Georgia Department of Audits and Accounts
Performance Audit Division
Greg S. Griffin, State Auditor
Leslie McGuire, Director

Wildlife Resources Division – Game Management Unit

Improvements in planning & data system needed

Why we did this review

The Department of Natural Resources' Wildlife Resource Division (WRD) is responsible for conserving, enhancing, and promoting Georgia's wildlife resources, including game and nongame animals, fish, and protected plants. This audit focuses on the Game Management Unit within WRD and evaluates the adequacy of long-term strategic planning and the management for both the species and properties managed by WRD, including the establishment of goals, objectives, and strategies. In addition, the audit determines if license fees align with market rates and whether WRD's internet content provides users with information on the species and properties managed by the agency and the activities available on WRD's properties.

About WRD

To achieve its mission, WRD works with the DNR board to establish rules and regulations to protect Georgia's wildlife resources, manages approximately 1 million acres of land, 500,000 surface acres of lakes, 12,000 miles of warm water streams, and 4,000 miles of cold water streams, and provides both conservation and hunter education. The game management unit manages the lands (called wildlife management areas) and game species. The wildlife management areas are used to protect habitat and to increase outdoor recreation opportunities including hunting, fishing, wildlife watching, hiking, camping, and conservation education.

What we found

WRD can improve strategic planning and oversight for land and game species management and can improve internet content to allow customers to more easily identify recreational opportunities such as hunting, fishing, and camping. In addition, WRD license fees are below average compared to other states in the region. We estimate that the division could increase revenue annually by $4.4 - $6.7 million by increasing resident license fees to match industry rates.

With regard to land management, WRD policy requires regional staff to develop a long-term strategic management plan for all properties the division owns and manages. Plans are to be formally reviewed every five years. However, only 37 of 60 properties (63%) have long-term management plans, while only 1 of 37 has undergone a formal review/update. Properties without management plans include some of the largest in WRD's portfolio and include properties that have been under management for decades.

In addition, WRD has not kept operating standards for field operations up-to-date or developed efficient and effective methods for collecting data and reporting on major land management activities, such as timber harvests and prescribed burns. Used effectively, standards and data systems can help upper and middle management design operations and capture data on operations to monitor compliance and track organizational progress toward achieving critical operational goals. Currently, field and regional managers do not have a clear set of guidelines on how to execute and/or oversee activities and outcomes, and upper management does not have a reliable record of land management activities that occur on properties.

With regard to game species, WRD has developed strategic plans for major game species such as white-tailed deer, black bear, and American alligator. However, species management plans have not been consistently updated.

Similar to land management, WRD has not developed adequate operating standards for field operations and management of species. As a result, basic procedures for species management—such as how often game management committees are to meet, or under what conditions changes to sampling strategy may be adopted—are not written. In addition, WRD has not consistently established efficient and effective methods for capturing and reporting species management data. As a result, the official for each major game species develops methods for collecting and reporting data independently and without instruction/approval from upper management.

With regard to internet content, Georgia WRD does not deliver content as effectively as similar entities in other states. For example, Ohio WRD has developed content that allows internet users to review on a single webpage key information about a specific wildlife management area (e.g., location, species of interest, and hours of operation). Georgia WRD web content does not. In addition, in North Carolina users can quickly inventory all of the wildlife management areas the state manages by activity of interest and species of interest (e.g., properties where camping and hunting is permitted). Prior to this audit, Georgia WRD web content did not allow users to filter information this way. However, WRD is currently working to improve web content and is making progress.

Lastly, the annual resident license fee for major activities that WRD promotes are all below the average of states in the region. In addition, Georgia can increase federal grant funds by a ratio of approximately 4:1 by charging a nominal fee for senior licenses. Currently, Georgia provides senior licenses for free. As a result, these license holders are not considered when federal grants are allocated among the states.

What we recommend

WRD should develop written operating standards and improve strategic planning to guide field staff and management activities. Specifically, WRD should develop written operating standards for all major recurring field management and oversight activities. WRD should ensure that operating standards are kept up to date and that staff statewide have ready access to them. In addition, WRD should complete and/or update long-term management plans for all applicable properties and major game species.

WRD should improve data collection and reporting methods to monitor progress on land and species management. WRD should consider developing an information system that permits staff statewide to access relevant land and species management data and reports. Where possible, WRD should utilize geographic information systems (GIS) to track major land management activities such as timber harvesting, prescribed burning, and major mechanical/chemical treatments to make oversight and monitoring of historical land management possible.

WRD should continue working on the content and form of information it presents to customers via the internet to improve the ability of customers to quickly access information about outdoor recreational opportunities.

The DNR Board and the General Assembly should consider raising resident license fees for hunting, fishing, and public land access to align with states in the region and to increase federal grant funding by charging a nominal fee for seniors.

For a list of all recommendations in this report, see Appendix A.

Report Revision: *On May 12, 2017, a correction was made on page 29. The number of acres harvested on three wildlife management areas was changed from 2,588 to "approximately 2,100." This revision does not change the report's findings, conclusions or recommendations.*

Table of Contents

Purpose of the Audit

This audit examines aspects of strategic planning and operations for the Wildlife Resources Division (WRD) within the Department of Natural Resources (DNR), with a focus on the game management unit. The audit examines (1) the strategic planning and management activities for lands owned by WRD and some game/nuisance species, (2) the fee structure and amount for activities such as hunting and fishing, and (3) the DNR/WRD web presence to promote activities.

A description of the objectives, scope, and methodology for this review is included in Appendix B. A draft of the report was provided to DNR and WRD to review. Pertinent responses are incorporated throughout this report.

Background

Governance, Organization, and Staffing

The mission of the Georgia Department of Natural Resources (DNR) is to sustain, enhance, protect, and conserve Georgia's natural, historic, and cultural resources. DNR is governed by a 19 member board comprised of citizens appointed by the Governor and confirmed by the Georgia Senate.[1] The board has power to establish general polices for DNR and to promulgate rules and regulations regarding the capturing, killing, and transporting of wildlife, including the methods, times, and places appropriate for such activities.

WRD is responsible for protecting, conserving, managing, and improving Georgia's wildlife resources, including game and nongame animals, fish, and protected plants.

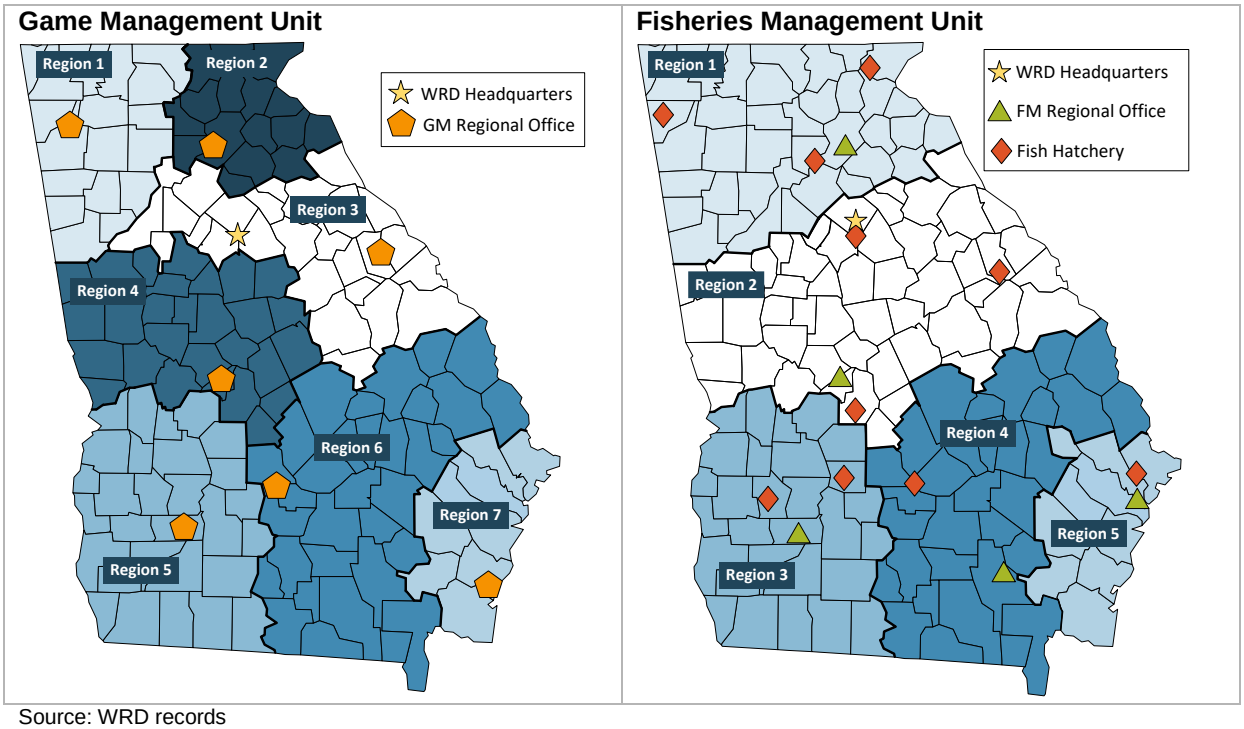
DNR is led by a commissioner who is appointed by the DNR board, is approved by the governor, and serves as the executive and administrative head of the department. DNR is comprised of six divisions: Law Enforcement, Historic Preservation, Environmental Protection, Coastal Resources, Parks/Recreation/Historic Sites, and Wildlife Resources (WRD). DNR headquarters and several divisional headquarters are located in Atlanta. WRD headquarters is located in Social Circle.

WRD is responsible for conserving, enhancing, and promoting Georgia's wildlife resources, including game and nongame animals, fish, and protected plants. WRD is led by a director and assistant director and has three primary operational units: (1) Game Management, (2) Fisheries Management, and (3) Nongame Conservation. Within WRD headquarters, each unit is led by a section chief and assistant chief. Each primary operational unit has personnel located throughout the state in satellite offices. The game management unit has divided operations into seven regions, the fisheries management has divided operations into five regions, and the nongame conservation unit has divided the state into three regions. **Exhibit 1** presents maps of the game and fisheries management regions and office locations.[2]

[1] The board consists of one member from each of the 14 congressional districts, four "at large" members, and one additional member from each of Georgia's six coastal counties (Chatham, Bryan, Liberty, McIntosh, Glynn, and Camden).

[2] The nongame conservation personnel occupy space in three regional offices used by the other units but personnel have state-wide management responsibilities. Therefore, a regional map is not shown.

Exhibit 1
Regions and Office/Hatchery Locations

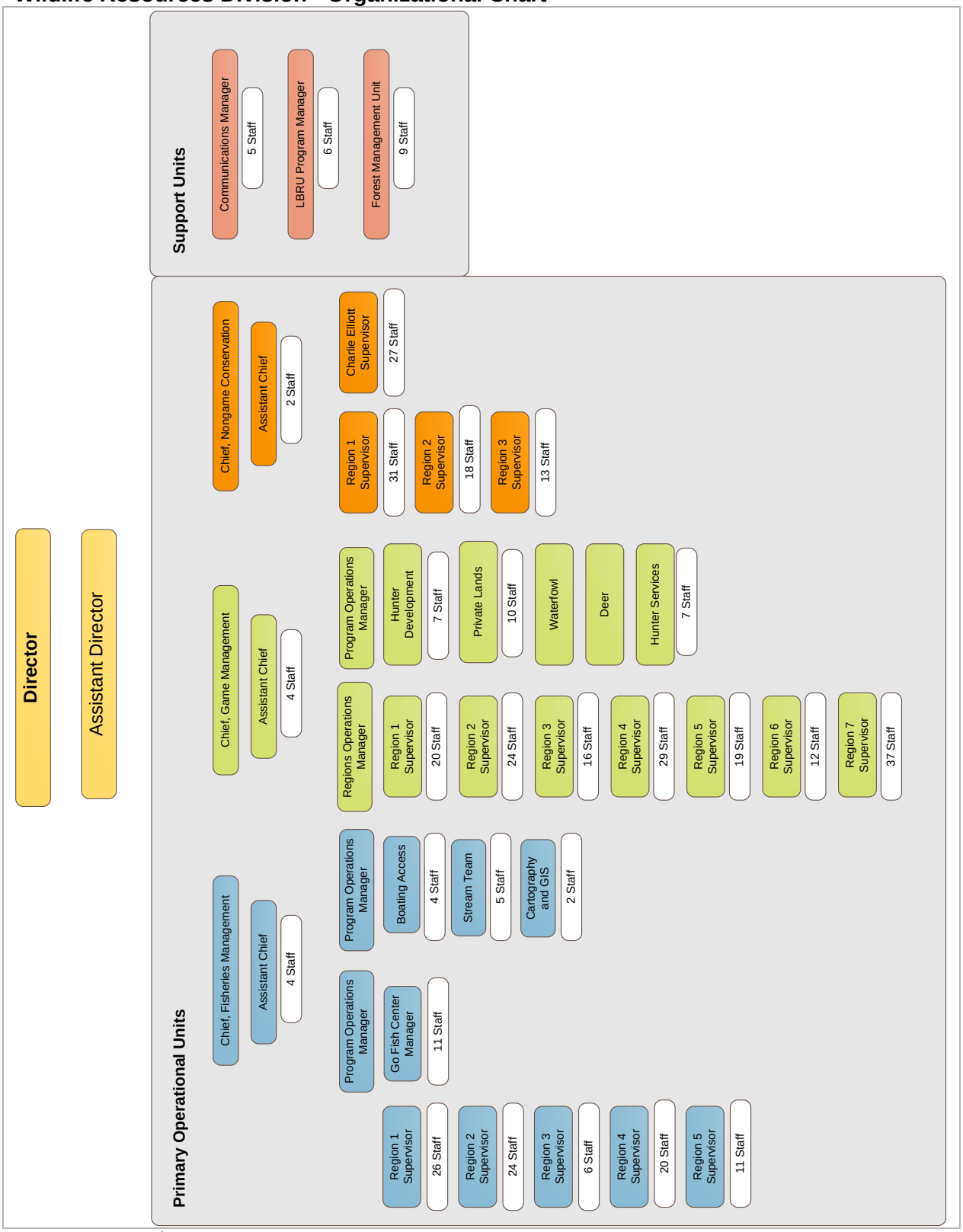


Source: WRD records

WRD primary operational units receive assistance from three major support units: (1) Forest Management, (2) License & Boat Registration, and (3) Marketing & Communications. These support units are located in offices in or near WRD headquarters in Social Circle. In addition, WRD receives significant support from two DNR units organized outside of WRD: the Law Enforcement Division (LED) and the Information Technology unit.

