R & E Grant Application 25-27 Biennium

Project #: 25-007

Unmanned Aircraft Systems Fish Stocking Project

Project Information

Requested Cycle:	25-1
R&E Project Request:	$34,990
Other Funding:	$78,500
Total Project:	$113,490
Spending Start Date:	6/15/2025
Spending End Date:	9/30/2025
Project Start Date:	3/10/2025
Project End Date:	12/1/2025
Organization:	Lane Community College

Fiscal Officer

Name:	Solomon Singer
Address:	4000 E. 30th Ave
Telephone:	541-579-3351
Telephone 2:	541-579-3351
Fax:	
Email:	singers@lanecc.edu

Applicant Information

Name:	Solomon Singer
Address:	P.O. Box 270 Lowell, OR 97452
Telephone:	541-579-3351
Email:	singers@lanecc.edu

Past Recommended or Completed Projects

This applicant has no previous projects that match criteria.

Authorized Agent

Name:	Jeremy Romer
Address:	3150 E MAIN ST SPRINGFIELD, OR 97478
Telephone:	541-285-8775
Email:	jeremy.d.romer@odfw.oregon.gov

Location Information

Where is it?

The project will occur Statewide

Project Summary

Project Summary

Please provide a couple sentence summary of the proposal.

Develop an unmanned aircraft system to stock ten high mountain lakes. A valuable tool for ODFW as an alternative stocking device.

Overall Project Goals

Describe the primary goals or outcomes of the entire project, including elements not requesting funding from R&E.

Purchase an American-made drone that is capable of lifting 50 pounds and flying for 50 minutes (the requirements needed for stocking fish).

Improve the design of current proof-of-concept fish stocking containers through feedback from ODFW to provide custom trout delivery containers using 3-D printers (possible patent)

Obtain Federal Aviation Administration (FAA) permitting/waivers to stock fish in high lakes (Lane Aviation Academy already works closely with the FAA on permitting for other projects)

Work closely with ODFW Springfield District Field Office Fish Biologists to successfully stock fish into 10 high lakes in their District.

Determine if stocking was successful (ODFW will sample fish the year following the stocking to assess overwinter survival)

Maintain a successful and consistent trout stocking program in high-use Cascade Mountain lakes even if the helicopter is unavailable or unable to stock specific lakes during the desired time period.

Primary objectives of R&E funding

Please describe the measurable objectives for the R&E portion of the funding request.

Purchase a heavy lift Freefly Systems Alta X Unmanned Aircraft and components (itemized budget included)

Current Situation/Justification

Please describe the current situation and explain why this funding is needed.

Helicopter stocking only occurs in odd years and during a very short window of time (usually one week). The intent is not for drone stocking to replace helicopter stocking at the same scale, but to provide an option for stocking the most utilized lakes if helicopter or manual stocking is not an option. Drones provide more flexibility for landing zones and do not require the extensive coordination for helicopter stocking. Ex. If a proposed stocking or landing area becomes inaccessible due to forest fire during helicopter stocking, drone stocking could still occur at another time - a different month, or following year.

Recreation and Commercial Benefit

This project will provide benefits to:

Recreational fisheries

Explain how this project will contribute to current (and/or potential) fishing opportunities, access, or fisheries management.

This project will provide a novel solution to complete management objectives (high lake stocking) when faced with adverse conditions, by providing a safer, more flexible, less labor intensive, less expensive, and less noisy alternative to helicopters for stocking trout into some high mountain lakes.

Percent benefit split between Commercial and Recreational anglers:

0 % Commercial
100 % Recreational

Please explain, or justify, how the percentage split was determined:

N/A

This project has been identified as an ODFW priority for:

Statewide

Does this project directly support implementation of the ODFW Strategic Plan and/or current Fish Division priorities?

Yes
Maintains and/or increases recreational angling opportunities for trout. Protects the opportunity for future generations to harvest fish in high Cascade lakes.

Please briefly explain when this was identified as a priority and what process or workgroup was used to identified this as an ODFW priority.

Multistate High Mountain Lake Summit. Rhine Messmer, Oregon Representative.
Stocking of many of Oregon's mountain lakes began at the turn of the century when propagated fish became available. Fish arrived in many areas in 1912, with the primary objective of providing maximum fishery benefits for anglers.

Identify any plan or other document that identifies this priority.

Meyer and Schill. 2007. Multistate High Mountain Lake Summit. Idaho Fish and Game Report #07-55. Includes CA, ID, MT, NV, NM, OR (pgs12-13), WA

Is this project part of an approved Salmon-Trout Enhancement Program (STEP) activity?

