

The background of the entire page is an aerial photograph of a dense, green forest. Overlaid on this photograph are numerous thin, white, wavy contour lines that represent topographical features, creating a layered and textured effect.

REDWOODS RISING

ASSESSING THE RESTORATION ECONOMY

WITHIN REDWOOD NATIONAL
AND STATE PARKS

SOCIOECONOMIC IMPACT STUDY

April 2025

CONTENTS

Executive
Summary
04

Introduction to
the Redwoods
Rising
Restoration
Economy
06

Importance of
a Restoration
Economy in
the Redwoods
Rising Gateway
Communities
08

Economic
Impacts of
Redwoods
Rising
10

Redwoods
Rising as a
Driver of Social
and Economic
Opportunity
16

An Expanded
Role for
Redwoods
Rising
22

Appendix
24

EXECUTIVE SUMMARY

Redwoods Rising is an ambitious landscape-scale restoration project and a model for both a healthy ecosystem and a healthy economy.

Redwood National and State Parks (RNSP) are located along the North Coast of California in the ancestral lands of the Yurok, Tolowa, and Chilula peoples and protect nearly half of the old-growth coast redwood forest remaining on Earth. Redwoods Rising is healing the redwood forest, two-thirds of which was the subject of decades of industrial-scale logging, through restoring aquatic and riparian habitats, thinning overly dense second-growth forests, and removing and reconstructing failing and eroding logging roads, among other activities. Over the next few decades, Redwoods Rising plans to rehabilitate 70,000 acres of dense, previously logged forest in RNSP and remove 300 miles of abandoned, failing, and inaccessible roads.

Accomplishments

Since Operations Began in 2020

3,700+ acres

Forest Restored

30+ miles

Road Removed

21,120+ feet

Stream Channel Daylighted

In an area with a legacy of extraction-based industries and boom-bust cycles of economic growth and contraction, Redwoods Rising creates ongoing opportunities for economic activity that is restorative rather than exploitative. The Redwoods Rising partners use the term *restoration economy* to describe the network of workers, economic opportunities, and socioeconomic benefits that stem from the activities of Redwoods Rising. In supporting this restoration economy, the partnership seeks to heal and grow social connections to the stewardship of RNSP while also healing the ecosystems on these lands.

This analysis focuses on the restoration activities in the Greater Prairie Creek (GPC) and Greater Mill Creek (GMC) project areas (Figure 1) and the restoration and construction of the 'O Rew Redwoods Gateway (hereafter referred to as 'O Rew), located in the Prairie Creek project area. The impacts are estimated for Humboldt and Del Norte Counties for the spending occurring 2022 through 2024.

In the decades to come, the restoration activities conducted in RNSP can continue to generate economic impacts for the gateway communities and present opportunities for people to participate in the local economy in sustainable and diverse ways, to improve their health and well-being, and to build deeper connections to their land and communities.

The activities at GMC, GPC and 'O Rew support a restoration economy through:

Cultivating a Strong Ecosystem of Collaborators

Redwoods Rising is engaging with communities and workforces that have been largely excluded from these lands since the establishment of RNSP in the 1960s and '70s. In doing so, we are bringing together a unique and diverse set of stakeholders around a shared vision for ecological restoration.

Improving Workforce Opportunities & Livelihoods

\$70K+

Annual Income of Staff & Contractors

Jobs tend to be higher paying than county averages and have low educational attainment requirements, with two-thirds of Redwoods Rising staff and key contractors making over \$70,000 per year in a region with an average median household income close to \$60,000.

70+

College Students Trained

Redwoods Rising has spent nearly \$600,000 in support of an apprenticeship program that has provided on-the-ground restoration training to over 70 college students.

The restoration activities require a localized multisector labor force, covering activities from planning through implementation. Most organizations employ construction workers and equipment management specialists from local communities.

Bringing Investment to the Region

\$18.5M

Biomass Revenue

Generated between 2020 and 2023 and reinvested back into restoration activities in Humboldt and Del Norte Counties.

\$44.5M

State and Federal Grants

Went towards funding Redwoods Rising since 2019. Redwoods Rising spends these funds locally, prioritizing work with local contractors whenever feasible.

\$350K

Timber Yield Tax Revenue

Generated between 2020 and 2023, contributing to tax revenue in Humboldt and Del Norte Counties.

Generating Economic Impacts

\$32M

Economic Output

160

Jobs

\$14M

Earnings

\$17M

Value Added

Estimated average annual direct, indirect, and induced impacts generated in Humboldt and Del Norte Counties between 2022 and 2024.

1

Introduction to the Redwoods Rising Restoration Economy

The term *restoration economy* describes the network of workers, economic opportunities, and socioeconomic benefits that stem from the restorative activities of Redwoods Rising. In supporting this restoration economy, the Redwoods Rising partnership seeks to heal and grow social connections to the stewardship of RNSP while also healing the ecosystems on these lands.





Photo credit: Mike Shoys

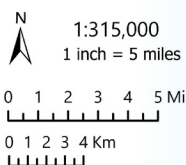
Redwoods Rising is an ambitious landscape-scale restoration project and a model for both a healthy ecosystem and a healthy economy. RNSP, located along the North Coast of California in the ancestral lands of the Yurok, Tolowa, and Chilula peoples, protect nearly half the old-growth coast redwood forest remaining on Earth (Figure 1). Redwoods Rising is healing the redwood forest, two-thirds of which was the subject of decades of industrial-scale logging, through restoring aquatic and riparian habitats, thinning overly dense second-growth forests, and removing and reconstructing failing and eroding logging roads, among other activities. Over the next few decades, Redwoods Rising plans to rehabilitate 70,000 acres of dense, previously logged forest in RNSP and remove 300 miles of abandoned, failing, and inaccessible roads.

Redwoods Rising is a model for both a healthy ecosystem and a healthy economy.

This study evaluates the restoration economy of RNSP gateway communities and the surrounding region.¹ RNSP gateway communities include nearby tribal communities, including the Yurok Tribe, Elk Valley Rancheria, Pulikla Tribe of Yurok People (formerly Resighini Rancheria), and Tolowa Dee-Ni' Nation, and employment/population centers, including Trinidad, Eureka, Crescent City, McKinleyville, Arcata, and Orick. These communities are located in Humboldt and Del Norte Counties, an area with a legacy of extraction-based industries and boom-bust cycles of economic growth and contraction. In this setting, Redwoods Rising creates ongoing opportunities for economic activity that is restorative rather than exploitative.

