

University of Minnesota Citizen Science Symposium 2017 *From Trees to Technology*



Janine Kohn

MN Department of Natural Resources

MN Frog and Toad Calling Survey, Program Coordinator

MN Nongame Water Education and Outreach Program Coordinator

Why count frogs and toads?

Excellent indicator species of water quality.

Their presence in, or disappearance from, an area provide information about:

- Contaminants in water
- Wetland health
- Drainage of wetlands
- Development
- Climate change



History



- **1993** Pilot project John Moriarty, herpetologist
- **1994** MN DNR developed the Minnesota Frog and Toad Calling Survey to monitor populations throughout MN.
- **1996** USGS Biological Resource Division initiated North American Amphibian Monitoring Program (NAAMP)
- **94-1997** Data collected during this time-excluded due to small sample size
- **1998-current**
Statistical trend analyses began with 1998-2009 data
Collection of data on-going



**2nd longest amphibian monitoring program in the country next to Wisconsin*

What is the *MN Frog and Toad Calling Survey?*

- Volunteer signs up for a route
- Agrees to go out at night 3 times in a season (spring, early summer, mid-summer)
- Following proper protocol-visits all 10 route stops in order
- Listens for presence/absence of frog species within designated calling periods
- Records their findings
- Submits data to the DNR



2016 NAAMP Shutdown



POOF!

And then it was gone! – (It Croaked!)

We need to go paperless...why?

- Staff time allocation-20%
- Currently-manual sign up by staff
- Mailings sent out to over 200 participants
- Staff needed collect, sort and enter data at end of season
- CD calls-obsolete
- Many errors on written copies
- Change was needed due to NAAMP shutdown (no longer national data entry)

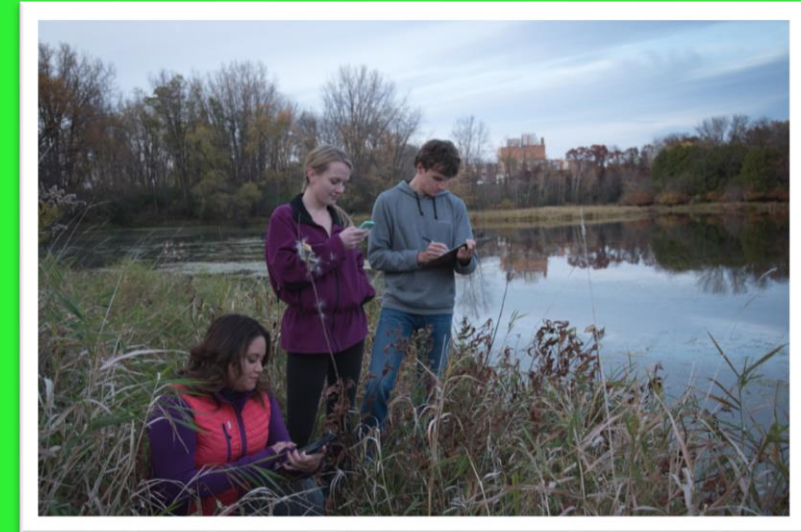


2016 Goals

Empowering Volunteers

- Making info easily available in one place
- All documents accessible
- Provide opportunities for less errors
- Create ways for public to self-assign a route

