FITS

FISHERIES INFORMATION AND TECHNOLOGY SECTION

http://www.fishdata.org

July 2012

this issue's highlights

President's Byte

Submitted by Jodi Whittier

The pace of technological advancement and the amazing volume of information available worldwide make it nearly impossible to keep up with the numerous resources available for fisheries work.

As the FITS section of AFS, I see one of our roles as being an outlet for sharing the existence of those resources. Along those lines, I have a few items to report.

The Electronic Services Advisory Board and FITS are co-sponsoring a symposium at the upcoming AFS meeting in the Twin Cities titled "Fisheries Data Dissemination – Building Better Networks" on Aug. 22, Wednesday, 8 am-12 pm. See page 7 of this newsletter for details on presenters and topics that will be covered.

In addition, there are several other symposia that focus on data and technology:

Advances in Telemetry in the Great Lakes and Beyond

Development of Sustainable Fisheries Resources Internationally: Useful Tools in Simulations, Modeling, and Planning.

Innovations in Thermal Research and Ecological Effects of Thermal Discharges

Free Data: Opportunities in Open-Access Network Databases to Advance Spatiotemporal Scales of Inquiry in Fisheries Science

New Perspectives in Fish Habitat: Remote Sensing, Modeling, and Scaling

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Technology-Related Courses at the 2012 Annual Meeting

Also, be sure to check out the technology related continuing education courses at the Annual Meeting:
http://afs2012.org/continuing-education/

President's Byte

Continued...

There are bound to be many individual presentations scattered throughout the meeting. I encourage everyone to take advantage of these opportunities to keep abreast with advances in our field.

Another item to note is that the look and format of the FITS website will be changing in the next several months. Some initial thoughts are to include blogs to enable discussions of technological and data organization advancements, events, and RSS feeds. We will be requesting your input on how we might best serve the needs of fisheries biologists.

Hope to see you in the Twin Cities,

Jodi

Professional

AFS

Ecological   Social

Twin Cities - 2012

It's not too late to earn the FITS Best Student Poster Award!

The Best Student Poster Award will be given to a student who demonstrates innovative use of technology in their undergraduate or graduate fisheries research. The award is designed to encourage the dissemination of knowledge gained from the use of cutting-edge information-technology in fisheries management and science.

Receive $250 and an honorary plaque!

Students presenting posters at the 2012 AFS Annual Meeting in Twin Cities, MN who wish to be considered for the award are encouraged to submit your poster's title and abstract to President Jodi Whittier at whittierj@missouri.edu.

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Online Fish Attractor Map Available for North Carolina Fishermen

Submitted by Lawrence Dorsey, North Carolina Wildlife Resources Commission

The North Carolina Wildlife Resources Commission recently added an online map of fish attractor locations across the state to the agency website. The interactive map can be found at http://216.27.39.120/WrcMaps/WRCFishAttractors.htm.

It is searchable by waterbody and each site contains information about the type of fish attractor used. Future additions to this section of the website include images of the attractors used and additional information about the fish attractor program. Along with the interactive map, anglers can also download the GPS coordinates for these attractors to be loaded into their own GPS devices.

Over 500 fish attractors are now in place on over 50 waterbodies in North Carolina. Prior to the creation of the online map, coordinates for these attractors were kept on file in district and regional offices and were only available to the public on request. An additional advantage of this setup will be that field staff can update the map in real time as attractors are added or removed.
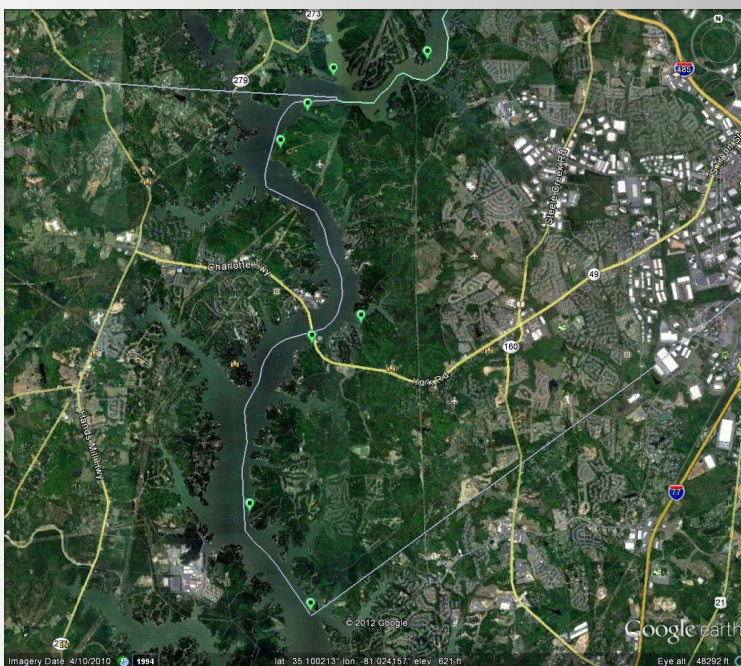
Lake Wylie, NC with fish attractors shown as green icons.