Figure 1
Redwoods Rising Project Areas

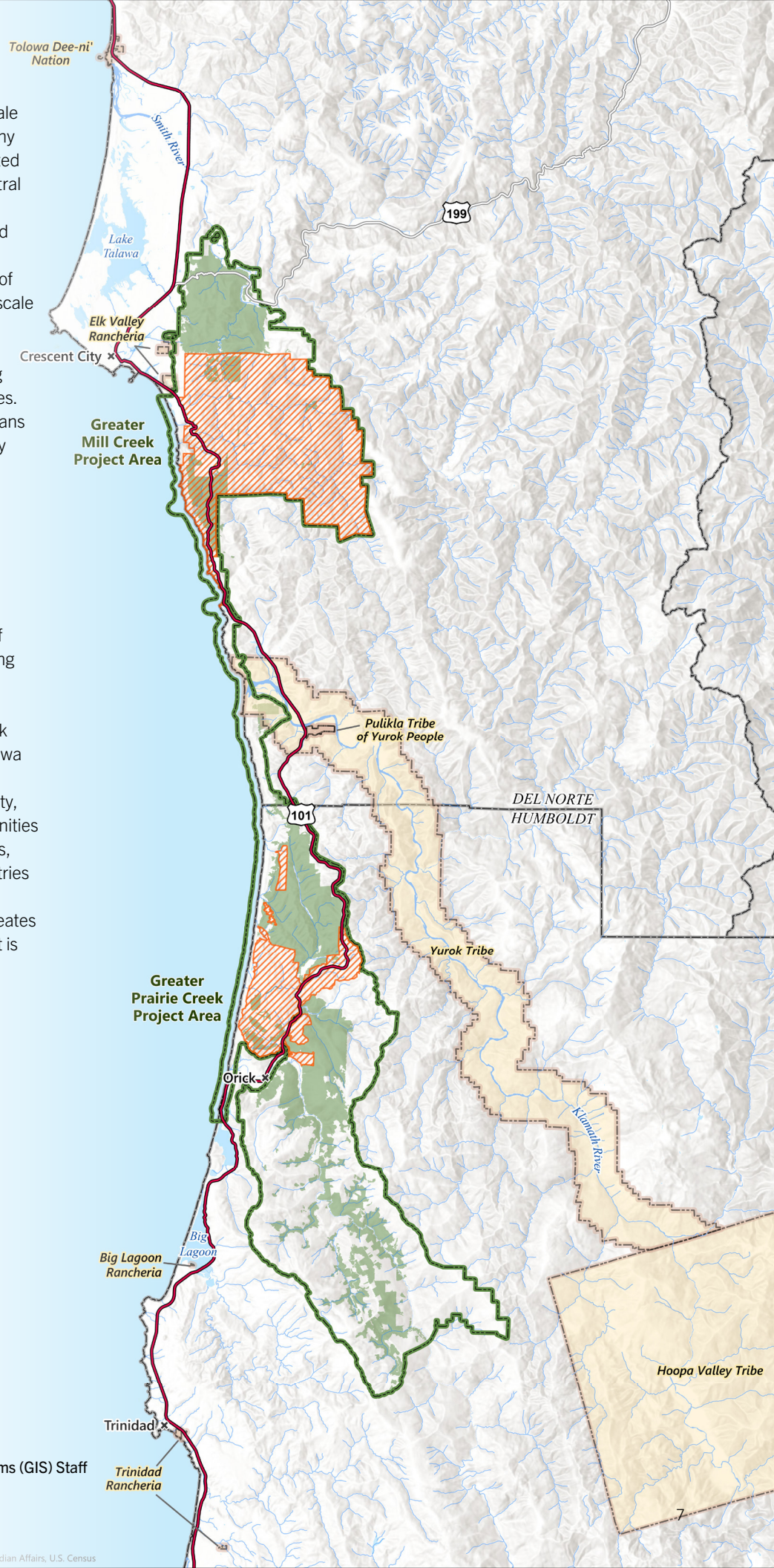
-  Redwoods Rising Project Areas
-  Redwood National & State Parks Boundary
-  Tribal Lands
-  Old-Growth Coniferous Forest



Credit: CA State Parks Geographic Information Systems (GIS) Staff

Redwoods Rising • AECOM

Data Source: U.S. Bureau of Indian Affairs, U.S. Census



2

Importance of a Restoration Economy in the Redwoods Rising Gateway Communities



Photo credit: Mike Shoys

Redwoods Rising creates sustainable economic opportunity in a rural region with lower median household income and higher rates of unemployment than national averages (Table 1), as well as a legacy of extraction-based industry and boom-bust cycles of economic growth. During the logging industry’s boom in the 1950s, per capita income and unemployment in Del Norte and Humboldt Counties were comparable to the rest of California (Roa 2007). In 1945, there were 19 sawmills in Humboldt County; by 1950 there were over 250 and the lumber output for Humboldt County was the second highest in the country (Wilson, n.d.). By the late 20th century, many factors led to significant industry declines, including over-harvesting and dwindling inventories of old-growth timber; state and federal directives to reduce environmental impacts of logging and protect threatened and endangered species; technological advancement and automation; and foreign competition (Howard 1992; Federal Reserve Economic Data 2024). According to Quarterly Census of Employment and Wages (QCEW) data, California had annual average employment levels of 5,500 in the logging industry in 1990 compared to just under 1,900 in 2023; and 9,400 annual average employment levels in sawmills relative to just over 4,000 in 2023.

In 1996, medical marijuana was legalized, leading to a growth in cannabis cultivation throughout the Emerald Triangle (which includes Humboldt County, in addition to Trinity and Mendocino Counties). When recreational cannabis was legalized in California in 2016, cannabis prices declined sharply, resulting in a decline of this industry in the region (Koseff 2023). While the legality of the cannabis market offers opportunity to those who can afford the permitting and taxation start-up costs, price reductions have limited the competitive advantage of well-established growers in Humboldt (Mintz 2018).

Today, half the population of Del Norte and 29% of Humboldt County fall within a federally designated Disadvantaged Community, based on census tracts identified by Council of Environmental Quality’s Climate and Economic Justice Screening Tool (CEJST). While unemployment rates within the two counties are comparable to the rest of California, the population of the two-county area is older and population growth is well below the state and national averages. Income levels are also below state and national averages. Census data reports American Indian and Alaskan Native median household income levels below county, state, and national levels though with a high margin of error (see Table 1).² Del Norte and Humboldt Counties face several community health challenges at higher rates than the state average. As noted in the California Health Care Almanac, Humboldt County has higher rates than the state average for age-adjusted death rates of all cancers, coronary heart disease, stroke, chronic lower respiratory disease, drug-induced deaths, suicide, and chronic liver disease. Del Norte has noted similar rates though they are statistically unreliable given the smaller population (California Health Care Foundation 2020). Since both Humboldt and Del Norte are rural counties, some of these health challenges can be attributed to the community’s lack of health care support services.

Employment opportunities in the region are concentrated in urbanized areas along the coast, including in and around Fortuna, Eureka, Arcata, McKinleyville, and Crescent City. The largest industry sectors in the two counties are Health Care and Social Assistance (20% of annual average employment levels), Public Administration (14%), Retail Trade (13%), Educational Services (12%), and Accommodation and Food Services (11%) (Bureau of Labor Statistics 2023). Recent and proposed developments on the North Coast such as offshore wind generation, the designation of California State Polytechnic University, Humboldt (Cal Poly Humboldt), and the installation of the Trans-Pacific Fiber Cable present unique opportunities for the local economy (County of Humboldt Economic Development Division, n.d.).

Table 1 Key Economic and Demographic Metrics

Metric	Del Norte County	Humboldt County	California	United States
Population	27,000	136,000	38,965,000	336,641,000
Population Change 1990-2023	13%	13%	31%	37%
Population 65+	21%	20%	16%	17%
Unemployment	6%	5%	5%	4%
Median Household Income	\$61,000	\$58,000	\$92,000	\$75,000
American Indian and Alaskan Native Median Household Income ³	\$57,000	\$48,000	\$75,000	\$56,000
Public Sector Jobs as % of Total ⁴	27%	12%	5%	15%
CEJST DAC Population ⁵	50%	29%	38%	17%
Employment	8,000	50,000	17,991,000	161,040,000
Employment Change 1990-2023	24%	12%	36%	35%
American Indian and Alaska Native Population	6%	3%	2%	1%

Sources: Bureau of Labor Statistics (2023), Council on Environmental Quality (2021), U.S. Census Bureau (2022), U.S. Department of Commerce (1990)

NOTE: Percentages are rounded to nearest percent. Other figures are rounded to the nearest thousand. Del Norte and Humboldt County Quarterly Census of Employment and Wages (QCEW) data have higher rates of not meeting disclosure restrictions that are in place to protect the identity of employers, and as such, numbers may have lower accuracy than statewide figures. Additionally, the margin of error for Humboldt County and particularly Del Norte County ACS 5-year data is higher than statewide figures due to lower population figures. Numbers for Del Norte and Humboldt may understate income, particularly due to unreported income from marijuana.

