Going Herping? There’s an App for That!

Phones: Motorola DROID X2 smart phone from 2011 to 2013. LG G2 from 2014 to 2016. Samsung S5 from Jan 2016 to present.

Operating System: Android

1. General Tips for High Productivity and Efficiency
* Turn off services (GPS, WiFi, Bluetooth, etc.) when not needed
* Use native Task Manager or an app like AppKiller to turn apps off, and also to set to automatically turn off (add to “Auto-end list”)
* Use airplane mode if wanting to limit calls and/or services (which saves battery life)
* Arrange your apps in easy ways to find them – can use Folder Organizer lite, if no native service (free); separate by function
1. GPS and Maps

The ability to use GPS in the field with color satellite imagery is incredibly useful. I have used this countless times in the field. Uses have included taking data points (creating way points) on natural features such as ephemeral wetlands and on species observations. I have also used it to locate difficult features in the landscape to find such as ponds that I had located previously on an aerial map, but had difficulty locating in the field. An ArcGIS app allows you to upload shapefiles created on your computer and use in the field with satellite imagery – very valuable for visiting historical sites for species. I have also used the Navigation app many times along with the native onboard GPS chip to offer driving directions from place to place. Free apps used to enhance the GPS experience include: ArcGIS, GPS Essentials (download EasyGPS program for computer to read exported files), Google Maps, US Topo Maps, My Tracks, Pocket Ranger (NC State Parks app), iExit, and SoilWeb. We will demo each of these.

1. Digital Camera/Video Camera

The onboard digital camera and video camera are both very valuable for taking pictures and video in the field. I have used the pictures many times to document species occurrence, ongoing management work, and site details. Because the phone also has GPS, each picture can be set to automatically tag the image with the location as well (as long as the GPS is active – if not, it still records a location using cell towers), a feature that is hugely beneficial. The ability to upload photographs immediately to another person has proved quite valuable also. I have taken numerous videos with the phone and several of these have been used successfully on the WRC YouTube page. I have primarily only used the native apps for using the still and video cameras, although many free apps are available. One free app that I have used, Photaf, allows the user to take panoramic stills. I have used Photaf to document wetlands in the field.

1. Audio Recorder

Working with frogs, the ability to record those calling is important. The audio features of the phone are quite adequate for this purpose. I have used the free app Easy Voice Recorder since I am often taking these recordings in the dark and do not need video.

1. Applications (Apps)

Many, many applications have proven extremely valuable in the field. Here are some of the more valuable:

* 1. RadarNow!, WeatherBug, and other weather apps – the obvious utility in these is in helping predict weather issues and potential safety hazards as well as predicting optimal weather conditions, depending on the species being surveyed for/worked with.
	2. iBird Pro ($5), Audubon Birds ($3), Frog Sounds, and other wildlife apps – these apps can be useful for field identification of species. The herp side of these apps is sorely lacking. More discussion on this later.
	3. Data apps such as Thermo (thermometer), Compass, SimpleMoon (moon phases), Unified Remote (allows use of phone as computer mouse during presentations), StopWatch, Converter (convert various fields from one form to another such as length, area, volume, etc.), Bubble (level), GasBuddy (helps find closest and cheapest gas), Flashlight – these have all come in very handy during field conditions.
	4. Data recording apps such as Herp Mapper (excellent app, named Mobile Mapper on Google Play), Project Noah (OK app), iNaturalist (seems OK), and WildObs (not great - not many herps, if any) – allow the upload and download of nearby data to assess species richness and provide utility for data deposition.
	5. WRC is currently partnering with Elon University, UNC-Greensboro, UNC-Pembroke, and Davidson College to develop several apps for collecting herpetological information. I have been helping beta-test one of these apps called HERPS which allows you to collect data in the field including species name, location, measurements, pictures, etc. and then it is all automatically uploaded into one database to be accessed later.
1. MP3 Player

For the frog call workshops I conduct, playing frog calls is critical to the success of the learning experience. In the past, I have used two computers – one to power the presentation and one to play the frog calls. With the phone’s native MP3 player, no additional computers are required, although I have used external speakers in some larger workshops. Additionally, I have used the MP3 player in the field to elicit calling back from wild species. This is particularly useful for several frog species and many birds.

1. Work Efficiency

Many, many applications have proven extremely valuable and have increased my work efficiency and productivity. Below are some examples:

* 1. Easy Tether (USB tethering, $10) – has allowed me to connect my laptop to the internet via my phone in locations where there is no WiFi or other connection. I have used this several times during presentations at remote locations where internet access is beneficial. There were also several occasions where my home internet service was interrupted due to weather conditions. In these instances, I was able to use my phone for internet service and not lose productivity. My phone is a 4G (a rating of the data connectivity speed) and was nearly as fast as my DSL. With the newer 4G phones, data speeds may actually be faster than some DSL and satellite internet providers.
	2. Email and Calendar – I have used the native email and calendar apps to sync with various accounts allowing access to emails and calendar dates in the field and during meetings.
1. Costs

If there is any downside to these phones and their abilities, it is the cost. The smart phone that I use cost around $60 with a state discount. Many “smarter” and newer phones are available nearly every month and some of these can cost upwards of $200, depending on the deal you make. Also, a smart phone requires a data plan cost recurring each month. This amount varies widely by plan and wireless carrier, but is often around $20/month above the costs of regular phones. I believe the additional functionality, accuracy, and efficiency provided by these phones more than makes up for the additional costs, but that will be up to you to decide!

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|  | **App or Widget Name** | **Status** |
| 1 | ArcGIS | free |
| 2 | Audubon Birds | $3  |
| 3 | Bubble | free |
| 4 | Calendar | native |
| 5 | Compass | free |
| 6 | Converter | free |
| 7 | Easy Tether | $10  |
| 8 | Easy Voice Recorder Free | free |
| 9 | Email | native |
| 10 | Flashlight | free |
| 11 | Folder Organizer lite | free |
| 12 | Frog Sounds | free |
| 13 | Magnifier | free |
| 14 | Map Coordinates | free |
| 15 | Where’s My Droid | free |
| 16 | GasBuddy | free |
| 17 | Google Maps | native |
| 18 | GPS Essentials | free |
| 19 | iBird Pro | $5  |
| 20 | iNaturalist | free |
| 21 | My Tracks | free |
| 22 | Photaf | free |
| 23 | Pocket Ranger | free |
| 24 | Project Noah | free |
| 25 | QR Droid | free |
| 26 | RadarNow! | free |
| 27 | RedLaser | free |
| 28 | SimpleMoon | free |
| 29 | SoilWeb | free |
| 30 | StopWatch | free |
| 31 | Task Manager | native |
| 32 | Thermo | free |
| 33 | Unified Remote | free |
| 34 | WeatherBug | free |
| 35 | WildObs Mobile | free |