



Tablet Computing in Fisheries Science: Devices and Current Implementation

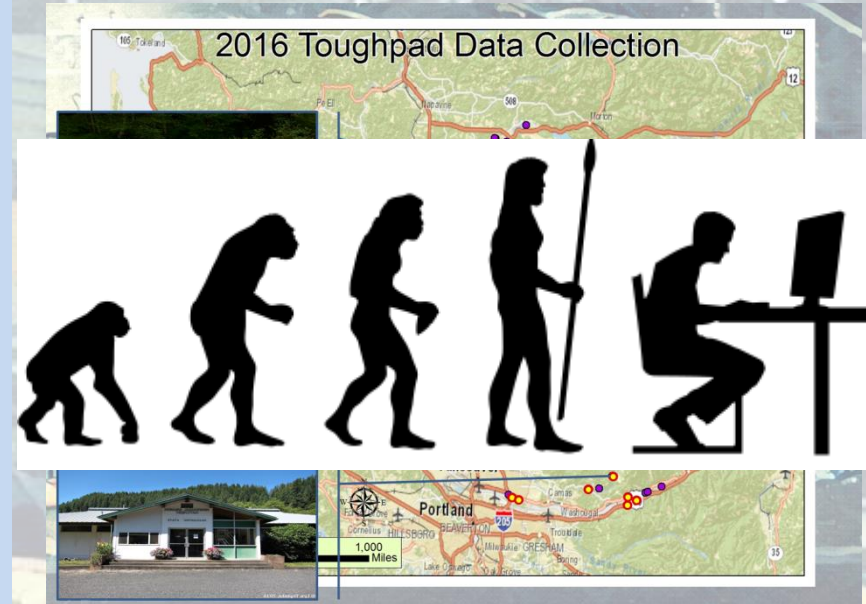
12/06/2016

Benjamin J. Warren
Washington Department of Fish and Wildlife



Contents

- Developing a mobile digital data collection program
- Current field and hatchery implementation
- Challenges
- Successes





Components of Digital Data Management

**Prioritize and Identify
Project Needs**

**Database selection and/or
development**

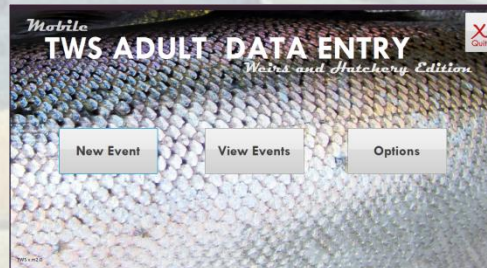


Components of Digital Data Management

Device selection
and acquisition



Form Development

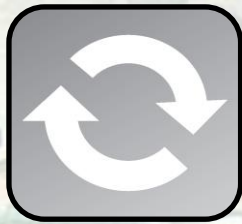


Staff
Training



Components of Digital Data Management

Data Exchange



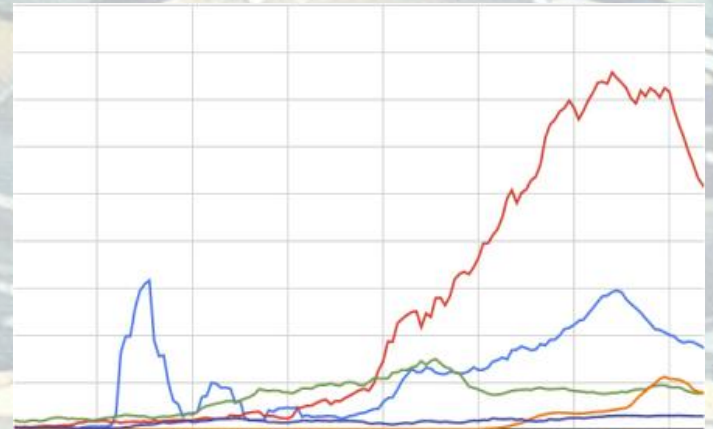
Washington Department of
FISH & WILDLIFE