Exhibit 2 presents an organizational chart, with staffing numbers of WRD for the primary operational units and major support units. The Law Enforcement Division and IT unit are not included. Each of the WRD primary operational and major support units are described in further detail in the following section.

Exhibit 2
Wildlife Resources Division - Organizational Chart



Source: WRD records

WMAs are habitats used to conserve wildlife and to offer outdoor recreation opportunities.

Primary Operational Units

- **Game Management** (183 staff) – The game management unit (GM) manages approximately 1,000,000 acres across more than 100 land units (called wildlife management areas or WMAs). WMAs are used to protect habitat and to increase outdoor recreation opportunities including hunting, fishing, wildlife watching, hiking, camping, and conservation education. Only 60 WMAs are state-owned. These make up approximately 360,000 acres. However, state-owned WMAs more intensely managed property with more personnel resources dedicated to activities such as prescribed burning, planning timber harvests, and conducting chemical and mechanical treatments.

- **Fisheries Management** (120 staff) – The fisheries management unit (FM) manages more than 500,000 acres of lakes, 12,000 miles of warm water streams, and 4,000 miles of trout streams for sport fishing. The unit operates fish hatcheries and manages public fishing areas, which are water bodies and the surrounding lands.

- **Nongame Conservation** (100 staff) – The nongame conservation unit conserves and protects nongame wildlife and plants and their habitats. The unit conducts research and surveys on a wide variety of nongame wildlife, identifies critical habitats, and implements species and habitat restoration programs.

Major WRD Support Units

- **Marketing and Communications** (6 staff) – The marketing and communications office provides information to the public on outdoor recreational opportunities, hunting and fishing rules and regulations, major game and nongame species, as well as technical guidance in support of conservation. This office manages the WRD website content, social media pages, publications, and advertisements.

- **License and Boat Registration** (7 staff) – The license and boat registration unit is responsible for issuing recreational hunting and fishing licenses, vessel registrations, and numerous other permits and licenses. The unit relies on a third party vendor for license sales.

- **Forest Management** (9 staff) – The forest management unit (FMU) is responsible for coordinating/overseeing certain forest management activities, such as timber harvests and prescribed burns that occur on WRD managed properties. The unit executes contracts with private parties to perform timber harvests and works with regional field staff from primary operational units to coordinate/oversee prescribed burns.

Game Management Unit Field Operations[3]

The GM unit is led by a chief who reports to the WRD director and assistant director. An assistant chief, a regions operation manager, and a program operations manager report directly to the GM chief.

Land Management

The regions operation manager is charged with overseeing the management of WRD managed lands (called wildlife management areas). WRD has divided the state into seven GM regions. **(See Exhibit 1.)** Each region is led by a regional supervisor/manager who is charged with overseeing both the region's budget and field operations. Regional supervisors are charged with overseeing administrative staff and a team of biologists and field technicians who plan and conduct land management activities on WMAs throughout the region.

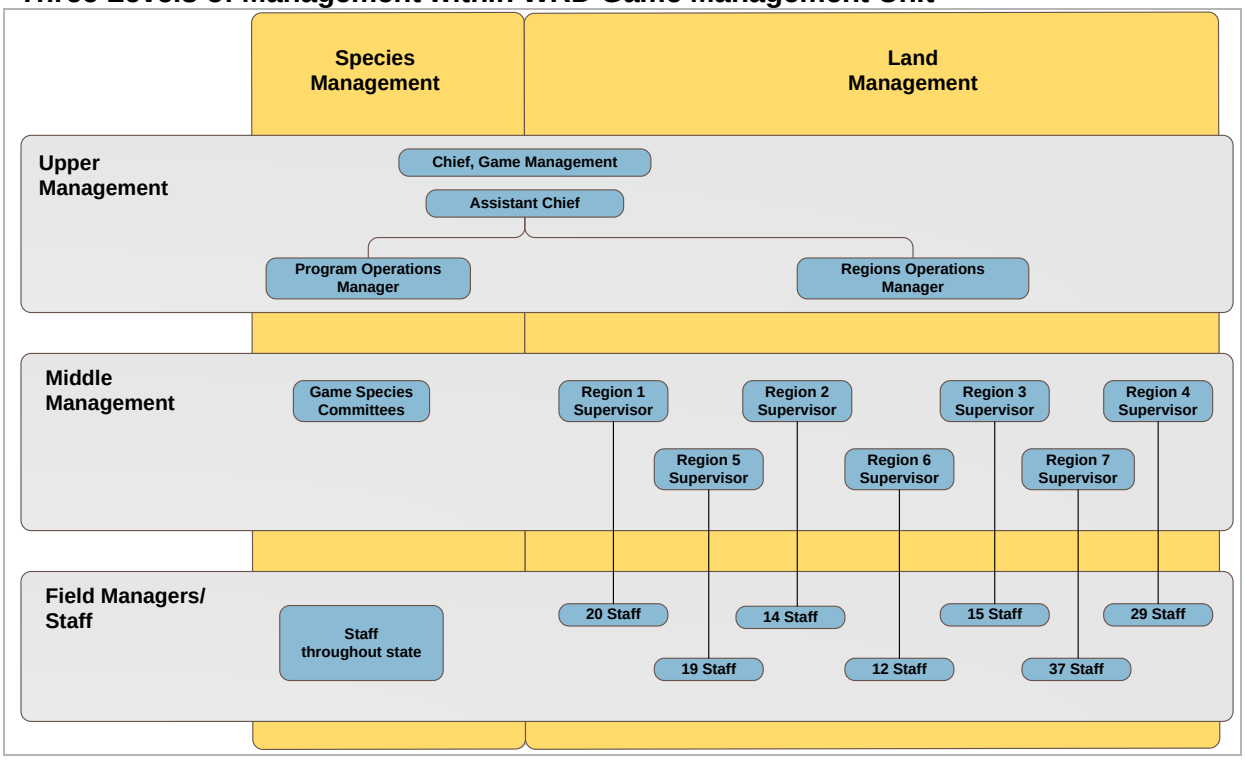
Game Species Management

The program operations manager is charged with overseeing several special programs (such as the hunter development and private lands program) and the management of game species. To manage major game species (e.g., deer, black bear, and alligator), WRD has created committees. Committees are typically made up of biologists who work in regional offices throughout the state and are headed by a lead biologist who serves as the committee chair.

Exhibit 3 shows the organizational relationship between upper management and regional and field managers for both land and species management. Details on field operations for both land and species management is provided below.

[3] The strategic planning and operations we reviewed for this audit were primarily restricted to the game management unit. Therefore, a description of field operations for fisheries management and nongame conservation is not presented.

Exhibit 3
Three Levels of Management within WRD Game Management Unit



Source: WRD records

Below are descriptions of the strategic and operational planning procedures for both land and game species management, as well as management activities used to execute the plans.

Land Management

- **Strategic Planning** – Once properties are acquired, land management strategic plans (called long-term habitat management plans) are developed by regional biologists. Staff are expected to establish a long-term habitat management plan for all properties that WRD owns and manages.[4] The plan establishes the purpose of wildlife management area, formally documents the property's habitat baseline, documents the desired future condition and function of the habitat, and explains the land management activities expected to occur on the property.

- **Operational Planning** – The regional manager, biologists, and field staff work together to develop a work plan annually. Annual work plans list in detail the type of custodial and land/habitat management activities field staff intend to complete on a WMA during the year. Typically, these plans are developed and approved in summer (coinciding with the state fiscal year) and executed throughout the following 12 months.

[4] WRD does not require a long-term plan be developed for leased properties.

- **Land Management Activities** – Land management activities conducted on wildlife management areas typically include some or all the following:

    - **Timber harvests and reforestation** involves timber stand thinning or clear cutting, and typically involves replanting trees following the final harvest of a timber stand.

    - **Prescribed burns** are conducted periodically by regional field staff to maintain desired plant make up on the property and/or to reduce the risk of fires by decreasing the build-up of flammable plant matter.

    - **Chemical and mechanical treatments** are conduced periodically by regional field staff to eliminate undesirable vegetation and/or beneficially alter landscape habitats. These may include applying herbicides or conducting heavy duty mowing.

Game Species Management

- **Strategic Planning** – A game species committee that is made up of a team of biologists is charged with developing/maintaining a strategic management plan for each game species. Species management plans typically include information about the current abundance and distribution of a species, as well as any population changes desired in the short- mid- and long-term (e.g., increase or decrease the number or distribution). Species management plans outline the goals, objectives, and strategies that the unit plans to implement to manage the species.

- **Operational Planning** – On a recurring time cycle (e.g., annually, semi-annually), game species committees will meet to decide what actions are necessary to better manage or track the species. Typically these actions will include developing a regulatory recommendation (e.g., modify hunting regulations) or a scientific recommendation (e.g., change a sampling strategy to capture data more effectively and efficiently).

- **Species Management Activities** – The committee is charged with developing rules on how field staff will execute procedures (e.g., where and when to execute sampling strategies). Field staff throughout the state (regardless of whether they serve on a committee) are relied upon to help conduct work to manage game species within their region. For example, local field staff may participate in collecting data during managed hunts.

Finances

Exhibit 4 details expenditures for fiscal years 2016 and 2015. WRD expenditures in fiscal year 2016 totaled $73.6 million and in fiscal year 2015 totaled $62.5 million. The increase in federal funds (of approximately $10 million) between 2015 and 2016 was primarily used for land acquisition.

Exhibit 4
WRD Fund Sources and Expenditures - Fiscal years 2015 and 2016

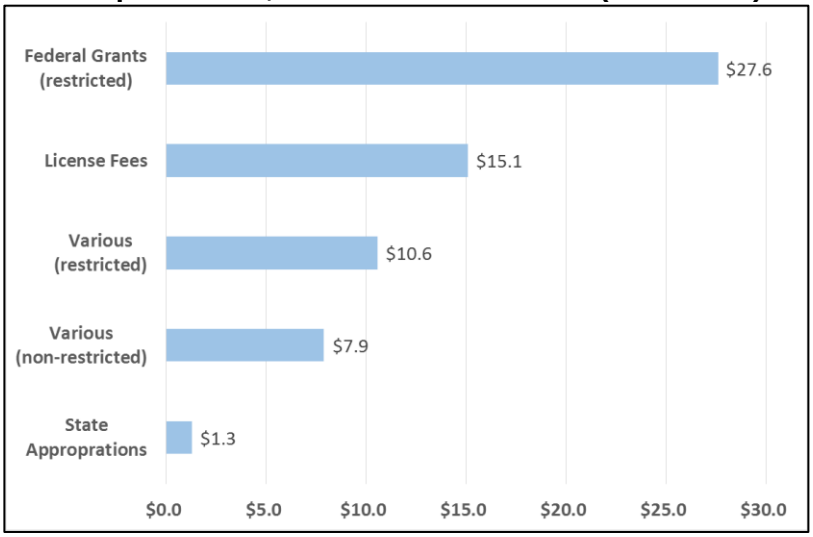
Funds and Expenditures	Fiscal Year	Fiscal Year
Fund Source	**2015**	**2016**
Federal	$27,596,934	$37,291,717
State[1]	20,235,102	17,057,206
Other	14,693,964	19,252,430
Total Funds	**$62,541,001**	**$73,601,353**
Expenditures		
Personal Services	$22,329,566	$22,822,172
Regular Operating	8,132,815	8,987,893
Motor Vehicles	191,299	632,419
Equipment	1,405,792	2,180,086
Information Technology	150,281	219,302
Real Estate Rental	667,277	7,016
Data Communication	776,150	692,583
Contractual Services	11,588,528	7,410,860
Other[2]	17,284,292	30,480,433
Total Expenditures	**$62,541,001**	**$73,601,353**

[1] Includes license fees and donations.
[2] Includes Capital Outlay for land acquisition and Nongame Wildlife Conservation Habitat.

Source: DNR records

In fiscal year 2015, a large percentage of funding came from federal grants (44%) and license fees (24%), with the remaining percentage coming from sources such as donations, program income, and state appropriations. Approximately $38.2 million of these funds were restricted based on the grant or donation to either a specific unit or program within WRD. **Exhibit 5** shows the breakdown of funding sources with notations on restricted fund amounts for WRD expenditures in fiscal year 2015.

Exhibit 5
WRD Expenditures, State Fiscal Year 2015 (in millions)



Source: WRD Records

Federal Grants

Grants from the federal government provide the largest source of revenue for WRD, with most of these grant funds coming from three long-time grant programs: the Wildlife Restoration Program, the Sport Fish Restoration Program, and the State Wildlife Grant Program. In fiscal year 2015, these and other, smaller federal grants totaled $27.6 million. These are described in detail below.

- **Wildlife Restoration Program** was authorized by the Wildlife Restoration Act (commonly known as the Pittman-Robertson Act of 1937). The program is funded by federal excise taxes on firearms, ammunition, and archery equipment and are apportioned to the states based on a formula that relies on both the size of the state and the number of paid hunting license holders.[5]

  These funds are dispersed to the states for approved projects and activities up to 75% of the project or activity costs. Eligible activities include those that restore and manage wildlife for the benefit of the public. In fiscal year 2015 Georgia expended approximately $11.3 million in Wildlife Restoration funds and an additional $4.3 million in hunter education funds.

- **Sport Fish Restoration Program** (commonly known as the Dingell-Johnson Act of 1950) provides federal funding for sport fish restoration management plans and projects. The program is funded by federal excise taxes on fishing gear and motorboat fuels; the formula for apportioning funds to the states is based on the size of the state waters and the number of paid fishing license holders.[6]

  These funds are dispersed to the states for approved projects and activities up to 75% of the project and activity costs. Eligible activities include those that restore and manage sport fish for the benefit of the public. In fiscal year 2015 Georgia expended approximately $5.1 million in Sport Fish Restoration funds.

- **State Wildlife Grants** provide federal funding for conservation research identified within the State Wildlife Action Plan such as scientific surveys and species/habitat management and monitoring. The funds are apportioned to the states based on a formula.[7]

  Funds may not be used for wildlife-related education, recreation, or law enforcement activities. In fiscal year 2015 Georgia received approximately $1.2 million in State Wildlife Grant funds.

