# R & E Grant Application 21-23 Biennium

**Project #: 21-022**

## *Internships Invasive Fish Removal in High Lakes*

### *Project Information*

| | |
|---|---|
| **Requested Cycle:** | 21-3 |
| **R&E Project Request:** | $20,136 |
| **Other Funding:** | $15,280 |
| **Total Project:** | $35,416 |
| **Spending Start Date:** | 7/1/2021 |
| **Spending End Date:** | 6/30/2023 |
| **Project Start Date:** | 5/1/2022 |
| **Project End Date:** | 12/31/2022 |
| **Organization:** | Oregon State University |

### *Fiscal Officer*

| | |
|---|---|
| **Name:** | Kira Lueck |
| **Address:** | 1500 SW Chandler Ave<br>Bend, OR 97702 |
| **Telephone:** | 541-322-3169 |
| **Telephone 2:** | |
| **Fax:** | |
| **Email:** | kira.lueck@osucascades.edu |

### *Applicant Information*

| | |
|---|---|
| **Name:** | Matt Shinderman |
| **Address:** | Office of Sponsored Programs B308 Kerr Administration Bldg<br>Corvallis, OR 97331-2140 |
| **Telephone:** | 541-737-4933 |
| **Email:** | matt.shinderman@osucascades.edu |

### *Past Recommended or Completed Projects*

| Number | Name | Status |
|---|---|---|
| 17-008 | Chub Removal Internships in Deschutes High Lakes 2 | Approved |

### *Authorized Agent*

| | |
|---|---|
| **Name:** | Jennifer Luke |
| **Address:** | 61374 Parrell Road<br>Bend, OR 97702 |

**Telephone:** 541-388-6350 x225
**Email:** jennifer.a.luke@odfw.oregon.gov

## *Location Information*

*Where is it?*

The project will occur on public land owned or managed by another party

*Landowner Information*

**Name:** USFS
**Address:** 63095 Deschutes Market Rd
Bend, OR, 97701
**Phone:** 541-388-5300

*Site Description*

*Street Address, nearest intersection, or other descriptive location.*

East and Paulina Lakes, Deschutes NF/Newberry National Volcanic Monument. Lava Lake, S.Twin, N.Twin, Crane Prairie Reservoir, Deschutes N.F.

*Directions to the site from the nearest highway junction.*

*Following project completion, public anglers will be allowed the following level of access to the project site:*

Full access

*Please describe what leases, easements, agreements are in place to ensure angler access to the project site, and what is the length of each agreement.*

*Dominant Land Use Type:*

Forest

*Project Location*

*General Project Location.*

**County:** Deschutes
**ODFW Dist:** Deschutes
**Stream/Lake/Estuary Name:** Paulina, East, Crane Prairie, Twin Lakes
**Sub-basin:** 17070301
**Tributary of:** Deschutes River

*Specific Project Location.*

| Latitude | Longitude |
|---|---|
| 43.89525 | -121.65829 |

## *Project Summary*

*Project Summary*

*Please provide a couple sentence summary of the proposal.*

East, Paulina, Lava Lakes are popular trout producing waters infested with invasive chub. Invasive chub have a detrimental effect on trout and angling. Bullhead catfish have infested Crane Prairie Reservoir. Interns would work with ODFW to remove chub and bullhead and

monitor lake and trout conditions.

*Overall Project Goals*

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

Remove chub and catfish to improve trout survival, condition and abundance.
Improve recreational fishing.
Monitor effects of chub and bullhead removal.
Monitor lakes with past rotenone treatments (Twin Lakes).
Provide opportunity for students to gain experience in fisheries management.

*Primary objectives of R&E funding*

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

R&E funds would provide an internship stipend for two students to work 12 weeks, approximately 960 hrs. Funds would also be used to lease a truck for 12 weeks.

Students will trap and remove invasive fish and collect associated monitoring data.

*Current Situation/Justification*

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

Twelve years ago, declining fisheries in East Lake led ODFW staff to write a 5 year experimental management plan, which included experimental removal of chub with fyke nets. Initial chub trapping (2010-2011) in East Lake was conducted by ODFW staff with volunteer support. However, it was apparent that ODFW staff and volunteers could not trap and remove chub from three lakes, given the level of manpower and funding. In 2012 -2014, the R&E board funded interns to remove chub from three lakes and evaluate results. Data collected through 2014 demonstrated removal had a positive impact on trout and recreational fishing in three lakes, most notably in East and Lava Lake. Chub removal efforts were discontinued in 2015-2016 and resumed in 2017, 2019 and 2021. Since 15-30% of adult chub are caught in the nets, there will always be chub present in the lake and periodic removal efforts will be necessary to maintain a quality fishery. In 2021, thirteen thousand pounds of chub were removed from East Lake and it was apparent the chub rebounded since the previous trapping effort in 2019. As part of the bullhead experimental removal, seventeen thousand pounds catfish were removed from Crane Prairie.