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Note from the Editors: The Fall 2011 FITS newsletter included an article that discussed a low-cost option for processing snap-shot images to map benthic habitat. The following article discusses another low-cost option using video. Watch for future user-provided examples on the implementation of technology in fisheries!

DrDepth Provides a Low-Cost Solution to Process Side-scan Videos for Use in GIS

Submitted by Michael R. Gatlin, Oklahoma Co-operative Fish and Wildlife Research Unit

The use of low-cost, recreational-grade, side-imaging technology (e.g., Humminbird 998 retails for approximately $2,000) has started to build momentum in the United States, especially in small rivers and streams. Humminbird side-imaging units can be used to visualize and record videos or snap-shot images of benthic habitat. We have used DrDepth side-imaging and bottom-hardness software in our river mapping projects to process side-imaging videos into GIS layers. DrDepth is available online (http://www.drdepth.se/) for $339 USD, which includes 2 licenses. DrDepth was developed in 2002 by Per Perlin in Sweden to help his "fishing buddies" and is user-friendly.

Similar to other methods that use side-imaging data in a GIS environment, some data conversion (processing) is required with DrDepth to make data readily usable in ArcGIS, but these conversions are minimal and easy to accomplish. However, the main reasons we chose this software are:

1. DrDepth processes side-imaging videos collected and stored as continuous data on an SD memory card,
2. continuous data collection allows the vessel operator to focus primarily on navigation,
3. DrDepth can automatically remove the water column from the video image allowing for easy and accurate classification of imaged substrate,
4. video images are georeferenced automatically,
5. data can be overlain on a GoogleEarth map directly in the DrDepth environment, and
6. DrDepth has several options for exporting data for use in 3rd party GIS software like ArcGIS (Figure 1).

DrDepth

DrDepth has some computing limitations and requires a modest learning curve to master. For example, although DrDepth is capable of loading an entire sonar video file at a high image resolution (6.25 by 6.25-cm), only an area of up to 1000 X 1000-m can be viewed (i.e., internal map area). The internal map area is somewhat confusing when moving along the image file for processing and is best thought of as a window in the floor of a plane where the mapping area is "on the ground below". Thus, as one processes the video files, you have to move the mapping area (i.e., fly the plane) in the correct direction to make other portions of the sonar video visible within in the internal mapping area.