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[5] The formula is based on land area including inland waters (50%) and on paid licensed hunters in proportion to national total (50%). No state receives more than 5% or less than 1% of the available funds.

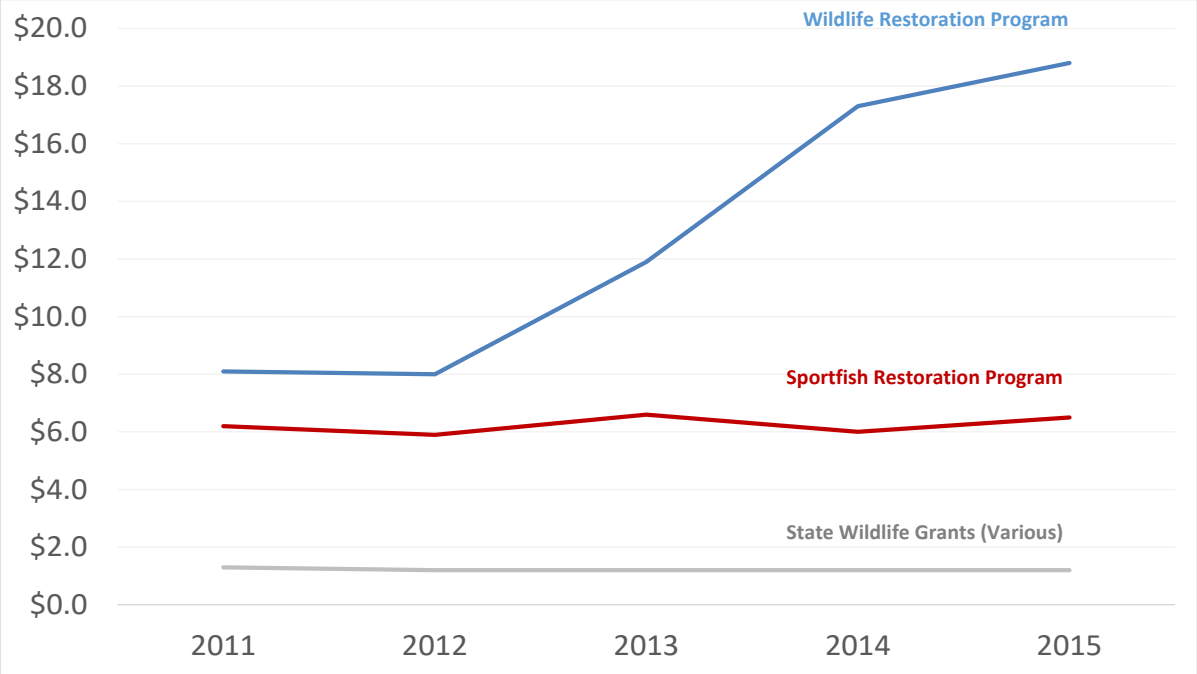
[6] The formula is based on land area including inland and coastal water areas (40%) and the number of paid licensed anglers in proportion to national total (60%).

[7] The formula is based on land area (33%) and on population (67%) with every state receiving no more than 5% or less than 1% of available funds.

- **Other grants** are awarded to WRD frequently in addition to these large federal grants. In fiscal year 2015, these smaller federal grants totaled $5.7 million.

Exhibit 6 presents the federal grant funding trend for the Wildlife Restoration, Sport Fish Restoration, and State Wildlife grants during fiscal years 2011-2015. During this period grant funds from the Wildlife Restoration grant increased significantly from approximately $8.0 million in fiscal years 2011 and 2012 to $18.8 million in fiscal year 2015. This spike is related to a surge in the sale of firearms and ammunition.

Exhibit 6
Trend in Federal Grant Funding FY2011 – FY2015 (In Millions)



Source: WRD records

Although federal grants and license fees comprise a significant portion of WRD's annual operating budget, WRD does receive bond funding as well. Between fiscal years 2010 and 2015, WRD received state bond funds totaling approximately $70.8 million. These funds were largely used to purchase land (80.5%), repair and renovate infrastructure including boat ramps, houses, docks, hatcheries, and bridges (9.5%), and purchase vehicles (2.7%).[8]

License Fees

License fees from hunters and anglers provide the second largest source of revenue for WRD. In fiscal year 2015, there were approximately 395,000 paid hunting license holders and 646,000 paid fishing license holders in Georgia. License fee revenue totaled $15.1 million.

[8] Includes bond funds for Law Enforcement Unit prior to the unit becoming a stand-alone DNR Division.

Hunters and anglers are required to have a license unless they are hunting or fishing on property owned by them or an immediate family member. Currently, the state offers a free lifetime hunting and fishing license to residents 65 and older. In addition, Georgia offers free licenses for disabled residents. However, the U.S. Fish and Wildlife Service does not count these free licenses when apportioning Wildlife and Sport Fish Restoration Funds to Georgia. (See federal grants above.)

The Wildlife and Sport Fish Restoration Acts require that revenue from hunting and fishing license fees be used only for administration of the state fish and wildlife agency.

Various Restricted/Unrestricted

Other significant funding sources in fiscal year 2015 include donations (approximately $3.1 million), timber sales (approximately $3.0 million), Georgia Forest Commission/Forest Legacy (approximately $3.0 million), and license tag sales (approximately $0.7 million). Approximately $8.8 million in funding came from a number of sources in smaller denominations for specific activities, such as the American shad restoration project.

Findings and Recommendations

Findings are divided into three chapters. Chapter 1 (p. 12-21) identifies deficiencies related to management's design of standards and information systems. Chapter 2 (p. 22-38) identifies deficiencies related to the execution of field activities, reporting, and monitoring. Chapter 3 (p. 39-48) identifies areas related to customers of WRD, including license fees and internet content.

Chapter 1: Management Framework – Design

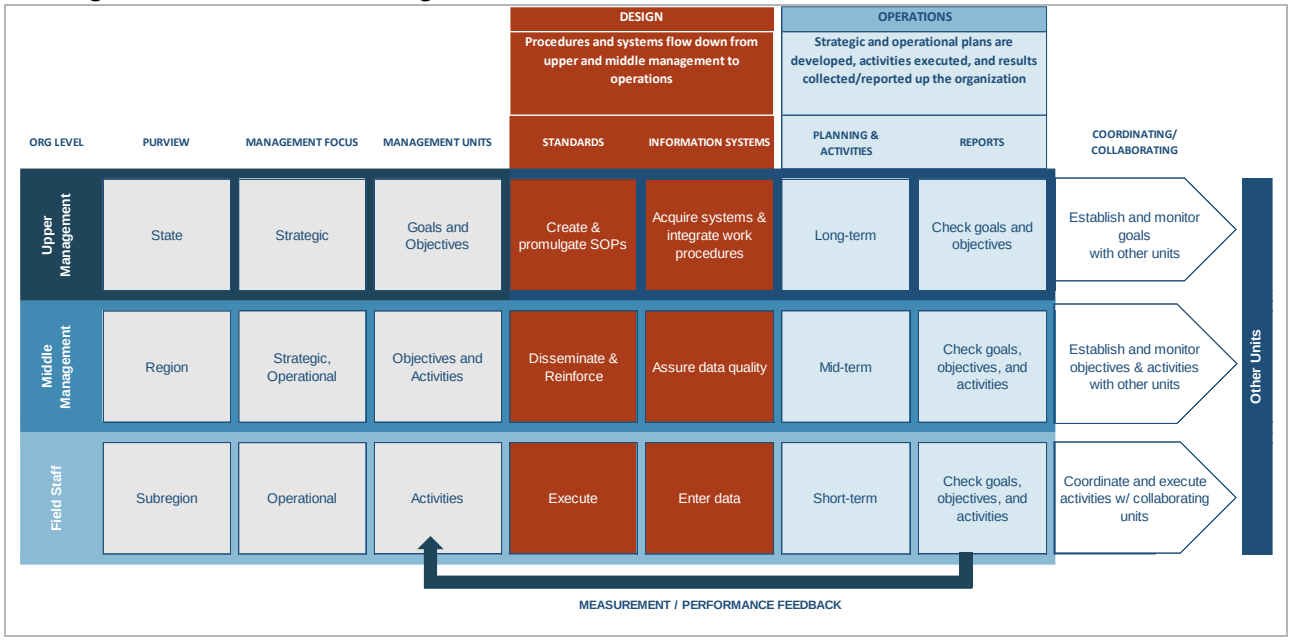
Exhibit 7 presents a management framework with management design components highlighted. Management design components include standards and information systems. Used effectively, standards and information systems can help upper and middle management design operations and capture data on operations to monitor compliance and track organizational progress toward achieving critical operational goals. WRD has not adequately maintained either of the two design components in the management framework.

WRD has not adequately maintained either of the two design components in the framework for effective management.

- **Standards** (See p. 14 for complete finding) – WRD management has not kept standards up to date for major areas of operation such as land and species management, and it is not clear when a complete set of standards was last in effect. We found reference to a set of standards from the 1980s in a regional manager's management handbook and found that another more recent effort was begun within the last five years but was abandoned without a final set of standards being adopted. As a result, regional managers and field staff have been conducting land and species management activities without clear written guidance for years.

- **Information Systems** (See p. 15 for complete finding) – WRD management has not strategically or effectively adopted information technology to collect and report information on land and species. For example, WRD does not maintain a database with attributes on land it owns and manages. Further, electronic data is not stored in a centralized location to allow managers throughout the organization to access records of land and species activity or performance. As a result, WRD upper and middle level managers do not have ready access to current or historical records of land or species management activities.

Exhibit 7
Management Framework – Design



Source: Department of Audits and Accounts

WRD does not have a coherent and current set of written standards to guide land and species management.

Regional managers, field managers, and staff conduct land and species management activities without a complete, coherent, and current set of operating standards.

Currently, regional managers, field managers and staff conduct land and species management activities without a complete, coherent, and current set of operating standards or guidelines from upper management. We found personnel throughout the organization individually keep record of policy statements that have been previously issued from upper management (typically via blast email) or old policy guidance (some dating back decades).

At the beginning of this audit, we requested from WRD's upper management a set of current operating standards and were informed that a set did not exist. In conducting fieldwork, we discovered that a procedure guide may have existed in the 1980s. In addition, while an attempt to compile previously issued policy statements from WRD and DNR was undertaken a few years ago, it was never completed. WRD should reconvene the effort to collect and disseminate the operating standards for land and species management as soon as possible.

Operating Standards – Status and History

In the 1980s WRD had a document akin to a set of operating standards, although it is not clear whether the document fully addressed all areas of land and species management. Since then, the general practice has been for WRD upper management to issue major changes to policy and operations via ad hoc memorandum sent to staff via email. Within the last five years WRD upper management began compiling these historic documents into a set of operating standards, but the project was abandoned without final approval of the inventory. The net result of these prior actions is that currently a set of documents (some decades old) are rotated throughout WRD without a clear understanding by regional managers and field staff of what constitutes a complete and current set of operating procedures.

This lack of clear standards is not without consequences. As explained in subsequent findings in this report, managers and field staff plan, conduct, and oversee land and species management activities without clear expectations from upper management, and inconsistent records of activities and achievements result. For example, long-term strategic plans for land management are inconsistently completed or reviewed (see finding on p. 24) and records of work historically completed on properties is not maintained (see finding on p. 28).

This lack of guidance can be seen even with regard to basic instruction of staff in the field. As one WRD manager noted, "[w]hen I have to train a new person and they ask me 'How do I do this,' I have to show them. I don't have anything in writing to instruct them on what is expected. And when they have questions later, I have to show them again until they eventually learn how things are supposed to be done."

In response to discussions with the audit team, WRD upper management is initiating another effort to inventory, compile, and update standards for the game management unit.

RECOMMENDATIONS

1. WRD should collect old policy memorandum and operating standards, determine which are still applicable and which are not, and use them as a starting point to develop a complete and coherent set of activity and management instructions into a WRD operations manual.

2. WRD should establish a system/method—such as an intranet system—that that permits WRD employees throughout the state to be able to access current operating standards.

   DNR Response: *WRD concurred with this finding. It noted that it is "evaluating all existing written standards and policy compendia. Staff have begun a systematic approach of updating current policies and drafting new policies for which no written standard exists. Additionally, all current and future policy statements will be reformatted or newly formatted, respectively, into a Division-wide standardized template. The policy documents will be combined in a relevant, topic-based organizational structure with associated indexing/search features and made available to all Division staff electronically. Opportunities for storage of the policy document on the Department's intranet site will be explored."*

   WRD also provided two policy revisions currently in process: ***Habitat Management Planning for State-Owned Lands Managed by WRD*** *and* ***Prescribed Fire****.*

WRD has not strategically and effectively adopted information technology to collect and report information on land and species.

WRD has regional offices and field staff throughout the state; however, it has not developed information technology to effectively create, store, transfer, and manage data throughout the division. Critical management data for land and species management is either maintained in paper records or on an individual staff member's computer and is not remotely accessible by other staff throughout the state. As a result of this lack of an integrated information, the division's ability to coordinate and monitor land and species management activities is limited.

As shown in **Exhibit 8** (p. 17) and **Exhibit 9** (p. 19), the majority of data collected on land and species is either maintained in paper records or on an individual staff member's computer and is not remotely accessible by other staff throughout the state.

Properties Data

WRD manages more than 100 wildlife management areas covering approximately 1 million acres. However, the division had not established a clear master record of properties at the onset of this audit.[9] Currently, the most comprehensive electronic inventory of property maintained by WRD is in a spreadsheet with only a few fields of data that is maintained on the desktop computer of WRD's regional operations manager stationed at WRD headquarters. This master record is not electronically

[9] WRD officials could not initially provide us with an accurate and complete list of properties it manages. During the audit, WRD officials began working with personnel in DNR's Real Estate Unit to establish a full list of the properties under management. Ultimately, the staff manually reconciled a list of properties it manages and provided it to the audit team.

accessible by any other staff in the division to review or edit. This lack of access to a master property record is also applicable to the nongame, fish management, and law enforcement groups, which also have responsibilities on these same lands.

