PROJECT REPORT
TRAIL MAINTENANCE PROJECT AND HABITAT RESTORATION
Torres del Paine National Park, Patagonia, Chile
Mar 15, 2008 to Mar 30, 2008

Prepared and Compiled by
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***Project Summary*:**

Volunteers contributed 1,658 hours to repairing a 7.6 km section of the "W" section of the Paine Circuit between Paine Grande Lodge and Campo Italiano.

New Trail:	**.4 km.**
Water Drains:	**170**
Rocks and Boulders Removed From Trail:	**240**
Closure and camouflaging of multiple Trail Treads:	**86**
Gravel Existing Trail and New Trail	**400 meters**
Major Stream Channeling and Crossing	**2**
Minor Stream Erosion Control and Water Bars	**6**
Meadow Restoration (Planting of Vegetation.)	**.3 km**
Debris Removal	**40 hours**

Project Location:

Torres del Paine National Park, Patagonia, Chile. Torres del Paine is a UNESCO Biosphere Reserve and National Park, consisting of 242,242 hectares. The Park is operated by CONAF, the government agency responsible for the administration of Chile's National Parks. Current visitation to the park exceeds 110,000 visitors per year.

The Park is famous for its hiking, and there is heavy use of the Park's trail system. Hikers are attracted to the Paine Circuit, a trail that encircles the mountainous center of the Park. A portion of the Circuit is the "W" trail section, which is the most heavily used portion of the Circuit trail. This project focused on one of the most heavily traveled sections of the "W."

Trail Location:

Paine Grande Lodge to Campo Italiano. Approximately 7.6 km. portion of the "W" Circuit.

Participants:

Project Leader:	John P. Hollinrake
Assistant Project Leader:	Gene Zimmermann
Crew Leader:	Richard Braunlich
Crew Leader:	Ruth Jamke
Volunteers:	Chile: 2 full time, 2 part time (Chilean Government Official and ALMA Local Chilean Volunteer Conservation Organization.)
	United States: 24 full time, 3 part time
	Czech Republic: I full time (ALMA Volunteer)
	Ireland: 1 full time (ALMA Volunteer)

2008 ConservationVIP Volunteers at Guardaria Lago Pehoe

Summary of Work:

Total Volunteer Hours: 1,658

Major repairs to the existing trail were achieved by the volunteers, with assistance from CONAF Rangers when available. The repairs were as follows: removal of water courses off of the trail to prevent erosion, placing gravel in heavily eroded sections of trail where no drainage was possible, construction of drains, water crossings, and elimination of multiple trail treads to prevent further erosion and habitat damage. A .4 km section of the existing trail that traversed a large meadow which had significantly impacted the meadow habitat with multiple trail treads was closed. The meadow restored using live plant plugs from the surrounding meadow, and the old trail camouflaged. A new trail was built on the southern slope of the surrounding hill, which

will enable the visitors to hike through the area without impacting the fragile meadow habitat. The view of the meadow is now restored, and the previous visual impact of multiple trails through the meadow has been eliminated. Tools utilized were picks, shovels, rock pry bars, McLeods, Pulaskis, wheel barrows, 5 gallon buckets, hand saws, and pruners. No power tools were used.

Volunteer Hours:

A total of 28 full time volunteers and leaders worked on the trail for 8 full work days, for 7 hours each day, for a total of 1568 hours, plus 5 part time volunteers worked 2 days each, for 7 hours each day for a total of 70 hours.

The total volunteer hours contributed to this project by Conservation Volunteers International Program and ALMA were 1658 hours.

Project Goals and Accomplishments:

a. **Remove Water on Trail to Prevent Erosion**

i. **Build Drains - 170 New Drains**
A total of 172 drains were built by the project team. Drains were particularly needed at regular intervals along the existing trail to allow water to flow off the trail to prevent erosion. The existing trail had not been constructed with such drains, thus significant erosion had occurred. Drains were placed in all areas where it was evident that water was flowing down the trail causing soil erosion. Drains are probably the most important improvement to existing trails. Drains will not only prevent soil erosion, but prevent rocks and boulders from being exposed on the trail tread, and prevent hikers from creating new trails to avoid wet and muddy trail sections.

