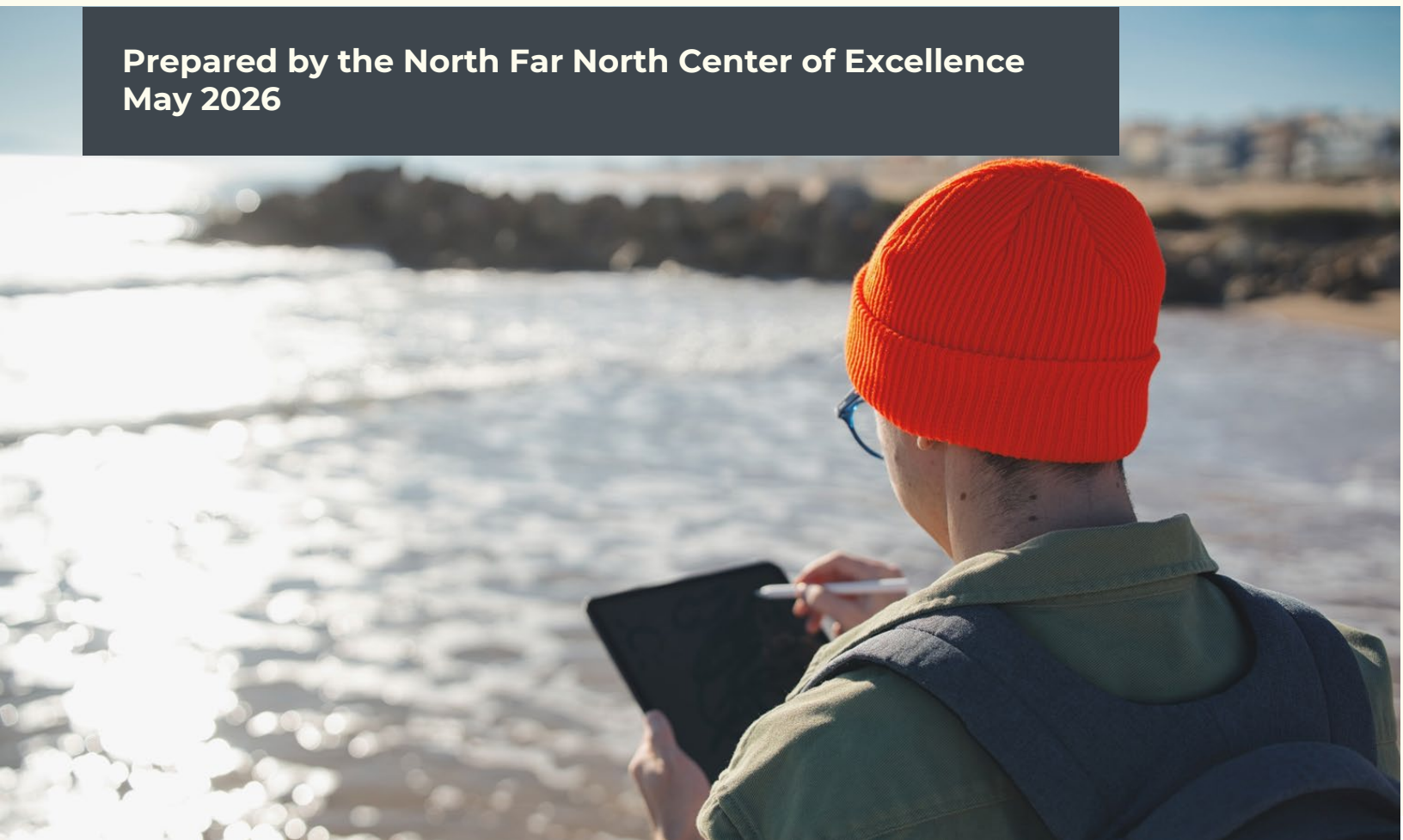


Labor Market Analysis for Program Review:

Marine Science Technicians in the Far North

**Prepared by the North Far North Center of Excellence
May 2026**



POWERED BY



California
Community
Colleges



CENTER OF EXCELLENCE
FOR LABOR MARKET RESEARCH
NORTH FAR NORTH

Summary

The North Far North Center of Excellence for Labor Market Research (NFN COE) prepared this report to provide an analysis of occupational demand and educational supply for selected occupations employed across the 22-county North Far North region. This report aims to determine if demand in the local labor market is unmet by the supply from existing community college programs and other postsecondary training providers, with a primary focus on training that leads to living wage jobs in middle-skilled occupations.¹

Key Findings

- **Marine science technician jobs are expected to decline in the Far North.** In the Far North, marine science jobs are expected to decrease by 3%, while in California, they are expected to increase by 1%.
- **Aligned occupations for marine science technicians often focus on the study and conservation of habitats outside of marine and estuary environments.** Job postings analysis revealed only 3% of postings (3 postings) focused on work with marine and estuary environments, while 78% of job postings (67 postings) focused on forestry work. Supporting narrative.
- **Marine science technician occupations align well with community college offerings.** Between 28% and 35% of incumbent workers have some college or an associate degree as their highest level of educational attainment, and 44% of job postings requested at least an associate degree.
- **Most job openings are for aligned occupations with entry-level wages exceeding the living wage.** Eighty percent of annual job openings are for biological technicians or forest and conservation technicians, which are jobs with entry-level wages that exceed the living wage for a single working adult in Mendocino's community college district of \$17.06 per hour.