2016 Winter Steelhead Surveys - Region 5

Survey Date	2016-09-09
Start Time	09:25:00
Observer(s)	
Subbasin	Mt. Abernathy, Germany, Coal
Stream Name	
Reach	GEA
Survey Type	Index
Survey Method	Foot
Survey Direction	Downstream
Is the data for this reach going to be split?	Yes
Who will you be splitting the reach data with?	
Clarity (ft)	4
Clarity Code	To Bottom
Weather	Cloudy
Conditions	Excellent (no impact)
Total new steelhead redds	
Total SV steelhead redds	
Total NV steelhead redds	
Total steelhead spawners	
Total steelhead holders	
User Name	RegD_Q2
HeaderID	E29019a2c-f725-40a3-90b5-c0d038b0b548
Was the entire reach surveyed?	Yes
End Time	10:10:00
New Redds	
SV Redds	
NV Redds	
GPS Name	Q2P
Reach Code	GEA
Code Date	9
Code Month	9
Code Year	2016
Date Code	9-9-2016

Edit Duplicate Record

Data Analysis



Device Selection

Basic Device Criteria:

- Tablet computer (touchscreen input)
- Barcode connectivity
- Long battery life
- Rugged design
- Water resistant



**Panasonic FZ-G1
Toughpad**



**Apple iPad
With GPS**

Panasonic FZ- G1 Toughpad

Capabilities:

- Connect PIT tag reader
- Long battery life
- Rugged design
- Water resistant
- Tablet-sized screen
- GPS or Barcode reader
- WiFi capable



**Panasonic FZ-G1
ToughPad:**

A versatile tablet computer for use
in fixed-site fisheries work

Apple iPad with GPS

Capabilities:

- Long battery life
- Rugged Design (with Life Proof case)
- Water resistant
- Light weight
- GPS



**Apple iPad
with GPS:**

A lightweight tablet computer for
use in mobile field work

Return to Header

View all Fish

Count Summary

DELETE FISH

Species

Fall Chinook - Tule

Count

1

Maiden

Recapture

Tags

NEW LOP TR

NEW Floy PK

+ Next Tags

Fork Length

87

Live

Dead

Mortality

Male

Female

Jack

NM

AD

LV

AD + LV

UNK

Not Wanded

CWT+

CWT-

SNID #

Scale Card #

Pos. #

Comments

+ C

+ 1

DNA

+ 1

Disposition

Upstream



1 OF 13
Current Record Total Records

+ New Fish

+ Same Fish



CLASS NO.	30783	DATE		DISPOSAL	DATE	BY
SAMPLE TYPE: FISH, FISH PART, FISH PART, FISH PART, FISH PART						
SAMPLE LOCATION						
SPECIES						
SAMPLE TYPE						
DATE SAMPLED						
FISH TAGS (COUNT)						
FISH TAGS (COUNT)						

A1

A2

Volume Up

Volume Down

Windows

File Manager



16T 1154

asonic

FZ-G1

Hatchery 2015

THE HULK

TOUGHPAD

2016 Hatchery Application : Database- C:\TWS_Mobile\2016 Hatchery Application.accdb (Access 2007 - 2013 file format) - Access

Edit scale card position

Position

1

Scales Taken

YES

NO

Snout ID

16T1154

Fork Length

75

DNA ID

Otolith ID

Rep. Suc.

