Environment and Natural Resources Trust Fund
2014 Request for Proposals (RFP)

Project Title: **ENRTF ID:** **018-A**

A Smartphone Application to Benefit Anglers and Fish

Category: A. Foundational Natural Resource Data and Information

Total Project Budget: $ 138,229

Proposed Project Time Period for the Funding Requested: 3 Years, July 2014 - June 2017

Summary:

Develop a free smartphone application that benefits anglers (information access, instant diary, peer interaction) and fish (informed and objective management via long-term, state-wide data on angler movement, effort, and harvest).

Name: Paul Venturelli

Sponsoring Organization: U of MN

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St. Paul MN 55108

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Web Address www.paulventurelli.net

Location

Region: Statewide

County Name: Statewide

City / Township:

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ Employment	_____ TOTAL _____%

PROJECT TITLE: A smartphone application to benefit anglers and fish

I. PROJECT STATEMENT

The goal of this project is to develop a user-friendly and free mobile smartphone application that will benefit Minnesota anglers (as a tool for logging and accessing relevant information) and help to sustain the resource (by establishing a long-term, state-wide dataset of angler movement, effort, and harvest)

Angler benefits
- Instant access to info (weather, DNR Lake Finder, regulations, local businesses)
- Log, map, review catch (species, date, time, location, conditions, lure) at the click of a button
- Ability to share with and follow other anglers, link to social media
- Improved fishing experience (in part through improved management); motivation

Management benefits
- Details of angler movement (and therefore revenue, diseases, invasive species, etc.)
- Fine-sale, lake- and state-wide distribution of angler effort and harvest in real time
- Determine how the above (and demographics) trend over time (e.g., seasons, years)
- Improvement over conventional data collection (which is expensive and localized)
- Informed and objective decision-making that prioritizes resources and adjusts to changing angler expectations and needs

Effective fisheries management requires an understanding of angler movement, pressure and harvest. In Minnesota, these metrics are determined by anglers: when, where, and how long they fish for, how they fish, the species that they target, and the degree of catch-and-release. However, data are difficult and expensive to collect by conventional methods (surveys, interviews and logbooks). Therefore, we know precious little about angler movement, pressure and harvest in Minnesota beyond our 10 large lakes.

We will develop a prototype smartphone app in partnership with a software developer, the MN DNR, and three angler groups (Activities 1 & 2) and then analyze data to reveal trends in angler movement, effort, and harvest (Activity 3). Analyses will center around 3 questions: 1) what segment of the angler population do the data describe; 2) how often do anglers fish, where, and for what; and 3) how does data stream compare to data from conventional angler surveys?

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: *Develop the smartphone app in partnership with three angler groups, the MN DNR, a software developer, & the developers of a highly successful birding app* **Budget: $ 56,374**

- Direct a software firm to develop an app that is both popular with anglers and useful to managers.
- Work with the DNR to determine data needs (in terms of both information and analyses) and ensure alignment with the MN Data Practices Act (discussions so far are positive).
- Consult with three angler groups (see Activity 2) and the designers of a birding app that has revolutionized bird data collection. These activities will ensure that the app is incentivized and attractive to anglers.

Outcome	Completion Date
1. Smartphone app alpha version (internal testing/use; not released to public)	*June 2015*
2. Smartphone app closed beta version (restricted public release - see Activity 2)	*May 2016*
3. Smartphone app open beta version (unrestricted public release)	*June 2017*

Activity 2: *Initiate a data stream and collect user feedback by releasing the closed beta version of the smartphone app (Activity 1) to three angler groups* **Budget: $ 41,374**

- Solicit feedback from catfish and sturgeon anglers (via the Minnesota Catfish and Sturgeon Alliance), non-game fish anglers (via roughfish.com), and upper Red Lake walleye anglers (via local contacts).
- These groups are passionate and engaged, have good relationships with the DNR, and are tech-savvy.

- Feedback is essential to ensuring that the app is popular with anglers (i.e., incentivized and attractive).
- The app will generate data on angler habits (e.g., fishing frequency, movement, effort, catch species and location). **The app will not collect personal data or reveal fishing hotspots.** All data will be stored and secured on DNR servers and managed under the Minnesota Data Practices Act.