No

This project is intended to benefit the following species:

Cutthroat Trout
Rainbow Trout

This project will benefit anglers or fishery by providing:

Angling Opportunity
Hatcheries/Propagation/Liberation

Angling Opportunity

This project will:

Improve the opportunity for anglers to catch fish (better stocked fish, trapping)

Hatcheries/Propagation/Liberation

Hatchery Name:
Multiple hatcheries - statewide

This is a:
State hatchery

As a result of this request hatchery production will:
Maintain

This project will:
Restore, rehabilitate, modify, or replace existing liberation equipment
Add new or upgrade liberation equipment
Improve safety of hatchery operations

Fish produced at this facility are for:
Sport harvest

Project Description

Schedule

Activity	Date	RE Funding
Improve current proof-of-concept designs to provide custom trout delivery containers using 3-D printers (possible patent)	Jan - May 2025	No
Obtain Federal Aviation Administration (FAA) permitting to stock fish in high lakes (2 waivers listed below).	Jan - July 2025	No
Work closely with ODFW Springfield District Field Office Fish Biologists to determine which 10 lakes will be stocked.	April-July 2025	No
Purchase an American-made drone that has the capability to lift 50 pounds and fly for 50 minutes (the requirements needed for stocking fish).	July 2025	Yes
Stock 10 high lakes in 2025	Sept 2025	No

Permits

Permit	Secured?	Date Expected
Federal Aviation Waiver - Over 55 lbs exemption for larger aircraft (30# payload + drone + batteries).	No	July 2025
Federal Aviation Waiver - Part 107.31 enabling Beyond Visual Line of Sight (BVLOS) flight.	No	July 2025

Project Design and Description

Please describe in detail the methods or approach that will be used to achieve the project objectives.
From Jan-Sept of 2024 a student of Lane Aviation Academy (LAA; Greg Gore) used a cheaper, foreign-manufactured, lightweight drone to mount a custom engineered and constructed stocking container that could be mounted (quick release) to the drone for stocking fish. He then provided a small-scale demonstration, successfully remote stocking fake trout into a circle drawn in the ODFW parking lot. ODFW Fish Biologists and LAA believe this method could be further developed to ODFW implementation level by using a larger drone. LAA has agreed to be the liaison with the Federal Aviation Administration for permitting/waivers, providing pilots, and use of their high-tech machines for design and creation of custom containers. This is a great opportunity to foster collaboration between ODFW and LAA to achieve common objectives. Funding allocation could be contingent on being awarded the Federal waivers prior to July 2025 (we cannot stock without them).

Engineering

Does the project involve capital improvement, engineering, site grading or other construction?
No

Project Management and Maintenance

What is the life expectancy of R&E funded construction, structures, equipment, supplies, data or fishery?

10 years. After that, structural components can still be re-used, modified, and may even be able to be retrofitted with new electronic components.

Who is responsible for long term management, maintenance, and oversight of the project beyond what is funded by R&E.

Lane Aviation Academy will be responsible for insurance, management, oversight, upkeep, maintenance and storage of the aircraft. We will attach an R&E logo on the ship to show where it came from. Upon completion of this project, LAA would continue to use it frequently to train pilots, use on other projects, and work on collaborative projects with ODFW to maximize use (not sitting on a shelf).

Will the project require ongoing maintenance?

No

Is there a plan to collect baseline data and to conduct monitoring efforts to measure the effectiveness of the project?

No

Project Funding

Funding

Have you applied for OWEB funding for this project?

No

Has this proposal, or similar proposal for this project location, previously been denied by OWEB or other funding source?

No

Other Funding Source	Type	Secured	Dollar Value	Comments
Lane Community College Unmanned Aircraft Systems Program	In-Kind	Secured	78,500	
		Total	78,500	