Land Management Activity Data

Land management is overseen by regional managers and field biologists in WRD offices throughout the state. As described below, there are three primary land management activities that local land managers oversee: timber harvesting, prescribed burning, and chemical/mechanical treatments. Records associated with timber harvesting, while maintained in a database, are not accessible by regional or field managers and therefore cannot be readily updated. In addition, records related to prescribed burns and treatments are not consistently kept and, if kept, are maintained as paper records.

- **Timber Harvests and Reforestation** involves thinning or clear cutting timber stands and replanting trees after the final harvest. WRD financed a comprehensive timber inventory of stands on managed property that was completed in 2013. The study produced a record of WRD owned and managed timber properties, organized by unit, which was captured in a GIS database and has been maintained by staff in the Forest Management Unit (FMU) since. Because the database resides on the desktop computer of a manager stationed near WRD headquarters, neither local land managers nor upper management can access, view, or edit the record of timber stands or historical records of harvesting.

  The FMU manager indicated that the timber inventory is likely inaccurate because the harvesting that has occurred since the initial inventory has not been consistently updated in the system. We did not conduct analyses to determine how inaccurate the record is, but we conclude that it is likely that an electronic record keeping system with a centrally accessible GIS database could be better maintained if regional management could access and edit records of timber on properties they manage and visit regularly.

- **Prescribed Burns** are conducted periodically by regional field staff to maintain the desired plant make up on a property. We found records of prescribed burns were not consistently kept and we could not effectively reconstruct the burn history for properties we reviewed. Because WRD does not have written standards regarding these burns, it is not clear whether regional and local land managers are responsible for keeping a master record.

- **Chemical and Mechanical Treatments** include applying herbicides or conducting heavy duty mowing, roller-chopping, or mulching to eliminate undesirable vegetation or beneficially alter the landscape. We found records of the chemical and mechanical treatments were not consistently kept, and we could not reconstruct the chemical and mechanical treatment history on the properties we reviewed. As noted above, absent written standards, it is not clear whether regional and local land managers are responsible for keeping a master record of these activities.

Exhibit 8
Land Management Activity Data Collection/Storage and Access

Data	Unit/Personnel	Method of Storage	Remotely Accessible?
Properties Managed (Master Record) 	Game Management Unit	Staff Computer 	No
Timber Harvests 	Forest Management Unit	Database 	No
Prescribed Burns 	Game Management Regional Staff	Non-standardized/ paper records 	No
Chemical/ Mechanical Treatments 	Game Management Regional Staff	Non-standardized/ paper records 	No

Source: Department of Audits and Accounts analysis

Species Management Activity Data

Data collection and management of game species is overseen by committees that are typically made up of regional biologists also working as local field-level land managers. Committees report directly to a programs operations manager located in WRD headquarters. As with land management activities, WRD has not established a standardized information system to collect and report data related to game species.

Information required to manage game species includes data on the location, abundance, and characteristics of the species. Data is typically collected using sampling techniques in the field or by collecting species information during managed hunts whereby hunters provide specimens for data collection. These data help managers make decisions about rules and regulations used to manage species toward desirable abundance and distribution. However, there is no consistency across species or regions with regard to the methods by which data is logged, the systems in which data is held or the accessibility of the data to management. With the exception of deer harvest information, data on species management is not consistently stored in a database or centrally located to allow managers throughout the state to access it. As a result, neither upper nor middle management has direct access to data on species to analyze data or run meaningful reports. As shown in **Exhibit 9,** data are stored in a variety of ways, and only deer harvest data is accessible remotely.

As noted earlier, WRD generally does not have written operating standards for major areas of operation. As a result, upper management advised us to speak directly with committee field managers responsible for each species to understand the type of data

collected and how it is used. Below is a brief description of the type of data collected and how it is managed for three major game species and nuisance species: white-tailed deer, black bear, American alligator, and coyote/feral hog.

- **Deer Harvest** – Biological data from harvested deer (e.g., size of antlers) are collected by staff during managed deer hunts and from sampling of deer processor facilities.[10] Unlike data collection and entry methods for other species, field staff can access and remotely enter biological data into an online Oracle database, and management information can be extracted remotely from the system.

  The system was developed by the DNR IT unit at the request of a biologist charged with leading the state's committee on deer management. Previously, the biologist was collecting deer data through over 300 spreadsheets, representing over 100 properties, via email from staff around the state and manually entering the data into a master sheet. In response to the perceived inefficiency, he requested DNR IT create a remotely accessible database that staff could enter data into directly. The biologist estimated that moving to a remotely accessible database reduced the time required for this procedure from two to three months to two to three days.

- **Black Bear Harvest** – Hunters are required to bring harvested bear to WRD offices where field staff collect biological data. The data is emailed to one of three black bear committee members located at regional offices throughout the state. These committee members email data to the lead member who enters data into a Microsoft Access database. Because the database is maintained locally by the committee chair, upper management within WRD cannot access the database or run reports from it.

- **Black Bear Line Surveys** – Field staff maintain "bear lines" (food bait lines), and field staff track "hits" by black bears as a measure of range and abundance. Data are maintained locally by staff and then emailed to the black bear committee chair, who compiles them into one file.

- **Alligator Harvest** – Hunters are required to bring harvested alligators to WRD offices so field staff can collect biological data on a paper sheet, which is forwarded onto the state alligator biologist via email. The data is captured in Excel spreadsheets and housed on the alligator biologist's computer.

- **Alligator Spotlight Surveys** – Field staff maintain alligator spotlight lines (e.g., transportation avenues through rivers and streams), run the survey lines, and count the number of alligators sighted and the size of each. Field staff record this data in Excel spreadsheets and send it to the alligator biologist who compiles it. The data is housed on the biologist's computer.

[10] DNR staff visit local processing centers and collect data, including sex, age, weight, and health indicators, on processed animals. There is a quota for how many deer to inspect per county.

- **Nuisance Species** – WRD has not developed a standard approach for what data to maintain on certain nuisance species such as coyotes and feral hogs or how to keep or report it.

Exhibit 9
Game Species Activity Data Collection/Storage and Access

Data	Unit/Personnel	Method of Storage	Remotely Accessible?
Deer Harvest 	Deer Committee	Database 	Yes
Black Bear Harvest 	Black Bear Committee	Database 	No
Black Bear Line Surveys 	Black Bear Committee	Staff Computer 	No
Alligator Harvest 	Alligator Committee	Staff Computer 	No
Alligator Spotlight Line Surveys 	Alligator Committee	Staff Computer 	No
Nuisance Species 	Game Management Unit	Non-standardized/paper records 	No

Source: Department of Audits and Accounts analysis [11]

A Model Information System Design

Based on a review of other state's wildlife management divisions and applying general principles of data management and accessibility for reporting, we identified an improved model for information system design (see **Exhibit 10).** As shown in the exhibit, if data for land and species management were consistently entered into a centrally accessible information system, key data could be summarized and reported to upper management as well as regional managers and local land managers throughout the state. This capacity is almost non-existent currently for major activities for property and species management in WRD. Florida and Minnesota are

11 Animal icons made by Freepik from www.flaticon.com.

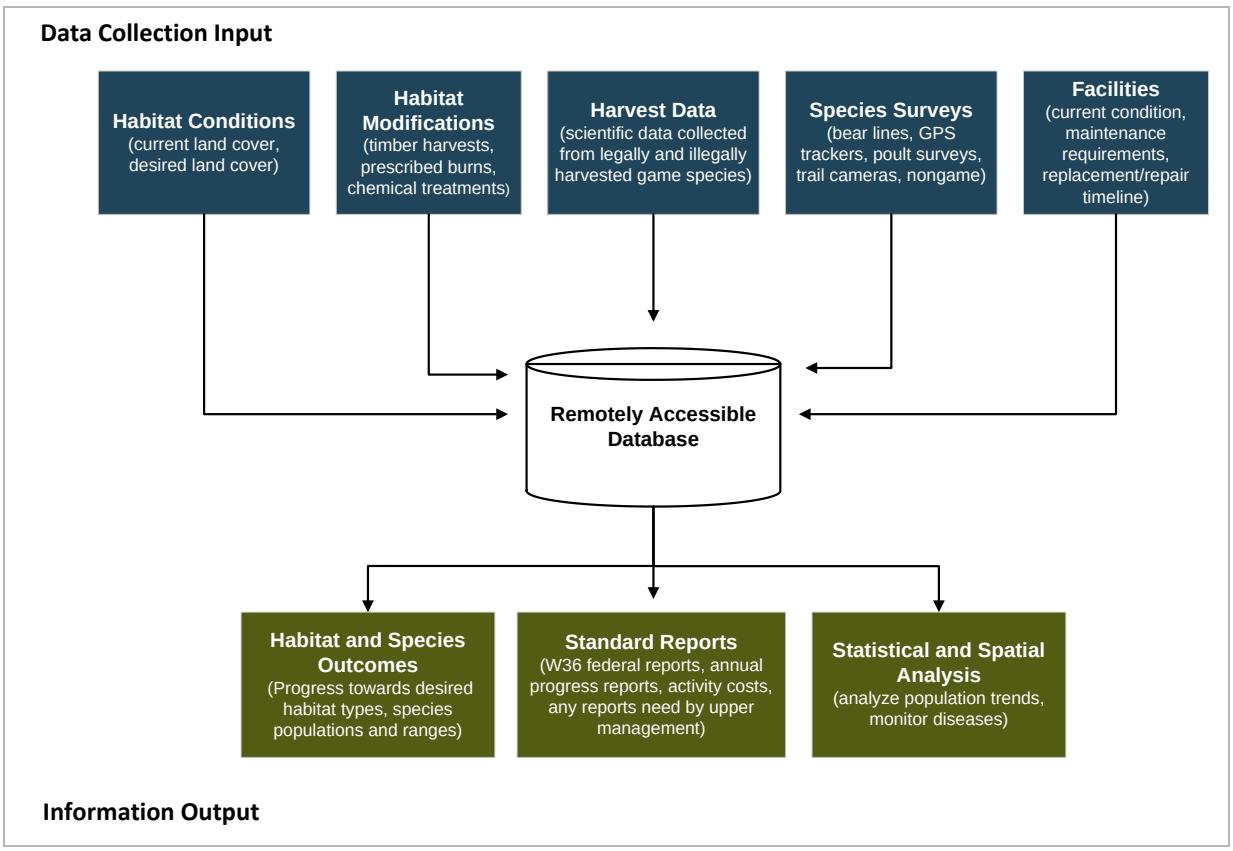
utilizing a central database to track species and land management activities, and the systems allowed managers at all levels to query for information.

- **Florida's Fish and Wildlife Commission** uses a database to track land, species, and facility maintenance activities such as prescribed burns, timber activities, species surveys, and custodial maintenance. Man-hours for each activity and expected costs, as well as the actual counts for each of those categories and annual accomplishments, are tracked. This information can be rolled up to a regional and statewide level for any of the categories.

- **Minnesota's Fish and Wildlife Division** uses a centralized GIS database to track all species and land management activities. It tracks the costs of land management activities, as well as accomplishments. Activities, their cost, and changes in the habitat are tracked and monitored. Species harvest, surveys, and other population monitoring data are also tracked. Management can query the system for any needed management information, as well as track progress on meeting the goals set for each property.

  Although we did not conduct a comprehensive cost assessment for establishing a system in Georgia, Minnesota established their system with an initial investment of approximately $500,000, with a four-year full-implementation cost of $750,000.

Exhibit 10
IT Systems: Data Should be Connected and Remotely Accessible



Source: Department of Audits and Accounts

RECOMMENDATION

1. WRD should establish a land management database that tracks all land management activities, associated costs, outputs, and outcomes for each state-managed property. In addition, WRD should establish a species management database where data collected for the management of game species is accessible by all levels of management.

***DNR Response**: WRD concurred with this finding. With respect to habitat management activities, it indicated it "will work with appropriate staff to investigate available information technologies that can provide a comprehensive, real-time database to meet its land management and administrative reporting needs, and develop requisite information technology assets within budgetary limitations." WRD indicated it has submitted a request to DNR IT to "assess utilization of ArcGIS online services to meet WRD's needs."*

With regard to game species management data, WRD indicated it is collecting biological data in accordance with scientific principles and techniques consistent with industry standards. It agreed "there is room for improvement and efficiencies to be gained in the management of this data." It indicated plans to "work with appropriate staff to investigate available information technologies that can provide a structured and comprehensive real-time database for remotely reporting biological data and developing administrative technology assets within budgetary constraints."

Chapter 2: Management Framework – Operations

Exhibit 11 presents a management framework with operations components highlighted. Operations components include strategic (long-term) and operational (short-term) planning, the completion of activities to execute those plans, and the reporting and monitoring of accomplishments.

WRD has not adequately maintained strategic plans for land or species management nor established effective reporting of operations for field activities for land or species management.

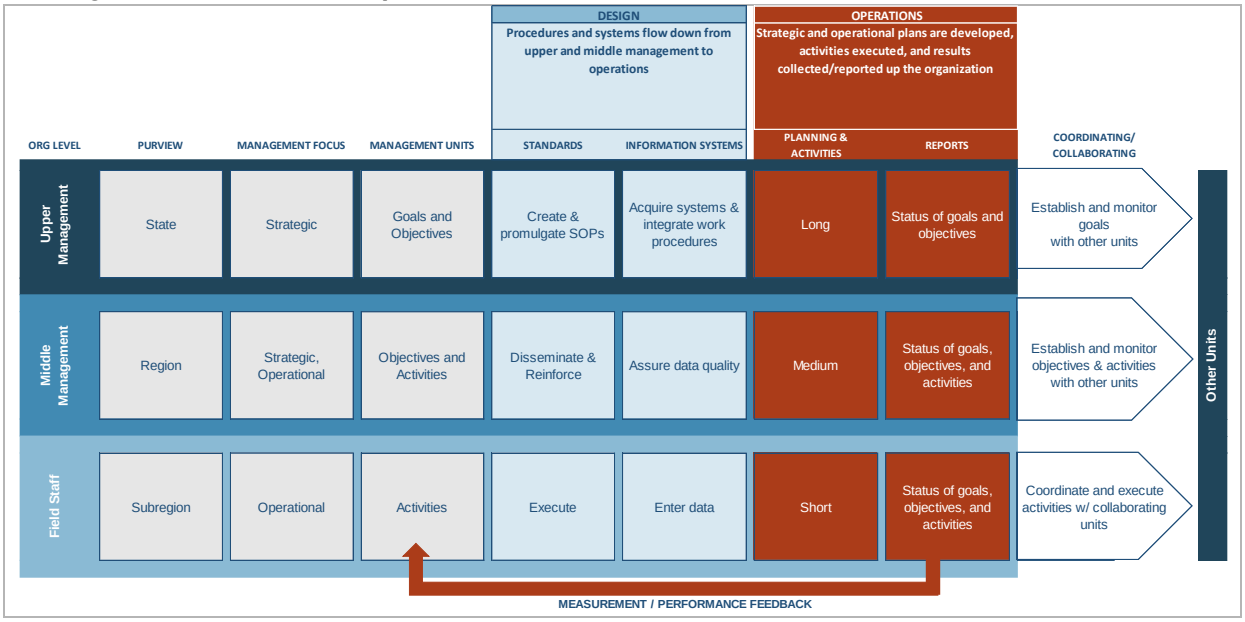
- **Habitat Management Plans** (See p.24 for complete finding) – WRD management has not developed long-term management plans for more than one-third of properties it owns, including some of the largest properties in the division's portfolio. Of the 37 plans that have been developed, only one plan has been formally reviewed and updated, as required by WRD policy. Some of the habitat management plans have been in place for decades without being formally updated.