*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.*

East Lake, Paulina Lake and Lava Lakes have been popular fishing destinations because of the fishing, good campgrounds, resorts and aesthetics. When chub population levels are high, trout are negatively impacted. Removing spawning chub on a regular basis should retain a good to excellent trout fishery. All these lakes have the potential to provide excellent, "blue ribbon" trout fishing. After eight years of chub removal and monitoring in East Lake, data shows chub removal by trap netting is an effective way to improve trout conditions, growth rates and abundance. Angler reports have been positive and ODFW doesn't receive as many complaints

from anglers about poor fishing or "we only catch chub." In addition, chub removal likely improves water quality by reducing algae blooms.

*Percent benefit split between Commercial and Recreational anglers:*

0 % Commercial
100 % Recreational

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

100% recreational fishery. There are no commercial fisheries on these lakes, although they are used heavily for guided fishing trips by licensed/permitted guide services.

*This project has been identified as an ODFW priority for:*

Local/watershed
Basin/regional
Statewide

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

Yes
Yes, goal 2 of the ODFW strategic plan: "increase participation in fishing," and "increase and maintain satisfaction with work we do." By removing chub in these popular waterbodies, trout conditions and abundance should improve and therefore increase fishing participation at these waterbodies.

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

Anglers, resort owners, and ODFW initiated this project. A working group was formed in 2009 with resort owners, local fishing club representatives, OSU Cascades and ODFW to develop a plan to control chub.

*Identify any plan or other document that identifies this priority.*

Supports goals 1 and 2 of ODFW's 25 Year Angling Enhancement Plan.

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

Yes
Yes, the STEP biologist will oversee interns and volunteers for this project.

*This project is intended to benefit the following species:*

Other Species
brown trout, kokanee salmon
Rainbow Trout

*This project will benefit anglers or fishery by providing:*

Angling Opportunity
Monitoring/Research

*Angling Opportunity*

*This project will:*

Improve the opportunity for anglers to catch fish (better stocked fish, trapping)
Restore a degraded fishery

*Monitoring/Research*

*This project will be used to evaluate:*

Population composition (i.e age, species, survival, size, or genetics)
Distribution (i.e. presence, abscence, abundance)

*Has this project been reviewed or developed by an individual with appropriate qualifications (i.e ODFW biometrician, research professor)?*

No

*Is this study critical to fishery management decisions?*

Yes

Information developed by the removal project is used to determine management options for maintaining current target species populations of rainbow trout, brown trout and kokanee salmon.

Yes

*Is there a plan to repeat this monitoring or research in the future?*

Yes

At present it is believed that periodic (every other year or every two years) chub removal is necessary to maintain the viability and quality of the trout fishery.

*Will the data be reported or published?*

Yes

Data from the project is summarized in a district report and used to determine management options for maintaining current target species of rainbow trout, brown trout and kokanee salmon.

## ***Project Description***

*Schedule*

| Activity | Date | RE Funding |
|---|---|---|
| Interview candidates for OSU Sponsored Program Internships | April 2022 | No |
| Interns and ODFW staff training and preparation | June 2022 | Yes |
| Interns and ODFW staff set 8-10 trap nets in lakes | June 2022 | Yes |
| Fish are marked for mark and recapture estimate | June 2022 | Yes |
| Nets are checked regularly, chub removed and hauled to dumpsite. Trout are measured and released. | June-August | Yes |
| Zooplankton samples are taken from various lakes that have invasive fish. | August -September | Yes |
| Bullhead catfish trapping in Crane Prairie Reservoir | August 2022 | Yes |
| Data entry, data and lab analysis, summary report | August -Septmeber 2022 | Yes |
| Remove nets from lakes. Clean and repair all equipment | August 2022 | Yes |

*Permits*

| Permit | Secured? | Date Expected |
|---|---|---|
| Special use permit - USFS - disposal sites for invasive fish | No | |

*Project Design and Description*

*Please describe in detail the methods or approach that will be used to achieve the project objectives.*

The purpose of this project and internship is to remove invasive tui chub from East, Paulina and Lava Lakes and improve the trout fishery for anglers. If time permits, the interns will trap and remove brown bullhead from Crane Prairie Reservoir. The interns and ODFW personnel will monitor these efforts and collect biological data on trout, zooplankton, and the invasive fish. Interns will be responsible for trapping chub using fyke nets. The duties require driving a boat, setting nets, emptying nets, lifting barrels of chub, and hauling chub or bullhead to disposal sites. Loads of chub will vary from 200-2000 pounds a day and some days may require

multiple trips to a disposal site. Trout and kokanee are weighed and measured and released unharmed.