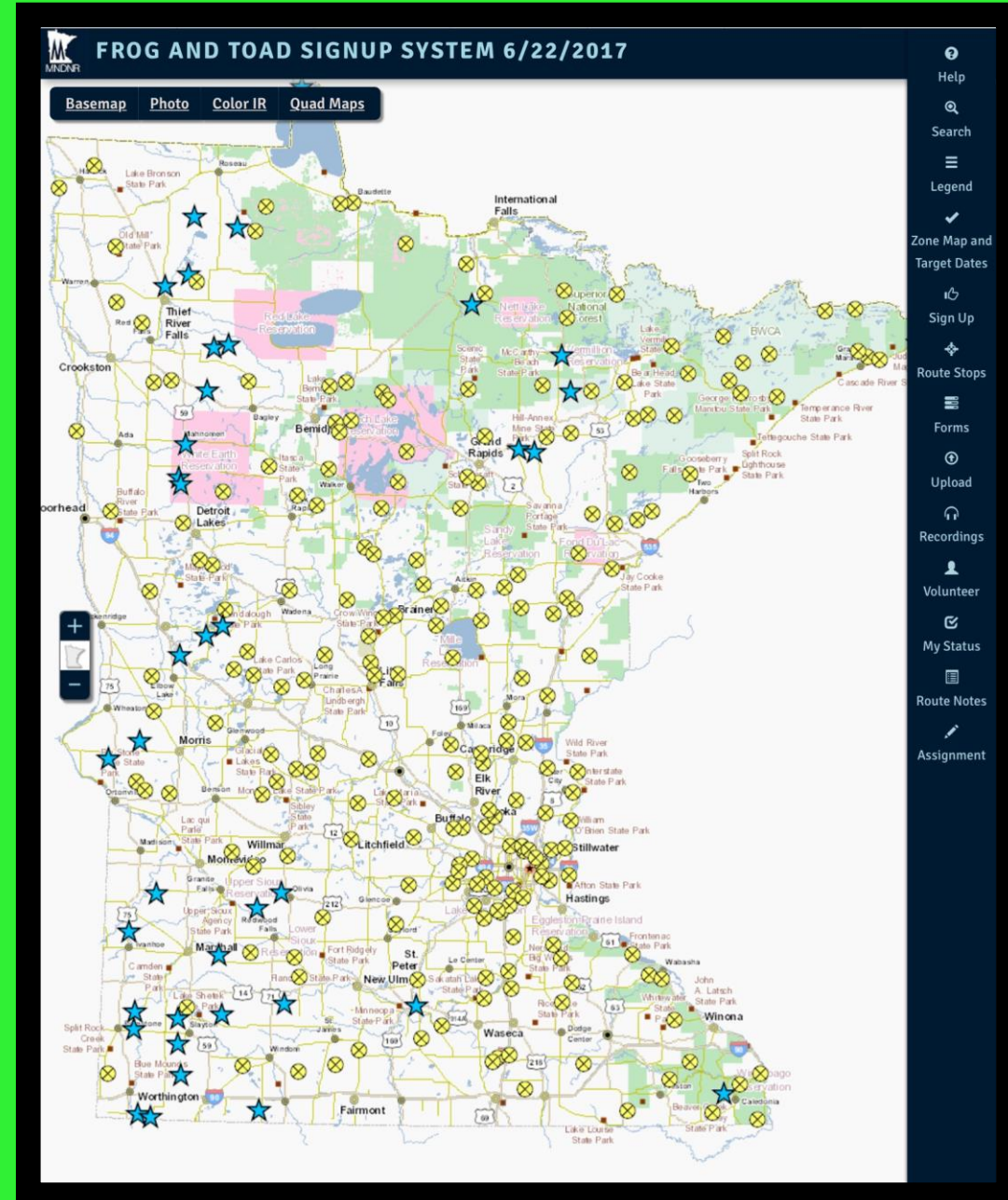
By empowering volunteers to manage their routes, efficiency increased which resulted in the agency becoming wise stewards of our budgets!



**Results-less shipping costs, space costs, phone charges and staff time.*

2016 GIS MAP Volunteer Sign-up

- Completion-39 days
- Blue star-open
- Yellow X-not available
- One click access to 10 stop details
- Sidebar has all information needed by volunteers
- Tabs—all volunteer info/additional links



2016 Change is difficult...

- Overall, good first year w/new system/positive feedback!
- Minor glitches-resolved
- Big issue-map could not be read in Internet Explorer only Chrome/Firefox.
- On-going challenge-getting people to submit their data!
- Intentions-good, some volunteers were unable to run route so data lost for that year-negatively impacting long-term monitoring.