Outcome	Completion Date
1. Angler-specific data from three MN angler groups during the 2016 open-water season	*November 2016*
2. Feedback for improving the Smartphone app (2016-17 open and closed-water seasons)	*March 2017*

Activity 3: *Analyze angler demographic & movement data, compare catch & effort data from the smartphone app to catch & effort data from conventional surveys* **Budget: $ 40,481**

- Demographic data will tell us which segment of the angler population is generating the data, and can later describe how this changes with smartphone use and the popularity of the app. Demographic data can include gender, age, ethnicity, and zip code, but will not relate to an identifiable individual.
- Movement patterns across groups and over time to gain early insight into how anglers (and therefore revenue, aquatic diseases, invasive species, etc.) move through the state.
- Comparing catch and effort data from the smartphone to catch and effort data from standard DNR creel surveys (i.e., angler interviews) on upper Red Lake will reveal the extent to which data from the smartphone compliment and corroborate data from the conventional approach.

Outcome	Completion
1. Analysis of angler demographic data (2016 open-water season)	*June 2017*
2. Analysis of angler movement data (2016 open-water season)	*June 2017*
3. Comparison of catch & effort data from smartphone app & creel survey (2016 open-water season)	*June 2017*

III. PROJECT STRATEGY

A. Project Team/Partners: The **project team to be funded** by the ENRTF consists of one graduate student (Benjamin Chen, UMN alum and fishing app conceptor). The **project team not to be funded** by the ENRTF consists of principal Investigator (PI) Paul Venturelli (University of Minnesota) and co-PIs David Fulton (Minnesota Cooperative Fish and Wildlife Research Unit) and Nick Phelps (UMN). All PIs will contribute to each activity. The **project partner not to be funded** by the ENRTF is the MN DNR Division of Fish and Wildlife (primary contact Don Pereira, Research Manager).

B. Timeline Requirements (3 years): Three years is the minimum time to develop, test, and deploy the smartphone app and analyze data. The project will be completed in the allotted period.

C. Long-Term Strategy and Future Funding Needs
This project kicks off an exciting effort to develop a free mobile smartphone application for Minnesota's resource users (fish, wildlife, and parks). Users will benefit from a two-way flow of information that puts relevant material at their fingertips (e.g., regulations, conditions, updates) and supports the DNR in making objective and informed decisions. We are starting with anglers because some angler groups have already contacted the DNR about developing an application. **It is very important that we corner this data market now so that information is public rather than private**, and to establish Minnesota as a leader in applying new technologies to resource management. We will disseminate findings by presenting at state conferences and meetings, and by publishing our analyses in scientific journals and lay publications. We do not anticipate future funding needs; when this project is complete, we will pass the app on to the DNR for further development and promotion within and beyond fisheries. Long-term monitoring of these data will likely reveal unforeseen trends that will initiate new management practices, future research directions, and increase public-private partnership.

2014 Detailed Project Budget

Project Title: *A smartphone application to benefit anglers and fish*

IV. TOTAL ENRTF REQUEST BUDGET *3* years

BUDGET ITEM	AMOUNT
Personnel (graduate student): one at 50% time for 3 full years to oversee the project. Salary $21,096 plus $17,911 benefits (15.7% health insurance, plus tuition). Inflationary increases of 3% for years 2 and 3.	$ 121,442
Contracts: Russell Herder (www.russellherder.com), a Minnesota-based software development firm, has agreed to code the mobile smartphone application at a discounted cost and according to our specifcations and timeline.	$ 15,000
Travel: in-state travel for ~12 meetings with the MN DNR and three angler groups (includes UMN fleet vehicle rental, mileage, three overnight stays, and per diem for one person)	$ 1,787
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 138,229

V. OTHER FUNDS

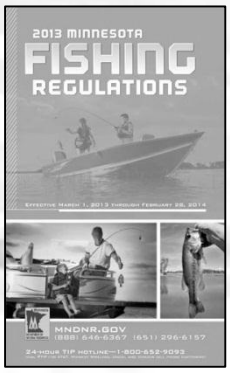
Other Non-State $ Being Applied to Project During Project Period	$ -	
Other State $ Being Applied to Project During Project Period	$ -	
In-kind Services During Project Period: 1% PI salary/fringe for 3 years. Venturelli ($2955) and Phelps ($3566). Because the project is overhead-free, laboratory space, electricity, and other overhead costs are provided in kind. The University of Minnesota overhead rate is 52% (~$65,000)	$71,521	*Effort secured, overhead estimated*
Remaining $ from Current ENRTF Appropriation (if applicable)	$ -	
Funding History	$ -	

