California Department of Fish and Wildlife
Environmental Enhancement Fund Grant Program
FINAL PROGRESS REPORT
Bull Kelp Restoration in Albion Cove

Date: December 12, 2024

Agreement No.: Q2375070

Project Title: Bull Kelp Restoration in Albion Cove

Grant Term: 9/25/2023 – 6/30/2026

Grantee: Reef Check Foundation

FISCAL REPORT

Fund Source	Amount Awarded	Total Amount Reimbursed
CDFW EEF Grant Funds	$44,000.00	$44,000.00
Agreement Totals	$44,000.00	$44,000.00

PROGRAM/TECHNICAL REPORT

Brief Summary of Work Performed 9/23/2023 to 12/12/2024:

Task 1: Project Management and Administration

- 2024 Q3 & Q4 Quarterly Report Submitted
- 2024 Q3 & Q4 Final Invoice Submitted
- Draft Final report sent
- Attended weekly meetings with project collaborators (The Nature Conservancy, Moss Landing Marine Lab, and Sonoma State University) to coordinate fieldwork efforts with commercial hand harvest.
- Managed commercial hand harvest by corresponding with divers weekly, ensuring their efforts align with other research efforts.

Task 2: Purchase of Urchins from Commercial Hand Harvest

- Purchased urchins through e-tix and ensured the correct disposal of urchins.

Deliverables

Task	Description	Deliverables	Expected Completion Dates	Completed (Yes/No) *	Date submitted to CDFW
1	Project Management and Administration	Quarterly Progress Reports	Due within 30 days following each calendar quarter (March, June, September, December) after grant execution	Q3 -Yes	**7/24/2024**
		Quarterly Invoices	Due within 30 days following each calendar quarter (March, June, September, December) after grant execution	Q3 -Yes	**7/24/2024**
		Final Progress Report	**3/23/26**	**YES**	**12/15/24**
		Final Invoice	**4/6/2026**	**YES**	**15/15/24**
2	Purchase of Urchins	Purchase of Urchins from Commercial Harvesters	**12/31/25**	**Yes**	**12/15/24**

***If no, summarize in Problems/Delays and Lessons Learned section below**

Problems/Delays and Lessons Learned:

From January to April 2024, we used the remaining funding from another source, received due to delay in receiving this fund. Urchin removals using EEF funding started on 4/24/2024.

Project Benefits and Results:

This funding has supported ongoing restoration at Albion Cove, where Reef Check began working in 2021 in collaboration with the California Department of Fish and Wildlife (CDFW), The Nature Conservancy (TCN), and the California Ocean Protection Council (OPC). Our earlier work in Albion Cove has shown that after an initial high-effort push to reduce urchin densities, maintenance of low urchin density is possible with significantly less effort and investment of time. Lessons learned in Mendocino are that 1) initial removals are much more costly and time-consuming than ongoing maintenance of low urchin densities, 2) restoration projects have to be designed and planned for time frames that are compatible with the ecological processes of the targeted

ecosystem (i.e., many years), and 3) that sustainable financing is critical to make this long-term engagement possible and for the project to remain flexible enough to adjust to changing socio-economic situations and increasing cost over time.
The project in Albion has not only built on the success of our partnerships with local commercial divers to maximize efficiency in restoration efforts but also on the success of collaborative research on restoration. This plan aligns with other collaborative restoration projects led by The Nature Conservancy (TNC) and incorporates community engagement to ensure the project's long-term sustainability.

From 2023 to 2024, Moss Landing Marine Lab (MLML) and Sonoma State University, funded by TNC, have been working on various outplanting techniques in Albion. Since April 2024, commercial divers funded by the Environmental Enhancement Fund (EEF) Grant Program have concentrated their efforts on removing purple urchins from the outplanting site. They have also created a buffer zone to protect outplants and allow kelp to grow. In five months, 12 days of commercial hand harvesting have been completed. In total, 8177 lbs. of purple urchins have been removed from the site, primarily protecting the outplanting area. For the first time in years, commercial divers have reported significant kelp growth, increased fish presence, and a rise in overall biodiversity.

A summary of the removal efforts, funded by the EEF grant, can be found in the table below.

# Hand Harvest days	Date	Lbs. of Purple Urchin removed
1	4/24/2024	638
2	6/2/2024	634
3	6/3/2024	156
4	6/14/2024	537
5	7/6/2024	542
6	7/17/2024	177
7	8/1/2024	296
8	8/2/2024	709
9	8/9/2024	667
10	8/10/2024	520
11	8/19/2024	877
12	9/15/24	864
13	9/17/24	257
Total		6,874

Estimated Co-benefits achieved to date:

- A subset of purchased purple urchins were donated to various initiatives to test potential future use of purple urchins (currently not a marketable product. This included UCLA, Nike, and Seelie Studio. For example, Seelie Studio uses sea urchins to dye cloth and other art materials.

- We have completed monitoring surveys in the restoration site, and urchin densities have been reduced to an average of 2.7 urchins per square meter (April surveys, 2024). For the first time in years, commercial divers have reported significant kelp growth, increased fish presence, and a rise in overall biodiversity. Collaborative work with TNC has shown an increase in kelp canopy.

- Additional funding from TNC has allowed us to continue the work founded by the EEF grant for the remainder of 2024 and into 2025.