*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?*

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

ODFW owns and maintains all the fyke nets, boats and equipment for invasive fish removal and trout/lake monitoring.

*Will the project require ongoing maintenance?*

Yes

In the years we do not remove invasive fish, ODFW will continue to monitor the chub population, trout conditions and abundance, and zooplankton levels. If enough staff and volunteers are available we may remove invasive fish for shorter season.

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

Yes

Baseline data was collected prior to chub removal (2009-2010) and we continue to monitor lakes each year.

## *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 |
|---|---|---|---|---|
| OSU Cascades Faculty staff: faculty supervision, student recruitment, credit evaluation | In-Kind | Pending | 770 | |
| ODFW Staff, STEP Biologist | In-Kind | Pending | 4,800 | |
| ODFW Staff, District Biologists | In-Kind | Pending | 500 | |
| Sunriver Anglers | Cash | Pending | 1,500 | fyke net |
| Central Oregon Flyfishers | Cash | Pending | 1,500 | fyke net |
| East Lake Resort,<br>Crane Prairie Resort: boat mooring, boat ramp use | In-Kind | Pending | 1,000 | |
| Lava Lake Resort: volunteer time, boat mooring | In-Kind | Pending | 1,860 | clearing road to dump site, working nets, hauling chub |
| ODFW Nrs1 | Cash | Pending | 1,200 | bullhead removal Crane Prairie |
| boat fuel, wood chips, tags, fyke net | Cash | Pending | 2,150 | STEP |
| | | Total | 15,280 | |

## *Budget*

| Item | Unit Number | Unit Cost | In-kind or non-cash contributions | Funding from other sources | R&E Funds | Total Costs |
|---|---|---|---|---|---|---|
| PROJECT MANAGEMENT | | | | | | |
| Matt Shinderman, OSU Cascades Salary | 11 | 70 | 770 | | | 770 |
| Jen Luke, ODFW STEP, Salary | 120 | 40 | 4,800 | | | 4,800 |
| Ben Stout, ODFW M&E Salary | 40 | 30 | 1,200 | | | 1,200 |
| ODFW District biologists, Salary | 10 | 50 | 500 | | | 500 |
| Joey Frazee, Lava Resort | 62 | 30 | 1,860 | | | 1,860 |
| | | SUBTOTAL | 9,130 | | | 9,130 |
| IN-HOUSE PERSONNEL | | | | | | |
| | | SUBTOTAL | | | | |
| CONTRACTED SERVICES | | | | | | |
| Sponsored Program OSU Internships (12 weeks) | 2 | 8,160 | | | 16,320 | 16,320 |
| | | SUBTOTAL | | | 16,320 | 16,320 |
| TRAVEL | | | | | | |
| Motor Pool Truck Lease | 3 | 500 | | | 1,500 | 1,500 |
| Truck fuel | 3 | 500 | | | 1,500 | 1,500 |
| | | SUBTOTAL | | | 3,000 | 3,000 |
| SUPPLIES/MATERIALS | | | | | | |
| woods chips for dump site | 1 | 300 | 300 | | | 300 |
| boat fuel | 1 | 300 | 300 | | | 300 |
| tags for mark-recapture | 1 | 50 | 50 | | | 50 |
| boat mooring - East Lake and Lava resort | 100 | 10 | 1,000 | | | 1,000 |
| fyke net | 1 | 1,500 | 1,500 | | | 1,500 |
| | | SUBTOTAL | 3,150 | | | 3,150 |
| EDUCATION/OUTREACH | | | | | | |
| | | SUBTOTAL | | | | |
| EQUIPMENT | | | | | | |
| fyke nets (2) | 1 | 1,500 | | 3,000 | | 3,000 |
| | | SUBTOTAL | | 3,000 | | 3,000 |
| FISCAL ADMINISTRATION | | | | | | |
| Internship OPE (10%) | 12 | 816 | | | 816 | 816 |
| | | SUBTOTAL | | | 816 | 816 |
| | | BUDGET TOTAL | 12,280 | 3,000 | 20,136 | 35,416 |

### *Internal Review Results*

**Review Score:** 2.3 out of 3

(0 = Do Not Fund, 1 = Strengthen Proposal, 2 = Recommend, 3 = Strongly Recommend)

*Summary of Review Team Comments*

The review team fully supports this proposal as this has direct benefits to anglers and provides a great opportunity to train the next generation of biologists. The applicant should provide details documenting the benefits realized from previous investments. While long-term commitments are not normally supported by R&E, the review team encourages the board to continue funding as this project was identified as a top priority through the ODFW unwanted fish prioritization effort. Scores included seven 2s and three 3s.