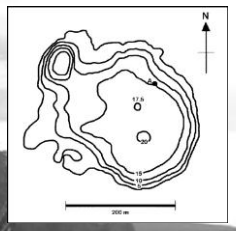
20th century and earlier

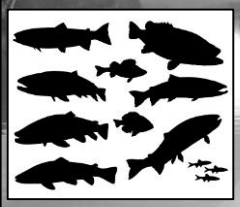
Traditional fish surveys take considerable time and manpower and are fairly localized.

As a result, we know little about angler movement, effort, and harvest beyond our 10 large lakes

21st century and beyond

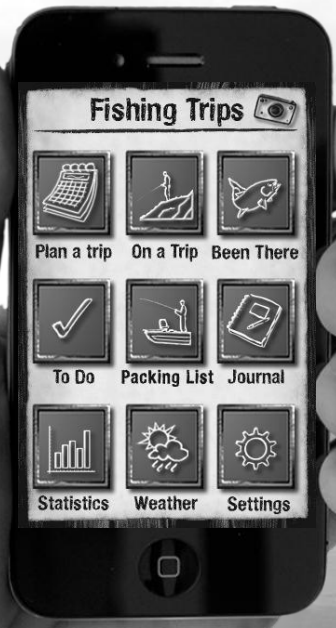


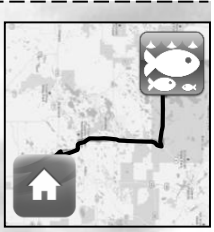


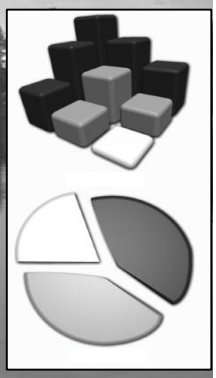


We will develop a smartphone application that

- anglers can use to access information and log their catch
- generates state-wide data in support of management







This smartphone application will benefit the entire state and future generations

PROJECT MANAGER QUALIFICATIONS AND RESPONSIBILITIES

Dr. Paul Venturelli
Assistant Professor, Department of Fisheries, Wildlife and Conservation Biology, University of Minnesota, Twin Cities (2011 to present)

B.S.	York University	Environmental Science	2000
M.S.	University of Alberta	Environmental Biology and Ecology	2003
Ph.D.	University of Toronto	Ecology and Evolutionary Biology	2009

Paul Venturelli will be responsible for overall project coordination (developing and planning the project, hiring personnel, liaising with project partners, ensuring that the project is on-time and on-budget, assisting in the preparation of progress reports and final reports, etc.). Paul has coordinated ~16 projects and dozens of personnel to date. He has gained expertise in fish ecology, population dynamics, and management through 13 years of research.

Dr. David Fulton (Minnesota Cooperative Fish and Wildlife Research Unit) is an expert in human dimensions of fish and wildlife and benefits-based resource management. His research focuses on understanding and improving human decision processes in fish and wildlife management.

Dr. Nick Phelps (UMN) leads the fisheries research and extension activities for the College of Veterinary Medicine. For the last six years, Nick has studied the threats and management opportunities that lie at the intersection of humans, animals, and the environment.

ORGANZATION DESCRIPTION

The University of Minnesota is one of the largest and most recognized public research universities in the United States. Its mission is to 1) "**conduct high-quality research**, scholarship, and artistic activity that benefit students, scholars, and communities **across the state**, the nation, and the world"; 2) "share that knowledge, understanding, and creativity by providing a broad range of educational programs … and **prepare graduate, professional, and undergraduate students**…for active roles in a multiracial and multicultural world"; and 3) extend, apply, and **exchange knowledge between the University and society** by applying scholarly expertise to community problems, by helping organizations and individuals respond to their changing environments, and by making the knowledge and resources created and preserved at the University accessible to the citizens of the state, the nation, and the world.