3

Economic Impacts of Redwoods Rising



NPS Geologist Neal Youngblood presenting to Redwoods Rising staff, partners, and collaborators about road removal operations within the Greater Prairie Creek project area.

Photo credit: Max Forster, CA State Parks

ECONOMIC IMPACT ANALYSIS

The economic impact analysis focuses on the restoration activities in the Greater Prairie Creek (GPC) and Greater Mill Creek (GMC) project areas (Figure 1) and the restoration and construction of the 'O Rew. Economic impact analysis evaluates how an initial change in an economy spurs economic activity and job creation in a specific region. This ripple effect, also referred to as a multiplier effect, can be quantified in three main categories: 1) direct impacts from spending on the initial project or onsite activity, 2) indirect impacts to the suppliers providing materials and equipment for the project or activity, and 3) induced impacts that result from direct and indirect workers spending their earnings on goods and services. Four key measures for these impacts can be evaluated: jobs, earnings, output (the total economic activity in the region), and value added, which represents output minus intermediate inputs (e.g., consumption of goods and services from other industries or imported) and can be interpreted as contribution to Gross Regional Product (GRP). The analysis applies 2022 multipliers estimated by Lightcast for the defined economic impact Study Area, which encompasses Del Norte and Humboldt Counties.⁶

To estimate the economic impacts, expenditure data for GPC and GMC restoration activities and 'O Rew was collected and categorized into standard North American Industry Classification System (NAICS) codes (see Appendix for more detail on the methodology). This represents Redwoods Rising expenditures, inclusive of funding from Save the Redwoods League, RNSP, California Trout, and the California State Coastal Conservancy. This spending, and the impacts it has in the Study Area economy, are the focus of the study. Once classified to NAICS codes, the remainder of the analysis for indirect and induced impacts is at the NAICS code level (i.e., indirect and induced impacts are not able to be noted at the level of specific suppliers but only at the level of a specific industry). As noted by numerous studies evaluating the economic impacts of restoration activities, there is no single NAICS code to capture restoration activities, as restoration projects are often a combination of many activities that involve numerous industry sectors (BenDor et al. 2014; Hjerpe, Lucas, and Eichman 2021).

The economic impact analysis focuses on GPC and GMC restoration activities from 2022 and 2023, in addition to projected spending for 2024. For 'O Rew, which is located in the GPC project area, the analysis estimates impact from spending in 2022 and 2023, in addition to projected spending through 2026. The results of the economic impact analysis are shown in Table 2 for years 2022–2024 for the combined activities. Detailed results are provided in the Appendix. Overall, the activities considered in this study have significant positive impacts to the regional economy.

The industries most impacted by restoration activities based on the analysis are logging, support activities for forestry, and highway, street, and bridge construction. While the average annual earnings in the Study Area are \$65,070 according to Lightcast data, the earnings in Humboldt and Del Norte Counties for these industries average around \$90,000 (logging and support activities for forestry) and \$145,000 (highway, street, and bridge construction). The most common occupations in these industries in Del Norte and Humboldt Counties include: logging equipment operators, heavy and tractor-trailer truck drivers, construction laborers, operating engineers, equipment operators, and fallers (Lightcast 2024). These occupations, which make up nearly half of those in these three NAICS industries, typically require a high school diploma or equivalent, such as a commercial driver's license for heavy and tractor-trailer truck drivers. Construction laborers, however, typically have no formal education requirement. These roles generally require no prior work experience and involve short-term or moderate-term on-the-job training. In data provided on Redwoods Rising staff and key contractors, 62% of full-time equivalent (FTE) positions required a high school degree or less, while 63% required 1-2 years of experience and 12% required less than 1 year. About one-third of the estimated FTEs make less than \$70,000, while another third make between \$70,000 and \$90,000 and the last third over \$90,000.

Economic impact analysis evaluates how an initial change in an economy spurs economic activity and job creation in a specific region. This ripple effect, also referred to as a multiplier effect, can be quantified in three main categories: direct impacts, indirect impacts, and induced impacts.

NOTE: *Lightcast (formerly Emsi) was used to conduct the input-output modeling for this analysis. Lightcast provides labor market data and analytics, including economic impact multipliers for a selected region of interest.*

Figure 2 Estimating the Economic Impact of Restoration and Construction Activities

Direct impacts result from the direct spending on restoration and construction activities. Examples include:

- Payroll for administrative staff
- Contracts with construction and trucking firms
- Field tour visitor spending on lodging

Indirect impacts include spending in the supply chain on the goods and services resulting from the direct activities. Examples include:

- Fuel and maintenance purchases of trucking firms
- Spending by contractors on sand and gravel
- Machinery purchases for sawmills

Induced impacts include direct and indirect employees spending their earnings in the community. Examples include:

- Lunch purchases at a local restaurant by contractor
- Grocery purchases by staff in the county

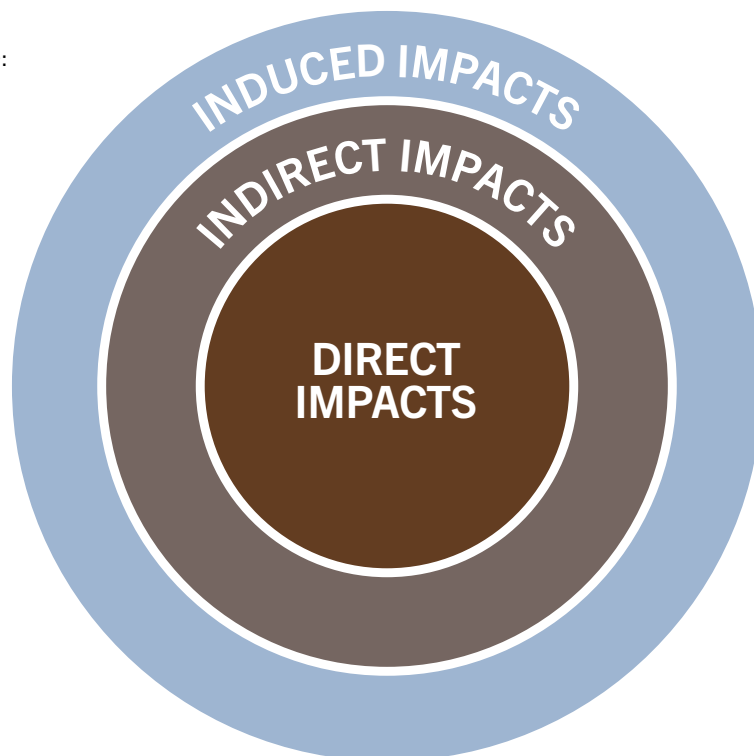


Table 2 Economic Impacts of GPC and GMC Restoration Activities and 'O Rew in Del Norte and Humboldt Counties, 2022-2024

DIRECT IMPACTS

Year	Jobs	Earnings	Output	Value Added
2022	75	\$4,810,000	\$16,570,000	\$7,570,000
2023	95	\$8,800,000	\$19,900,000	\$8,730,000
2024	130	\$12,300,000	\$29,350,000	\$13,600,000

INDIRECT IMPACTS

Year	Jobs	Earnings	Output	Value Added
2022	10	\$1,290,000	\$2,650,000	\$1,980,000
2023	15	\$1,840,000	\$3,150,000	\$2,370,000
2024	25	\$2,280,000	\$4,640,000	\$3,420,000

INDUCED IMPACTS

Year	Jobs	Earnings	Output	Value Added
2022	25	\$2,190,000	\$4,690,000	\$3,220,000
2023	50	\$4,590,000	\$5,790,000	\$3,830,000
2024	45	\$4,460,000	\$8,340,000	\$5,660,000

TOTAL IMPACTS

Year	Jobs	Earnings	Output	Value Added
2022	110	\$8,290,000	\$23,910,000	\$12,770,000
2023	165	\$15,230,000	\$28,840,000	\$14,920,000
2024	200	\$19,040,000	\$42,320,000	\$22,680,000

NOTE: Jobs are rounded to the nearest 5.
Monetized values are rounded to the nearest \$10,000.
Totals may not sum due to rounding.