As an example of the utility and speed of using this software to map underwater riverine habitat, we surveyed, processed and classified 30-km of an Ozark stream in eastern Oklahoma in approximately 2 weeks. A two-person field crew collected side scan data, which took approximately 4 days. It took an additional 10 days to process images in DrDepth and to classify substrate types in ArcGIS. Ground-truthing surveys, which took approximately 3 days, were conducted to estimate map accuracy. Using DrDepth software, side-scan video images can be processed in a GIS effectively and efficiently, making it a creative innovation in technology that has a direct benefit to fisheries science.
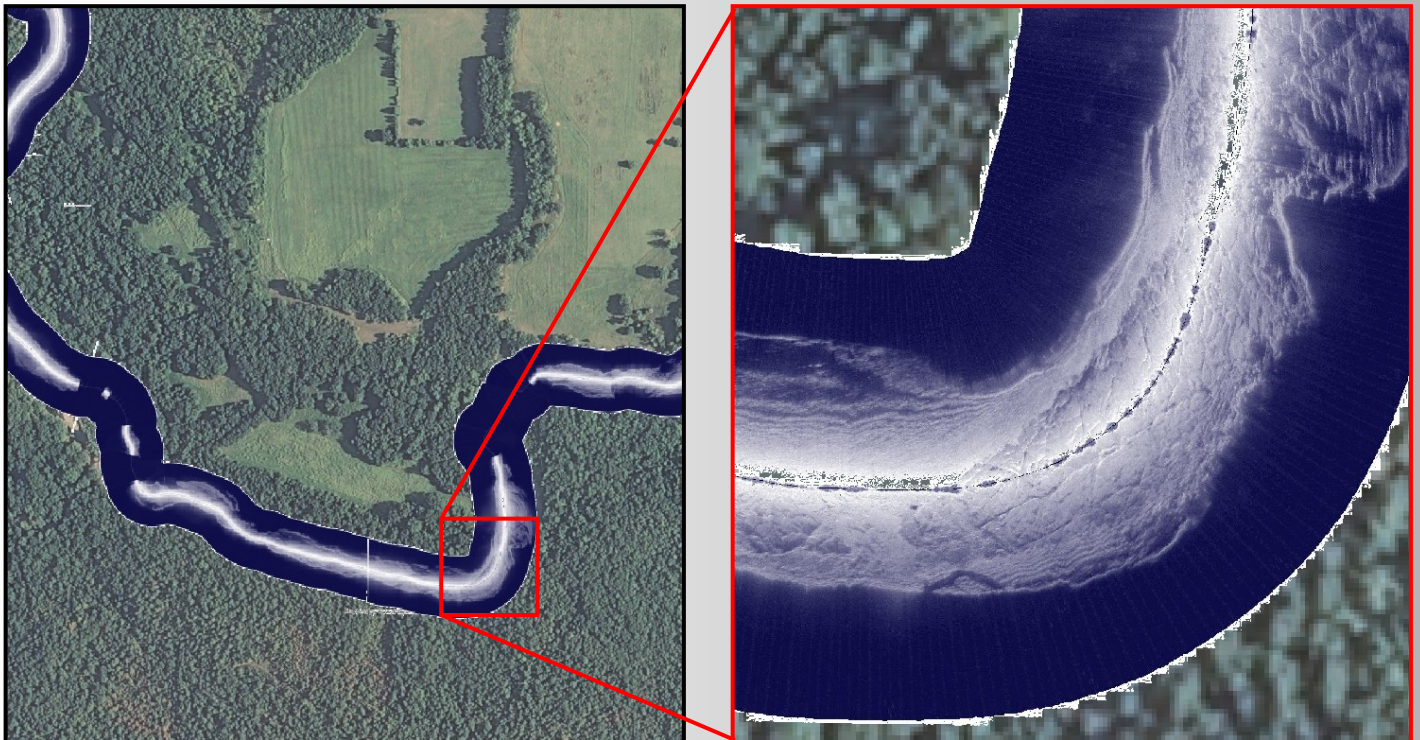

Figure 1. An aerial photo with a section of side-scanned stream images correctly georeferenced to the stream channel. The right image is an example of the extreme detail captured using side-scan sonar technology. The dark areas indicate portions with no data, which are typically areas that are too shallow to side-scan or beyond the wetted perimeter of the stream channel.

Upcoming Technology Symposium

Submitted by Jeff Kopaska, Past-President

Members of the AFS-FITS community are participating in a special symposium organized at the AFS Annual Meeting this August in Minneapolis. The topic area this symposium is addressing is how agencies are utilizing new technologies (smart phone apps, etc.) to interact with anglers, and how agencies are working to improve data dissemination to anglers. This symposium is targeted more toward state agencies, but there are broad applications of this work.

There is a great line up of speakers for this symposium, starting with Dr. Rob Neumann, from In-Fisherman magazine, who will be talking about what information anglers would like to see agencies provide to them. This symposium has a great mix of speakers from private entities, state and regional agencies, and universities. The topics to be discussed during the oral presentations include:

- iPhone apps to identify fish
- collecting data from recreational and commercial anglers using smart phones
- providing fishing report information to anglers via the internet
- selling fishing licenses on mobile phones
- does the future of fisheries management include citizen scientists replacing professional staff for fish data collection?

