SANTA BARBARA
**URBAN CREEKS COLLECTIVE**

# MISSION CREEK ESTUARY SWEETCLOVER REMOVAL PHASE 1 PROJECT REPORT

**DECEMBER 2025**

## Project Proposer

The project was proposed by a trash cleanup volunteer and landscaper with extensive history in restoration and other ecological work. The idea had been suggested a year previously by a different volunteer.

## Site Description


1. A flat, sandy expanse dominated by Fleshy Jaumea and Saltgrass, with intermingled populations of Alkali Heliotrope and Prostrate Atriplex. Smaller populations of native Pickleweed (*Salicornia pacifica*) and invasive Bermuda Grass (*Cynodon dactylon*). Moderate Sweetclover infestation. See Figures 1-8.

2. A flat, sandy expanse dominated by Bermuda Grass, intermingled with populations of Saltgrass, Fleshy Jaumea, native Cocklebur (*Xanthium sp.*), an unidentified Dodder (*Cuscuta sp.*), and Prostrate Atriplex. Heavy Sweetclover infestation. Notably, the Dodder was almost exclusively parasitizing Sweetclover,[1] to

[1] https://www.inaturalist.org/observations/297482571

a much lesser extent Cocklebur, and, in only one instance, nonnative Ice Plant (*Carpobrotus sp.*).[2] See Figures 9-11.

3. A flat, lower-lying sandy expanse with a mini-lagoon of its own; heavy driftwood coverage. Dominated by Saltgrass, Bermuda Grass, and Fleshy Jaumea, with intermingled Prostrate Atriplex. Smaller populations of Pickleweed, Alkali Heliotrope, native Alkali Bulrush (*Bulboschoenus maritimus*), and native Cattail (*Typha sp.*). Moderate Sweetclover infestation. See Figures 12-13.

4. Raised pseudo-dune habitat with steep banks. Banks are vegetated near the bridge, sandy past the dredge pipeline. Heights dominated by Beach Suncup and Bermuda Grass, intermingled with native Buckwheat (*Eriogonum sp.*), native Telegraphweed (*Heterotheca grandiflora*), and native Silver Beach Burr (*Ambrosia chamissonis*). Small populations of native Mugwort (*Artemisia douglasiana*). Very heavy Sweetclover infestation, concentrated mostly in one huge central patch. Vegetated banks dominated by Fleshy Jaumea, intermingled with Saltgrass and Bermuda Grass. Small populations of Cattail, Alkali Bulrush, Sea Rocket, and native Alkali Heath (*Frankenia salina*). Modest Sweetclover infestation. Sandy banks dominated by Sea Rocket and Bermuda Grass, intermingled with Cocklebur. Smaller populations of unidentified Flatsedges (*Cyperus spp.*), Fleshy Jaumea, Prostrate Atriplex, and invasive Salt Cedar (*Tamarix sp.*). Moderate to heavy Sweetclover infestation. See Figures 14-18.

Additionally, two further sites were cleared: first, the bank between Site 3 and Site 4, dominated by native Coastal Goldenbush (*Isocoma menziesii*) with small populations of Alkali Heath and a moderate

[2] https://www.inaturalist.org/observations/317103972

Sweetclover infestation. Second, the beach to the east of Site 2 was largely cleared of a modest Russian Thistle (*Salsola sp.*) infestation.

**Project Evaluation**

Board Secretary Jean-Michel Ricard's initial evaluation of the project when it was proposed in 2024 was as follows:

*"My primary concern about the idea is whether there is much of a benefit to it. Non-native plant removal is most useful for returning habitat to native vegetation or mitigating fire risk, but I don't know that either of those benefits apply there. The estuary and its environs didn't look particularly flammable, and at least on the western side there didn't seem to be much native vegetation to take over after the non-natives are removed. The non-natives weren't growing very densely either so I think the problem is a shortage of native plants rather than out-competition from non-natives. I think the most helpful thing would be to plant native vegetation in that area and subsequently weed out non-native competition, but that would be a much bigger, long-term project. In the likely absence of planting, all we'd be doing is denuding some dunes, and I feel that there are more valuable uses of our time and energy. If anyone wants to do a site tour to double-check though, I'd be interested in joining!"*