2024
Economic Impacts
Snapshot



200
JOBS



\$19M
EARNINGS



\$42M
ECONOMIC OUTPUT



\$23M
VALUE ADDED

NOTE: Monetized values are rounded to the nearest million.

OTHER ECONOMIC BENEFITS



Ben Blom (Save the Redwoods League Director of Stewardship & Restoration and Redwoods Rising Leadership Team member) and José Juan Rodríguez Gutierrez (Redwoods Rising 2023 apprentice) having a conversation at the Redwoods Rising five-year anniversary event.

Photo credit: Max Forster, CA State Parks

Biomass

Revenues from biomass or timber removed from the project are reinvested back into Redwoods Rising restoration activities. Between 2020 and 2023, \$18.5 million in biomass revenue was generated and used to offset operation costs, over \$9 million of which was generated in 2023. This creates a sustainable source of funding and is used for components of the project, such as aquatic restoration and road stabilization, that are more difficult to fund through grants. Of note, each step of the process can contribute to the economy, spurring jobs in trucking and sawmills and generating value added from processing a byproduct to a valuable consumer good. A portion of these impacts are captured above in the economic impact analysis (such as the impacts of spending on trucking the material elsewhere), but impacts that leave the Study Area for post-processing are not captured. Additional discussion on the broader implications of the sawmill industry is in the following section.

Expanded Regional Impact

The aforementioned impacts are focused within the Study Area. While this is the area where direct spending will occur, certain indirect and induced impacts will ripple out into the economies beyond the Study Area. Adding other neighboring counties or even taking a statewide perspective for economic impact allows a greater percentage of indirect and induced impacts to be captured. For example, total sales, earnings, and jobs multipliers for all industries (6-digit NAICS) across California averaged 170%-189% higher values than those within the Study Area.⁷ This would also not account for spillover effects to nearby states Oregon and Nevada.



Heavy equipment operator during biomass removal operations.

Photo credit: Jim Campbell-Spickler



Timber Tax

The California Department of Tax and Fee Administration (CDTFA) administers and collects timber yield tax, which is required for timber owners to pay when harvesting trees (timber). After state administrative costs, timber tax is allocated back to the counties where the timber was harvested (California Department of Tax and Fee Administration, n.d.). From 2020-2023, just over \$353,200 in timber tax revenue was generated. In 2022-2023, just over \$81,000 in timber tax revenue was generated in Humboldt County, while nearly \$165,000 was generated in Del Norte County.



Tourism

Every year, Redwoods Rising hosts field tours for nearly 100 people to come to the site. While the spending on these field tours is included in Table 2, additional analysis was conducted assuming that people may extend their stay once they are in the area, bringing more spending on goods and services such as lodging (see Appendix for more information on spending assumptions). It was estimated that this extended stay results in an additional \$30,000-\$40,000 annually in total direct, indirect, and induced output. In the long term, restoration activities will enhance safe access to RNSP's diverse recreational opportunities, including hiking, rafting, fishing, and wildlife watching, through improved forest management, road upgrades, and aquatic treatments. This additional tourism has not been quantified but is further discussed in the following section.



4

Redwoods Rising as a Driver of Social and Economic Opportunity

In addition to the previously outlined quantifiable economic impacts, restoration activities realize broader social and ecosystem service benefits for local communities and economies. These were evaluated with data, literature review and case studies, insights from project experts, and interviews with key collaborators, including representatives from tribal organizations, local academia, government, nonprofit and public organizations involved in restoration activities, and the private sector.

SHIFTING TOWARDS A MORE SUSTAINABLE AND DIVERSE LOCAL ECONOMY

The growth of the restoration economy has the potential to result in economic growth for the region by means of more consistent and reliable forms of employment, reduced rates of unemployment, and higher wages. It can also support tourism and recreation and increase economic diversification, shifting employment opportunity, in-region supply, and exports. Interviews highlighted how businesses previously supportive of extractive activities, including logging and trucking companies, shifted away from traditional logging practices towards forest management and restoration. This aligns with other studies on the economic benefits of restoration economies, which have noted that restoration tends to happen in low-income rural areas and that many firms that transition to restoration are moving from declining industries such as extractive-based logging (Kelmenson, BenDor, and Lester 2016).

Compared to traditional extractive processes, restoration activities bring together a broader diversity of professions (Hjerpe, Lucas, and Eichman 2021).⁸ This is supported with Lightcast data for the region. When looking at the logging industry (NAICS 113), 69% of employment falls in just three occupations: logging equipment operators, fallers, and truck drivers. Within Support Activities for Forestry and Environment, Conservation, and Wildlife Organizations (NAICS 115310 and 813312), forest and conservation workers, conservation scientists, foresters, and fire inspectors make up just less than half of the occupational patterns (Lightcast 2024).

As noted above, earnings in key occupations supporting the restoration activities are higher than county averages, which can have cascading positive impacts.⁹ Anecdotally, those employed by these organizations have experienced greater potential for homeownership, which is largely due to improved job security and increased wages provided by these employers. This is particularly noteworthy given the high costs of the local housing market and the premium placed on homeownership in the region. As of June 2024, a home in Del Norte County costs \$332,938, while in Humboldt County the cost increases to \$464,167 (Redfin 2024). To comfortably afford the minimum monthly payments, households must earn approximately \$87,000 in Del Norte County and \$114,000 in Humboldt County.¹⁰ Some organizations have indicated that increased local employment has decreased rates of divorce and drug use among their workforces. Additionally, rural communities with a “multifunctional” character and diversified economies are determined to be more resilient to social, economic, and ecological change and benefit from better environmental and economic health (Charnley et al. 2018). Here, “multifunctional” refers to rural communities containing a mix of land uses, including commodity production (e.g., forest products, agriculture); amenity-driven development (e.g., recreation, tourism, services); and natural resource protection (e.g., forest restoration, jobs with land management agencies).

In-Region Capacity

Since its inception, Redwoods Rising has prioritized hiring local contractors to implement restoration work whenever feasible. With the exception of the GPC forestry contractor that is based out of Oregon, all of the projects’ primary contracts are based in Humboldt County. Operational planning advancements and contractor relationship management improvements have allowed Redwoods Rising to consistently meet annual restoration objectives. Long-term contractors working on Redwoods Rising have dedicated more resources to achieve annual goals. Despite overcoming several short-term challenges, Redwoods Rising continues to face local market constraints, including contractor capacity, lumber mill capacity, and trucking availability.

Availability of services and capacity, as well as growth of new industry, are all important to consider. Input/output multipliers used in the economic impact analysis provide a perspective of current and historic industry connection. In situations where a local economy is undergoing change, possibly due to the emergence of new industries, the multipliers will tend to understate impacts; additionally, with the emergence of new sectors, resulting local supply chain connections take time to emerge (often more than five years). Developing industries are more likely to diversify and localize their purchasing as new demand attracts local suppliers and vendors. While new and diverse job opportunities are created by restoration activities, the skills required can be specialized, emphasizing the importance of training a local workforce that can compete against non-local workers and firms (more on workforce development below). More local hiring leads to a stronger capture of payroll revenue and more induced impact, which is an area Redwoods Rising will continue to prioritize in future operating seasons.