- **Habitat Management Activities** (See p.28 for complete finding) – WRD does not maintain records adequately to allow managers to monitor and evaluate habitat management activities, such as prescribed burns, mechanical and chemical treatments, and timber harvests. As a result neither regional managers nor upper management can adequately survey the status of work conducted on properties or evaluate the success of those activities to satisfy long-term goals and objectives on the properties. Record keeping throughout the division is either non-existent or not effectively compiled.

- **Species Management Plans** (See p.31 for complete finding) – WRD has not adequately maintained game species management plans nor incorporated desired content in the development of plans it has developed. For example, the black bear management plan has not been updated since 1999, and major changes in hunting policy for that species – including the expansion of hunting opportunities of the middle Georgia population near Oaky Woods WMA – have been adopted that are not reflected in the plan.

- **Species Management Activities** (See p.35 for complete finding) – WRD can improve management coordination as well as transparency in both the data collection and reporting for game species, as well as the public participation methods it adopts for hunting standards.

Exhibit 11
Management Framework – Operations



Source: Department of Audits and Accounts

WRD has not established adequate long term habitat management plans or monitoring systems to track progress toward long term goals and objectives.

WRD does not have written long term habitat management plans for 23 of 60 properties (38%), representing 129,000 of 363,000 acres (36%). Some properties without habitat management plans are among the largest managed by WRD and have been in its land portfolio for decades. For example, the first major parcel purchased for the Richmond Hill WMA (in the southeastern area of the state) occurred in 1979. While this property, at more than 20,000 acres, is the fourth largest owned by WRD, it does not have a long-term habitat management plan.

In addition, WRD long-term habitat management plans we reviewed had deficiencies. Generally, long-term habitat management plans lack consistency in both form and content, and many do not include an explicit time period, so it is not clear the period for which the plan is applicable. Only 1 of 37 plans have undergone a formal update, with a review conducted by upper management, as required by WRD policy.

WRD acquires properties that vary in the amount and type of land management activities required to maintain or modify it. Some properties may require extensive habitat modifications to reach a desired condition (e.g., a former timber farm being converted to a traditional forest over decades) or the property may already be in the desired condition and only need to be maintained with active management (e.g., periodic prescribed burns). Long-term habitat management plans establish baselines for properties, as well as outline the goals, objectives, and general management activities that are necessary to reach desired conditions.

Long-Term Habitat Management Plans

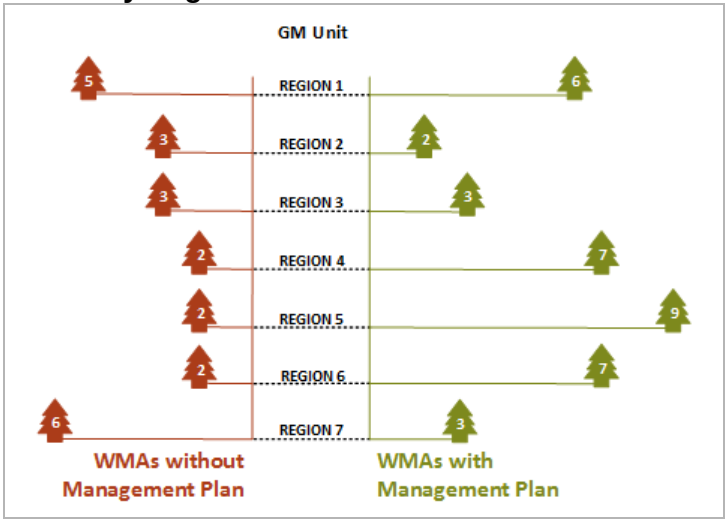
Long-term habitat management plans are a type of strategic plan used to document the purpose of property and to establish written comprehensive goals, objectives, and management strategies that will be pursued during a long time cycle (e.g., decades). Ideally, systems of management oversight include a short-term reporting mechanism on land management activities and more comprehensive reviews at longer time intervals (e.g., 3-5 years). These activities are intended to help managers document the land management strategies that have been executed and evaluate whether management objectives and long term habitat goals are being met. Long-term habitat management plans establish the long-term vision of the managing entity and should provide a framework to local land managers who are charged with developing specific management strategies on shorter time scales to assure that work conducted on those properties fulfill the purpose of the property.

The deficiencies we found in work and management oversight are attributable to a lack of a clear policies and procedures regarding expectations for developing long-term habitat management plans, the lack of a standard (entity-wide) monitoring method, and no information system to capture relevant data. It should be noted that WRD management has begun to address some of the deficiencies we identified and should be commended for their quick action. Problems identified with the completion of plans, established timeframes, updates to plans, and consistency between plans are discussed in the following sections.

Completion Rates

WRD requires long-term habitat management plans be developed for all properties owned by DNR and managed by WRD.[12] However, long-term habitat management plans have not been completed for 23 of 60 properties (38%), representing 129,000 of 363,000 acres (36%). As shown in **Exhibit 12,** the completion rate of long term habitat management plans varies significantly by region, with the highest completion rate in Region 5 (nine complete, two not complete) and the lowest completion rate in Region 7 (three complete, six not complete). Some of the properties without habitat management plans are the largest managed by WRD and have been in the land portfolio for decades.

Exhibit 12
Completion of Long-Term Habitat Management Plans by Region

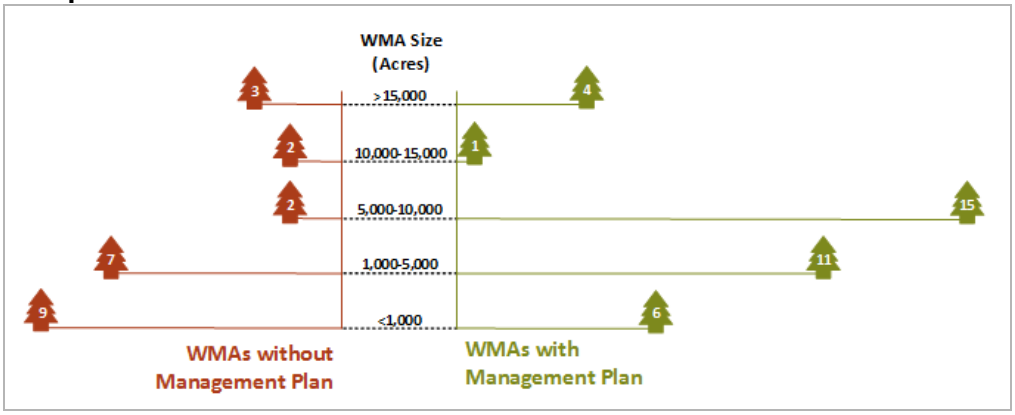


Source: WRD

As shown in **Exhibit 13**, the completion rate of long term habitat management plans does not vary significantly by property size. The highest completion rate was for medium-sized properties (5,000-10,000 acres), with 15 of 17 plans completed. Additionally, three of the seven very large properties (>15,000 acres) do not have long-term habitat management plans.

[12] In 1997, WRD developed a 15-page document entitled *A Conceptual Plan for Management of Natural Areas, Public Fishing Areas, and Wildlife Management Areas* (1997). We applied management activities put forth in this document to assess the status of habitat management plan activities.

Exhibit 13
Completion of Long-Term Habitat Management Plans by Size of the Properties



Source: WRD

Appendix C presents a complete list (and map) of WRD owned and managed properties as well as the status of long-term habitat management plans for each, the WRD unit responsible for the plan, the size of the property, and the year the first major land parcel was acquired.

Time Frames

While best practice from other states and even within Georgia WRD's own regional offices show that long-term habitat management plans should include an applicable time frame and/or expiration date, WRD management plans do not consistently have them. Approximately 30% of the 37 completed plans did not identify the year in which the plan was created. We attribute the lack of time frame on plans to ambiguous language in the WRD document that established the requirement to develop long-term habitat management plans.

WRD's *Conceptual Plan for Management of Natural Areas, Public Fishing Areas, and Wildlife Management Areas* was created in 1997 and established a requirement to develop a "50-year plan" for all properties owned by DNR and managed by WRD.[13] The purpose of the 50-year plans is to establish management "goals and objectives for each area based on present and desired habitat conditions." However, this document does not clarify that the plans should have an explicit starting or ending year.

The 50 year time frame WRD has adopted is not a useful time frame to effectively guide work activities and monitor progress. Although it is reasonable for WRD to envision a desired habitat condition 50 years in the future, establishing objectives and management strategies with such a long time frame is impractical because management systems and personnel do not operate on such a large time cycle. We found management plans from another state that applies a 10 year time frame. The time period balances the need to establish long-term goals and objectives with the need to provide staff a workable time frame for developing habitat management

[13] During the course of the audit, the document was circulated to regional and local land managers via blast email. It is not clear that this policy document was being widely circulated or was well known by WRD managers prior to the audit.

objectives and activities as well as affording personnel a chance to observe and monitor progress.

Updates/Reviews

WRD policy requires a review of long-term habitat management plans "be conducted at regular intervals not to exceed 5 years . . . to determine progress made towards reaching objectives" for the property. However, the policy does not provide any details on procedures for conducting the review. We requested all written reviews of long-term habitat management plans from WRD upper management. Of the 37 properties with a long-term habitat management plan only one had a written update report.[14] WRD should ensure updates are conducted on properties, and a formal review procedure every five years seems reasonable and in line with what we observed from wildlife management units in other states.

Content and Consistency

We reviewed the long-term habitat management plan for the largest property within each WRD management region for content and consistency to determine whether the documents were structured similarly and whether they contained key information that could be used to help establish an effective framework for tracking and monitoring progress. Although the long-term habitat management plans generally contained some of the same basic information (such as explaining the type of public hunting and fishing opportunities that are available), the documents were not consistent in content, format, or detail. These plans should be standardized, and WRD should develop standard templates for long-term habitat management plans.

WRD Management Response

WRD should be commended for taking quick action to address some of the deficiencies we identified. Shortly after we presented our analysis of the status of long-term habitat management plans to division management, WRD formed a committee to develop improved guidance on the creation of long-term habitat management plans and a system to review and revise plans. If implemented, these procedural changes should improve WRD's ability to consistently develop and monitor long-term progress for properties it owns and manages. As noted in the finding on page 15, this data should be integrated into an information system that can summarize results and be accessible to field staff, regional managers, and upper management.

[14] Some regional managers indicated that reviews were conducted but not documented. However, we cannot confirm how consistently or often reviews are conducted.

RECOMMENDATIONS

1. WRD upper management should adopt the current draft policies and procedures for creating long-term habitat management plans and monitoring activities and outcomes on properties.

2. WRD should create long-term habitat management plans for all applicable properties. WRD should prioritize properties for which long-term habitat management plans are created and updated.

3. WRD should require that long-term habitat management plans include an explicitly stated time period, contain similar content and consistency across the unit, and are periodically reviewed/updated.

4. WRD should consider adopting a 10-year time frame for its long-term habitat plans.

DNR Response: *WRD concurred with this finding. It indicated it has adopted a revised and more comprehensive policy on long-term habitat planning. The policy "addresses each of the recommendations offered by the auditors, including prioritizing plan completions, periodic plan review, explicitly state time periods and adopting a 10-year time frame for each property plan."*

WRD cannot efficiently and effectively evaluate habitat management activities and outcomes because managers lack access to data.

WRD can improve oversight and transparency for land management by collecting and compiling better data of work related to major activities, such as timber harvesting, prescribed burns, and chemical/mechanical treatments. Improving data capturing and record keeping of work history, in conjunction with improvements in habitat management planning (as discussed in the previous finding), will allow upper and middle management to review and evaluate the activities and progress staff make in land management. Currently, middle and upper management cannot review historical work records efficiently (if at all) because records are not kept or are stored ineffectively. As described in **Exhibit 11** (p. 23), upper and middle management should make this type of periodic review and analysis part of an overall management oversight framework.

Habitat Management – Planning and Activities

WRD policy requires local land managers to develop both long-term habitat management plans and annual work plans for properties the state owns.[15] We attempted to evaluate whether the annual habitat management activities conducted by field staff were achieving long-term habitat management goals and objectives. However, we could not make a determination because the annual work plans do not explicitly relate to the goals and objectives established in long-term habitat management plans.

[15] Deficiencies related to long-term habitat plans are presented in the finding on p. 24.

In the process of trying to reconstruct habitat management activities, we identified deficiencies in record keeping and information management that limit middle and upper management's ability to summarize and review field activities and progress.

- **Timber Harvest/Stands** – On the three wildlife management areas we reviewed, 12 harvests covering approximately 2,100 acres were conducted during the period 2011-2015. The master record of timber stands on properties is maintained by the Forest Management Unit (FMU) in a GIS database. However, according to FMU officials, the data is out of date and is not remotely accessible to local land managers, regional managers, or upper management within WRD.[16]

  In addition, FMU uses "timber stand" units as its GIS data units (i.e., shape files) while local land managers divide property into "burn units." Because these GIS shape files are not the same, even if FMU data were accessible to local land managers, the FMU data would not easily integrate into existing GIS records maintained by local land managers charged with tracking activity.