This symposium also includes two posters, one of which addresses utilizing creel data to increase angler recruitment and retention. The other poster addresses fishing tournament management from an agency perspective.

This promises to be an interesting and informative session, and it will be held Wednesday, August 22, from 8 AM – 12 PM. I hope to see you in Minneapolis!

Speaker	Organization	Presentation Title
Robert Neumann	In-Fisherman magazine	Fisheries Information in the Digital Age: The Angler's Perspective
Tom Lang	Kansas Department of Wildlife, Parks and Tourism	Converting Kansas' Fisheries Data into Angler Consumable Communication
Jeff Kopaska	Iowa Department of Natural Resources	Iowa's Online Fisheries Data Systems
Al Stevens	Minnesota Department of Natural Resources	Agency to Angler Data Dissemination in Minnesota
Steve Lime	Minnesota Department of Natural Resources	Lake Data for the Masses - Lakefinder Mobile
Dyanne Cortez	Texas Parks and Wildlife Department	Texas Fishing Mobile Web
Jeff Kopaska	Iowa Department of Natural Resources	How to Manage Your Agency's Fish Web Pages without the Webmaster Lifting a Finger
Gary Whelan	Michigan Department of Natural Resources	Setting the Hook: Capturing Anglers and Their Sales Through Technology
Andy Loftus	Loftus Consulting	Development of an iPhone Application for Collecting Fisheries Data with Visual Recognition Component
M. Scott Baker, Jr.	North Carolina Sea Grant	Mobile Technology in Fisheries Data Collection and Dissemination
Julie M. Defilippi	Atlantic Coastal Cooperative Statistics Program	Atlantic Coastal Cooperative Statistics Program: Good Data In, Good Data Out, Good Decisions
Thomas Litts	Georgia Department of Natural Resources	Side Imaging Sonar: The Angler and Beyond
Matthew Johnson	Contour Innovations, LLC	The Benefits of Using Cloud Computing to Automate Aquatic Habitat Mapping with Acoustics
Rick Lorenzen	Minnesota Department of Natural Resources	Future of Data Collection and Dissemination

Summary of Data Request Responses

Submitted by Jeff Kopaska, Past President

I recently posted a note to the AFS-FITS listserv regarding a data request Iowa recently received. This resulted in a number of responses, and I thought you all might be interested in a summary of the topic and discussion. Enjoy!

Background (Original Listserv Post)

Iowa received an inquiry from a company called Navionics. The Iowa DNR maintains an active lake mapping program, because our primary recreational lakes tend to change bathymetry faster than those in many other states. This change is due to the fact that many of our lakes are small impoundments (10-1000 acres), we have few natural lakes, and the watersheds of these lakes tend to be agricultural land prone to erosion (and subsequent sedimentation into the lake). With the mapping program, we have recently acquired bathymetry data for around 120 lakes.

Navionics has observed our newly created maps on our web site and has requested the XYZ data we collected and created the maps with. I am curious if any of you have fielded similar requests, and if you gave this data away freely. If it was not free, what did you charge for it?

The perspective of my agency is that our anglers have already paid for this information, and we want to provide it to them for free in as many ways as possible. We already have paper maps that they can access, but we would like to provide electronic maps that they could download and put on their fish finder units. It seems that Navionics is not too willing to partner with us in regard to low cost data dissemination, because they wish to profit from selling the electronic maps. Do any of you have any experience with creating and providing maps for Humminbird or Lowrance units? Is it even possible? These issues are a little outside my area of expertise, so I'm looking for any guidance I can get. Thanks in advance!

Summary of Responses

Issue 1 – Legal responsibilities

Many of the responses that were received shed light on the legal responsibilities or legal position that federal, state, and local organizations have regarding their data. Public agencies generally view finalized products, including the raw data associated with those products, as public information. As such, agencies freely distribute this information, often by adding to an online data dissemination system where the public can access the information on their own. Most organizations request/require that whomever uses the data acknowledge/credit the agency as the source of the data or information in any products they sell or disseminate.

