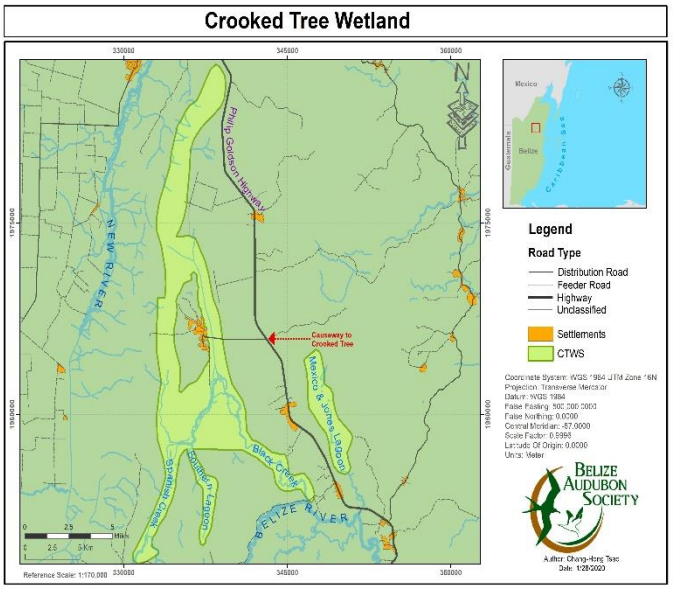
Tools Used in Research and Monitoring by BAS Staff

The tools we use help our Research and Monitoring Officers and Rangers to be more efficient and effective in planning, data collection, data entry and data analysis. While there are various frameworks, methods, indicators, and tools used in biodiversity research and monitoring activities, here is a sample of three that we use.

Geographic Information System (GIS)

An important tool for monitoring biodiversity is a geographic information system (GIS), which accommodates large varieties of spatial data. A GIS is a conceptual framework for gathering, managing, and analyzing spatial and geographic data. Although GIS can produce statistics, graphs and reports, the map is the main output from a GIS. At BAS we use GIS for both the Marine and Terrestrial components of the BR&M Program.

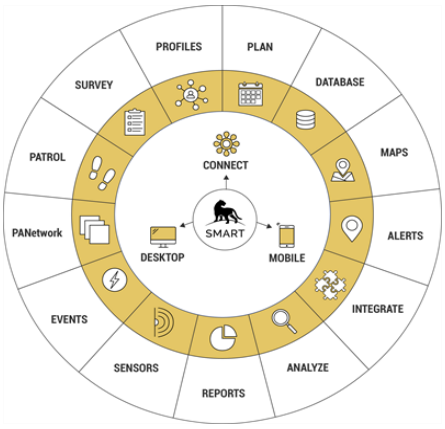


GIS is used in our **terrestrial monitoring** to depict locations of study sites for jaguars, bird counts, and water quality, etc. It is also used to create ecosystem maps of the protected areas showing distribution of wetlands, broadleaf forest, land clearings and waterways.

GIS is used in our **marine monitoring** to depict locations of sampling sites for conch, lobster, spawning aggregations, etc. It is also used to create habitat maps of the protected areas showing distribution of seagrass, coral reef and landmass.

Spatial Monitoring And Reporting Tool

The Spatial Monitoring and Reporting Tool was developed by Zoological Society of London (ZSL) and other leading conservation organisations. It is a combination of software, training materials and patrolling standards to help conservation managers monitor animals, identify threats such as poaching or disease and make patrols more effective. The approach covers three areas: cutting-edge technology, building conservation capacity, and empowering a global network of SMART conservation practitioners. It is used at more than 1,000 sites in over 70 countries to support a broad range of conservation management activities, including protected areas management, biodiversity conservation, law enforcement, tourism and visitor management, citizen science, natural resources use, intelligence, and performance and threat level assessments.



SMART Tools are open-source, non-proprietary, and freely available. SMART is a suite of tools that enables you to collect, store, communicate, and evaluate data on wildlife and conservation areas. It can be customised to suit specific

needs and contexts. Whether in terrestrial or marine environments, at connected or disconnected sites, SMART enables users to monitor and evaluate conservation efforts in order to improve conservation management. By providing rapid access to accurate data and analysis, SMART helps managers and frontline workers minimize threats to wildlife and conservation areas. SMART Conservation Software - Spatial Monitoring and Reporting Tool (smartconservationtools.org)

At BAS we started using SMART for law enforcement and intelligence matters regarding the seven protected areas we co-manage; we have recently started to collect data on birds, sea turtles and wildlife sightings in our protected areas.

eBIRD & Merlin applications

These two apps are popular amongst birders, scientists and protected areas managers. They allow us to identify birds (by sight and by call) and catalog our sightings to determine trends locally or across the globe capturing full life cycle of birds. They are both open-source and freely available.

eBird is an online database of bird observations providing scientists, researchers and amateur naturalists with real-time data about bird distribution and abundance. It transforms the global birding community's passion for birds into a powerful resource for research, conservation, and education. (ebird.org)

Merlin is designed to be a birding coach for bird watchers at every level. It features the best of community contributed photos, songs, and calls, tips from experts around the world to help you ID the birds you see, and their range maps. (allaboutbirds .org)