Budget

Item	Unit Number	Unit Cost	In-kind or non-cash contributions	Funding from other sources	R&E Funds	Total Costs
PROJECT MANAGEMENT						
Solomon Singer - Lane Aviation Academy - Program Director	80	75	6,000			6,000
		SUBTOTAL	6,000			6,000
IN-HOUSE PERSONNEL						
Flight validation and testing	40	100	4,000			4,000
FAA waiver applications x2 (107.31 and Over 55#)	200	100	20,000			20,000
Aircraft modification 3D modeling of parts and components	50	100	5,000			5,000
Avionics system installation and long range testing	40	100	4,000			4,000
Per day Student Pilot fee - Greg Gore (15 days)	120	50	6,000			6,000
Standard Operation Procedure Development -FAA required	100	100	10,000			10,000
		SUBTOTAL	49,000			49,000
CONTRACTED SERVICES						
		SUBTOTAL				
TRAVEL						
		SUBTOTAL				
SUPPLIES/MATERIALS						
Fish stocking tanks x 6 - materials to build	6	300			1,800	1,800
3D printing services and rapid prototyping	150	100	15,000			15,000
Aluminum, assembly hardware, wires, assembly lab expendables	1	1,000	1,000			1,000
CNC Machine Services - manufacture custom parts	50	150	7,500			7,500
		SUBTOTAL	23,500		1,800	25,300
EDUCATION/OUTREACH						
		SUBTOTAL				
EQUIPMENT						
Alta X Drone and Herelink long range controller	1	28,150			28,150	28,150
Alta X Battery Dual Charger	1	650			650	650
ALta X Batteries	3	1,380			4,140	4,140
Long Range Telemetry Radio	1	250			250	250
		SUBTOTAL			33,190	33,190
FISCAL ADMINISTRATION						
		SUBTOTAL				
		BUDGET TOTAL	78,500	0	34,990	113,490

Internal Review Results

Review Score: 2.3 out of 5

(1 = Do Not Fund, 2 = Strengthen Proposal, 3 = Recommend with Conditions, 4 = Recommend, 5 = Strongly Recommend)

Summary of Review Team Comments

This project did not score high in IRT review. Reasons given were that ODFW will not have ownership of the aircraft, there are no long term agreements in place around use of the aircraft by ODFW, nothing to address possible repair costs, or efficiency of the method.

Specific Review Team Comments

Formal agreements need to be made that would allow for the drone to fly in federal airspace. It is unlikely that the USFS will allow drone operation if there is any fire activity and other airships in the area as indicated in the application.

The R&E program is being asked to pay for something that could potentially create income for a private entity.

Specific Review Team Questions

Is this a one time use of the machine? If successful would the drone be available for ODFW use in the future? Or would ODFW have to buy another machine or rent from Lane Aviation Academy? Not clear what the long term benefit could be. If funded, the drone should be dedicated for ODFW use to benefit anglers.

Please refer to attachment "Reply to ODFW Internal Review Comments" for full reply including addressing the Specific Review Team Comments that are stated above, but have no space provided for response. Responses to Specific Review Team Questions are also included in the attachment but also included here where space is provided:

No. The initial agreement addressed in the proposal is to 1) determine if stocking trout from a drone in a real-world application is feasible (have already conducted simulations/‘parking lot stocking’) 2) develop a workable drone trout stocking system for high lakes and 3) stock 10 high mountain lakes in the Springfield District in 2025. After that, our hope (LAA & ODFW) is to continue to work together on additional projects, anything that ODFW needs assistance with.

1) Currently it is unknown whether drone stocking of trout in high lakes is possible. Development of this system will provide a more flexible tool for ODFW District Fish Bios to complete management objectives (high lake stocking) on a smaller scale (specific lakes whenever needed), or when helicopter stocking is unable to complete the task (fire closure, restricted airspace during helicopter stocking). Development of this system could help protect the opportunity for future generations to harvest fish in high Cascade lakes.
2) ODFW can borrow the drone any time they need it for any project, especially those that benefit anglers, with the added benefit of working with experts in the drone avionics field who have access to specialized knowledge and equipment.
3) Provides ODFW options to be trained by LAA, be covered under their existing Federal Aviation Administration waivers or ‘borrow’ a pilot that is already covered for any project they may encounter.
4) Lane Aviation Academy will provide ODFW with a template (the language and documentation required) to complete a successful application should they choose to obtain their

own waivers in the future. (complicated process, ODFW has not yet applied for either of these waivers and would save a lot of time/money)
5) Purchase of this specialized, USA manufactured drone increases the potential options for drone projects (heavier payload, longer flight time). It also creates more opportunities for future collaborative projects between LAA & ODFW, many of which could benefit anglers.
6) Drone stocking provides a safer, less labor intensive, potentially less expensive, and less noisy alternative to helicopters for stocking trout into some high mountain lakes. Drones provide more flexibility for landing zones and do not require the extensive coordination that is required for helicopter stocking.
7) ODFW does not have to insure, maintain, or store the drone.

Are there other uses for a drone and pilot on other ODFW projects or programs (e.g. stream temperatures, creel survey instantaneous counts)?