- Reef Check provided internships for three community members throughout the field season. These were funded on separate funding but their participation in this project created substantial co-benefits. One of them, a local diver currently attending Cal Poly Humboldt, went through the annual Reef Check training course and assisted on multiple restoration surveys. The other two interns were not dive certified but were invaluable in both the collection of urchin morphometric data, as well as data entry. Both are from Fort Bragg and expressed that these intern experiences were transformative in their personal and professional development. All three interns actively participated in the daily activities of the restoration program. In addition to these ongoing tasks during the field season, two interns took their engagement with restoration practice and research further. One is scheduled to obtain her Open Water scuba certification, and the other was able to attend the Western Society of Naturalists (WSN) meeting in Portland, where she experienced how data collected during field work is presented to the scientific community to advance our understanding of restoration practices.

Objectives:

Project Objective (as stated in Grant Agreement)	**Objective met or exceeded? (Yes/No)**
Task 1: Project Management and Administration	Yes
Task 2: Purchase of Urchins from Commercial Hand Harvest	Yes

Issues and Lessons Learned:

Weather can impact the diver's ability to remove urchins at the site. This is typically during the winter months, November- February. During this time, it is sometimes beneficial to front load urchin removal days while the weather is good to protect the site when the weather is bad.

Relevant Pictures and Maps for this Report:

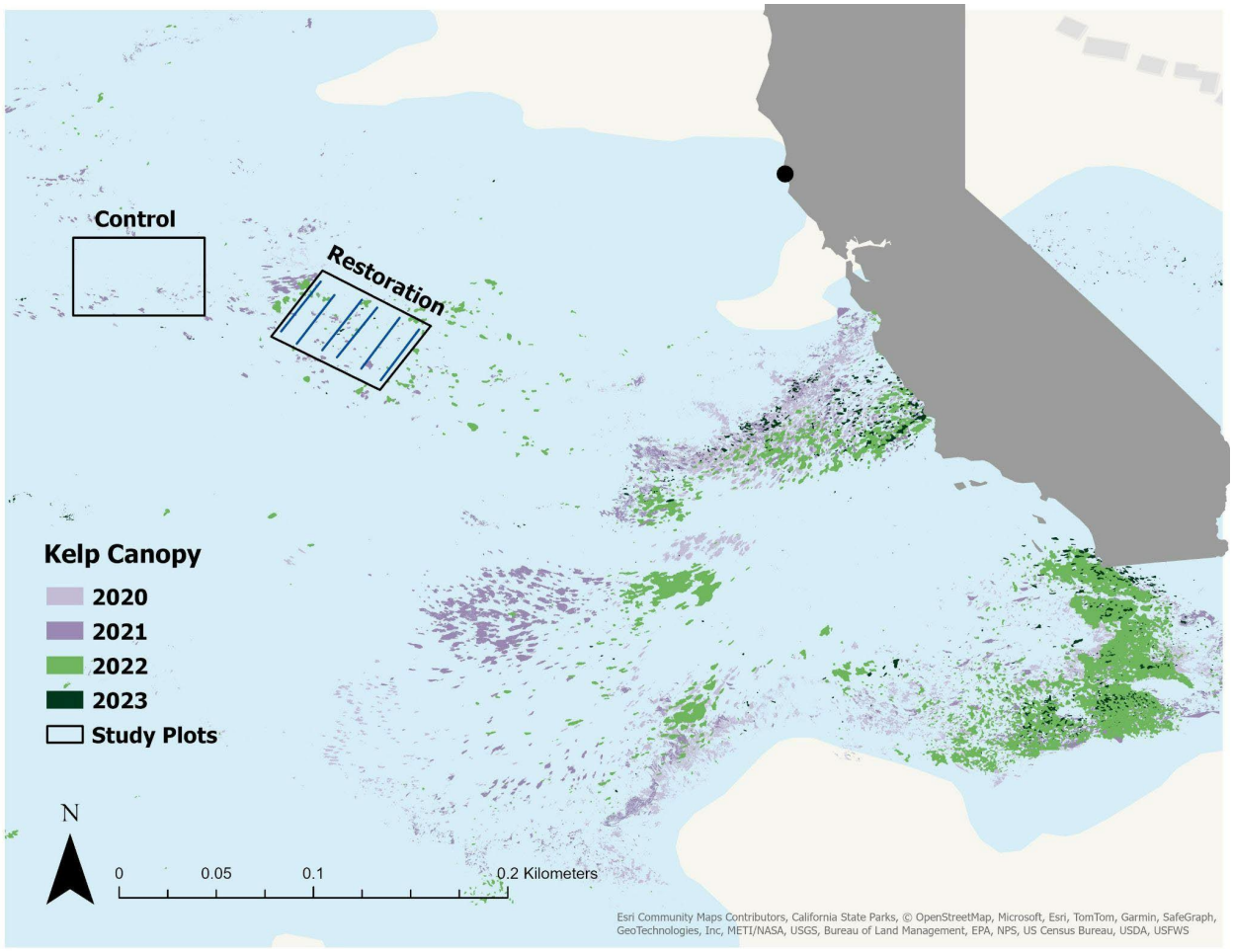

Figure 1: Canopy kelp changes through time at Albion Cove, collected by drone imagery conducted annually by The Nature Conservancy. The map shows the approximate location of the outplanting site within Albion Cove, established in 2023, where commercial urchin divers concentrated their removal efforts.

Figure 2: Purple Urchins offloaded at Noyo Harbor by commercial divers.

Figure 3: Purple Urchins offloaded at Noyo Harbor by commercial divers.