Continued ongoing investment may lead to growth of tailored industry for restoration and other economic opportunity, resulting in even greater localized economic impact. For example, biomass byproduct can be used to support the local sawmill industry. While the sawmill industry has declined since the 1990s, it has increased to over 4,000 annual average employment levels in 2023 since its lowest point in 2010 (3,400) based on QCEW data (Bureau of Labor Statistics 2023). The proximity of mills is an important component to the Redwoods Rising operational strategy. The further that a log travels to the nearest mill increases both labor and fuel costs: One report notes that the break-even distance is as little as 50 to 80 miles between the forest and the mill (Avitt 2024).

In some instances, Redwoods Rising must transport biomass to mills that are outside the break-even distance. It is critical for ecological purposes to remove biomass from the project landscape, which is the primary forestry thinning methodology. This demonstrates a key operational constraint that Redwoods Rising must continue to resolve. While complete watershed recovery is the primary objective, experts must also account for operational constraints, until all 70,000 acres of forest landscape is restored.

There are many reuse opportunities for biomass and sawlogs, including young-growth lumber, often used for dimension lumber (lumber that is used for structural framing), shop lumber, cants and timbers, chips, and biofuel. Lessons can be learned from other communities that have made concerted efforts to focus on creating opportunity for local timber industry, including Prince of Wales Island in Southeast Alaska, where the United States Forest Service (USFS) works closely with Village and Regional Corporations, the City of Hydaburg, and Alaska Native Villages to manage the Tongass National Forest. While the management plan for Tongass National Forest has varied since the first release in 1997, there were specific amendments focused on transitioning the timber program from one based predominantly on young growth rather than old growth, which has led to extensive reporting on the local economic conditions. The initiative has had mixed success, though young-growth utilization averaged about 22% in 2022 (up 1.3% from 2021). Some considerations include: concern from the timber industry about the cost of retooling for young-growth lumber, overall lower value of young-growth timber, and questions of quality of small-diameter logs for wood products; and exploration of niche markets for products such as cabinetry and wood biomass for heating (Joint Chiefs' Landscape Restoration Partnership 2017; Miller 2013; U.S. Government Accountability Office 2016).

While Del Norte and Humboldt Counties have already made this similar shift to small diameter timber, it is clear that forestry thinning for the purposes of ecological resilience has many outside factors that need to be considered during pre-operational planning and contracting processes. Redwoods Rising project experts must account for all species that inhabit the redwood forest landscape. This includes careful mill selection and log sale negotiation in order to sustainably restore the landscape. Most mills in the Northern California region only have certain species they will process and since Redwoods Rising removes coast redwood, spruce, Douglas-fir, hemlock, and other timber species, there is a delicate balancing act to ensure that timber is removed with ecological concerns at the forefront to accomplish the full 70,000 acres of landscape recovery.

Modernization of Rural Communities

There have been federal policies focused on investing in rural communities since the 1930s, beginning with delivery of basic services like water and electricity and expanding in more recent years to include other aspects of infrastructure, education, and social services. A renewed interest in rural communities sparked by the rise of remote work and a growing interest in climate resilience and diversification has led to a new policy focus, as evidenced by the Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA). A wealth of incentives has targeted rural communities to expand broadband access, improve infrastructure, including renewable energy and accommodation of electric vehicles, and fund the upskilling of workers in professions and skilled trades, among others. The installation of the Trans-Pacific Fiber Cable is a result of this targeted investment and emblematic of its promise.

To date, Redwoods Rising has received \$8 million in funding from the IRA, which has gone and will continue to go towards heavy equipment purchases, forestry monitoring and research, surveying of cultural resources, tribal engagement for wood placement on Prairie Creek, and forestry thinning in Prairie Creek. Other federal funding sources have also contributed to increased capacity for field restoration objectives. RNSP were selected to receive federal funding to support the restoration and adaptive reuse of mothballed park facilities at the former Prairie Creek Fish Hatchery. This rehabilitation and adaptive reuse will ultimately allow use of this facility as a meeting and training space for government, tribal, and NGO partners. When operational, one planned training program will focus on heavy equipment training for landform restoration, as implemented under Redwoods Rising (Department of the Interior 2023; National Park Service 2023).

Our interview participants highlighted that they and other firms are introducing new technologies to conduct and support restoration activities. These new technologies are cleaner, safer, less disruptive to the natural environment, and are contributing to a new and diverse workforce being attracted to the roles available. Responsible forestry practices can also attract interest from entrepreneurs and innovators that are looking for markets to install and test products ranging from soil quality monitors to tools to help us better understand microclimates.

Diversification of economies and stabilized, higher earnings, coupled with technological advancement and improvements in infrastructure, can help connect residents with a global job market, build and sustain amenities that attract new families to the community, and attract "digital nomads" seeking proximity to nature and recreation. At the same time, it is critical to ensure that changes to the economy uplift those who currently live there, with policies in place that address issues of gentrification and displacement.

Tourism and Recreation

A study estimated over 400,000 visitors to RNSP resulted in \$29.6 million spent in 2023 (2023 dollars) and supported 384 jobs (Flyr and Koontz 2024). Note this data only counts visitation for Redwood National Park and does not include surrounding State Parks within RNSP. According to Placer.ai (a cell phone location geofencing data service), 1.47 million overnight visitors traveled to Del Norte and Humboldt Counties between May 2023 and April 2024. The tourism industry has struggled historically in the area, with fewer amenities available to visitors than other state and national parks. This might contribute to the short duration of visitors to the region, the large majority of whom stayed 1-2 days (71 percent). Sixty percent of overnight visitors originated within California, while the remaining visitors primarily originated from the Pacific Northwest and Intermountain West (Placer.ai). Visitors to the area are often coming from urban areas with above average incomes, and bring a combined disposable spending potential of \$650 million during their visits.

Increasing the attractiveness of the region and availability of tourism infrastructure, including access to recreation opportunities, lodging, attractions, entertainment, dining, and shopping, have clear potential to increase visitation, stay duration, and spending. The restoration economy can be a part of this as it has been found to support the “recreational economy.” Restoration projects implemented elsewhere in the U.S. are shown to integrate recreational access improvements as well as ecologically focused activities; increased visitation to national parks has been shown to generate sales and support jobs, particularly in lodging and restaurants within gateway communities (Thomas et al. 2016; Flyr and Koontz 2024).

The current objectives of Redwoods Rising are only related to restoring 70,000 acres of previously logged forests so RNSP can have a continuous network (unfragmented landscape) of coastal redwood forest ecosystem. Redwoods Rising is not actively expanding public access to RNSP at this time. However, one of the most profound insights discovered during restoration activities is the genuine interest from the park visitors as to the benefits of the restoration work happening on the ground. Redwoods Rising has directly responded to this by starting the process to incorporate interpretive exhibits and demonstration sites which will highlight the ecological benefits of forestry thinning, road removal, and instream restoration. After the initial restoration treatments are complete, there will be an opportunity to expand the existing public trail networks for visitors to enjoy. While this is not an immediate goal, in the long term Redwoods Rising is preparing RNSP for better access to areas that were degraded from previous clear-cutting operations.

Interviewees highlighted the exceptional nature of RNSP’s recreational assets and the benefits that they have for local communities. Participants understood the importance of these assets in the protection and enhancement of RNSP and in support of economic opportunity for historically underserved communities.



Photo credit: Cal Poly Humboldt

RESTORATION AS A DRIVING FORCE FOR REGIONAL COLLABORATION

Redwoods Rising and 'O Rew are fostering meaningful collaborations with local tribal communities. Yurok Tribe Construction Corporation (YTCC) is a foundational partner for the 'O Rew project, whose involvement extends beyond construction and restoration. YTCC brings invaluable multi-generational knowledge of the land and its intricate ecosystems, allowing RNSP and the Yurok Tribe to implement a blended land management practice that combines deep, local knowledge with current technologies and methodologies.