Yes, Lane Aviation is excited to work with ODFW on other projects.
Drone - Upon completion of this project, LAA would continue to use it frequently to train pilots, use on other projects, and work on collaborative projects with ODFW to maximize use - opposed to possibly sitting on a shelf in ODFW storage. Potential projects mentioned in the proposal include release of experimentally tagged fish in hard-to-reach areas and treating aquatic invasive vegetation. The above-mentioned stream temps and instantaneous counts can be completed with many drones that ODFW already owns, the reason for purchasing this specific model is that it can carry a heavy payload for a longer flight time (increased distance).
Pilots - ODFW and LAA have discussed other ODFW Fisheries issues that could be addressed, and experiments that could be conducted in future collaborations with their program and pilots. LAA is open to additional ideas because it helps students to get experience in real-world applications.

Is there an agreement between ODFW and Lane Community College regarding responsibility and liability of operating the drone? Who has to obtain and maintain the FAA license?

Lane Aviation Academy will be responsible for insurance, management, oversight, upkeep, maintenance and storage of the aircraft.
LAA has agreed to be the liaison with the Federal Aviation Administration for permitting/waivers. They have already identified the two FAA waivers needed (Beyond Visual Line of Sight 107.31 and Unmanned Aircraft Over 55#). LAA has extensive experience working with the FAA and has received these waivers before for use on other projects. ODFW has not applied for these waivers, but through LAA training materials, ODFW pilots could be trained and covered by LAA' s waivers for specific projects.

Who is responsible for maintenance or repairs cost to the drone? How will the R&E investment be recovered if the drone is damaged?

Lane Aviation Academy will be responsible for any insurance, management, oversight, upkeep, maintenance and storage of the aircraft.
The drone will be insured by Lane Aviation Academy.

Will the drone be insured by either ODFW or Lane Aviation Academy?

The drone will be insured by Lane Aviation Academy.

Who will own the drone and where are the assurances that this drone can and will be used by ODFW

when we need the equipment?

Lane Aviation Academy will own the drone. ODFW pilots would have to acquire FAA waivers to fly the larger drone, but Lane Aviation Academy would be happy to assist. ODFW pilots could be trained and covered by LAA's waivers for specific projects. Since R&E purchased the drone, we would make their projects a higher priority and work around their scheduling if there was a conflict.

Will there be a contract in place with Lane Aviation Academy that restricts the use of the drone to High Lakes Stocking or other activities that have a direct benefit to sport or commercial anglers in Oregon?

No, the contract will not restrict the use of the drone to high lakes stocking. Springfield ODFW has advised that would not be very efficient or productive use of funding. The intent of purchasing the drone is to use it for training and specialized (heavy) projects, and until now ODFW has not pursued these options in a drone. ODFW can borrow the drone whenever they need it, but It makes more sense to use the drone as much as possible rather than have it sitting on a shelf. Lane Aviation would use the drone for other projects too, but if ODFW has additional ideas of how to benefit anglers in Oregon, Lane Aviation Academy would be excited to assist in any way we can. It would be a win/win situation with our students gaining experiential training in real-world scenarios and helping ODFW solve problems or complete tasks. We have already discussed some potential opportunities with Springfield District staff.

Does ODFW have any say in how the equipment will be used the rest of time? How much say, if any, does ODFW have in what the equipment can be used for?

ODFW can always suggest projects to collaborate on, our students need practical experience solving real-world problems and if ODFW has opportunity for Lane Aviation Academy students to learn and/or assist, then we would be excited to help with drones and other capabilities that we have and ODFW does not (FAA permitting guidance, specialized machinery for design and fabrication, training, specialized piloting skills, etc.). If ODFW needs to borrow the drone we can work out a method to accommodate.

Additional Files

Budget Information

Maps

Photos

Design Information

Management Plans and Supporting Documents

2007 Multi-state high mountain lake meeting report	*Published information from the meeting (OR pg 12-13)*
Detailed UAS Stocking Project Proposal Overview	*Additional details on the proposal, progress, and project specifics*
High Lakes Trout Stocking History _Yanke 2010	*Powerpoint Presentation*
Reply to ODFW Internal Review Comments	*Reply to ODFW Internal Review Comments*

Permits and Reviews

Partnerships

Public Comment

ODFW Letter of Support	*Letter of support*

Administrative Documents

Signature Authorization Page Signed	*Signiature Authorization Page - Public, completed*

Completion Report

A completion report has not been submitted for this project.