Some organizations also require that users accept a set of terms and conditions prior to being able to use or download data or products. Additionally, data that is made available for dissemination must have complete metadata associated with it. Both of these last two concepts generally reference that using bathymetry data does not imply safe navigation, and that it is not the fault of the agency if a user fails to safely navigate while using the data/products.

Finally, most agencies will provide data that has already been collected/finalized without any additional charge. However, if additional work must be undertaken to respond to the data request, the requesting organization can be billed FOIA-like fees for the cost of the time/materials that are provided.

Issue 2 – Products and materials provided

Agencies are currently offering a wide variety of products to their constituents, as the variety of

Continued...

outlets for data continue to expand. Downloadable PDF maps of lakes are a staple product that most organizations are providing. Many organizations have online GIS libraries that they utilize to provide shapefiles or other GIS coverages, data tables, and metadata. Some of these data products are newly developed, while others are likely digitized versions of maps created decades ago. Other options for providing data include KMZ files for Google products and downloadable maps for Garmin, Lowrance and Magellan GPS units. One cautionary note is to be careful using Google Maps as your base map on agency web pages; it has the potential to become expensive in the future.

Issue 3 – Dealings with companies that are outlets for spatial data

Everyone who has used Navionics products indicates that the products are very good. Navionics products include smartphone apps, downloads for GPS units, and bathymetry/map coverages for combination GPS-depth finder units manufactured by Humminbird, Lowrance and others.

Many of the responses indicate that Humminbird must have some exclusive programming that will not accept external inputs except for their supposed licensees. Lowrance seems to be more open source, and there are products available that allow users to build maps for their Lowrance units (http://www.drdepth.se/, http://www.globalmapperforum.com/help.html). GPS manufacturers, on the other hand, seem to be much more open to allowing broader development of coverages for their units.

Conclusions

It seems that many organizations/agencies are slowly feeling their way through this topic area, trying to determine the best ways to serve their constituents in a rapidly-evolving technology storm. Situations such as these highlight the necessity of AFS-FITS, because no agency can afford to leap ahead in all areas where the technology is advancing. Providing a mechanism for communication of lessons learned, to the benefit of all, is where AFS-FITS can really shine. Like the fable of the tortoise and the hare, slow and steady is the attribute that likely wins the race. If many of us as individuals take on portions of the role of the hare, and allow AFS-FITS to be our "aggregate tortoise", success is imminent.

Thanks to all who provided a response to my initial question!

Examples of data provided in responses to this inquiry:

Indiana - http://www.in.gov/dnr/fishwild/5759.htm - PDF lake maps

Michigan - http://www.mcgi.state.mi.us/mgdl/ - Michigan Geographic Data Library.

http://www.michigan.gov/dnr/0,1607,7-153-30301_31431_32340---,00.html - PDF lake maps

Pacific Northwest – www.streamnet.org – online data

South Dakota - http://www.gfp.sd.gov/wildlife/gps/default.asp - hunting maps for GPS units

There's an App for That: Using Apps for Scientific Data Collection

Submitted by Harmony Hancock, Conservation Coordinator for the International Game Fish Association

Obtaining robust estimates of recreational catch and effort has proved to be a continuous challenge for many fisheries managers. In 2006, a peer review of the Marine Recreational Fisheries Statistical Survey (MRFSS) sent the National Marine Fisheries Service back to the retooling shed to reform its methodology for calculating these metrics. Despite the birth of the new and improved Marine Recreational Information Program (MRIP), managers and anglers alike are looking for innovative ways to capture recreational catch data.

Currently in the U.S. there are a number of voluntary data reporting instruments in place that allow individual anglers to report their own catch data, either for their own use or to augment state or federal fisheries data collection efforts. Many of these reporting instruments are web-based however, with the prolific shift from 'dumb' phones to smart phones; these miniature computers have become increasingly mainstream, making it possible for recreational anglers to report their catch data. The development of corresponding app technology has not trailed far behind, and a suite of apps focused on recreational fishing have come onto the scene. The iTunes App Store and Android Marketplace are flooded with over 100 apps for recreational anglers, but most are not focused on data collection.

