cave Rock	17	NDSP	NDSP	in-draft
Logan Shoals & Vista	10 & 6	Private	NDSP	in-draft
Glenbrook	4	Private	USFS	23-Sep-06
Skunk Harbor	16	USFS	USFS	
Secret Harbor	12	USFS	USFS	
Chimney Rock	13	USFS	USFS	
Sand Harbor	3	NDSP	NDSP	in-draft
Hidden Beach		NDSP	NDSP	in-draft
Burnt Cedar Beach		IVGID	USFS	23-Sep-06
Crystal Point	933	Private/Placer Co	CSLC	19-Oct-05
Kings Beach	932	Private/Public	CSLC	
Agate Bay	920	Private	CSLC	
Dollar Point (approved template)	934	Private	CSLC	10-May-05

Appendix G: Agency Management Activity Report Forms for 2006

US Forest Service (USFS)
US Fish and Wildlife Service (USFWS)
California State Lands Commission (CSLC)
California Department of Fish and Game (CDFG)
California Department of Parks and Recreation (CDPR)
Nevada Natural Heritage Program (NNHP)
Nevada Division of State Lands (NDSP)

USDA Forest Service-Lake Tahoe Basin Management Unit

Tahoe Yellow Cress Conservation Activities Annual Report

As agreed to in the Tahoe Yellow Cress (TYC) Conservation Agreement, the TYC Adaptive Management Working Group (AMWG) shall prepare an annual report describing the status of TYC. A component of the annual report is a reporting by each of the participating agencies on TYC conservation activities undertaken or planned for the future

This form provides a standardize format to assist management agencies in submitting their annual report to the AMWG. This report should be completed by each management agency and submitted to the TYC TAG no later than **December 31** of each year.

Please complete the following fields. Press the tab key to scroll from field to field:

Enter name of reporting agency:	USDA Forest Service-Lake Tahoe Basin Management Unit
Reporting period:	January 1 through December 31, 2006
Enter date report submitted to AMWG:	December 6, 2006

Describe in the table below site-specific conservation activities for each TYC site within the agency's jurisdiction undertaken during the previous growing season. Please use site names as listed in the TYC Conservation Strategy:

List TYC site name:	Describe site specific activities:	Staff hours involved	Cost (include staff time and other costs)
Ebrights Ski Beach	Outplanting; Temporary fence	60 160	4000 2500
Nevada beach Enclosure	Outplanted plants; Temporary fence	60 160	4000 2500
Pope Beach	Outplanting; Translocation of plants; Temporary fence	60 160	4000 2500
Tallac Enclosure	Translocation of plants	60	4000
Taylor Creek	Outplanting	60	4000
Taylor Creek Enclosure	Translocation of plants	60	
Zephyr Cove	Translocation of plants; Removal of Permanent Fence	60 160	4000 2500
Forest Service Beaches	Annual Survey	80	2350
	Site Specific Conservation Activities Totals	1140	36,350

NOTES:

- Total cost of outplanting and translocation = $4000 / 60 staff hours
- Total cost of temporary fence construction at Pope, Nevada, and Ebrights/Ski beach and permanent fence removal at Zephyr cove = $2500 / 160 staff hours

Describe in the field below general TYC conservation activities undertaken by the agency during the reporting period (i.e. public outreach, consultation, TAG participation, etc.):

Describe general conservation activities:	Staff hours involved	Cost (include staff time and other costs)
TAG participation	100	3,000
TYC genetic study FY 2006 PSW Research Station, 2721		24,532
General Conservation Activities Totals	100	27,532

Please describe in the field below any significant disturbances to the species or its habitat on land within agencies jurisdiction and subsequent response:

List TYC site name:	Describe disturbance and response:	Staff hours involved	Cost (include staff time and other costs)
	Totals		

Please describe in the field below planned TYC conservation activities anticipated for the upcoming year:

Continuation with outplanting and translocation study

List and describe in the table below all shorezone projects within the agency's jurisdiction undertaken within potentially suitable TYC habitat:

Project Name (list below):	Project Description including location:
Pope Beach Parking Area	Retrofit of the Pope Beach parking Area
No Projects were implemented during the reporting period, however several projects were surveyed for and will be implemented in the future	New bathrooms on several beaches GID improvement at Roundhill, Renewal of permit at Roundhill, Master Plan revision at Zephyr Cove
Roundhill Fuels Plan	Fuels reduction: Logan Shoals and Roundhill

US Fish and Wildlife Service

Tahoe Yellow Cress Conservation Activities Annual Report

As agreed to in the Tahoe Yellow Cress (TYC) Conservation Agreement, the TYC Adaptive Management Working Group (AMWG) shall prepare an annual report describing the status of TYC. A component of the annual report is a reporting by each of the participating agencies on TYC conservation activities undertaken or planned for the future

This form provides a standardize format to assist management agencies in submitting their annual report to the AMWG. This report should be completed by each management agency and submitted to the TYC TAG no later than **December 31** of each year.

Please complete the following fields. Press the tab key to scroll from field to field:

Enter name of reporting agency:	USFWS
Reporting period:	January 1 through December 31, 2006
Enter date report submitted to AMWG:	12/06/2006

Describe in the table below site-specific conservation activities for each TYC site within the agency's jurisdiction undertaken during the previous growing season. Please use site names as listed in the TYC Conservation Strategy:

List TYC site name:	Describe site specific activities:	Staff hours involved	Cost (include staff time and other costs)
	Site Specific Conservation Activities Totals		

Describe in the field below general TYC conservation activities undertaken by the agency during the reporting period (i.e. public outreach, consultation, TAG participation, etc.):

Describe general conservation activities:	Staff hours involved	Cost (include staff time and other costs)
TAG/AMWG/EXEC meeting participation	60	4,800
General Conservation Activities Totals	60	4,800

Please describe in the field below any significant disturbances to the species or its habitat on land within agencies jurisdiction and subsequent response:

List TYC site name:	Describe disturbance and response:	Staff hours involved	Cost (include staff time and other costs)
	Totals		

Please describe in the field below planned TYC conservation activities anticipated for the upcoming year:

AMWG/TAG/EXEC Meetings and annual survey

List and describe in the table below all shorezone projects within the agency's jurisdiction undertaken within potentially suitable TYC habitat:

Project Name (list below):	Project Description including location:

California State Lands Commission
Agency Tahoe Yellow Cress Conservation Activities 2006 Annual Report

As agreed to in the Tahoe Yellow Cress (TYC) Conservation Agreement, the TYC Adaptive Management Working Group (AMWG) shall prepare an annual report describing the status of TYC. A component of the annual report is a reporting by each of the participating agencies on TYC conservation activities undertaken or planned for the future.

This form provides a standardize format to assist management agencies in submitting their annual report to the AMWG. This report should be completed by each management agency and submitted to the TYC AMWG no later than **December 31** of each year.

Please complete the following fields. Press the tab key to scroll from field to field:

Enter name of reporting agency:	California State Lands Commission
Reporting period:	January 1, 2006 through December 31, 2006
Enter date report submitted to TAG:	November 20, 2006

Describe in the table below site-specific conservation activities for each TYC site within the agency's jurisdiction undertaken during the previous growing season. Please use site names as listed in the TYC Conservation Strategy:

List TYC site name:	Describe site specific activities:	Staff hours involved	Cost (include staff time and other costs)
	Site Specific Conservation Activities Totals		

Describe in the field below general TYC conservation activities undertaken by the agency during the reporting period (i.e., public outreach, consultation, AMWG/TAG participation, etc.):