Recommendation

Based on the findings, the North Far North COE recommends that community colleges **proceed with caution when developing marine science technician programs**. However, the NFN COE will defer to community colleges for program modifications. Key considerations include:

- Marine science technician jobs are in decline in the Far North.
- Many aligned occupations do not focus or do not focus solely on marine environments. Newly developed programs should work in partnership with employers to ensure students have sufficient opportunity and preparation for jobs working in marine habitats.
- A significant percentage of incumbent workers (between 35% and 37%) have a bachelor's degree as their highest level of educational attainment, so transfer pathways should be developed for marine science.

¹ Pursuant to California Education Code §78015, labor market information (LMI) is required for all new career education certificate and degree program proposals, and the North Far North Regional Consortium (NFNRC) requires LMI to come from the NFN COE. This report should serve to satisfy those requirements.

Introduction

The North Far North Center of Excellence (COE) was asked to provide labor market data to support a proposed new career education program or modifications to existing programs at a regional community college (see Appendix A for methodology and data sources).

This report focuses on the following Standard Occupational Classification (SOC) occupations and codes:

- Biological Technicians (19-4021)
- Environmental Science and Protection Technicians (19-4042)
- Forest and Conservation Technicians (19-4071)

A review of related programs revealed the following Taxonomy of Programs (TOP) title(s) and code(s) are appropriate for inclusion in this report:

- Natural Resources (0115.00)
- Wildlife and Fisheries (0115.20)

The corresponding Classification of Instructional Program (CIP) title(s) and code(s) are:

- Natural Resources/Conservation, General (03.0101)
- Water, Wetlands, and Marine Resource Management (03.0205)
- Environmental/Natural Resources Management and Policy, Other (03.0299)
- Wildlife, Fish, and Wildlands Science and Management (03.0601)

Occupational Demand

Exhibit 1 summarizes the five-year projected job growth for the targeted occupational groups in the Far North subregion, the 22-county North Far North region, and California.² Among the 297 annual openings, 62 are in the coastal counties of Del Norte, Humboldt, and Mendocino, which have access to marine environments.

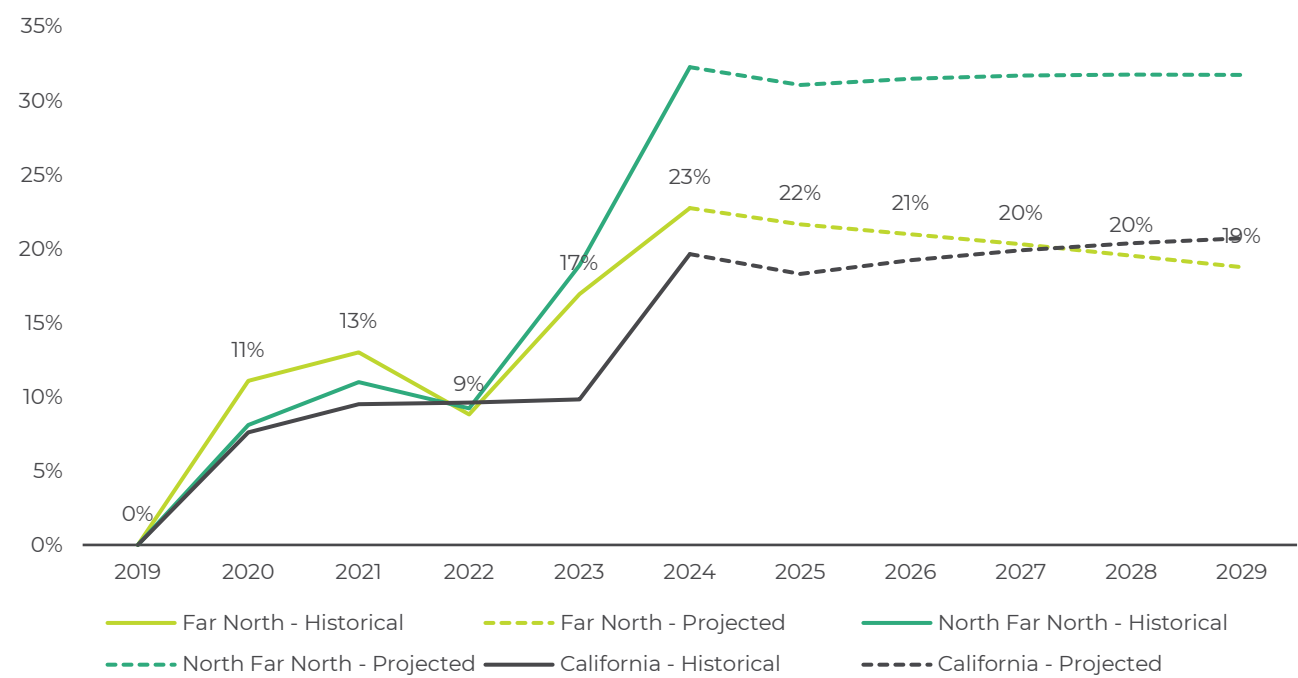
Exhibit 1. Current employment and projected occupational demand, 2024-2029