To better determine the type of data collection instruments (both online and phone based) currently in existence, I created a comparison matrix of 22 instruments (Figure 1 on next page). Each instrument was examined for the types of data it collected. Of the instruments examined, most were designed for anglers (n > 13) and only 4 were designed explicitly to collect data. Five of those examined had the sole purpose of providing information (e.g., size and bag limits, species identification guides, etc.) and a species identification guide to anglers. However, to the best of my knowledge, only one has simultaneously offered something for anglers and data collection for managers.

The International Game Fish Association is currently in the process of developing an innovative smart phone application to collect recreational catch data for an applied fisheries management purpose (see associated article "IGFA and Columbia University Team Up to Develop Fish App for iPhones."). The new app will use visual recognition to help anglers identify the species and possibly the length of a catch from a picture captured on the iPhone. In addition to species and length, date, time and general location will be collected, and these data will be freely available to fisheries scientists and managers. The app is in the development stages now, and a pilot study is expected to take place in March of 2013. The pilot will be tested with anglers fishing the nearshore marine waters of Florida Bay, using a select number of species.

For further information, please contact Harmony Hancock at hhancock@igfa.org.

Continued...

Figure 1. Smartphone applications and online instruments currently used for fisheries-related data collection.

Smartphone App	Catch Log	Fish ID	Rules & Regs	Stats & Tracking	Fishing Report	Fishing Tips
Angler Action [1]	√			√		
iSnapper [2]	√			√		
Release Mako [3]	√			√		
Expedition White Shark [4]	√			√		
Find MO Fish [5]		√	√			
Texas Hunt and Fish		√	√			
Colorado Hunting and Fishing		√	√		√	
SD Hunt and Fish [6]		√	√			
FL Fishing Companion *		√	√			
Strikeking	√			√	√	
FishingStatus	√			√	√	√
IGFA	√	√	√	√		
My Fishing Companion	√	√			√	√
Fishhound	√	√			√	√
Time2Fish	√				√	√
My Fishing Advisor	√	√			√	√
Bill Dance	√	√				√
go-fish	√	√				√
Fishhead	√				√	
Cabelas Recon Fish	√				√	√
Online Instrument	Catch Log	Fish ID	Rules & Regs	Stats & Tracking	Fishing Report	Fishing Tips
FishingStatus.com	√			√	√	√
FishSwami	√			√	√	
PFX Pro Fishing Log	√			√		
FishArc	√			√	√	√
eBird [7]	√	√		√	√	

Developed for…

[1] The Snook Foundation
[2] Texas A&M, Harte Research Institute
[3] National Marine Fisheries Service
[4] Marine Conservation Science Institute

[5] Missouri Department of Conservation
[6] South Dakota Game, Fish and Parks
[7] Cornell Ornithology Laboratory

* This is part of a suite of Fishing Companion apps that are regionally specific

IGFA and Columbia University Team Up to Develop Fish App for iPhones

Submitted by Harmony Hancock, Conservation Coordinator for the International Game Fish Association

The International Game Fish Association (IGFA) and Columbia University have partnered in a joint effort to develop an application that will allow anglers to contribute to fisheries data collection efforts using Apple's iPhone.

A unique feature of this app will be a "visual recognition" component, developed by computer scientists at Columbia University, which will help anglers identify a fish from its iPhone photograph. Researchers at Columbia have pioneered similar visual recognition systems for plants through projects like "Leafsnap."

The basic application will be modified from the existing IGFA app to allow anglers who want to participate in research and management efforts to do so quickly and easily, in the same way they share photos with friends and family. While the data collected will be designed to feed into specific fisheries research and management efforts, an "anglers log" aspect will allow users to store details of their catches and track their catch statistics as well as share with others.

"As evidenced by the popularity of IGFA's current app, anglers are thirsting for opportunities to catalog their catches in an easy-to-use application," remarked Jason Schratwieser. "Adding the capability for them to snap a picture and have the app suggest an identification will provide a quick way for all anglers to quickly store accurate details of their catch and help novice anglers to know what they have caught."

The initial pilot area for testing this app will be the near shore marine waters of south Florida. At the same time, project personnel will be consulting with state and federal data managers along the Atlantic seaboard to determine elements and features of the app that might be helpful in other areas where angler generated data might be useful.