Describe general conservation activities:	Staff hours involved	Cost (include staff time and other costs)
TYC AMWG/TAG	50	5325
Site-Specific Plans	59	6284
2006 Annual Survey	14	1491
Shorezone Project Planning/Review/TYC Project Site Reviews	49	5218
TYC Executive Meeting	9	959
General Conservation Activities Totals	181	19277

Please describe in the field below any significant disturbances to the species or its habitat on land within agencies jurisdiction and subsequent response:

List TYC site name:	Describe disturbance and response:	Staff hours involved	Cost (include staff time and other costs)
	Totals		

Please describe in the field below planned TYC conservation activities anticipated for the upcoming year (2007):

- Finishing and maintaining Site-Specific Information sheets for all TYC sites
- Continued Participation on TAG, AMWG, and Exec meetings
- Participating in 2007 Annual Survey
- Continue Shorezone Project Review and Agency Coordination

List and describe in the table below all shorezone projects within the agency's jurisdiction undertaken within potentially suitable TYC habitat:

Project Name (list below):	Project Description including location:
Green Property (Rubicon Bay)	New recreation pier and redesign of a creek flume. Pier already constructed, flume work anticipated in 2007. CDFG lead agency/CSLC oversight.

California Department of Fish & Game
Tahoe Yellow Cress Conservation Activities Annual Report

As agreed to in the Tahoe Yellow Cress (TYC) Conservation Agreement, the TYC Adaptive Management Working Group (AMWG) shall prepare an annual report describing the status of TYC. A component of the annual report is a reporting by each of the participating agencies on TYC conservation activities undertaken or planned for the future

This form provides a standardize format to assist management agencies in submitting their annual report to the AMWG. This report should be completed by each management agency and submitted to the TYC TAG no later than **December 31** of each year.

Please complete the following fields. Press the tab key to scroll from field to field:

Enter name of reporting agency:	**California Department of Fish & Game**
Reporting period:	January 1 through December 31, 2006
Enter date report submitted to AMWG:	15 December 2006

Describe in the table below site-specific conservation activities for each TYC site within the agency's jurisdiction undertaken during the previous growing season. Please use site names as listed in the TYC Conservation Strategy:

List TYC site name:	Describe site specific activities:	Staff hours involved	Cost (include staff time and other costs)
	Site Specific Conservation Activities Totals		

Describe in the field below general TYC conservation activities undertaken by the agency during the reporting period (i.e. public outreach, consultation, TAG participation, etc.):

Describe general conservation activities:	Staff hours involved	Cost (include staff time and other costs)
AMWG coordination and prep	86	
Contract preparation	54	
Annual Survey	28	
Exec meeting	32	
Stewardship activities	180	
General Conservation Activities Totals	380	

Please describe in the field below any significant disturbances to the species or its habitat on land within agencies jurisdiction and subsequent response:

List TYC site name:	Describe disturbance and response:	Staff hours involved	Cost (include staff time and other costs)
	Totals		

Please describe in the field below planned TYC conservation activities anticipated for the upcoming year:

increase private landowner participation in Stewardship activities

List and describe in the table below all shorezone projects within the agency's jurisdiction undertaken within potentially suitable TYC habitat:

Project Name (list below):	Project Description including location:

California Department of Parks and Recreation
Tahoe Yellow Cress Conservation Activities Annual Report

As agreed to in the Tahoe Yellow Cress (TYC) Conservation Agreement, the TYC Adaptive Management Working Group (AMWG) shall prepare an annual report describing the status of TYC. A component of the annual report is a reporting by each of the participating agencies on TYC conservation activities undertaken or planned for the future

This form provides a standardize format to assist management agencies in submitting their annual report to the AMWG. This report should be completed by each management agency and submitted to the TYC TAG no later than **December 31** of each year.