- **Prescribed Burns** – We identified 119 approved burn plans covering 16,032 acres on three WMAs within our period of review (2012-2015); however, we could not reconstruct the number of burns conducted or acres that were burned because records of executed burns are not consistently kept in a manner that allows reconstruction of an historical record by property.[17]

  We identified practices that conflicted with WRD policy restricting the planning/managing for properties to the lead unit while conducting the review. (See Appendix D for explanation of lead unit and policy.) Although the game management unit is identified by WRD as the lead planning and management unit for each of the three WMAs we reviewed, local land managers from the game and nongame units reported submitting and executing prescribed burns on these properties. However, because burn plans do not require signature approval of both units, it is unclear if the counterpart units approved (or even were aware of) prescribed burns that were planned. Because burn evaluations are not consistently recorded, it is not clear which burns actually occurred.

  We also found the approval process for prescribed burns is inefficient. Field staff must submit burn plans, which include plat maps of the property to be burned, to numerous individuals for approval via email. Because of size limitation on DNR's email system, these large files must be deconstructed into parts, sent to the appropriate personnel, and

[16] A comprehensive timber stand inventory was conducted approximately six years ago and – according to FMU officials – needs to be updated. WRD personnel estimated that approximately 30,000 acres of timber stands from approximately 120 harvests have not been updated in the database. FMU officials indicated timber inventories should be updated every 6-10 years.

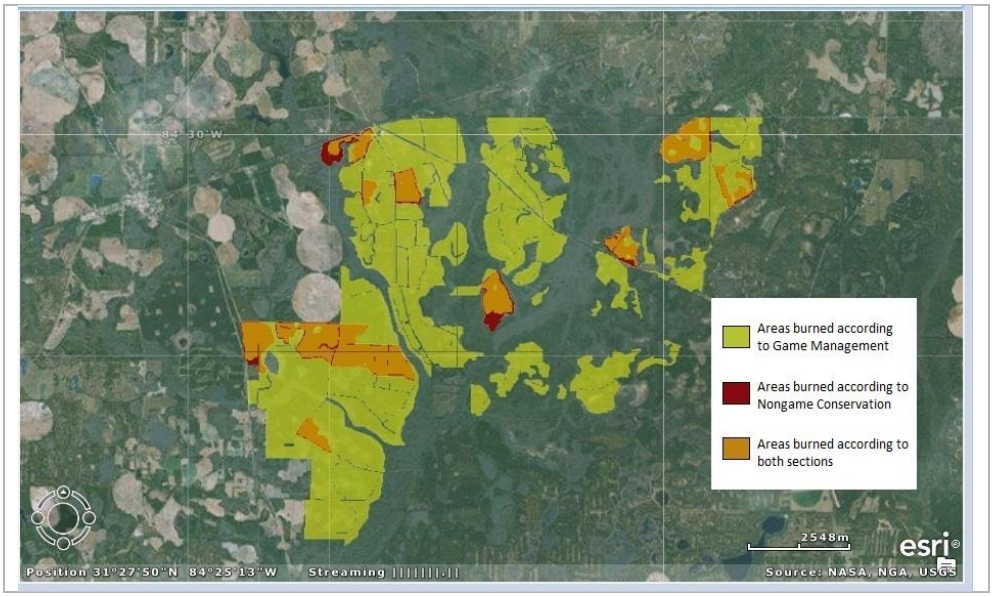
[17] For two of the three properties we reviewed, no burn evaluations were kept for the executed burns. For the third property, burn evaluations were irreconcilable with the approved burn proposals. The burn evaluations were not associated with specific plans and the number of acres recorded as burned on the evaluation did not match the acres to be burned on the plan.

reconstructed by the recipients. Cloud based storage systems could be used to store all necessary documents in a remotely accessible forum, and manager approvals could be integrated as work steps.

Additionally, we found evidence of managers documenting prescribed burns locally in a GIS on assigned laptop computers, but the efforts were not being coordinated effectively. **Exhibit 14** is a reconstruction of burn records documented by the game and nongame unit for a WMA during the period FY2010-2014. We combined burn records from personnel from the game and nongame unit to illustrate the work history on the property. Because GIS records and files provide vital spatial data that can be embedded with data to deliver a comprehensive visual record of land management activities on a wildlife management areas, they are a superior record of land management activity compared to traditional spreadsheet records.

- **Mechanical and Chemical Treatments** – We requested records of mechanical and chemical treatments for the three properties we reviewed, but local land managers generally did not keep records of mechanical and chemical treatments executed on each individual property.

Exhibit 14
GIS Image of Prescribed Burns on a WMA
Game and Nongame Units
FY2011-2015



Source: Department of Audits and Accounts analysis

RECOMMENDATIONS

1. WRD should update land management operating procedures to clarify which units are the lead planning and activity managers for all properties. WRD

should update land management operating procedures to clarify how units will coordinate work.

2. WRD should redesign annual plans to link to long-term goals and objectives to allow managers to track land management progress.

3. WRD should maintain a comprehensive record of activities (timber harvest, prescribed burns, and major mechanical/chemical treatments) on all properties. GIS data systems should be considered ideal for capturing temporal and spatial data.

4. WRD should acquire information systems that allow local, middle, and upper managers to approve, review, and coordinate activities more efficiently and effectively.

DNR Response: *WRD concurred with this finding. It indicated that, while it believes it has a history of effective collaboration among sections, in some cases "roles and responsibilities for planning and implementation at the local level have been informally assigned and may not be clear to all parties." As indicated earlier, WRD reports it has recently revised its policy for development of management plans for state properties. It indicated that the policy "articulates the process for assigning lead roles for development of long term site management plans... [and] clarifies the process of coordination of ten-year review and annual work plans and defines objectives for linking annual work plans to long term goals."*

WRD also noted that, as resources allow, it will "further develop its information technologies and databases, focusing on the development of a geospatial data management system that will incorporate information on specific management activities targeting habitat and species as well as site characteristics." It also noted that data from population and habitat monitoring programs could be incorporated. It acknowledged that "[h]aving such a system available to all agency staff would provide an efficient framework for planning, implementing, and reporting management activities and would help ensure consistency of effort over time to meet defined management objectives."

WRD can improve species management plan design and content.

WRD can improve game species management plans for three species it actively manages: American alligator, black bear, and white tailed deer. Management plans have not been kept up to date, and key content to facilitate effective management/measurement is missing from plans.

Species management plans identify population trends and establish the population goals for a species (i.e., increase, decrease, maintain) in the state and in geographic sub-regions. For example, the total white-tailed deer population in the state may be at a desirable level, but the population within a specific region of the state may be too high. A management plan is used to identify these trends and establish goals, supporting objectives, and executable strategies to manage the species. Both biological and social science is used to develop these plans. Data from physical sources (e.g., species harvest data) and the public (e.g., surveys, town hall meetings) are incorporated when establishing the policy goals for a plan and hunting regulations that help attain those goals. Generally, species management plans are time-bound. Plans we reviewed from other states' wildlife units applied a 10-year time frame. The problems we identified with WRD's plans are discussed below.

Completion Status and Time Frames

WRD has completed a written species management plan for the three major game species we reviewed: American alligator, black bear, and white-tailed deer. However, (similar to long-term management plans for properties) some are either outdated or fail to define the time period for which the plan is applicable. Plans we reviewed from other state wildlife units applied a 10-year time frame. **Exhibit 15** presents the completion status and time frames of written species management plans for the game and nuisance species we reviewed.

Exhibit 15
Species Management Plan Status and Time Frames

	Complete	Not Complete	Start Date	End Date
Game Species				
Alligator	X		2010	None listed
Black Bear	X		1999	None listed
Deer	X		2015	2024
Nuisance Species				
Coyote		X		
Feral Hog		X		

Source: WRD Records

Further, species management plans should be revised as necessary to reflect material changes in species populations and management goals, objectives, and strategies. We found significant changes in population and management strategy were not accurately reflected in the most recent WRD management plan for black bear. (See text box.)

Black Bear Management Plan – Significant changes in management objectives not incorporated

The most up-to-date management plan for black bear was created in 1999. Since then, WRD has expanded hunting opportunities for the population of black bear in Central Georgia (near Warner Robbins) without updating key information in the management plan, such as population estimates, management objectives, and strategies.

In 1999 the only permitted legal hunting of the Central Georgia black bear population was restricted to a "one-day, check-in" hunt on Ocmulgee WMA that yielded one bear annually on average. The plan indicates that "hunting opportunities in this small Central Georgia population should be limited to check-in hunts on WMAs" and indicates that further geographic expansion of hunting "should not be considered until an effective bear index technique and an adequate method of collecting harvest data has been developed for the Central Georgia area" to prevent overharvesting.

Prior to expanding hunting opportunities in 2011, WRD contracted with UGA researchers to establish up-to-date population estimates (2007) and to evaluate public opinion of the bear population from local residents (2008). Additionally, in 2007 WRD developed a bait station survey technique to annually monitor bear population indices, and the bear bait station routes are surveyed annually. Further, WRD established a mandatory requirement that all harvested bears delivered to a check station to collect biological data. In 2011, WRD modified hunting opportunities by eliminating the one-day check-in hunt on Ocmulgee WMA and established a one-day hunt within an expanded geographic area. Bear hunting on Ocmulgee and Oaky Woods WMA, the core habitat for this bear population, is prohibited. The change in strategy resulted in 66 bear harvests between 2011 and 2015. WRD has again contracted with UGA researchers to continue studying the number and distribution of the Central Georgia black bear population.

The 1999 black bear management plan should be updated to reflect current population estimates as well as the changes in WRD's management goals, objectives, and strategies.

Content

Species management plans we reviewed from other state wildlife units included clearly identifiable management goals with supporting objectives, strategies, and tasks, as well as time bound methods for managing and monitoring. The three WRD species management plans we reviewed did not fully meet these standards. Details are discussed in the following bullets.

- **American Alligator** – While the management plan includes clearly stated goals, detailed objectives, and measurable strategies, it is not time bound, the time frame for reevaluating the plan progress is not stated, and there are no deadlines for individual objectives.

- **Black Bear** – The management plan includes general goals but does not include detailed objectives or specific strategies to achieve those goals. General management goals and strategies are presented throughout in a narrative style, which makes it difficult to identify goals and match them with supporting objectives and management strategies.

- **White-tailed Deer** – The management plan does not include clearly defined goals, with supporting objectives, strategies/tasks, and time bound methods for assessing progress towards goals. For example, population trend goals are established for different regions within the state, but the goals are merely to increase, decrease, or stabilize the population, and the strategy, through harvest regulations, is vague. The plan does not establish deadlines for achieving the proposed actions.

WRD personnel indicated that no written species management plan has been created for feral hogs and coyotes because the state does not actively restrict the number of feral hogs and coyotes a hunter or land owner can kill. Generally, WRD has reserved management plans for species whose population has to be managed to prevent overharvesting. However, we contend that the WRD still has an active management role regarding these species - including educating stakeholders and the general public on population trends and dispersion, providing active consultation when appropriate, and providing best management strategies. Appendix E provides further information on the distribution of these species and the ongoing management efforts of the division.

Monitoring and Measurement

We reviewed species management plans from other states and identified one that integrated a formal evaluation of objectives at the end of the period. Like other areas of operation, WRD has not developed operating standards for monitoring and measuring the attainment of goals and objectives for species. However, reports on the status of goals and objectives are a critical component of any management oversight and monitoring framework. Absent such a mechanism, upper management cannot know what progress has been made. This shortcoming in monitoring can be attributed to several factors discussed above, including the absence of an up-to-date management plan, the absence of a time-bound plan, and the absence of clearly identifiable and connected goals, objectives, and management strategies.

We found that Virginia utilizes a simple scorecard to measure progress made in achieving written goals and objectives from species management plans. A scorecard is

created whenever a new management plan is developed and is incorporated into the new management plan. This allows managers to evaluate the accomplishments of the previous strategic management plan, to redesign goals, objectives, and strategies as necessary, and to provide transparency of accomplishments and efforts to the public. **Exhibit 16** shows the scorecard from the 2012 Virginia black bear management plan for one goal. There are four objectives identified to meet the goal, and each is given a priority rank and evaluated to determine whether the objective was met, generally met, or not met. An explanation section provides context for the evaluation. Appendix F compares the relationship between objectives, goals, and activities of this plan with the Georgia WRD black bear plan.

Exhibit 16
Virginia Black Bear Management Plan Scorecard

1. Goal stated
2. Objective stated
3. Objective given priority rank
4. Objective evaluated
5. Results explained

Objective by Goal Area		2001 Priority Rank (out of 24)		Objective Met?
		SAC	VDGIF	
Goal 1 - Population Viability				
1. To determine status of the northern Allegheny, southern Allegheny, northern Blue Ridge, southern Blue Ridge, southern Piedmont, and southeastern Tidewater black bear populations by 12/31/03.		5	2	Generally Yes (with exceptions)
Explanation	Within these broad regions, Bear Management Zones with sufficient harvest data were used for population trend analyses and population reconstructions (see Figure 12, Table 1). Although boundaries of the 22 Bear Management Zones do not correspond exactly with the larger regions, status analyses in these Zones provide a good foundation for assessments of the larger regions. Many Zones (1, 2, 3, 4, 5, 8, and 12) within the northern Allegheny, southern Allegheny, northern Blue Ridge, southern Blue Ridge, and southern Piedmont had growing bear populations. Other Bear Management Zones (6, 7, 10, and 20) located within the southern Piedmont, southern Blue Ridge, northern Blue Ridge, and southeastern Tidewater regions had bear populations that were stable. The majority of the Bear Management Zones with insufficient data came from the northern Piedmont and northern Tidewater regions that were not included in this objective.			
2. To establish minimum population and habitat criteria required for achievement of long-term viability of the northern Allegheny, southern Allegheny, northern Blue Ridge, southern Blue Ridge, southern Piedmont, and southeastern Tidewater black bear populations by 12/31/05.		3	4	No
Explanation	Minimum population and habitat criteria for population viability were not specifically assessed; however, bear population trends by Bear Management Zones were assessed. Leaving little doubt about population viability, bear populations in the long-term viability areas were found to be increasing or stable.			
3. To determine the most important risk factors that may prevent attainment and/or maintenance of the long-term viability of the northern Allegheny, southern Allegheny, northern Blue Ridge, southern Blue Ridge, southern Piedmont, and southeastern Tidewater black bear populations by 12/31/04		9	12	No
Explanation	This objective was not explored specifically. Although risks are probably not immediately critical, trends in increasing human populations, development, subsequent loss of habitat, and disease or pests of hard mast producing forests have the potential to negatively affect bear populations.			
4. To implement management programs that achieve or maintain the long-term viability of the northern Allegheny, southern Allegheny, northern Blue Ridge, southern Blue Ridge, southern Piedmont, and southeastern Tidewater black bear populations by 12/31/06.		1	8	Yes
	Population impacts of hunting seasons are evaluated annually and specific hunting			

Source: Virginia Department of Game and Inland Fisheries

RECOMMENDATIONS

1. WRD should update/draft species management plans for all major game species. Plans should be time bound and contain clear goals, objectives, and management strategies. WRD should review the success/completion of goals and objectives at the end of the period as part of a monitoring process.