Funding for the project is being provided by the Gordon and Betty Moore Foundation.

For more information, contact Jason Schratwieser at jschratwieser@igfa.org or (954) 924-4320.

The International Game Fish Association is a not-for-profit organization committed to the conservation of game fish and the promotion of responsible, ethical angling practices through science, education, rule making and record keeping

Virginia DGIF Launches Android Version of Hunt Fish VA App

Press release from February 14, 2012 (Source: Virginia Interactive)

RICHMOND, VA — Continuing its commitment to mobile technology users and serving as a benchmark for innovation for outdoor regulatory and enforcement agencies throughout the nation, the Virginia Department of Game and Inland Fisheries (DGIF) is once again partnering with Virginia Interactive (VI) to offer the Android version of its popular, award-winning Hunt Fish VA mobile app.

Officially released February 6, 2012, the new Hunt Fish VA mobile app for Android is available free from the Android Market (https://market.android.com/). The online tool allows Virginia sportsmen and sportswomen to search a wide variety of Virginia hunting- and fishing-related information on their smart phones. Some of the app's numerous capabilities include:

- buying a license through the secure mobile online licensing system;
- calculating Geolocation-based sunrise and sunset times;
- looking up hunting regulations, seasons, and bag limits while in the field;
- viewing freshwater fishing regulations;
- identifying the fish you just caught and comparing them to state record fish;
- recording your harvests in your own personal "Trophy Case";
- finding nearby boat ramps, Wildlife Management Areas, and lakes with the "Near Me" mapping tool;
- getting the latest news and information from DGIF;
- and much more!

DGIF had previously launched the Hunt Fish VA mobile app for Apple's iOS devices in July 2011 and was later recognized at the 2011 Governor's Technology Awards, held annually at the Commonwealth of Virginia's Innovative Technology Symposium. Since its release, the iOS version has been downloaded over 7,000 times and remains a five-star rated app in the Apple's iTunes store.

"With the success of the original iOS version and because so many sportsmen have been asking for an Android version, we are very excited about launching the new Hunt Fish VA app for Android. We love the idea that we can reach the thousands of hunters, anglers, boaters, and wildlife enthusiasts while afield or afloat!" said Bob Duncan, DGIF Executive Director.

Technology savvy sportsmen are growing in number with many relying on smartphones and tablets to conduct the everyday business of life. Fish and wildlife agencies would be remiss to ignore the growing trends toward mobile technologies and with the release of the new Hunt Fish VA mobile app for Android; DGIF has elegantly continued its tradition of leadership in mobile application development.

Message from the Editors

Nick Sievert

Nick is a Master's student working with Dr. Craig Paukert at the University of Missouri-Columbia. His work experience and current project utilizes large datasets compiled from research organizations including government agencies, universities, and non-profit groups. His current research focuses on identifying vulnerable species and using this information to evaluate Missouri's conservation networks. He has been a member of AFS since 2011.

Rebecca Krogman

Rebecca is a Master's student at Mississippi State University currently in transition to work for California Department of Fish and Game. She has been a member of AFS since 2007, and became involved in FITS in 2010.

Thank you, Travis!!

Thank you to Travis Neebling, our past co-editor of the FITS newsletter. Travis has been highly involved in many AFS activities, and we are sure to see him continually involved in FITS and AFS.

Call for Articles

If you did not get a chance to submit something to this newsletter, please send us your submission for the next publication. We are preparing the next newsletter for October 2012.

Newsletters will be published each May/June in preparation for summer events and meetings, and each October/November immediately after the annual meeting of the Parent Society.

Submit your articles for the next newsletter by sending your article to afsfits@gmail.com. We welcome course announcements, meeting announcements, press releases, full articles (typically 1-3 pages), photos or digital images, and anything else that might catch our readers' interest.

Thank you! Your participation in the Section is greatly appreciated by your fellow members (and editors)!

Learn more about FITS!

Visit our website to find section updates, past newsletters, software, and other useful technological resources! Also, check out our past winners of the FITS Student Travel Award!

Website: http://www.fishdata.org