VIRGINIA
Department of Game & Inland Fisheries
Effective use of GIS & GPS in Law Enforcement

Presented by: Lenée Pennington, GISP
What are some of the Issues Officers Encounter

- **Hunting/Fishing**
  - Trespassing to Hunt or Fish
  - Duck Blind Issues
  - Hunting Shootings/Fatalities
  - Spotlightting/Poaching

- **Boating**
  - Boating Fatalities
  - Boating Under the Influence (BUI)
  - Stolen Boats and Personal Watercraft (PWC)

- **Illegal Selling of Animals and Parts**

- **Serial Criminals**
Trespassing to Hunt or Fish
Duck Blind Issues

Case No. 16212050102

Legend:
- 500 Yard Radius from Blinds
- BLIND
- BOAT
- BRIDGE
- DOCK

500 0 500 1000 1500 2000 Yards

Pamunkey River

RR BRIDGE
SMITH DOCK
Hunting Shootings/Fatalities

Case #: 1411032384

Sussex County Parcels Dec. 20, 2011

Virginia Jurisdictions

Approx. Victim Location
Cigarette Butt from Victim
Location of Deer Crossing Path
Shooter

Roads
Ancillary Roads

0 75 150 225 300 375 450 525 600 Yards

Source:
Virginia Pages - 2013 VDPN® Commonwealth of Virginia
Roads - 2013 VLS, VDS
Ancillary Roads 2013 VLS, VDS
Parcels - 2013 Sussex County
All Other Data: VDPN

VDPN - L. James Parrington, OSFP 1/25/2014
103 Magistrate Warrants Issued from Analyzing these Data
Boating Fatalities – Boating & Alcohol
A recipe for disaster!!!
Speed is a Factor
Serious Night Boating Accidents
Stolen Boats
Tools to provide the Officer working in the Field

- ARCExplorer with Data on MDT
- Crime Analysis
- Planning Maps
- Collection of detailed GPS when needed for court cases
- Testifying to certify maps and data
Crime Analysis

- Method of Displaying Crime Patterns and Trend Correlations to Aid in the Prevention and Suppression of Criminal Activities

- 3 Types:
  - Tactical
  - Strategic
  - Administrative
Field Pilot
District 15
Field Data Collection Pilot Project

- **Goal:** Streamline the Collection of Data for Needed in Crime Analysis
- **Reduce Data Entry Needs While Increasing Point Data**
- **Work Synergistically with STARS, CAD, and Other DGIF Systems**
Field Pilot
Smith Mountain Lake
Summons Data

- The Following Depicts the Number of Summons Written for Each County and the Hot Spots for the State
Change in # of Incidents

- The Following Slide Depicts the Change in the Number of Boating Incidents in ’05 from the Average Number from ’99-‘04

- Change =
  (# Incidents for ’05) – (Avg. # Incidents ‘99-’04)
Where are the Hot Spots for Boating Incidents on SML in 2005?

Hot Spot Analysis
- Cold
- Cool
- Normal
- Warm
- Hot
Where are the Hot Spots for Boating Incidents on SML from 2003-2005?

Hot Spot Analysis
- Cold
- Cool
- Normal
- Warm
- Hot
Smith Mountain Lake Pilot Data Collection Unit & Forms

Data Collection Form

Radar Collection Form
May 15 – September 19, 2007

170 Data Collection Points

9 Unknown
1 Boat 10-50
119 Boat Violations
27 Fish Violations
13 General Violations
1 General Violation – Underage
Overall Conclusions and Recommendations

- Crime Analysis can be Valuable for Answering Administrative to Tactical Questions when Data is Available
- Collect Point Locations where Possible and Include in All Databases
- Integrate Spatial Data Collection with CAD and Field Based Reporting (STARS)
Success of Statewide Crime Analysis

- Could Use Existing Software

- Administrative Crime Analysis
  - Developed Staffing Model

- Point Location Analysis
  - Boating Incident Data
  - Pilot Project Area Summons Data

- County Based Analysis
  - Summons Data
  - Warning Data
  - Boating Incidents Data
  - CAD Data

- Pilot Project
  - Obtained Useful Information
  - Designed Forms that can be Used Later
Pit Falls of Statewide Crime Analysis

- **Training**
  - Little or No Training is Available

- **Analysis**
  - Can **ONLY** be done at the County Level for all but 1 data set

- **Data**
  - Geocoding Data is not an Option since most of our Data is Collected in Rural Areas
  - Changes Need to be Made to Make Data Usable (add exact location of citation)
  - Takes a Long Time to get Data Entered into Databases
  - CAD Data is not very Useful

- **Mobile GIS**
  - Had Trouble with units losing GPS connectivity with ArcPAD
  - Forms were taking too long to Fill Out
Data Errors

Things to Remember

- GPS Readings are Sometimes Off Do to Accuracy of Unit or Conditions
- GPS Readings are Miss Read by Conservation Officers Reporting
- GPS Reading was NOT Taken
- Sometimes ALL Data is not Recorded (i.e. Time of Day)
Questions?

Lenée Pennington, GISP
Lenee.Pennington@dgif.virginia.gov