Example of Drain on Trail

ii. **Place Gravel in Existing Eroded Trail Sections - 400 meters**

Approximately 400 meters of gravel was placed in sections of the trail where water drainage was not possible. Gravel was obtained by taking shale from scree slopes in the area in wheelbarrows and in 5 gallon buckets and depositing in the trail tread.

Specifically, Approximately 250 meters of the trail from the Guardaria Lago Pehoe to the base of the eastern edge of the Paine Grande meadow area was filled in with gravel to prevent further erosion.

Approximately 100 meters of gravel was placed in the new section of trail where the trail, by necessity, traverses the eastern edge of the meadow.

CONAF is encouraged to monitor the gravel levels, and replenish the gravel in areas where needed to maintain consistent gravel levels.

iii. **Build Stream Crossings at Large Streams - 2 major stream crossings**

There are several major stream crossings on the trail above Lago Skottsberg. These stream crossings were causing major erosion and year round water running down the trail. Large sections of mud forced hikers to deviate from the trail and create alternative trails, leading to further erosion.

Example of Major Stream Crossing Channel Project

Major Stream Crossing Channel Work

Two significant stream crossings were channeled by volunteers, by digging deep open channels across the existing trail, and lining the channels with large rocks and boulders obtained from the area. Large rocks were placed strategically to enable hikers to easily walk across the channels, and to encourage hikers to remain on the existing trail. The results of building the drains could be immediately observed, because all water that had previously run down the trail was eliminated, and the trail was dry in one day.

iv. Minor Stream Crossings and Water Diversions - 6 Crossings

Six smaller stream crossings were also constructed in the same area with excellent results. Each of these crossings involved placing large rocks and boulders strategically to channel or divert water off the trail, and to provide rocks for hikers to walk on when crossing these streams.

b. **Re-route Portion of Existing Trail Away From Fragile Meadow Habitat and Restore Meadow**

i. **Build New .4 km Section of Trail**

Approximately 2 km. east of the Guardaria Lago Pehoe, the existing trail traversed a large meadow. This meadow is within one of the most scenic vistas in the Park, enabling visitors to look at the full view of the Cuernos mastiff above Campo Italiano. This vista had been visually impacted by the routing of the existing trail through a wet meadow habitat. Due to the inability of water to drain off the trail in the meadow, the trail tread would

fill with water, forcing hikers to set off the trail, creating yet another trail. At the time of this project, the meadow had in some areas five trail treads, each 15 cm. or more in depth. This natural aesthetics of the meadow was significantly impacted by the "braided" trail, and was impacting heavily on the fragile wet meadow. The only solution was to close the existing trail and built a new trail across the slope of the southern hill surrounding the meadow. In addition, the existing trail in the meadow needed to be restored and access to the old trail camouflaged to eliminate future use.

Meadow With Braided Trails Prior to Restoration

A new trail route was surveyed by Conservation VIP leaders and marked for clearing and construction consistent with current trail design methodology. Two teams of volunteers and several CONAF Rangers cleared brush and shrubbery and cut the trail into the slope. The cut brush and shrubbery was used to camouflage the western section of the closed trail where deep eroded ravines had been created creating a serious erosion problem, and a hazard to hikers.

New Trail Construction, Clearing the Vegetation

Over the course of one week, the volunteers placed drains, placed boulders to assist in shallow stream crossings, built erosion control water bars, and placed gravel in the northeastern section of the trail where it lay in a flat area at the edge of the meadow. The trail was opened to hikers on the third day of construction while drains and water bars were constructed. Hikers were observed eager to use the new trail, and through interviews with some hikers, most understood that the trail had been re-routed to prevent traversing the fragile meadow habitat. The new trail opened up a new vista of Lago Skottsberg, which hikers greatly admired.