Please complete the following fields. Press the tab key to scroll from field to field:

Enter name of reporting agency:	California Department of Parks and Recreation
Reporting period:	January 1 through December 31, 2006
Enter date report submitted to AMWG:	12/1/06

Describe in the table below site-specific conservation activities for each TYC site within the agency's jurisdiction undertaken during the previous growing season. Please use site names as listed in the TYC Conservation Strategy:

List TYC site name:	Describe site specific activities:	Staff hours involved	Cost (include staff time and other costs)
Lester Beach TYC Enclosure	Outplanting and watering TYC plants	14	$366.00
General Creek (Sugar Pine)	Temporary fencing and sign installation and removal	2	$47.00
Avalanche/Eagle Creek	Hand removal of Eurasian Watermilfoil growing on Avalanche beach	26	$801.00
	Site Specific Conservation Activities Totals	42	$1,214.00

Describe in the field below general TYC conservation activities undertaken by the agency during the reporting period (i.e. public outreach, consultation, TAG participation, etc.):

Describe general conservation activities:	Staff hours involved	Cost (include staff time and other costs)
AMWAG meetings, meeting minutes, TYC Exec. Meeting	49	$2,022.00
Site Specific plans, maps, document reviews	56	$2,392.00
TYC Annual Survey	56	$1,787.00
Project surveys and document reviews	20	$900.00
General Conservation Activities Totals	181	$7,101.00

Please describe in the field below any significant disturbances to the species or its habitat on land within agencies jurisdiction and subsequent response:

List TYC site name:	Describe disturbance and response:	Staff hours involved	Cost (include staff time and other costs)
	Totals		

Please describe in the field below planned TYC conservation activities anticipated for the upcoming year:

Participate in AMWG and TYC Executive Committee meetings and assignments; monitor TYC at park units and install/maintain temporary and other fencing and signs as needed; and participate in lake-wide annual TYC survey.

List and describe in the table below all shorezone projects within the agency's jurisdiction undertaken within potentially suitable TYC habitat:

Project Name (list below):	Project Description including location:
Anchoring Zone Boundary Marker Project	Installation of two visible shoreline boundary markers for the Emerald Bay Anchoring Area at Emerald Bay State Park (Superintendents Order No. 684-06-001).
Emerald Bay Cable Project	Submarine power and fiber optic cables placement across Emerald Bay in Emerald Bay State Park by Sierra Pacific Power and AT&T.
Eurasian Watermilfoil Removal	CA State Lands Commission project to remove Eurasian Watermilfoil (EWM) from the bottom of Emerald Bay, Emerald Bay State Park. Contractor uses diver assisted suction removal method. Largest patch of EWM is located N/NE of and adjacent to Avalanche Beach.

Nevada Natural Heritage Program
Annual Tahoe Yellow Cress Conservation Activities

As agreed to in the Tahoe Yellow Cress (TYC) Conservation Agreement, the TYC Technical Advisory Committee (TAC) shall prepare an annual report describing the status of TYC. A component of the annual report is a reporting by each of the participating agencies on TYC conservation activities undertaken or planned for the future

This form provides a standardize format to assist management agencies in submitting their annual report to the TAG. This report should be completed by each management agency and submitted to the TYC TAG no later than **December 31** of each year.

Please complete the following fields. Press the tab key to scroll from field to field:

Enter name of reporting agency:	Nevada Natural Heritage Program
Reporting period:	January 1 through December 31, 2006
Enter date report submitted to TAG:	15 December 2006

Describe in the table below site-specific conservation activities for each TYC site within the agency's jurisdiction undertaken during the previous growing season. Please use site names as listed in the TYC Conservation Strategy:

List TYC site name:	Describe site specific activities:	Staff hours involved	Cost (include staff time and other costs)
	Site Specific Conservation Activities Totals		

Describe in the field below general TYC conservation activities undertaken by the agency during the reporting period (i.e. public outreach, consultation, TAG participation, etc.):