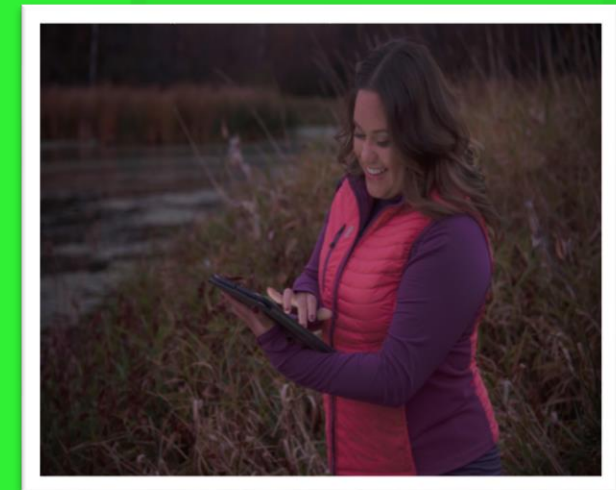
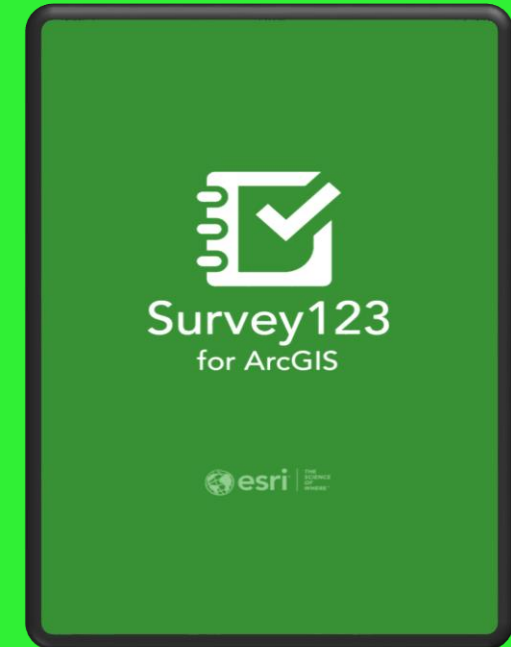


2017 Survey APP 123

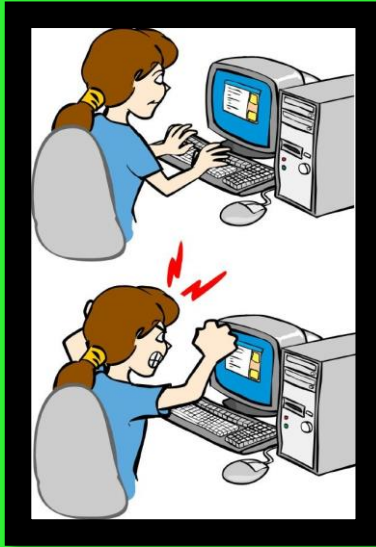
- Conducted pilot training for 25
- IT staff assigned to assist w/APP
- Data stored in the cloud
- Well received by all-younger audiences very favorable
- Couple glitches figured out right away
- Best feature was frog calls-people could double check themselves right on the spot!

The screenshot shows the Survey123 app interface on a mobile device. The title is "Frog & Toad - Stop Data Form". The form includes the following fields and options:

- Call Survey Start Time ***: A date and time selector showing "11/27/17" and "1:12 PM". A note below states "Survey must begin 30 minutes after sunset or later".
- Stop Location**: A map showing the location "Village of North Hudson" with coordinates "44°60'N 92°45'W ± 775.997 m".
- Air Temp in Fahrenheit ***: A text input field. A note below states "8 stops must be: greater than 42 - Run 1, greater than 50 - Run 2, greater than 55 - Run 3".
- Moon Visible? ***: Radio buttons for "Yes" and "No".
- # of cars passing during 5 min survey ***: A numeric input field with the value "0".
- Distracting Noise? ***: Radio buttons for "Yes" and "No".
- Index Value**: Three options with descriptions:
 - Index Value = 1**: Individual of the species can be counted; there is silence between the call you hear
 - Index Value = 2**: Calls of individuals can be distinguished, but there is some overlapping of the species' calls.
 - Index Value = 3**: Full chorus for the species. Calls are constant, continuous, and overlapping.
- Wood Frog**: A dropdown menu with a speaker icon for audio playback.
- Boreal Chorus Frog**: A dropdown menu with a speaker icon for audio playback.