Occupational Group	2024 Jobs	2024-2029 Change	2024-2029 % Change	2024-2029 Annual Openings
Biological Technicians	177	6	3%	21
Environmental Science and Protection Technicians, Including Health	410	14	3%	59
Forest and Conservation Technicians	1,781	-97	(5%)	217
Far North	2,368	-77	(3%)	297
Biological Technicians	952	22	2%	108
Environmental Science and Protection Technicians, Including Health	1,239	28	2%	174
Forest and Conservation Technicians	2,653	-69	(3%)	331
North Far North	4,844	-19	(0%)	613
Biological Technicians	10,983	260	2%	1,256
Environmental Science and Protection Technicians, Including Health	9,339	74	1%	1,280
Forest and Conservation Technicians	6,842	-91	(1%)	859
California	27,164	243	1%	3,395

² The 22-county North Far North is a dual region. It is represented by the North (Greater Sacramento) subregion that covers seven counties, including El Dorado, Nevada, Placer, Sacramento, Sutter, Yolo, and Yuba, and the 15-county Far North subregion which includes Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Sierra, Siskiyou, Tehama, and Trinity.

Exhibit 2 compares historical and projected annual change in employment for the period 2019 to 2029 with the base number of jobs in 2019 for the Far North, the 22-county North Far North region, and California.

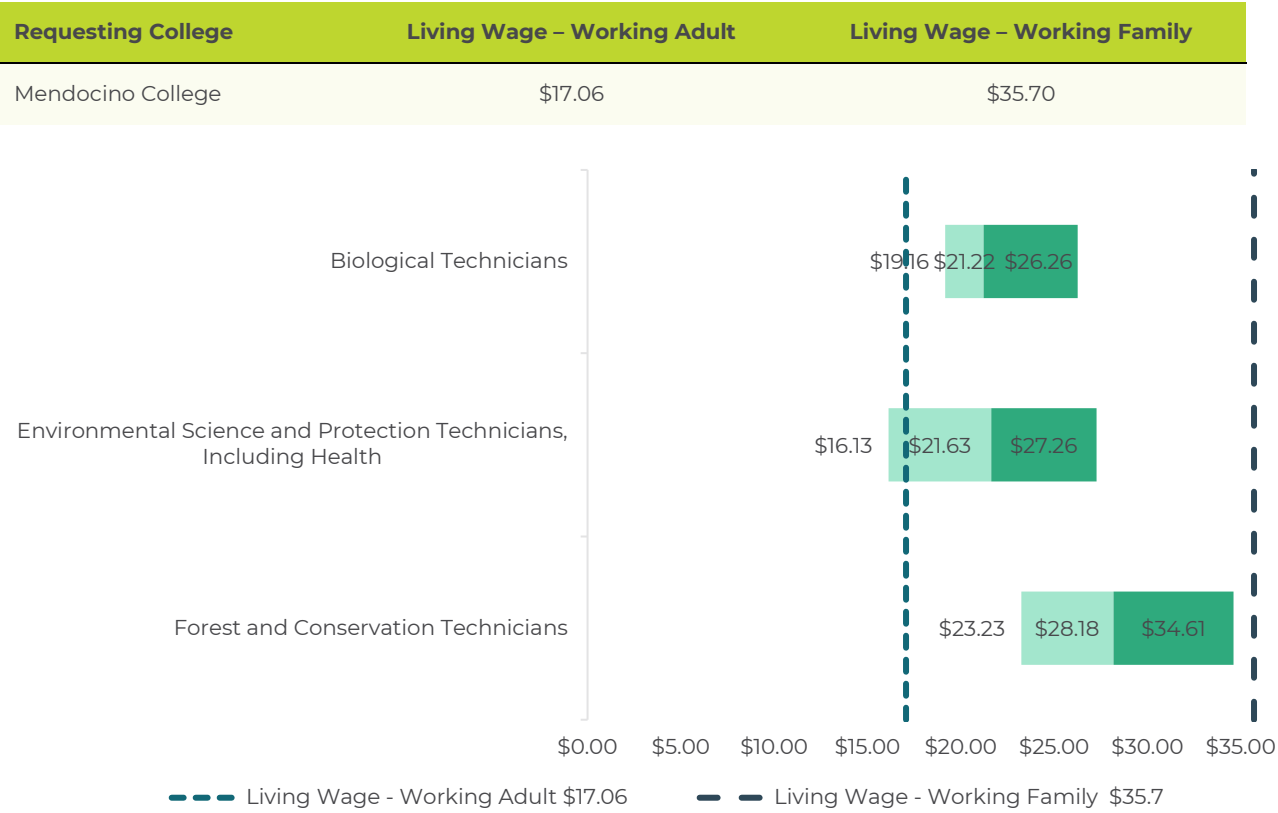
Exhibit 2. Changes in employment, 2019-2029