G

Male

Female

Jack

Adult

AD

LV

AD + LV

NM

UNK

BLANK

SC 0

SC 1

SC 2

SC 4

1

OF

1

+ New Position

Delete Position

iPad with GPS and iForm Builder

Built in QA/QC with picklists and data-enforcement

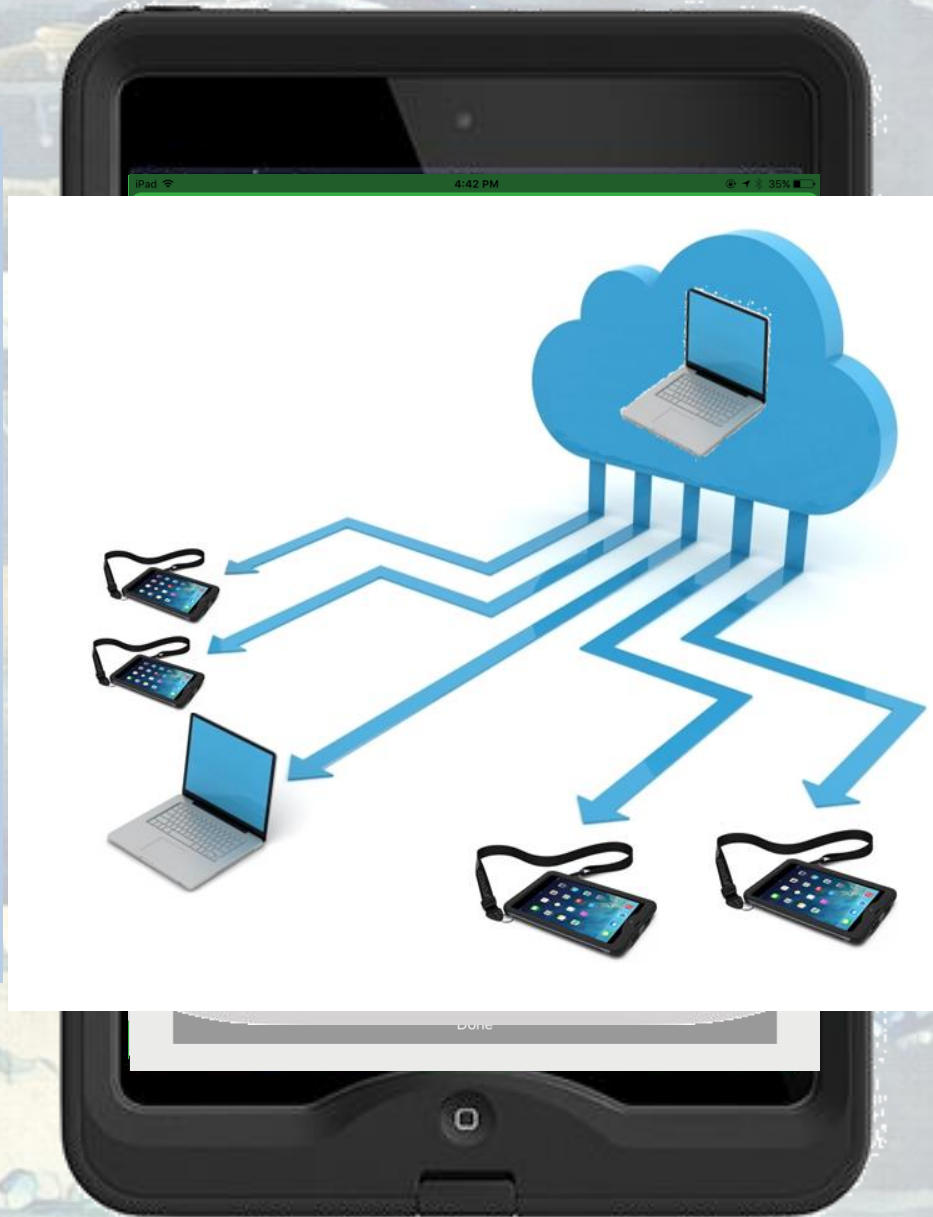
Integrated GPS into all data collection - removing the need to link GPS data with survey data.