2017 Fill-able PDF form



- Worked for some-not others
- Did not work on all operating systems
- Difficulty following directions for upload
- Frustrating for volunteers, walked many through-some gave up!

mn DEPARTMENT OF NATURAL RESOURCES

Route Number: _____ Route Name: _____ County: _____

Person assigned to route: _____

Use this form for new or established survey routes. Each route consists of 10 stops (minimum of 0.5 miles apart), and is repeated 3 times during the breeding season, according to the minimum water temperature and approximate range. If you cannot finish the route, you cannot pick up where you left off; you will have to rerun route at a different date.

RECORDING INSTRUCTIONS

1. Run your survey after dark, when wind velocity is less than 12 mph.
2. Listen for 5 minutes at each stop and record an **Index Value Code** for each species (1, 2, or 3).
3. At the start and end of each run, record a sky and wind **Condition Code**.
4. Record your comments at the end of the run. This may include information about difficulties, background noise, uncertain calls, observed changes in habitat since previous run, safety issues, etc.
5. If you believe you hear a species outside of their known range (see distribution ranges at: www.dnr.state.mn.us/reptiles_amphibians/frogs_toads/index.html), contact the MFTCS Coordinator, Janine Kohn. If possible, an audio recording which is helpful in verifying species identification.
6. **Email electronic Data Form form by August 1, 2017 to:**
<https://arcgis.dnr.state.mn.us/ewr/FrogToadVolunteer/index.html>

MFTCS DATA FORM 2017

CONDITION CODES

Sky Codes:

- 0 Clear or only a few clouds
- 1 Partly cloudy or variable
- 2 Broken clouds or overcast
- 4 Fog
- 5 Drizzle/light rain (doesn't effect you hearing the species) ex: inconstant motion, wind extends light flag
- 7 Snow
- 8 Showers (affects you hearing the species); don't conduct survey; ex: loose papers

Wind Codes:

- 0 Calm (less than 1 mph) ex: smoke rises vertically
- 1 Light air (1-3 mph) ex: smoke drifts in direction of wind
- 2 Light breeze (4-7 mph) ex: wind felt on face; leaves rustle
- 3 Gentle breeze (8-12 mph) ex: leaves and small twigs
- 4 Moderate breeze (13-18 mph) ex: moves thin branches. Don't conduct survey at level 4, unless in Great Plains.
- 5 Fresh breeze (19 mph or greater) ex: small trees begin to sway. Don't conduct survey at Level 5 in ALL REGIONS.

INDEX VALUE CODES

- 1 Individuals of the species can be counted (silence between the calls you hear).
- 2 Calls of individuals can be distinguished (some overlapping of the species' calls).
- 3 Full chorus for the species (calls are constant, continuous, and overlapping).

If there have been any changes to your route attach a description of the changes with this form.

Local Environment	Stop Number										RUN <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 (check)		
	1	2	3	4	5	6	7	8	9	10	Date: ____ / ____ / ____		
Air temperature (required) Fahrenheit											Start Time: _____ am / pm		
Moon visible? yes or no											Start Wind: 0 1 2 3 4 5		
# of passing cars during 5 min. survey											Start Sky: 0 1 2 4 5 7 8		
Distracting noise? yes or no											End Time: _____ am / pm		
Species Name	Stop Number (use Index Value Codes 1, 2, or 3)										End Wind: 0 1 2 3 4 5		
	1	2	3	4	5	6	7	8	9	10	End Sky: 0 1 2 4 5 7 8		
Wood Frog 244											Water Temp. (optional): _____		
Boreal Chorus Frog 214											Comments: _____		
Spring Peeper 208											_____		
Northern Leopard Frog 239											_____		
Pickerel Frog 238											_____		
Gray Treefrog 201											Observer(s): _____		
Cope's Gray Treefrog 196											_____		
Blanchard's Cricket Frog* 191											Phone Number: _____		
Mink Frog 242											<p>*Blanchard's Cricket Frog or American Bullfrog If you believe you have heard one of these, try to verify it by taking a photograph or recording of the call, and report it to the MFTCS coordinator.</p>		
Green Frog 230													
American Bullfrog* 228													
Canadian Toad 178													
Great Plains Toad 175													