Earnings

Exhibit 3 compares the percentile hourly earnings for the selected occupations to the living wage for a single working adult and a working family residing in the county of the community college district that requested this report.^{3,4} Earnings data includes wages from employed and self-employed workers. Also, it's important to note that living wage thresholds vary by county, and in the Far North subregion, range from \$17 to \$24 per hour for a single working adult.

Exhibit 3. Hourly earnings compared to the community college district's living wage



³ A “living wage” is defined as the level of income one working adult with no children must earn to meet basic needs, including food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs. Please note that the 25th-percentile and 75th-percentile hourly wages are used as proxies for entry-level and experienced-level wages.

⁴ A “working family” is defined as one working adult and one infant (between the ages of 0 and 2 years).

Job Postings

Analysis of online job postings can offer additional insights into recent labor market changes not reflected in historical trends. However, it is important to note that job postings do not equate to actual labor market demand, which is based on projected annual job openings.

There are several limitations to interpreting online job postings. Employers may repost the same position multiple times to attract more applicants, or job postings may remain active even if the position is no longer being filled. Additionally, a single job posting can be used to hire for multiple openings, and not all job opportunities are advertised online. Despite these limitations, job posting analyses can be valuable for guiding community college curriculum development and identifying potential employers for targeted experiential learning opportunities.

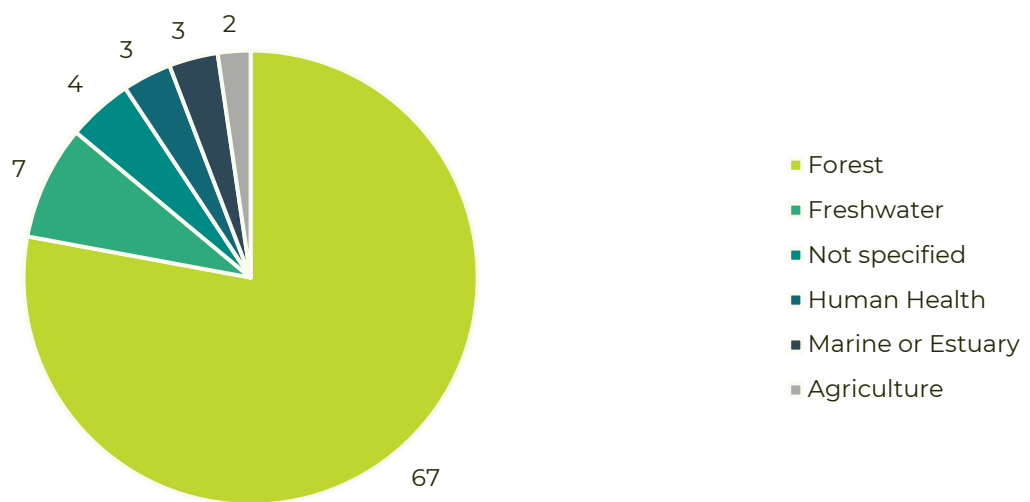
The North Far North COE identified 86 online job postings for the selected occupations across the Far North subregion. Job posting data comes from and represents unique advertisements posted online during the last 12 months, from May 2025 to April 2026. Details about those postings are shown in Exhibit 4.

Exhibit 4. Job postings by occupation

Occupation	Number of Job Postings	Share of Postings	Median Advertised Salary
Biological Technicians	17	21%	\$22.15
Environmental Science and Protection Technicians, Including Health	7	8%	\$25.85
Forest and Conservation Technicians	62	71%	\$21.42
Total	86	100%	\$21.42

Many of these job postings do not focus on marine habitats. Exhibit 5 shows the habitat focus of the job postings. Of the three job postings focusing on marine environments, all are from the US Department of Fish and Wildlife for Biological Technicians. The rest of this job posting analysis will show an analysis of all job postings, regardless of habitat.

Exhibit 5. Job postings by habitat



Top employers

Exhibit 6 shows the employers with the most job postings for the selected occupations across the Far North.

Exhibit 6. Employers with the most job postings

Employer	Number of Job Postings
ACRT	10
Great Basin Institute	9
Sierra Pacific Industries	6
Trinity County Resource Conservation District	4
United States Department of the Interior	4
Mendocino Forest Products	4
Alpine Land Information Services	3
Sierra Institute for Community and Environment	3
United States Fish & Wildlife Service	3

Top titles

Exhibit 7 shows the job titles with the most job postings for the selected occupations across the Far North.