In March 2024, the Yurok Tribe, RNSP, and the League signed a landmark memorandum of understanding to transfer 125 acres of land, 'O Rew, back into the stewardship of the Yurok Tribe in 2026, following the completion of the 'O Rew project. This first-of-its-kind agreement opens new pathways for co-management of public lands and serves as a new model for tribal and non-tribal partnerships.

Redwoods Rising contracts with YTCC and the Yurok Tribe's Fisheries Department to support restoration efforts in both Redwoods Rising project areas, GPC and GMC. The primary focus of this collaboration to date has been aquatic restoration but has recently expanded to include road removal.

Redwoods Rising also emphasizes collaboration with non-tribal organizations such as educational institutions, private firms and organizations, local community groups, and economic development agencies. Such partnerships have been found to be critical for achieving restoration goals and furthering community resilience and social cohesion (Tidwell 2015; Christoffersen et al. 2008).

California's current forestry workforce falls far short of current needs due in part to a 38% reduction in the forestry workforce in the last two decades, with barriers to entry for those looking

to work in forest restoration, such as licensing requirements for Registered Professional Foresters (Heard and Franklin 2023). Redwoods Rising and key partners are working to expand local capacity and encourage participation in the restoration economy through hiring practices and workforce development. Interviews highlighted the importance placed on not only creating new workforce opportunities, but also seeking to fill those roles from within local communities. Interview participants indicated that most of their employees originate from the communities of McKinleyville, Fortuna, and Crescent City in Del Norte and Humboldt Counties. Staffing data from Redwoods Rising on direct staff and key contractors shows that the vast majority (over 90%) of the worked hours are filled by people from Del Norte and Humboldt Counties.

Several interviewees also highlighted that due to the complexity of projects there is a need to have a continuous learning mindset to effectively design and implement restoration projects. Those leading restoration-related organizations and implementing projects are paving the way for and mentoring the next generation to learn from earlier efforts and build a collective capacity across the local community. The Redwoods Rising Apprenticeship Program, available to students enrolled at Cal Poly Humboldt and College of the Redwoods, has allowed students to engage in restoration activities, including forestry, watershed, and wildlife and botany management, in addition to other fields. RNSP involves students to educate the next generation of restoration stewards so that they are well prepared for full-time positions within natural resource management agencies. Students from Cal Poly Humboldt have also completed capstone projects related to 'O Rew.

The restored sites at 'O Rew and Redwoods Rising also are used for local educational outings that serve the community at large by such groups as the Audubon Society for birding trips or the Native Plant Society for field trips. Furthermore, open houses hosted by the League provide educational and partnership development opportunities for local community members.

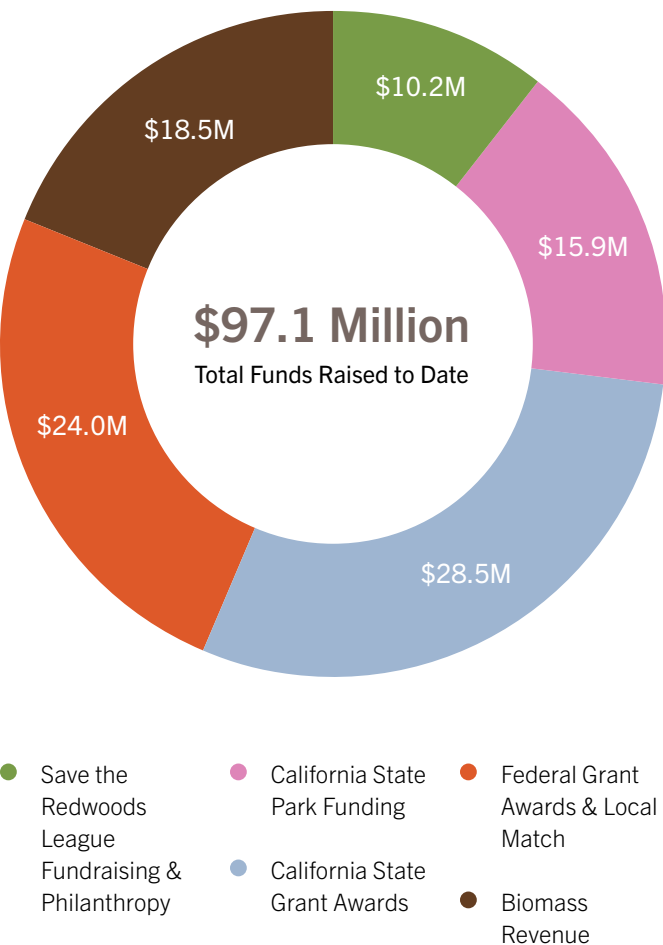


Photo credit: National Park Service

HOW FUNDING IMPACTS LOCAL COMMUNITIES

Redwoods Rising brings funding to the region. As of February 2024, the partnership has secured \$44.5 million in public grant funding, including \$28.5 million from state sources and \$16 million from federal (with local grant matches, this totaled \$24 million). Since 2019, public funding has included state grant awards from CAL FIRE (\$12 million), State Coastal Conservancy (\$4 million), and Wildlife Conservation Board (\$12.5 million) and federal grant awards from the NPS (\$8 million) and IRA (\$8 million). Additionally, Redwoods Rising has raised \$10.2 million from fundraising and philanthropy, generated \$18.5 million from biomass returns, and received \$15.9 million from California State Park funds. Additional funding from the Ocean Protection Council, National Oceanic and Atmospheric Administration (NOAA), and other agencies have supported the 'O Rew project. Gateway and tribal communities have also successfully received grant funding opportunities to support a range of projects, including for the Hoopa Forest Industries Sawmill upgrades, improved flood control infrastructure, wildfire resilience, and other infrastructure community investments.

Figure 3 Funding Sources



These funds directly support RNSP gateway communities. The Redwoods Rising contractor selection process prioritizes local contractors and vendors near both project areas, while biomass revenues are a flexible funding source that facilitates partnerships with sovereign entities. In 2024, these funds were used for contracted instream aquatic restoration work with the Yurok Tribe. Additionally, funds for Redwoods Rising staff have created growth opportunities within the Northcoast Natural Resource job market, with staff and former apprentices advancing to new roles within Redwoods Rising and other local restoration projects.

As noted previously, newer federal funding sources such as the IJA have had a renewed focus on rural and tribal community investment. In May 2024, the White House announced the new Rural Innovators Initiative and over \$671 million in investments to strengthen rural infrastructure (Biden-Harris Administration 2024). Past investments in rural communities have included delivering clean and reliable water, improving rural electricity infrastructure, strengthening rural workforce and career development, and increasing access to higher education. As part of the IJA, the federal government initiated the Justice40 commitment, which established that 40 percent of benefits of certain federal programs go towards disadvantaged communities. As noted in Table 1, a significant portion of gateway communities and tribal communities located within or around RNSP are considered to be disadvantaged under the federal criteria for Justice40. Federal grant funding programs are already realizing positive impacts on communities and economies. The U.S. Fish and Wildlife Service cited the expanded impacts the service has been able to deliver, including local conservation projects, improved access, community, infrastructure, and wildlife habitats, and rebuilding ecological infrastructure (U.S. Fish and Wildlife Service 2022).

Funds for Redwoods Rising staff have created growth opportunities within the Northcoast Natural Resource job market, with staff and former apprentices advancing to new roles within Redwoods Rising and other local restoration projects.