A follow-up site visit was not scheduled at the time. By the time invasive plant removal was suggested again a year later, large, dense stands of White Sweetclover (*Melilotus albus*) had manifestly established themselves at Site 4 (see Figs. 14, 15, 17), and native plants, particularly Beach Suncup (*Camissoniopsis cheiranthifolia*), had an extensive presence as well. A follow-up site visit that encompassed the entire lagoon's circumference found multiple Sweetclover colonies at Sites 1-3, more directly and heavily encroaching on Fleshy Jaumea (*Jaumea carnosa*), Saltgrass (*Distichlis spicata*), and Alkali Heliotrope

(*Heliotropium curassavicum*) populations (among other, less numerous, native plants; see Figs. 2, 3, 5, 12). Lesser infestations of Sea Rocket (*Cackile maritima*) and Prostrate Atriplex (*Atriplex prostrata*) were also identified. The cause of the discrepancy between the first and second site evaluations is unclear, but presumed to be a combination of factors. One is simply that the evaluation was only based on casual observation of Site 4, rather than a close inspection of the lagoon's entire periphery. The second factor is that it seems likely that both native and nonnative plant populations expanded over the space of a year, meaning that both populations were now in much more serious competition. This speculation only applies to the Site 4 though, as Sites 1-3 were not evaluated the first time around (although the same dynamic could have also been at play there). All told, three lessons can be taken from all this: first, the importance of conducting thorough, full-site visits before drawing conclusions on restoration projects; second, since modest invasive plant populations can become a serious infestation in short order, even minor infestations are worth targeting preventatively; third, native plant populations can also be capable of relatively fast expansion, meaning that potential restoration projects shouldn't be easily written off as low impact.

## Methodology

SBUCC partnered with the City of Santa Barbara Creeks Division to obtain permission to operate and free parking passes. Removal efforts were initially limited to Sweetclover, but the City subsequently expanded permission to remove other clearly identified invasive plants like Sea Rocket and Prostrate Atriplex. Small groups of volunteers were trained to recognize invasives and differentiate them from native plants. The biggest problem was rare but repeated instances of volunteers pulling out Alkali Heliotrope, which looks marginally similar to Sweetclover seedlings in that they both have lots of little white flowers. Volunteers mostly used hand pulling, but clippers were used to cut below the crown when plants were too embedded to remove without risking strain injuries. Green waste from Sites 1-3 was

removed to a trailer (see Fig. 19) in the parking lot provided free of charge by Dale Parks Landscape, from whence it was taken away to be converted into a vegetative soil layer for an unrelated restoration project. Green waste from Site 4 was piled on-site for removal by City contractors since carting the waste to the trailer would have taken an inordinate amount of volunteer time and risked conflicting with bike and pedestrian traffic. Similarly, the Russian Thistle east of Site 2 was left in a pile on-site for the City to remove so as to avoid spreading seeds to uncontaminated areas.

## Project Impact

Overall, five volunteer events were held, during which approximately 6,161 square feet of habitat were cleared and about 1,514 cubic feet of invasive plant material were removed. There was no systematic monitoring of the impact of this project, but several impacts may be inferred through observation. First and foremost, the removal of invasive plant colonies, particularly the dense Sweetclover stands, opened up more habitat for native plants, who will no longer have to deal with fierce resource competition and overshadowing. The main native beneficiaries of this in Sites 1-3 are Alkali Heliotrope, Saltgrass, and Fleshy Jaumea, while the main beneficiary of the more sparsely populated Site 4 is Beach Suncup. Nonnative plants, almost exclusively Bermuda Grass, also benefitted from reduced cover and competition, and can be assumed to present another threat to native populations. The unidentified species of Dodder may be assumed to be very negatively impacted by the removal of the Sweetclover that appeared to constitute its primary host (the only other observed host being Cocklebur and one Ice Plant leaf). If it was the nonnative Alfalfa Dodder (*Cuscuta approximata*; Sweetclover is a close relative of alfalfa) then this is of little concern, but if it was a native species then significant damage has been done, and appropriate native host species should be planted to replace the Sweetclover. The Dodder had already gone to seed so it should still have a foothold on the site.