Making form changes in-season

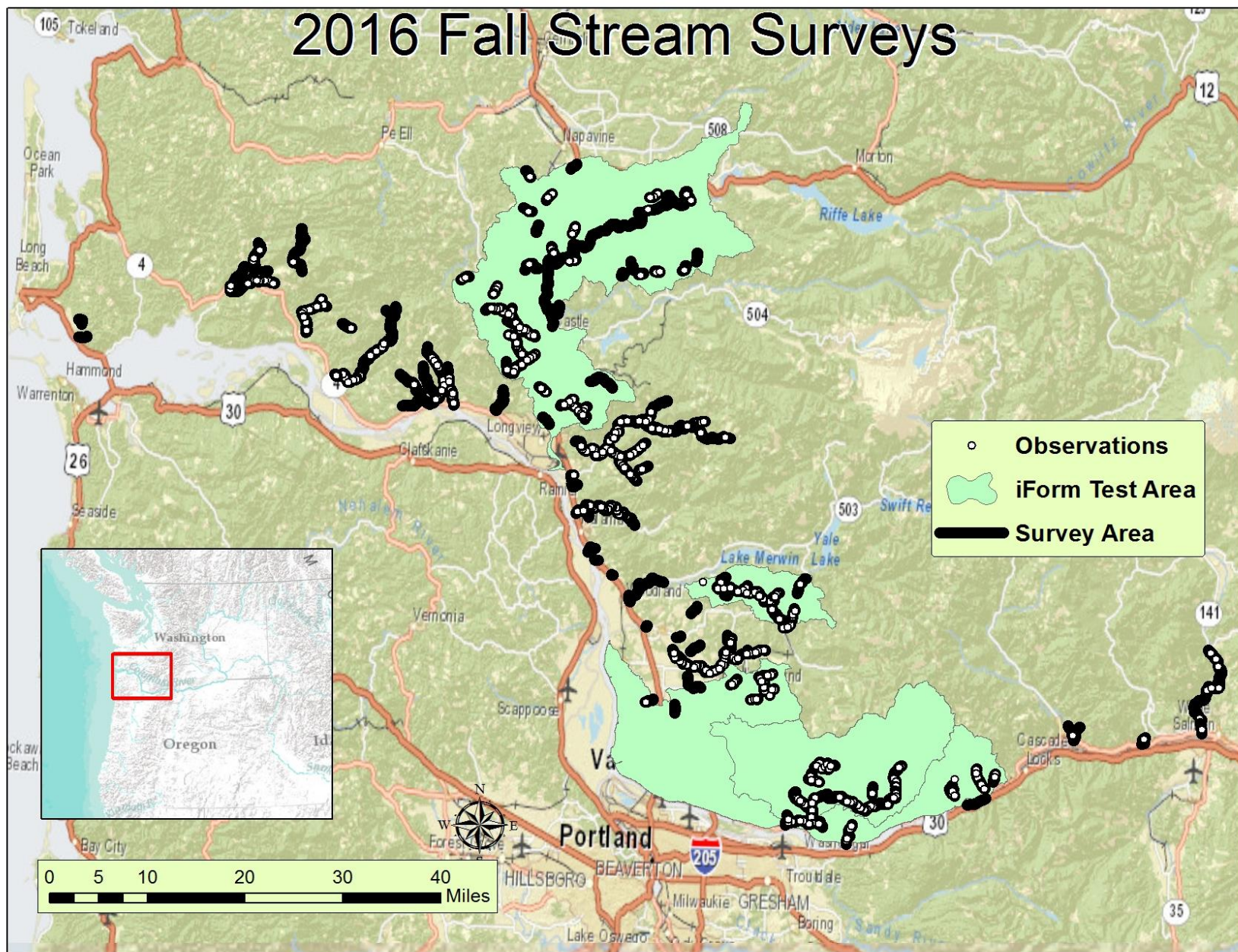
Ability to incorporate barcodes

A large set of preexisting “widget applications”