*Specific Review Team Comments*

Good project that is relatively inexpensive and provides ongoing benefits to anglers. Also a great opportunity for interns to gain experience.

The application notes that removal has been shown to restore quality trout fishing and that sustained effort is necessary to maintain those important fisheries. While gaps beyond a year or so quickly allow the non-natives to return to previous abundances. However, removal efforts have not been able to reduce or eliminate those populations. The applicant should discuss why ongoing trapping is the selected alternative and what other control or eradication options have been explored with a larger group or other experts to address the situation.

Since this has been ongoing for several years, the applicant should provide a report and/or a summary of fish populations vs angler effort/success. This should help clearly demonstrate the benefits of this project to anglers by comparing the current fishery to the fishery before the project was initiated and when trapping effort has been reduced.

The IRT understands this project will require a long-term commitment by R&E and recommends the district provide the information necessary to support continued investments by R&E and continue to work with Division to locate other sources of funding if they ever become available. ODFW is exploring different funding approaches to handle this in the future, those actions may be a few more years out, so it is important to have R&E support to keep these projects going in the meantime.

During the 2021 “Reservoir Dogs” unwanted fish project prioritization, a review team of several District staff reviewed priority projects from around the state and divided the top ten projects into Tier 1 (top statewide priority) and Tier 2 (second priority). Priority was given to projects that build on existing investments and are considered to represent the greatest return for anglers and/or native fish conservation.
The unwanted fish team encourages Fish Division and staff to continue to seek funding opportunities beyond R&E for these important and on-going projects. In the meantime, the unwanted fish team urges the R&E Board to sustain investments in these priority projects as R&E is currently the most appropriate funding source and other funding sources are limited or not available at this time for most of these projects.
The unwanted fish team supports implementation, and associated funding, of the Central Oregon Lakes Invasive Fish Removal as a Tier 1 project on an on-going basis.

Lots of cost share from many different entities.

*Specific Review Team Questions*

*The application should clearly explain how this proposal will support removal of bullhead at Crane*

*Prairie or other removal projects. Much of the discussion refers to Crane Prairie, but then another section states "if there is time".*

While the proposal does mention bullhead in several locations ODFW's priority is chub removal and monitoring in East, Paulina and Lava Lake. If chub capture subsides, which it usually does by early August, we will move nets and crew to Crane Prairie Reservoir and remove bullhead catfish. Unlike chub, bullhead catfish can be caught in large numbers throughout the summer. There is a separate proposal supported by a different funding source that prioritizes bullhead removal, so the chub project will support that effort as available.

*Is the applicant aware of other lakes where non-desirable fish removal is conducted every two or three years to maintain a recreational fishery?*

Applicant is not aware of non-desirable fish removal conducted elsewhere intermittently. Each lake with an invasive chub problem is unique and factors include species, habitat, predators, water temperatures, water depth etc. In East Lake we hypothesized if spawning chub were significantly curtailed for consecutive years rebound of the spawning population would slow, and mechanical removal could be suspended for a year or two without detrimentally affecting the trout.

## *Additional Files*

Budget Information

Maps

Photos

| | |
|---|---|
| 14 " chub from East Lake | *Large chub from East Lake* |
| Chub in barrels 2021 | *2021 chub removal at East Lake* |
| Measuring trout from East Lake | *Interns collecting data from East Lake 2021* |

Design Information

Management Plans and Supporting Documents

Permits and Reviews

Partnerships

Public Comment

Administrative Documents

signature authorization page

***Completion Report***

*Objectives and Accomplishments*

R&E funds would provide an internship stipend for two students to work 12 weeks, approximately 960 hrs. Funds would also be used to lease a truck for 12 weeks.

Did you meet the objective? Yes

Yes, two student interns trapped and removed invasive chub from East, Paulina, and Lava lakes. Invasive catfish were trapped and
removed from Crane Prairie Reservoir. Lengths and weights collected from game fish (trout and kokanee) were used to determine
relative weights and condition factors. Zooplankton samples were collected from the lakes to determine abundance and size of
zooplankton for monitoring purposes.

Students will trap and remove invasive fish and collect associated monitoring data.

Did you meet the objective? Yes

Yes, two student interns trapped and removed invasive chub from East, Paulina, and Lava lakes. Invasive catfish were trapped and
removed from Crane Prairie Reservoir. Lengths and weights collected from game fish (trout and kokanee) were used to determine
relative weights and condition factors. Zooplankton samples were collected from the lakes to determine abundance and size of
zooplankton for monitoring purposes.

*Comments*

*Grantee agreed to forfeit all remaining funds.*