5

An Expanded Role for Redwoods Rising



Photo credit: Max Forster, CA State Parks

Redwoods Rising has demonstrated success delivering restoration projects. In 2023, Redwoods Rising was recognized with the Climate Adaptation Award by State Parks for the work the partnership has taken to heal 70,000 acres of young coast redwood forest in RNSP. These restoration activities are contributing to the local and regional economy and supporting enhanced economic security for gateway communities. This includes economic impacts from the restoration economy, bringing in funding from sources outside the region, supporting and enhancing recreational opportunity, and encouraging and providing workforce development through apprenticeship programs with education institutions and local training programs through employers. The lessons learned and best practices from the efforts at RNSP can be leveraged to inform restoration progress elsewhere.

As Redwoods Rising continues to evolve, there are opportunities to expand its role as a driver of economic and equitable growth. These include:

- 1** Expand outreach and promotion of workforce training, educational opportunities, and apprenticeship programs into local communities.
- 2** Expand outreach with younger-age school children to promote restoration approaches and inspire the next generation to continue working in the space.
- 3** Increase involvement of tribal groups and communities in all parts of the restoration economy, including non-tribal employers and educational programs.
- 4** Create new models for tribal/agency partnerships in land management.

5 Contribute to a holistic economic transition that focuses on infrastructure, local business, and amenity improvements, through:

- Understanding what the community wants/needs and supporting ongoing efforts such as those from the Redwood Region Economic Development Commission to improve the outlook for small businesses.
- Focusing on opportunities in the tourism industry. There is significant potential in extending people's stays and attracting more out-of-state visitors. Supporting tourism through marketing campaigns and support of amenities and services.
- Supporting growth of local sawmill capacity and biomass processing. Exploring certified/marked wood from the region as a unique selling point.
- Planning for future funding opportunities to support alignment between planned projects and grants. Strategically planning for these opportunities will also enable Redwoods Rising to expand its role as convener and to facilitate other entities engaging in the restoration economy.

With this continued development, the impacts of Redwoods Rising can benefit gateway communities and the region in the decades to come. In its first five years, Redwoods Rising has cultivated a strong ecosystem of collaborators and partners that work together to deliver restoration activities across RNSP, including state and national parks, tribal communities, educational institutions, conservation groups, private firms and organizations, local communities, and economic development agencies. The restoration activities conducted in RNSP generate economic impacts for the gateway communities and present opportunities for people to participate in the local economy in sustainable and diverse ways, to improve their health and well-being, and to build deeper connections to their land and communities.

APPENDIX

To complete the economic impact analysis, AECOM reviewed actual and projected spending data provided by the League and California State Coastal Conservancy to generate an estimate of initial investment. The data was categorized to standard NAICS industry categories as shown in Table 3 (GPC and GMC spending) and Table 4 ('O Rew). Note that there is not a single "restoration" industry, and as such, effort was made to assign codes as relevant or applicable based on the type of work completed. This includes consideration of the business involved, notes provided by the League, and when available, the general ledger title and description of the expenditure item.

The industry allocations for activities at GPC and GMC in 2022 through 2024 are summarized below. The information for 2022 and 2023 was more detailed due to expenditures having occurred, while information for 2024 represents projected numbers and was provided at a summary level resulting in broader industry classifications. For GPC and GMC spending, the vast majority of expenditures were allocated to Logging (NAICS 113310) and Highway, Street, and Bridge Construction (NAICS 237310). The activities included in these categorizations includes the removal of biomass, removal of trails to restore natural habitat, and road/access improvement work.

Table 3 GPC and GMC Spending by Assigned Industry 2022-2024

NAICS	Industry	2022	2023	2024*
113	Forestry and Logging	\$7,113,000	\$9,528,000	\$12,339,000
115	Support Activities for Agriculture and Forestry	\$191,000	\$183,000	\$600,000
221	Utilities	\$0	\$1,000	\$0
237	Heavy and Civil Engineering Construction	\$4,009,000	\$3,050,000	\$7,085,000
423	Merchant Wholesalers, Durable Goods	\$1,000	\$279,000	\$0
425	Wholesale Trade Agents and Brokers	\$0	\$6,000	\$0
449	Furniture, Home Furnishings, Electronics, and Appliance Retailers	\$3,000	\$21,000	\$0
455	General Merchandise Retailers	\$9,000	\$45,000	\$30,000
457	Gasoline Stations and Fuel Dealers	\$82,000	\$37,000	\$0
459	Sporting Goods, Hobby, Musical Instrument, Book, and Miscellaneous Retailers	\$0	\$6,000	\$0
481	Air Transportation	\$1,000	\$1,000	\$0
485	Transit and Ground Passenger Transportation	\$2,000	\$3,000	\$51,000
512	Motion Picture and Sound Recording Industries	\$3,000	\$3,000	\$0
518	Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services	\$0	\$2,000	\$0
531	Real Estate	\$36,000	\$36,000	\$55,000
532	Rental and Leasing Services	\$7,000	\$3,000	\$0
541	Professional, Scientific, and Technical Services	\$431,000	\$426,000	\$36,000
561	Administrative and Support Services	\$0	\$10,000	\$0
721	Accommodation	\$3,000	\$2,000	\$1,000
722	Food Services and Drinking Places	\$4,000	\$8,000	\$10,000
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	\$598,000	\$757,000	\$243,000
902	State Government, Excluding Education and Hospitals	\$555,000	\$1,530,000	\$890,000
Total Direct Spending:		\$13,048,000	\$15,937,000	\$21,340,000

*The information for 2024 represents projected numbers and was provided at a summary level resulting in broader industry classifications. Data for 2022 and 2023 was based on actual expenditures.

NOTE: Values are rounded to the nearest \$1,000. As such, some values <\$500 will show up as \$0 above. Totals may not sum due to rounding. All multipliers were assigned at the 3-digit NAICS code except for state government, which was assigned at the 6-digit.

Table 4 'O Rew Project Spending by Assigned Industry 2022-2026

NAICS	236	541	
Industry	Construction of Buildings	Professional, Scientific, and Technical Services	Total Direct Spending
2022	\$2,772,000	\$748,000	\$3,520,000
2023	\$2,766,000	\$1,197,000	\$3,963,000
2024	\$5,220,000	\$2,785,000	\$8,005,000
2025	\$2,373,000	\$1,106,000	\$3,479,000
2026	\$1,898,000	\$885,000	\$2,783,000

NOTE: Values are rounded to the nearest \$1,000. Totals may not sum due to rounding. Note the data for future projections was provided as a lump sum, and based on input was split as 55% for 2024, 25% for 2025, and 20% for 2026. Both secured and pending funding is included for projected spending in 2024-2026.

The analysis for the 'O Rew project includes an assessment of 2022 and 2023 actual spending and 2024-2026 projected spending. The spending allocated to the Yurok Tribe was assumed to go towards construction, while spending associated with the League and Caltrout was assumed to go to planning, engineering, and other support services based on conversations. These were assigned to Commercial and Institutional Building Construction (NAICS 236220) and Engineering Services (NAICS 541330), respectively. Additionally, the data for projected spending was provided as a lump sum, and, based on input, was broken into the following: 55% for 2024, 25% for 2025, and 20% for 2026. Projected spending includes both secured and pending funding (of the \$13.9 million for March 2024-2026, \$10.2 million is secured).

The last spending input is related to the assumption that visitors coming for sponsored tours may extend their stay. The League staff reported that the site hosts an average of twelve tours per year, estimating just under 100 total visitors. In addition to the amount spent by the Redwoods Rising program (which is included in the economic impact assessment for GPC/GMC), the extended day would be additional spending by people coming into the region. In order to estimate the impact of an additional visitor night, the team used lodging and per diem estimates from the U.S. General Services Administration and added an estimated one-day car rental cost. Daily lodging and meal & incidental expenses are calculated for the cities of Eureka, McKinleyville, and Arcata in Humboldt County. Data from GSA was not available for Del Norte County. This spending was assigned to Hotels (NAICS 721110), Full-Service Restaurants (NAICS 722511), and Passenger Car Rental (NAICS 532111).