Ability to use iPad account to relay information to crew

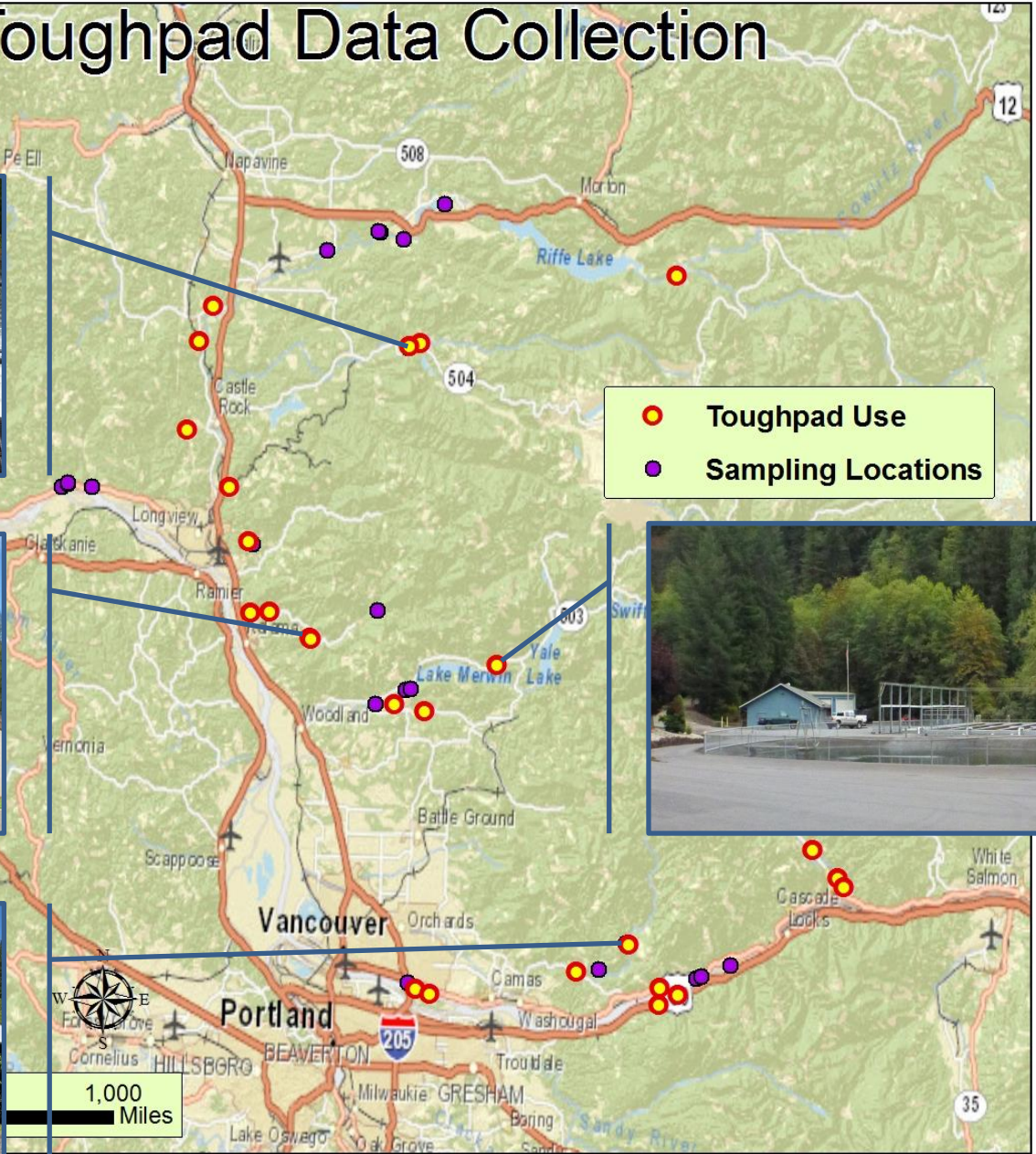


2016 Fall Stream Surveys





2016 Toughpad Data Collection



- Toughpad Use
- Sampling Locations





Challenges and Successes



Challenges:

- Cost of equipment:
 - Toughpad - \$3000
 - iPad - \$800
- High investment in systems and application design – necessitates prioritization of projects\
- New training and protocols

What worked well:

- Able to accommodate complicated study designs
- Negligible occurrences of data loss over 3+ years and many thousands of sampling events
- High approval ratings from users
- Digital data collection can save time and improve accuracy



Thanks To:

- Bob Woodard and the WDFW Region 5 BDS Team
- Quinten Daugherty and the Region 5 Fish Program
- WDFW field staff
- BPA and the StreamNet Team
- North Toutle, Kalama Falls, Speelyai and Washougal Hatchery staff

Questions?