Exhibit 7. Job titles with the most job postings

Job title	Number of Job Postings
Forestry Technicians	36
Wildlife Technicians	8
Conservation Technicians	5
Biological Science Technicians	4
Wildlife Biological Science Technicians	2
Research Technicians	2
Fish and Wildlife Technicians	2
Botany Technicians	2
Seasonal Associates	2

Skills and qualifications

Exhibit 8 shows the most requested skills in job postings by occupation in the Far North.⁵

Exhibit 8. Most requested in-demand skills in job postings

Specialized Skills	Common or Employability Skills	Software and Technology Skills
• Forestry/ Forest Management • Data Collection • Field Research • Biology • Global Positioning Systems (GPS) • Natural Resource Management • Project Management • Construction • Chainsaws • Riparian Ecology	• Communication • Management • Research • Planning • Operations • Sales • Program Management • Critical Thinking • Multitasking • Self-Starter	• Microsoft Office (Excel, Access, Word, Outlook) • ArcGIS/ GIS Applications

⁵ Specialized skills are those primarily required to perform specific tasks in an occupation. Common skills are typically related to employability; these are skills that are prevalent across many occupations and usually include a mix of interpersonal attributes and soft skills. Software skills are specific to any software tool or programming component used to accomplish tasks in a job.

Exhibit 9 shows the employer-preferred minimum level of education in job postings related to the selected occupations in Far North. All marine-focused job postings preferred a bachelor's degree, but strictly required at least some relevant college education.

Exhibit 9 Employer-preferred education levels for the studied occupations

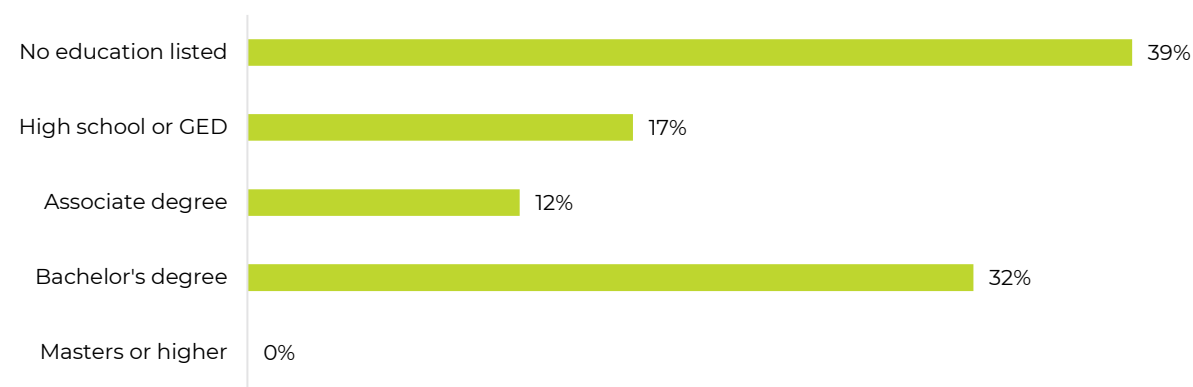
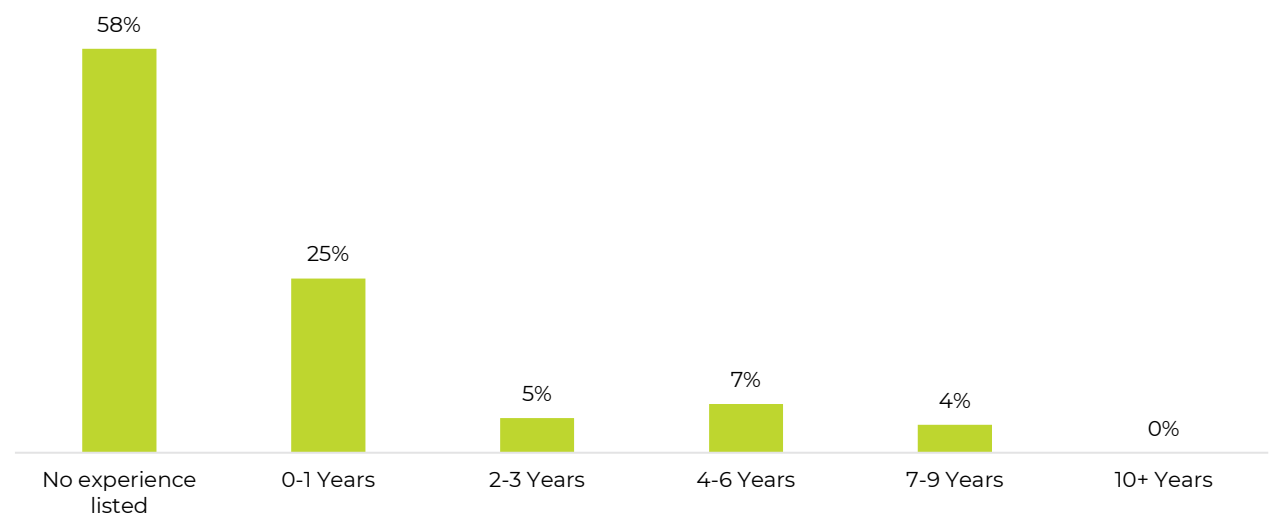


Exhibit 10 shows the employer-preferred minimum level of experience in job postings related to the selected occupations in Far North.