New Trail Being Used by Hikers

**It is HIGHLY recommended that CONAF place signs at both ends of the former meadow trail indicating the meadow trail is permanently closed to allow meadow restoration. CONAF will need to monitor the area closely to ensure that hikers do not use the old trail. Grasses and shrubs that were planted by the volunteers to restore the meadow and eliminate the trail will need to be monitored and additional plant plugs replaced as needed.*

ii. **Restore Meadow by Filling In Old Trail with Plants from Meadow Area**

Volunteers cut plugs of grasses and shrubbery from the meadow area outside of the viewshed, and placed these plugs into the closed trail treads. In some areas, nearly 100% of the trail tread was filled in with these plugs. In other areas, a checkerboard pattern of plugs was used, and dead vegetative material was used to fill in the gaps. It is anticipated that the live plants and grasses will migrate into the gaps as the dead vegetative

material decomposes. Emphasis was placed on 100% coverage of the old trail where the new trail begins at the northeastern edge of the meadow to restore the aesthetic beauty of the meadow, restore the habitat, and prevent future use of the old trail.

Grass and Shrubbery Plugs in Meadow Trail -
Remaining Path was later Scarified for Seed Embedding

iii. **Camouflage Old Trail to Prevent Future Use**. - **.3km**

The western portion of the old trail where it drops from a ridge down into the meadow area had been seriously impacted by erosion, resulting in numerous ravines and gullies. CONAF Rangers and volunteers placed significant amounts of cut brush and shrubbery, and dead shrubbery and trees from the area to hide the former trail and promote re-vegetation as the seeds fall off the cut shrubbery, and the dead material decomposes. Additionally, and importantly, the trail tread that could not be covered with plant material was scarified with pick axes to turn up the soil and enable seeds to embed in the fresh soil and sprout in the spring.

The camouflaging was very effective, and the old trail is now completely hidden from view as one approaches the trail from the crest of the western ridge above the meadow.

c. Remove Multiple Trail Treads (Braided Trails) - 86 Re-routes and Closures

i. **Limit Trail to One Trail Tread**

In numerous sections of the trail, there were areas where, due to problems with water remaining on the trail, hikers created several trail treads. These areas were identified by the volunteers and the best trail tread was selected for drain improvement, and the additional trails were closed by filling in with dead shrubbery, rocks, and when possible, live plant plugs.

ii. **Camouflage other Treads to Prevent Future Use**.

Where possible, the closed trail treads were camouflaged with tree branches, dead shrubbery, and rocks.

Example of Closed And Camouflaged Trail Tread

RECOMMENDED THAT CONAF monitor these problem areas and continue to maintain the drain improvements on the that will prevent hikers from creating new trails in the future.

d. **Remove Large Boulders and Rock Hazards -240 Rocks Removed**

i. Clear existing trail of rock hazards and large rocks to prevent hikers going off trail to avoid such hazards.

Large rocks and boulders, some weighing 100 kg. were removed by volunteers using rock pry bars and brute force. These rocks were exposed

during the past years by water and soil erosion. These large rocks posed a safety threat to hikers due to possible trip and fall accidents. Removal of these rocks and boulders also prevents hikers from creating new trails to avoid these obstacles.

An added benefit of the removal of rocks is that it makes passage of the trail easier for hikers who may have physical limitations that would prevent them from traversing the existing trail due to rock and boulder hazards.

Removal of Rocks Near Stream Crossing

e. Remove and hide old boardwalks left along side of trail in wetlands area - 40 volunteer hours

i. Move large sections of old boardwalk and hide out of sight from hikers.

Conservation VIP was informed that CONAF recently contracted for the replacement of most of the boardwalks that traverse a large wetlands area between Lago Skottsberg and Campo Italiano. Regrettably, the old boardwalks were simply removed and dumped next to the new boardwalk. This was considered by the volunteers as aesthetically unpleasing and inappropriate in a National Park. Anecdotally, hikers conveyed the same sentiment to us. It was therefore decided to remove the old boardwalk material and cache it behind large trees and shrubbery in the area so that it was hidden from view. This was a project that took 8 team members at least 40 hours to accomplish.

CONAF is encouraged to retrieve the material and remove it from the area entirely. It is unknown if the wood material used in the old boardwalk was chemically treated, but it is known that it has lots of nails.

f. Remove Hazardous Trees and Shrub Branches

Tree branches and shrubbery above and along the trail tread weere cut and trimmed in critical areas to prevent snag hazards, and to conform to uniform trail construction standards requiring a 1.5 m. canopy above the trail and 1.5 meter trail width.