As far as animals are concerned, impacts vary by species. Nonnative aphids, which feed on Sweetclover, and nonnative Bagrada Bugs (*Bagrada hilaris*), which were found in quantity under the Searocket at Site 4, can be assumed to be highly negatively impacted by the removal of their food/shelter sources. Likewise, nonnative Honeybees (*Apis mellifera*), which feed on Sweetclover flowers, can be assumed to be negatively impacted by the removal of a food source, though their high mobility means that they'll likely find food elsewhere. Whether this might intensify already detrimental competition with native pollinators for limited food sources is unknown, particularly as concerns the flowers of on-site native vegetation. Argentine Ants (*Linepithema humile*) also seemed to favor building colony chambers under Sweetclover plants, presumably due to the soil-loosening effect of the roots, so their removal may be considered at least an inconvenience to the ants. Broadly speaking, the removal of competition against native plants stands to benefit native pollinators, such as the Furrow Bees (*Halictus sp.*) observed pollinating an Alkali Bulrush.[3] As far as birds are concerned, one volunteer remarked that seagulls seemed to be making far more use of the northern banks since the Sweetclover was removed, possibly because they no longer had to fear that the dense stands were concealing predators. This expansion of habitat is especially heartening since an abandoned nest found inside one of those stands suggests that they might have been used to conceal bird nests (though it is not impossible that the nest came first and the Sweetclover grew around it afterwards).

**Follow-up**

Since a substantial seed bank of invasive seeds undoubtedly remains, most especially at Site 4 where Sweetclover went to seed before it could be removed, full eradication will require SBUCC to return several times a year to eliminate future generations, preferably while they are still few and young. A site

[3] https://www.inaturalist.org/observations/314261247

visit on 12/21/25 confirmed extensive resurgence of Sweetclover seedlings at Site 2, relatively minor resurgence at Site 1 (See fig. 20), almost no resurgence at Site 3, and extensive resurgence at Site 4 (See Figs. 21-22). Unsurprisingly, resurgence was at its worst in areas of bare sand, whereas it was most limited amongst dense-growing natives such as Fleshy Jaumea and Saltgrass. In those areas hand-picking of seedlings is a practical means of control, while the dense patches of seedlings on bare sand will require the use of a hula hoe to efficiently remove. During a trash cleanup event on 1/17/26, two volunteers dedicated time to controlling Sweetclover resurgence, but progress was so limited that it became clear that a second phase of dedicated volunteer days would be necessary to control seedling resurgence before they reached maturity. This report thus marks the end of Phase 1 (removal) and the beginning of Phase 2 (maintenance).

## Photo Gallery

Fig. 1 - Dense Sweetclover patch at Site 1

Fig. 2 - Sweetclover encroaching on Marsh Jaumea at Site 1

Fig. 3 - Small Sweetclover patch at Site 1

Fig. 4 - Alkali Heliotropes uncovered at Site 1 on 7/12

Fig. 5 - Site 1 before restoration on 6/28

Fig. 6 - Site 1 mid-restoration on 6/28

Fig. 7 - Site 1 post-restoration on 6/28

Fig. 8 - Site 1 post-restoration on 6/28

Fig. 9 - Site 2 before restoration on 7/12

Fig. 10 - Site 2 after restoration on 7/12

Fig. 11 - Restoration complete at Sites 1 & 2

Fig. 12 - Restoration work at Site 3 on 8/9

Fig. 13 - Restoration of Site 3 completed on 8/9

Fig. 14 - Large, dense Sweetclover patch smothering Beach Suncup at Site 4

Fig. 15 - Site 4 before restoration on 9/13

Fig. 16 - Site 4 after restoration on 9/13

Fig. 17 - Site 4 before restoration on 9/27

Fig. 18 - Site 4 after restoration on 9/27

Fig. 19 - Full green waste trailer on 7/12

Fig. 20 - Sweetclover resurgence at Site 1 on 12/21

Fig. 21 - Sweetclover resurgence at Site 4 on 12/21

Fig. 22 - Sweetclover seedlings at Site 4 on 12/21