Exhibit 10. Employer-preferred experience levels for the studied occupations



Education and Training Requirements

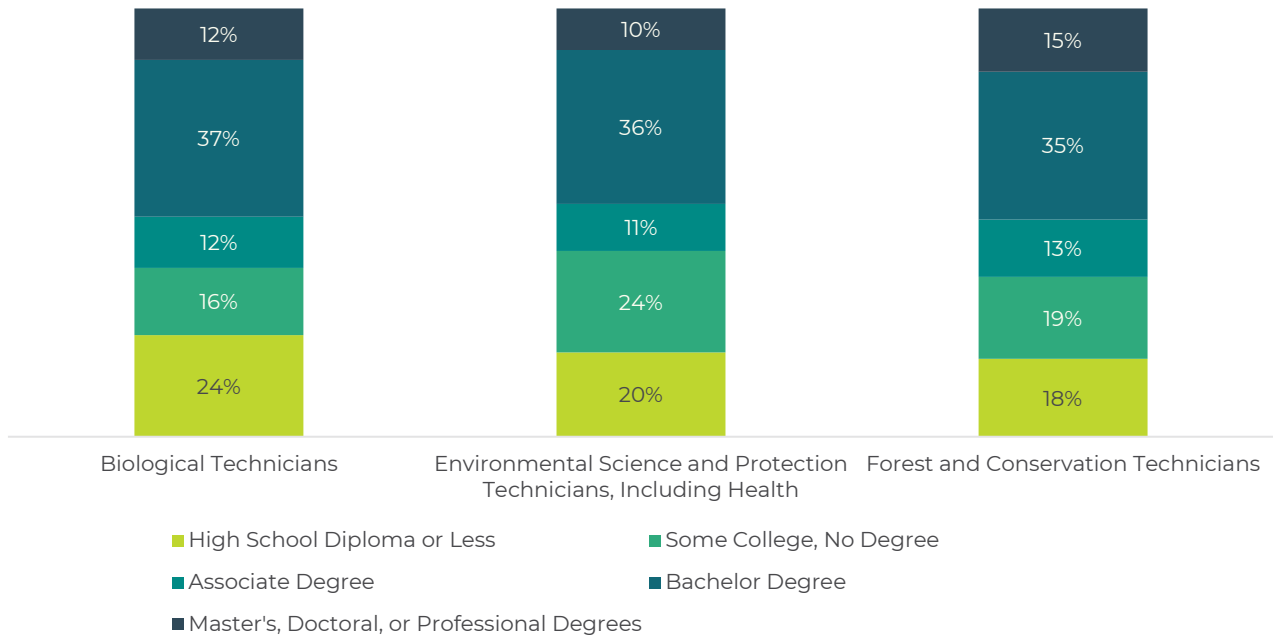
The U.S. Bureau of Labor Statistics (BLS) assigns each occupation a typical entry-level education, related work experience, and on-the-job training category in its projection data. Exhibit 11 summarizes these requirements by occupation.

Exhibit 11. Typical entry-level job requirements for the studied occupations

Occupation	Entry-Level Education	Work Experience	On-The-Job Training
Biological Technicians	Bachelor's degree	None	None
Environmental Science and Protection Technicians, Including Health	Associate's degree	None	None
Forest and Conservation Technicians	Associate's degree	None	None

The U.S. Census Bureau tracks the highest education level attained by workers in all occupations. Exhibit 12 presents this data for the current U.S. workforce in the studied occupations.

Exhibit 12. Educational attainment for workers 25 years and older by occupation, 2021-22



Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards issued in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.

Community college supply

Exhibit 13 lists the colleges with active, chartered programs under the Natural Resources (0115.00) TOP code, along with their titles and degree types. As shown, none of these programs focus solely on marine environments, although many have coursework in marine settings. Not listed is an unchartered Wildlife Technician certificate at Butte College listed under the Wildlife and Fisheries (0115.20) TOP code, and an Ecosystem Restoration and Applied Fire Management Bachelor of Science degree that is under review.