2. WRD should consider writing at least a basic management plan with the division's goals, objectives, and strategies as they relate to limiting the dispersion/density of feral hogs and coyotes. The plans should contain best practices management plan attributes and public involvement procedures.

***DNR Response**: WRD concurs with this finding as it relates to plans having time-bound review periods and improved monitoring of objectives or actions. It agrees that "the plans for bear and alligator are not formally time-bound" but notes that informally it has used a 10-year review period. WRD stated that it will "take action to formally specify a 10-year management horizon on these plans, and others, when they are revised or updated." It also indicated that "all plans will be reviewed in year five of the 10-year management horizon for pertinent updates as determined by WRD."*

WRD also indicated that, because using a tracking spreadsheet has proven to be a successful method for monitoring plan goals and objectives related to deer, it will be "formally instituted for all other species management plans upon revision." It also plans to develop a "basic plan of best management practices for coyotes and feral swine that provides technical information, management techniques and statutory requirements pertinent to these species."

WRD can improve species management by better coordinating oversight of game committees and making public participation approaches more transparent.

WRD can improve oversight and transparency for game species management by better coordinating game species committee activities, improving data collection and reporting, and bmore transparently applying public participation approaches established by WRD policy.

To manage major game species (e.g., deer, black bear, and alligator), WRD has created species committees. Committees are typically made up of biologists that work in regional offices throughout the state and are headed by a lead biologist who serves as the committee chair. In addition, WRD established a program operations manager position in January 2014 to oversee game species management and serve as the liaison between middle management and upper management. (See Exhibit 3 for WRD organizational chart that highlights this position.)

Establishing Oversight and Coordinating Activities

WRD upper management and middle management can improve the oversight and coordination of game species activities by clarifying the roles of each and key activities, such as applicable planning cycles and methods for getting changes to data collection strategies approved.

- **Roles and Responsibilities** – Interviews with upper and middle management staff suggest that the level of management oversight and involvement of the operations manager position established in 2014 should be clarified. Because the position was created after game committees were already in existence and had developed ad hoc operating procedures independent of one another, clarification is needed regarding which management level and personnel are responsible for aspects of game species management.

- **Planning Cycles** – Game committees for species meet at time intervals to discuss species management strategies, but the time cycles that committees adopt are not consistent among species, are not written into operating standards, and are not designed or approved by upper management. We interviewed committee biologists and the programs operation manager, and they agree that a regular planning time cycle is desirable.

- **Data Collection and Reporting** – WRD lacks explicit operating standards and information systems to collect desired data - such as species sampling data - to help middle and upper managers evaluate the outcomes of species management strategies. As a result, committees develop ad-hoc methods for collecting, compiling, storing, and reporting data.

  Upper management should determine whether species management data should be integrated into a geographic information system. While WRD does not consistently utilize Geographic Information Systems (GIS) to manage game species, we found another state centralizes all species data onto a central server space and tracks activities and species utilizing GIS databases, allowing for the collection and analysis of geospatial data. For example, the Minnesota Fish and Wildlife Division tracks species management activity data in GIS, producing population models, range estimates, and vegetation changes.

Public Participation

WRD managers are charged with developing scientifically-based species management recommendations that must also consider (and to the degree possible incorporate) public opinion. Best practice for species management recommends incorporating public participation into regulatory management decisions for species, because stakeholder groups (e.g., WRD managers, general public, hunters, and conservationists) may have different opinions on population goals or appropriate regulatory management strategies.

In 2003, the DNR Board created a policy requiring WRD to apply one of three levels of public involvement when developing rules for species management: a minimal, targeted, or extensive approach (see below).

- The **Minimal Approach** is used when the department has little or no discretion and public involvement cannot make much difference. Examples include strict statutory requirements or implementation of

federal rules or regulations. This approach uses meetings or other means to inform and educate affected parties.

- The **Targeted Approach** is used when the department has discretion and there is a small or clearly defined set of organized interests. This approach uses stakeholder meetings to discuss the issues, identify components, and develop consensus. Interested parties may include individual citizens, representatives of conservation organizations, landowners, legislators, etc.

- The **Extensive Approach** is used when the department has discretion and there is broad interest. This approach uses town hall style meetings, stakeholder meetings, or public meetings. Interested parties may include individual citizens, representatives of conservation organizations, landowners, legislators, etc..

The three-tiered approach the DNR Board adopted in 2003 exemplifies best practice in public participation for species management. However, WRD should make public participation approaches more explicit in written operating standards and management plans. As with other areas of operations, WRD has not formally integrated its public participation approach into a coherent set of operating standards. (See finding on p. 14) Additionally, WRD should explain the public participation approach adopted when developing management goals, objectives, and strategies inside its species management plans. For example, the current deer management plan (2015) and alligator management plan (2010) describe public participation activities WRD used in developing the plan (e.g., steering committees, public comment opportunities), but neither clarifies which approach was executed (e.g., targeted or extensive). The black bear plan (1999) was developed before this policy was adopted and public participation activities are not described.

RECOMMENDATIONS

1. WRD upper management should work with each game committee to establish a consistent and appropriate planning schedule. We recommend that game committees meet at least semi-annually to align with the time cycle for changes to rules and regulations. In addition, WRD should explicitly adopt time cycles for game management.

2. WRD should develop operating standards for how game species committees and upper management will work to decide the type of data to collect, as well as the methods and storage of data. In addition, WRD should strategically adopt information systems to facilitate better reporting capacity.

3. WRD should include public participation frameworks in both division-level operating standards and specific species management plans. Each plan should make clear the approach used and the criteria used in selecting the appropriate tier.

DNR Response: *WRD agreed that formal operational guidelines for game species committees should be developed. However, WRD disagreed with "the implication that the absence of formal guidelines have been an impediment to game species committee functions. For each respective species, game species committees provide the biological expertise necessary to review and coordinate the collection of statewide biological data necessary to inform management and regulatory decisions; provide recommended regulatory proposals for consideration; development of species management plans; and development of technical guidance publications. WRD acknowledges that these committees have successfully and professionally performed these functions without formal operational guidelines to meet the mission of WRD."*

WRD noted that "the development of formal operational guidelines can improve efficiency and business continuity of committee functions . . . [and] plans to develop operational guidelines for each game species committee to include, but not limited to, requirements for frequency and timing of meetings and development of annual work plans."

WRD agreed that "its public participation approaches in developing species management plans will gain greater transparency by developing written operating standards and explicitly stating in species management plans the specific level approach (Minimal, Targeted or Extensive) taken."

WRD indicated that it "has consistently met or exceeded the recommendations for public involvement set forth by the Department's Public Involvement Task Force but did not indicate within the alligator management plan which approach was taken. The bear management plan was developed prior to the Task Force's report. WRD will develop a Division-wide step-down policy consistent with the recommendations of the Department's Public Involvement Task Force that establishes an operational framework for the use of identified public participation methods and public participation levels will be included in all future plan revisions."

Chapter 3: Consumer Issues

The previous sections of this report described areas of management oversight for designing and monitoring operations—operating standards, information systems, the long-term planning for land and species, and the monitoring of activities and outcomes for land and species management. The following section addresses two consumer-centered areas for management to consider: WRD's use of the internet to effectively advertise and communicate with consumers about properties and recreational opportunities and the license fees associated with those properties and recreational opportunities. We conclude that WRD will have to make significant improvements in internet content and form and that WRD license fees are below market rates compared with other states in the region.

WRD internet content does not effectively provide users with information on outdoor recreational opportunities on properties, nor does it provide sophisticated search features or technical guidance to local land owners.

In today's government environment, it is critical that state agencies and divisions communicate with customers and conduct business effectively on the internet. Currently, WRD web content consists of more than 4,000 individual web pages that lack structural coherence and often do not provide clear pathways for users to navigate to key information about properties, species, and rules. The content does not include basic information about properties or high-interest species that the division manages and protects.

We analyzed how well WRD web content informed customers of outdoor activities, properties under management, and species of interest. We considered both WRD and DNR maintained websites.

DNR/WRD Web Content

Together DNR and WRD provide two websites for users to access division managed properties, wildlife, and rules and regulations. The WRD website ***www.georgiawildlife.com*** *is the division's primary website. It is managed by marketing and communications staff within the division and functions as the primary online communication resource for WRD.*

In addition, DNR IT built and maintains an online map at ***www.georgiaoutdoormap.com*** *that allows users to query properties and amenities managed by the entire agency. It includes WRD properties as well as those from other divisions, such as the Division of State Parks. We considered the information available on both of these websites in conducting this evaluation.*

Information on Outdoor Activities

Georgia's web content does not provide users access to complete information on outdoor recreational opportunities, amenities, and wildlife for each property. We compared the Georgia DNR and WRD web content to those of six wildlife management units from other states and four third party groups to evaluate how well these units presented outdoor activities to internet users. We analyzed seven attributes indicative of information desired by user groups and found that Georgia's

DNR and WRD web content consistently does not meet industry best practices for state wildlife agencies about outdoor recreational opportunities.

- **DNR/WRD vs. Other States** – Web content provided by other state units presented better information on properties and recreational opportunities. In addition, other states had better, more advanced search features. For example, some states have developed search features that allow users to identify public lands according to species of interest, a feature not available on web content maintained by DNR. **Exhibit 17** shows the results of a comparison between the Georgia WRD and DNR content to those from other states. Georgia ranked last among the seven.

Exhibit 17
Georgia Lags Behind Other States' Website Content and Function

STATE	PROPERTY DESCRIPTION	FACILITIES	MAJOR SPECIES	RECREATIONAL OPPORTUNITES	ACTIVITY (FILTER)	DIRECTIONS	LOCATION (FILTER)	TOTAL
Florida	X	X	X	X	X	X		6
Kentucky	X		X	X	X	X	X	6
Indiana	X	X	X	X		X		5
Alabama	X			X	X	X		4
North Carolina		X	X			X	X	4
Ohio	X		X	X		X		4
Georgia					**X**	**X**		**2**

Source: Department of Audits and Accounts Analysis

- **DNR/WRD vs. Third Parties** – Third parties that provide information about DNR properties consistently provided more complete information and more advanced functions than the web content DNR and WRD manage. For example, the **OhRanger.com** site provides information and functions for all seven of the attributes we examined, including location and activity filters. **Exhibit 18** shows the results of a comparison between the Georgia WRD and DNR web content and content from other third party groups that present information on properties managed by the WRD. WRD's web content ranked last compared to third party websites that provide user content on division managed properties.

Exhibit 18
Georgia Lags Behind Third Party Websites' Content and Function

WEBSITE	PROPERTY DESCRIPTION	FACILITIES	MAJOR SPECIES	RECREATIONAL OPPORTUNITES	ACTIVITY (FILTER)	DIRECTIONS	LOCATION (FILTER)	TOTAL
Oh Ranger	X	X	X	X	X	X	X	7
Explore Georgia	X	X		X		X		4
Georgia Outdoors			X	X	X	X		3
Park Maps	X			X				2
GA DNR					**X**	**X**		**2**
GA WRD								**0**

Source: Department of Audits and Accounts Analysis

Information on Properties

WRD web content does not provide a simple-to-understand description of the properties the division manages and the facilities and recreational opportunities available on them. We found good examples of content like this produced by third parties and wildlife resource agencies in other states.[18]

Exhibit 19 compares the Georgia WRD web content on managed properties to those from the Ohio Division of Wildlife and OhRanger.com. WRD ranked poor by comparison. In Ohio, users can access a single web page that describes key attributes of wildlife management areas. The page conveys basic property attributes, such as major outdoor activities and species of interest. The OhRanger.com website offers a similar page for Georgia wildlife management areas. Appendix G provides examples of these web pages with analysis of key content.

Exhibit 19
Other Websites Provide Individual Webpages for Each Property

ATTRIBUTE	DESCRIPTION	Georgia WRD	Ohio WRD	OhRanger.com
Unique WMA Webpage	Each WMA has its own webpage?		X	X
Driving Directions	Users can get directions from a specific city/location?		X	X
Contact Information	Specific to the property?		X	X
Property Description	Overview of unique attributes?		X	X
Activity Description	Details on each recreational opportunity?		X	X
Major Species	List of major game and nongame species?		X	
History and Purpose of WMA	History of the WMA and stated purpose(s) of the property?		X	
WMA Map	Map of the property?	X	X	
Area Map	Map of the property and areas surrounding the property?		X	X
Total		1	9	6

Source: Department of Audits and Accounts Analysis

WRD web content on properties, species, and rules is difficult to navigate, often failing to include basic information. The content is dense and lacks structural coherence.

WRD manages more than 100 wildlife management areas, and these vary greatly in size, physiographic characteristics, recreational opportunities, facilities and in the types of wildlife present. For example, Crockford-Pigeon Mountain wildlife management area has miles of maintained horseback riding trails and a rock climbing area, while Dawson Forest wildlife management area features paddling opportunities. Users should be able to identify these differences and the unique attributes of each property from the website. Because of the incomplete and poorly designed layout of the WRD web content, users are unable to collect useful information about WRD managed properties currently.

Activity and Species Filtering

We compared the Georgia web content to those in other states and found that although Georgia's web page has some query features, it lacks key details that are useful for citizens interested in selecting properties for key attributes.[19] For example, citizens can query among Georgia DNR properties to determine which properties offer activities like hunting and fishing, but the web page does not provide details such as which species are located at each. By comparison, state wildlife agencies in

[18] By not maintaining a comprehensive and authoritative set of web content on its properties, WRD forces users to rely on secondary sources for information about the property the division maintains, which may be inaccurate. We did identify some material errors related to activities (e.g., presence of camp sites, boat ramps, hiking trails) in the content about WRD properties provided by third parties.