2017 Volunteer database sign-up pilot

Better Impact

- New DNR Volunteer Database
- Frog and Toad Program-1st to pilot
- Volunteers create profile
- Sign mandatory agreement form
- Enter their hours
- Collects all hours/activities
- Personal calendar
- Notifications/correspondence
- All DNR volunteers will be using this by end of 2019

The screenshot shows the user interface of the Minnesota Department of Natural Resources (DNR) volunteer database. At the top, there is a navigation bar with the DNR logo and menu items: HOME, OPPORTUNITIES, SCHEDULE, HOURS, REPORTS, CONTACT, and MY PROFILE. Below the navigation bar, the user is logged in as Renee Hartwig. A welcome message is displayed next to her profile picture and a link to edit her profile. To the right, a table shows her volunteer hours: This Week (0.0), This Month (0.0), and This Year (3.0). The main content area features a news section with a green header and a purple header for Public Opportunities. The news section contains two paragraphs of text and a link to mobile access. The public opportunities section includes a search button and social media links for Facebook, Twitter, and a general share button. At the bottom, there is a footer with a link to video tips.

m DEPARTMENT OF NATURAL RESOURCES

HOME OPPORTUNITIES SCHEDULE HOURS REPORTS CONTACT MY PROFILE

Home [? Help](#) [Switch to Administrator View](#) [Log Out](#)

Welcome **Renee Hartwig**
[Edit](#)

VOLUNTEER HOURS		
This Week	This Month	This Year
0.0	0.0	3.0

Minnesota Department of Natural Resources

News

The contributions of more than 22,000 volunteers each year enable the DNR to expand and improve services to the public. Volunteers help to preserve and enhance Minnesota's natural beauty for the enjoyment of people of all ages, interests and abilities.

The DNR is committed to working with citizens to conserve and manage the state's natural resources, providing opportunities to engage volunteers in accomplishing this work and building partnerships to foster support.

Welcome to the DNR team!

MOBILE ACCESS NOW AVAILABLE TO VOLUNTEERS

Volunteers can access MyVolunteerPage in **just 1 click** on their smart phones.

Go to Video Tips at <http://www.betterimpact.com/siteguide/>

Public Opportunities

Want to volunteer elsewhere in Minnesota Department of Natural Resources? Visit our public page to explore all of our opportunities.

[Search for Opportunities](#)

Get Social

Share this [f](#) [t](#) [+](#)

Tweets by @mndnr

2017 Lessons Learned

- Good year, but overloaded volunteers
- Younger audience motivated by app
- Too many new programs to learn in 2017
- Not all operating systems are the same.
- Good thing-required all volunteers to have written backup of their data-preventing total loss



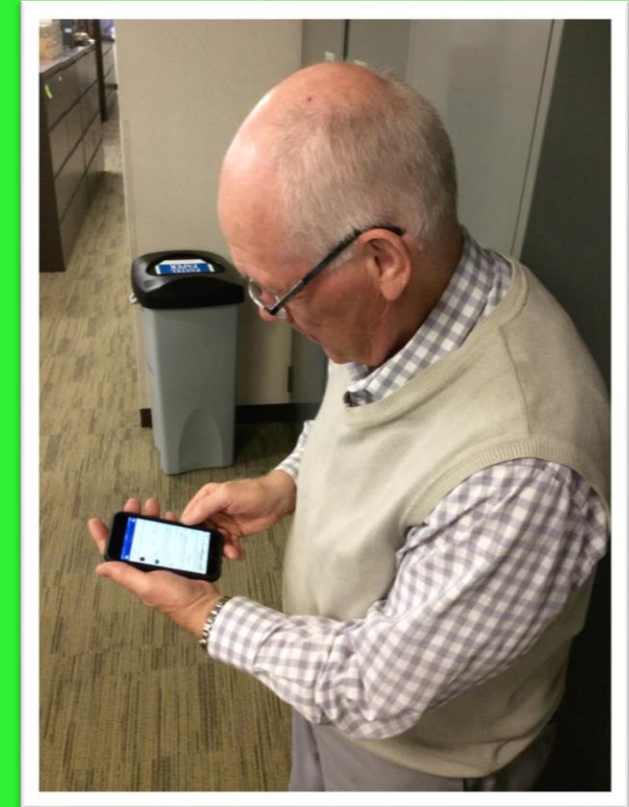
Provide Opportunities for All Learning Styles and Ages