Exhibit 13. Active, chartered programs under Natural Resources 0115.00 in the Far North

College	Program Title	Award Level
Butte	Natural Resource Management	A.S. Degree
Feather River	Hydrologic Technician	8 < 16 unit certificate
Feather River	Biological Science Technician	8 < 16 unit certificate
Feather River	Hatchery Technician	16 < 30 unit certificate
Shasta	Agriculture: Natural Resources	16 < 30 unit certificate
Shasta	Agriculture - Natural Resources	A.S. Degree

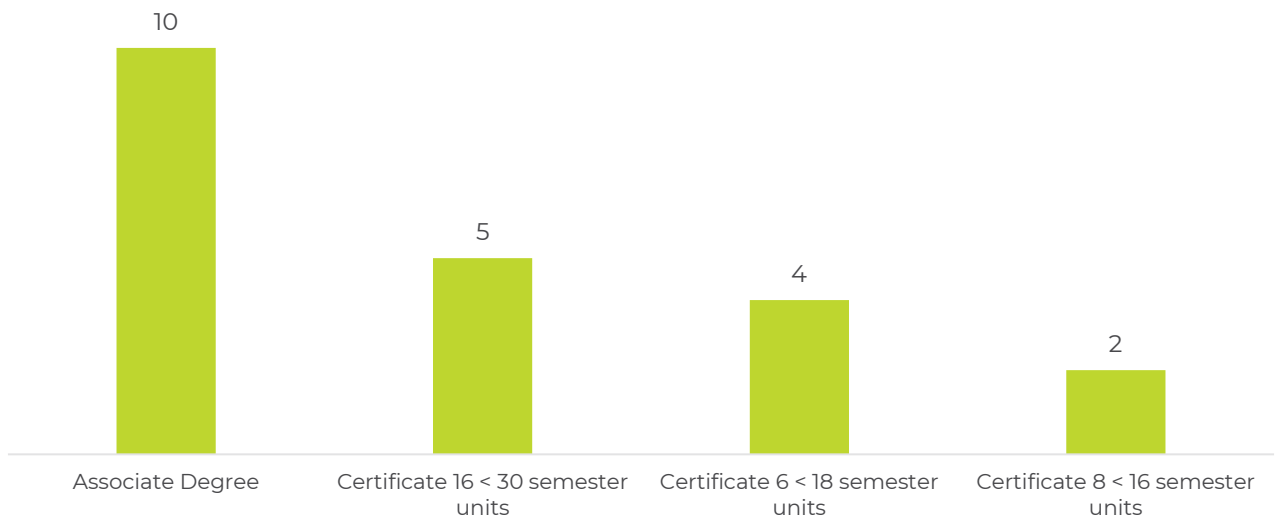
Exhibits 14 and 15 summarize the three-year average of awards (certificates and degrees) conferred by the Far North community college programs relevant to the occupations studied.

Exhibit 14. Average annual community college awards by TOP program

TOP Program and Code	College	2022-23 Annual Awards	2023-24 Annual Awards	2024-25 Annual Awards	Three-Year Average Awards
Natural Resources (0115.00)	Butte	4	9	4	6
	Feather River	-	-	2	2
	Shasta	3	15	8	9
Subtotal		7	24	14	16
Wildlife and Fisheries (0115.20)	Butte	6	0	5	4
Subtotal		6	0	5	4
Totals		13	24	19	20

Note: Values in the table are rounded to the nearest whole number. However, subtotals and totals are calculated using unrounded values.

Exhibit 15. Average annual community college awards by award type



Other postsecondary supply

Exhibit 16 summarizes the three-year average of awards up to a Bachelor’s degree conferred by postsecondary institutions outside of the community college system and located in the Far North.

Exhibit 16. Average annual community college awards by award type and program area

CIP Program and Code	Institution	Award Level	2021-2024 Average Annual Awards
Environmental/Natural Resources Management and Policy, Other (03.0299)	California State Polytechnic University-Humboldt	Bachelor's degree	2
Subtotal			2
Wildlife, Fish, and Wildlands Science and Management (03.0601)	California State Polytechnic University-Humboldt	Bachelor's degree	94
Subtotal			94
Totals			96

Conclusion and Recommendations

Data insights

Demand— Marine science technician jobs are expected to decline in the Far North. In the Far North, marine science jobs are expected to decrease by 3%, while in California, they are expected to increase by 1%.

Living Wage— Most job openings are for aligned occupations with entry-level wages exceeding the living wage. Eighty percent of annual job openings are for biological technicians or forest and conservation technicians, which are jobs with entry-level wages that exceed the living wage for a single working adult in Mendocino’s community college district of \$17.06 per hour.

Education— Marine science technician occupations align well with community college offerings. Between 28% and 35% of incumbent workers have some college or an associate degree as their highest level of educational attainment, and 44% of job postings requested at least an associate degree.

Supply Gap— While the supply of awards is lower than the annual job openings, many jobs may not focus on marine environments. There are 297 annual openings in the Far North, but only 62 in counties with access to marine environments. There are 116 annual awards, with 20 coming from community colleges. However, the other 96 of those awards were for Bachelor’s degrees.

Recommendation

Based on the current analysis, the North Far North COE recommends that community colleges **proceed with caution** in creating new programs related to marine science. However, the NFN COE will defer to community colleges for program modification.

Marine science technician jobs are in decline in the Far North. Also, job postings analysis revealed many jobs do not take place in a marine environment, and only three counties in the Far North have access to marine ecosystems. Additionally, a significant proportion of incumbent workers have at least a bachelor’s degree (between 46% to 50%).