The detailed economic impact results for GPC and GMC and 'O Rew are shown in Tables 5 and 6.

Table 5 Economic Impacts of GPC and GMC Restoration Activities in Humboldt and Del Norte Counties, 2022-2024

Direct Impacts

Metric	2022	2023	2024
Jobs	55	75	85
Earnings	\$3,270,000	\$7,010,000	\$8,630,000
Output	\$13,050,000	\$15,940,000	\$21,340,000
Value Added	\$5,700,000	\$6,580,000	\$9,230,000

Induced Impacts

Metric	2022	2023	2024
Jobs	20	45	35
Earnings	\$1,850,000	\$4,200,000	\$3,650,000
Output	\$3,630,000	\$4,580,000	\$5,880,000
Value Added	\$2,440,000	\$2,960,000	\$3,900,000

Indirect Impacts

Metric	2022	2023	2024
Jobs	10	15	20
Earnings	\$1,120,000	\$1,640,000	\$1,870,000
Output	\$2,110,000	\$2,540,000	\$3,400,000
Value Added	\$1,610,000	\$1,960,000	\$2,600,000

Total Impacts

Metric	2022	2023	2024
Jobs	85	135	140
Earnings	\$6,240,000	\$12,850,000	\$14,150,000
Output	\$18,790,000	\$23,060,000	\$30,620,000
Value Added	\$9,750,000	\$11,500,000	\$15,730,000

NOTE: Jobs are rounded to the nearest 5. Monetized values are rounded to the nearest \$10,000. Totals may not sum due to rounding.

Table 6 Economic Impacts of 'O Rew Project Spending in Humboldt and Del Norte Counties, 2022-2026

Direct Impacts

Metric	2022	2023	2024	2025	2026
Jobs	20	20	45	20	15
Earnings	\$1,540,000	\$1,790,000	\$3,670,000	\$1,580,000	\$1,260,000
Output	\$3,520,000	\$3,960,000	\$8,010,000	\$3,480,000	\$2,780,000
Value Added	\$1,870,000	\$2,150,000	\$4,370,000	\$1,890,000	\$1,510,000

Indirect Impacts

Metric	2022	2023	2024	2025	2026
Jobs	0	0	5	0	0
Earnings	\$170,000	\$200,000	\$410,000	\$180,000	\$140,000
Output	\$540,000	\$610,000	\$1,240,000	\$540,000	\$430,000
Value Added	\$370,000	\$410,000	\$820,000	\$360,000	\$280,000

Induced Impacts

Metric	2022	2023	2024	2025	2026
Jobs	5	5	10	5	5
Earnings	\$340,000	\$390,000	\$810,000	\$350,000	\$280,000
Output	\$1,060,000	\$1,210,000	\$2,460,000	\$1,070,000	\$850,000
Value Added	\$780,000	\$870,000	\$1,760,000	\$610,000	\$610,000

Total Impacts

Metric	2022	2023	2024	2025	2026
Jobs	25	30	60	25	20
Earnings	\$2,050,000	\$2,380,000	\$4,890,000	\$2,100,000	\$1,680,000
Output	\$5,120,000	\$5,780,000	\$11,700,000	\$5,080,000	\$4,060,000
Value Added	\$3,020,000	\$3,420,000	\$6,950,000	\$2,860,000	\$2,410,000

NOTE: Jobs are rounded to the nearest 5. Monetized values are rounded to the nearest \$10,000. Totals may not sum due to rounding. Note the data for future projections was provided as a lump sum, and based on input was split as 55% for 2024, 25% for 2025, and 20% for 2026. Both secured and pending funding is included for projected spending in 2024-2026.

ENDNOTES

- ¹ Gateway communities are communities near tourist attractions such as national parks.
- ² Note that population represents all tribal communities in the designated region. The American Indian population in Humboldt and Del Norte Counties includes RNSP gateway communities, Yurok Tribe, Elk Valley Rancheria, Pulikla Tribe of Yurok People, and Tolowa Dee-Ni' Nation.
- ³ Note in U.S. Census Bureau, American Community Survey (ACS) 5-Year Estimates. Note in counties such as Del Norte, margin of error in ACS data can be very high. The median Native American household income in Del Norte margin of error is plus or minus \$24,064, while the margin of error for median Native American household income in California is plus or minus \$4,196.
- ⁴ "QCEW produces a comprehensive tabulation of data on the number of establishments, monthly employment and quarterly wages for workers covered by State unemployment insurance (UI) laws and Federal workers covered by the Unemployment Compensation for Federal Employees (UCFE) program. These data are aggregated to many different levels, starting at the 6-digit NAICS industry level, to higher industry levels (NAICS industry groups, sectors, and supersectors), and to higher geographic levels (MSA, State, and national). At the national level, the QCEW program publishes establishment, employment and wage data for nearly every NAICS industry. At the State, county and MSA level, the QCEW program publishes establishment, employment, and wage data down to the 6-digit NAICS industry level, if disclosure restrictions are met." Note that tribe-owned businesses may choose to exempt themselves from unemployment insurance, in which case their data would not be captured.

"BLS withholds the publication of UI-covered employment and wage data for any industry level when necessary to protect the identity of employers. Totals at the industry level for the states and the nation include the undisclosed data suppressed within the detailed tables without revealing those data."
- ⁵ Percent of population in census tracts designated as disadvantaged based on the Climate and Economic Justice Screening Tool (CEJST) Version 1.0. CEJST analyzes census tracts (2010 boundaries) based on a series of indicators of burdens, which are organized into the following categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. Communities are considered disadvantaged if (1) they are in census tracts that meet the thresholds for at least one of the tool's categories of burden, (2) they are on land within the boundaries of Federally Recognized Tribes, or (3) are completely surrounded by disadvantaged communities and are at or above the 50th percentile for low income.
- ⁶ Impacts would be greater if the analysis were expanded to look at impacts beyond Humboldt and Del Norte Counties, such as impacts to the State of California or nearby counties in Oregon. Multipliers capture the current presence and relationships of industries. Continued ongoing investment may result in growth of tailored industry for restoration, resulting in even greater localized economic impact. Also note that Lightcast multipliers rely on QCEW data, which captures information based on those covered by unemployment. Tribe-owned businesses may choose to exempt themselves from unemployment insurance, in which case they would not be captured within QCEW or Lightcast data.
- ⁷ Certain indirect and induced multipliers averaged 5 to 7 times higher values than corresponding multipliers in the Study Area.
- ⁸ A survey from a 2015 study found that restoration economy jobs included: 24% planning, design, and engineering, 24% physical restoration (e.g., earth moving, planting), 16% consulting, 13% monitoring, and 23% in other various categories (e.g., landscaping supplies, real estate and site acquisition, legal services) (Theodore Roosevelt Conservation Partnership 2021).
- ⁹ Kelmenson et al. find that the restoration job creation they estimated resulted in high- and low-income opportunities but few in the middle-income bucket, though that restoration jobs are well compensated relative to average wages (Kelmenson, BenDor, and Lester 2016).

- ¹⁰ AECOM conducted an analysis to determine the minimum annual income required to purchase a home at the median home value in 2024. The analysis relies on median household income data from the U.S. Census ACS 5-Year Estimates for 2022. The analysis assumes a 6.20% interest rate and a 30-year loan term, according to August 2024 California housing financing information from Zillow. When assessing housing affordability, lenders typically apply the "28/36 Rule," whereby a payment is considered affordable if it does not exceed 28% of a household's gross monthly income (known as the front-end ratio) and total monthly debt payments do not exceed 36% of gross monthly income (known as the back-end ratio). The 28/36 Rule is a generally accepted heuristic and is solely a means for estimating a borrower's ability to afford additional debt.

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