- Instructional videos
- Written & audio directions
- Electronic data collection
- Written data collection-(scan it)
- Don't underestimate people- (esp. with age)

*-Meet them where their needs are
-Walk them through the new methods.
-Most are willing to learn!*

According to Pew Research Center:

- *74% people ages 65 and up owned mobile devices*
- *Over 39 million had Facebook/Twitter profiles*
- *Elderly-fastest growing group of social media users, using it for same purposes as other age groups!*



Final tips on data collection:

- Be clear and concise w/ directions.
- Send out frequent reminders, make personal phone calls.
Remember people don't read emails!
- Be understanding, but firm.
Explain consistency of data crucial to the program's success.
- Thank them several times for their efforts!



Mentoring

- Older volunteers mentor friends/ grandchildren to take their place.
- Great way to pass knowledge, & recruit new generation of volunteers.
- Families participating in citizen science.
- By staying current with upcoming trends in technology, we can attract volunteers and keep them!



Grandparents & Grandkids



Families



Important –Don't be the Xerox of Citizen Science!

Need to change with the times....

The downfall of Xerox is a tale of technological change, management failure, and board irresponsibility. Some \$38 billion in shareholder wealth has been destroyed in less than two years. The tragic fall of this icon presents important lessons for every company trying to find its way in the new Information Economy.

The most important?

If you bring in a change agent, allow the person to make changes. These may or may not succeed, but anything less will lead to disaster.



We Live in a Fast-Pass World...

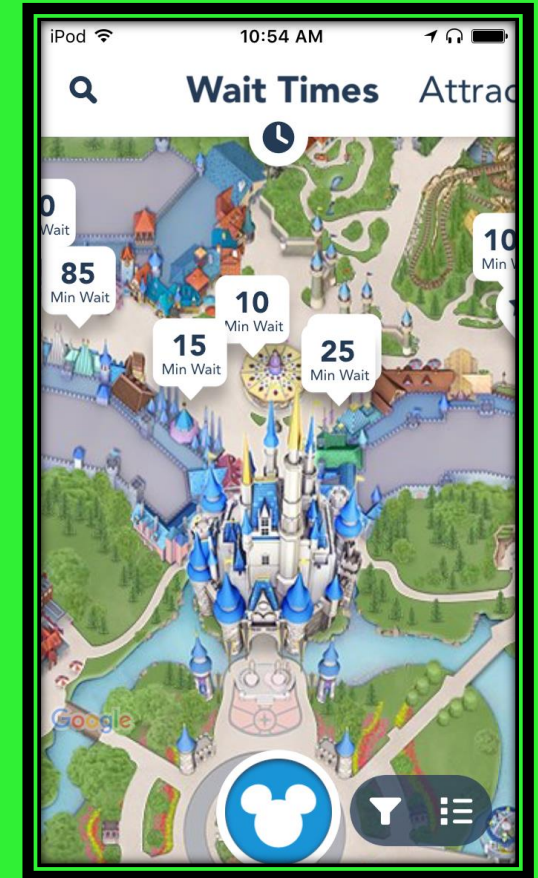
Embrace technology-it saves time and \$

Create a team, it takes a village!

Allow for mistakes and learn from them.

Expect that technology will deter some, but attract others!

Make things easy & fun for volunteers!



Believe your dreams can come true using technology!

*Through citizen science,
we as a community are
planting seeds for our
future...*

Thank You!



Janine.Kohn@state.mn.us