New Program Recommendation		
Proceed	Use Caution	Do Not Proceed
☐	☒	☐

Support for Program Modification	
Yes	No
☒	☐

Appendix A. Methodology and Data Sources

Labor market and educational supply data compiled in this report derive from a variety of sources. Occupations were identified by using the Center of Excellence TOP-to-CIP-to-SOC Crosswalk: <http://coeccc.net/>. This report's findings were primarily determined with labor market and educational supply data from the Bureau of Labor Statistics (BLS), the economic modeling firm and job postings aggregator Lightcast, and the California Community Colleges Chancellor's Office.

Data Sources

The following table summarizes the data sources used in this study.

Data Type	Source
Labor Market Information and Job Postings	Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast's occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and non-QCEW employee classes of worker) and the American Community Survey (self-employed and extended proprietors). For more information, see https://lightcast.io/ .
Living Wage	The living wage is derived from the Insight Center's California Family Needs Calculator, which measures the income necessary for an individual or family to afford basic expenses. The data assesses the cost of housing, food, childcare, health care, transportation, and taxes. The Chancellor's Office uses wage data to calculate the percentage of students who attained a regional living wage. For more information, visit https://selfsufficiencystandard.org/California/ .
Typical Education Level, On-the-job Training, and Educational Attainment	The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, visit https://www.bls.gov/emp/documentation/education/tech.htm .
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	The O*NET database includes information on skills, abilities, knowledge areas, work activities, and interests associated with occupations. For more information, visit https://www.onetonline.org/help/online/ .
Labor Force, Employment, and Unemployment Estimates	The California Employment Development Department's Labor Market Information Division is a source of labor market and workforce data. For more information, visit labormarketinfo.edd.ca.gov .
Educational Supply	The CCCC Management Information Systems (MIS) Data Mart provides information about students, courses, student services, outcomes, and faculty and staff. For more information, visit https://datamart.cccco.edu. The Chancellor's Office Curriculum Inventory System (COCI) collects data on courses and programs offered by the California Community Colleges. For more information, visit https://coci2.ccctechcenter.org/. The National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) collects data from providers of postsecondary education, including the number of postsecondary awards earned (completions). For more information, visit https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions.
Student Metrics and Demographics	DataVista, a statewide data system supported by the Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, visit https://datavista.cccco.edu/ .

Living Wage

Beginning in October 2024, to determine if an occupation meets the living wage threshold, the NFN COE compared the 25th percentile hourly wage of an occupation in the subregion to the living wage for a single adult (no dependents) living in the county where the requesting community college district was located.

This change aligned with the Chancellor’s Office methodology for calculating the share of students earning a living wage after leaving the California Community College system, as reported in the Data Vista living wage metric (802S). For details, see the *DataVista Metric Definition Dictionary*.

The NFN COE updated this practice as needed to remain consistent with the Chancellor’s Office. The table below summarizes hourly living wages by community college district and county.

2024 Single Adult Living Wage			
Community College District	County	Hourly	Annual
Butte-Glenn	Butte	\$16.77	\$35,416
Feather River	Plumas	\$15.11	\$31,909
Lake Tahoe	El Dorado	\$22.11	\$46,703
Lassen	Lassen	\$14.81	\$31,274
Los Rios	Sacramento	\$21.17	\$44,709
Mendocino-Lake	Mendocino	\$17.06	\$36,039
Redwoods	Humboldt	\$16.59	\$35,046
Shasta-Tehama-Trinity Joint	Shasta	\$16.99	\$35,874
Sierra Joint	Placer	\$23.92	\$50,519
Siskiyou Joint	Siskiyou	\$14.51	\$30,639
Yuba	Sutter	\$17.08	\$36,074
California Minimum Wages			
All industries, except fast food and healthcare (Effective January 2026)		\$16.90	\$35,152
Fast food (Effective April 2024)		\$20.00	\$41,600
Healthcare (Effective July 2025)		\$18.63-\$24.00, depending on facility type	\$38,750-\$49,920

Sources: University of Washington Self Sufficiency Standard and State of California Department of Industrial Relations, “Minimum Wage,” https://www.dir.ca.gov/dlse/minimum_wage.htm

For more information, contact:

The North Far North Center of
Excellence for Labor Market Research

Anna Hoehenrieder, Research Analyst
anna.hoehenrieder@losrios.edu

Sara Phillips, Co-Director
sphillips@ShastaCollege.edu

**Accessibility:**

If, for any reason, this document is not accessible or if you have specific needs for readability, please contact us, and we will do our utmost to accommodate you with a modified version.

Funding Acknowledgement:

This publication was supported through Strong Workforce Program funding from the North Far North Regional Consortium and the California Community Colleges Chancellor's Office Economic and Workforce Development Grant.

Important Disclaimer:

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. Efforts have been made to qualify and validate the accuracy of the data and the reported findings; however, neither the Centers of Excellence, the COE host district, nor the California Community Colleges Chancellor's Office is responsible for applications or decisions made by recipient community colleges, or their representatives, based upon components or recommendations contained in this study.