Describe general conservation activities:	Staff hours involved	Cost (include staff time and other costs)
Comprehensive update and reconciliation of all TYC sites through 2005	98	3234
Attendance at TAG meetings	25	825
Update, revise, and provide annual TYC survey form	20	660
Provide GIS map for annual report	5	165
Provide summary information and photocopied reports and documents for site specific management plans	30	990
Establish and populate TYC virtual library on-line	12	396
General Conservation Activities Totals	190	6270

Please describe in the field below any significant disturbances to the species or its habitat on land within agencies jurisdiction and subsequent response:

List TYC site name:	Describe disturbance and response:	Staff hours involved	Cost (include staff time and other costs)
	Totals		

Please describe in the field below planned TYC conservation activities anticipated for the upcoming year:

Update the database with 2006 data; provide GIS map for annual report; attend TYC TAG meetings when possible; provide 2007 data forms for site specific surveys, maintain TYC virtual library on-line.

List and describe in the table below all shorezone projects within the agency's jurisdiction undertaken within potentially suitable TYC habitat:

Project Name (list below):	Project Description including location:

Nevada Division of State Parks and Department of Forestry
Tahoe Yellow Cress Conservation Activities Annual Report

As agreed to in the Tahoe Yellow Cress (TYC) Conservation Agreement, the TYC Adaptive Management Working Group (AMWG) shall prepare an annual report describing the status of TYC. A component of the annual report is a reporting by each of the participating agencies on TYC conservation activities undertaken or planned for the future

This form provides a standardize format to assist management agencies in submitting their annual report to the AMWG. This report should be completed by each management agency and submitted to the TYC TAG no later than **December 31** of each year.

Please complete the following fields. Press the tab key to scroll from field to field:

Enter name of reporting agency:	Nevada Division of State Parks
Reporting period:	January 1 through December 31, 2006
Enter date report submitted to AMWG:	Dec 08, 2006

Describe in the table below site-specific conservation activities for each TYC site within the agency's jurisdiction undertaken during the previous growing season. Please use site names as listed in the TYC Conservation Strategy:

List TYC site name:	Describe site specific activities:	Staff hours involved	Cost (include staff time and other costs)
Cave Rock	None due to high water	0	$0
Sand Harbor	None due to high water	0	$0
Hidden Beach	None due high water	0	$0
Sand Harbor Experimental Outplanting	Fence removed due to high water	32	$400
Hidden Beach experimental outplanting	Fence removed due to high water	32	$400
	Site Specific Conservation Activities Totals	64	$800.00

Describe in the field below general TYC conservation activities undertaken by the agency during the reporting period (i.e. public outreach, consultation, TAG participation, etc.):

Describe general conservation activities:	Staff hours involved	Cost (include staff time and other costs)
Public outreach – NDSP provided funding assistance on TYC outreach activities. Activities are currently in progress.	4	$14,400
Attendance at AMWG meetings (Peter Maholland, NDSP)	9	$3600
Attendance at AMWG meetings (Roland Shaw, NDF)	24	$960
Participation in annual survey (Roland Shaw, NDF)	10	$400
Installation of TYC interpretive display in Sand Harbor Visitor Center	5	$5,150

General Conservation Activities Totals	52	$24,510.00

Please describe in the field below any significant disturbances to the species or its habitat on land within agencies jurisdiction and subsequent response:

List TYC site name:	Describe disturbance and response:	Staff hours involved	Cost (include staff time and other costs)
Sand Harbor	High water, majority of site under water. No response required.		
Hidden Beach	High water, majority of site under water. No response required.		
Cave Rock	High water, majority of site under water. No response required.		
	Totals	0	$0

Please describe in the field below planned TYC conservation activities anticipated for the upcoming year:

Removal of remaining portions of damaged exclosure fence at Hidden Beach
Participate in TYC AMWG meetings and annual surveys

List and describe in the table below all shorezone projects within the agency's jurisdiction undertaken within potentially suitable TYC habitat:

Project Name (list below):	Project Description including location:
None	