[19] DNR has made improvements to the georgiaoutdoormap.com site since the onset of the audit. Web users can now filter content to identify fishing opportunities by species.

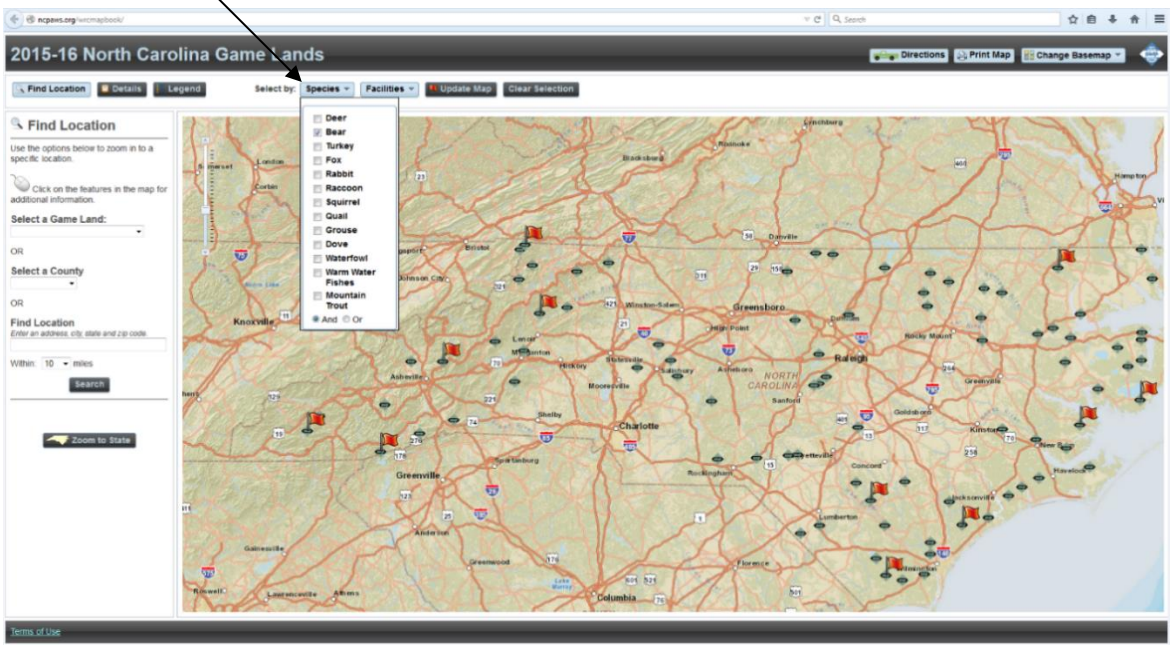
neighboring North Carolina and Florida provide users with the ability to filter properties by the wildlife species that can be found on them.

Exhibit 20 shows a comparison between North Carolina's web content and Georgia's. In this example we show that users can find out exactly which state managed properties in North Carolina are recommended for hunting black bear, a primary game species. By comparison, when searching for similar information using the Georgia DNR web search function, users are only able to identify which state-managed properties allow hunting generally, and the site does not permit users to identify which subset of properties permit bear hunting. To determine which WRD managed properties allow bear hunting users must call the regional office that manages the property or obtain a hard-copy of the annually-published rules and regulations guide. This requires additional work for the customers and is contrary to the general modern customer expectations of easy information access in one location on the internet.

Exhibit 20
North Carolina Provides Better Search Capacity than Georgia

Website allows wildlife management areas to be filtered according to species of interest. This functionality allows users to fine-tune the properties to consider for hunting, fishing, or wildlife watching activities by allowing species to be queried.

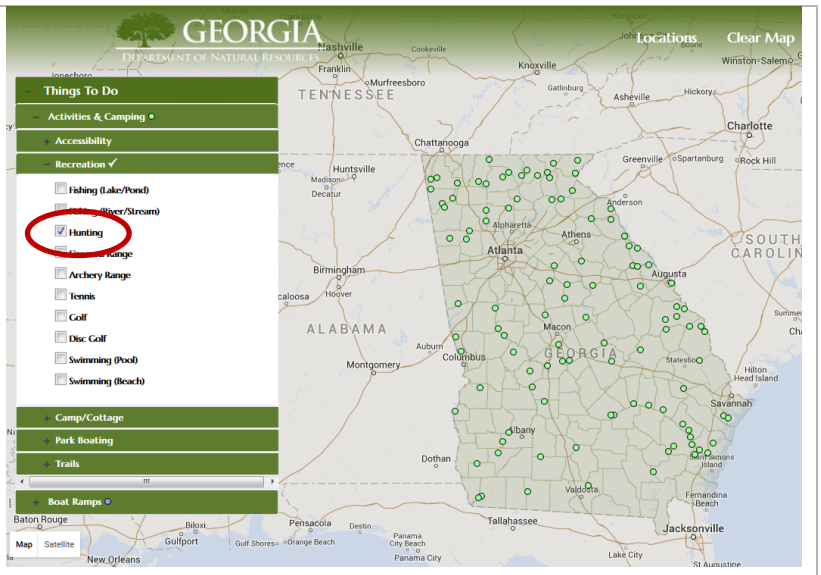
In this example, 11 areas have been identified (red flags) among all the wildlife management areas (green icons) that allow hunting of black bear.



Using the Georgia Outdoor Map allows users to compile a set of results by activities, such as fishing and hunting; but the advanced search features provided in other states are not available.

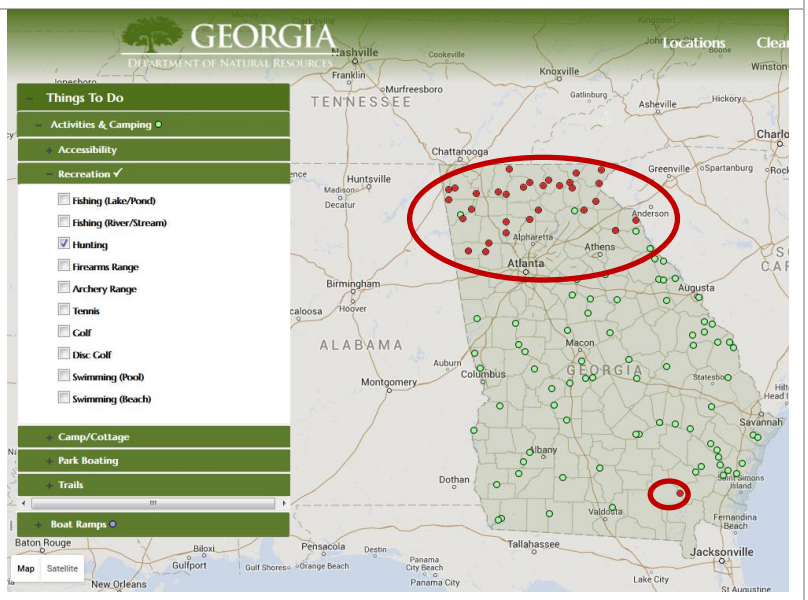
In this example, (similar to the one above) we attempted to identify state properties where black bear hunting is permitted, but the system does not allow users to specify species of interest.

This query is limited to hunting and the results are a smattering of properties across the state that give no detail about species. Therefore, users are left to call a regional office or refer to a printed hunting guide for details about the species found there.



We manually simulated the black bear hunting search using data provided by DNR. In the analysis we identified state-owned properties that permit black bear hunting (red dots) and were able to see that black bear hunting is permitted on state managed properties only in North Georgia and on one property in Southeast Georgia (near the Okefenokee National Wildlife Refuge).

This type of species-specific query could provide users with valuable information about the species they are interested in observing, hunting, or fishing and should be readily available.



Source: North Carolina Wildlife Resource Commission and Georgia Outdoor Map

Technical Guidance Information

Land management practices on private and local public lands have a significant effect on the ability of wildlife in the state to survive and thrive. We found other state WRDs included web content of comprehensive technical guidance for residential land management, local government land use planning and technical assistance information, habitat conservation, and maps and data for terrestrial and aquatic wildlife the agency manages.

Although the Georgia WRD has some information among its web content, the information is usually linked to specific subsidy programs (e.g., private lands programs and conservation easements) and species (e.g., controlling deer damage),

with very little best practice guidance for general land holders. For example, WRD has created a two page guide for designing and managing wildlife openings, but the WRD web content lacks an overall general technical guidance for habitat improvement practices that private land owners should adopt to support the agency's mission. In addition, there is little information that local public land owners can collect to establish best practices for land management of parks and greenspaces that could be managed for wildlife, and no guidance on land use planning for wildlife protection.

By comparison, we found the North Carolina Wildlife Resources Commission has created a useful 96-page ebook entitled *Conservation Recommendations for Priority Terrestrial Wildlife Species and Habitats in North Carolina.* The intended audience includes local governments, developers, and private land owners. The guidebook notes that, because the agency does not have regulatory authority over the majority of the state's land, successful outcomes for wildlife management cannot be achieved solely through its actions. Therefore it created the guidebook to make clear to local land managers the habitat management recommendations that would support the agency's mission to sustain and preserve the state's wildlife.

This type of technical support and guidance should be one of the primary products that WRD delivers from its web content so that local land owning stakeholders can clearly understand the technical guidance WRD is able to provide and to understand the land management actions they can take to support the mission of the state agency.

RECOMMENDATIONS

1. DNR and WRD management should improve the web content, format, and function for the division. Content should include information about the properties the state manages and advanced search features about the species the state protects. User testing should be incorporated into the work design procedures.

2. WRD should consider creating technical guidance web content to educate private and local public land owners on the best land management practices to support the agency's mission.

DNR Response: *WRD concurred with this finding. It noted that prior to the report, it was working on many of the items cited in this report as "lacking or needing improvement." WRD noted that it has begun addressing some of the shortcomings and pointed to online descriptions for some properties, facilities, major species, and recreational opportunities. It indicated it is working towards completing this information. In addition, a new website is being developed in coordination with DNR IT and planned completion is calendar year 2017. It will "be responsive to mobile devices, and address other issues such as: having a page for each WMA, driving directions, contact information specific to the property, property description, activity descriptions, and history and purpose of each."*

Additionally, WRD noted that the Georgia Outdoor Map is an online resource that has been enhanced to include "robust angling opportunity search functions for fishing and reservoir fishing... [and includes] an alert system to notify constituents of closures at facilities represented in the system."

WRD noted that the development of the "new Department and Division website may present an opportunity to build a webpage to deliver property specific information including description,

facilities, species, recreational opportunities, directions, etc." It also noted that ArcGIS Online (discussed earlier) could be used to deliver this information if it is adopted.

Georgia license fees are substantially lower than other southeastern states, and fee exemptions prevent the state from qualifying for significant federal grant funds.

Georgia license fees for resident hunting and fishing have not been increased since 1992 and are substantially lower than those charged by other southeastern states. We estimate that the division could increase revenue annually by $4.4-$6.7 million by increasing annual resident license fees to match industry rates; other states' experiences suggest that a modest license fee increase will not significantly decrease demand. In addition, because federal grant dollars are divvied according to the number of paid license holders, Georgia currently forgoes significant federal grant dollars by offering a free lifetime license to residents 65 and older. We conservatively estimate that the state could eventually increase federal grant funds by $3.0-$5.0 million annually if it charged a nominal annual or lifetime fee for these licenses. WRD officials have surveyed license holders and have found strong support for modest fee increases.

WRD could increase revenue annually by $4.4 - $6.7 million by increasing resident license fees to match industry rates.

Revenue from license fees account for a significant portion of WRD's operating budget. In fiscal year 2015, approximately 24% ($15 million) in expenditures were derived from license fees, making it the second largest contributor to the budget, second only to federal grants at 44% ($27.5 million).

Increases in revenue could be directed to systemic improvements described in other findings, such as the development of an information system and improving web content and function.

Annual Resident Hunting and Fishing License Fees

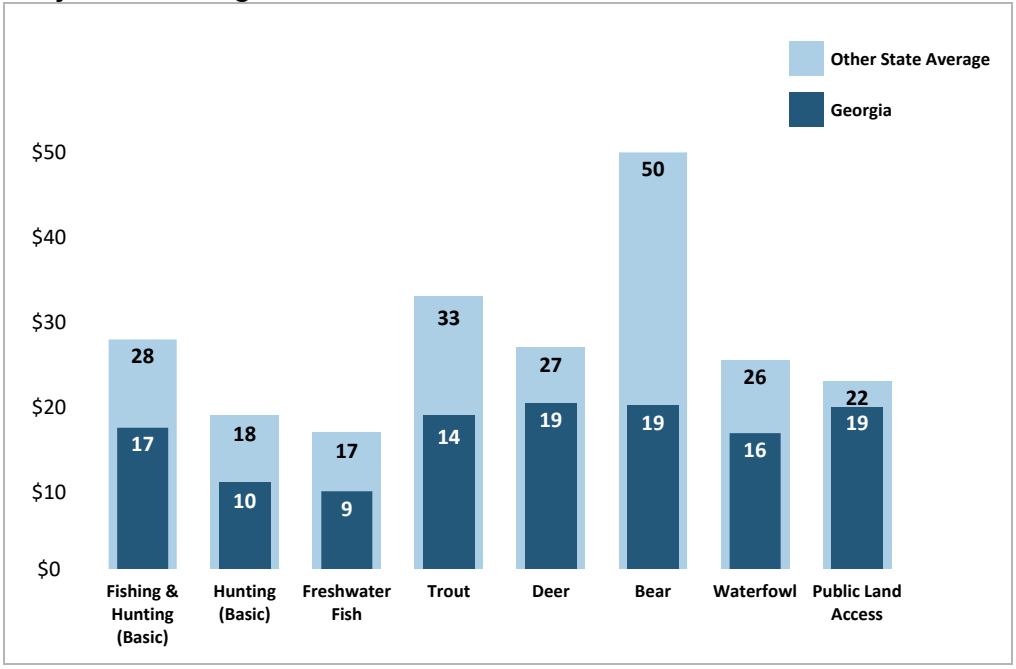
We compared Georgia's resident license fee for a variety of hunting, fishing, and public land access privileges to those in Alabama, Florida, North Carolina, South Carolina, and Tennessee and found Georgia fees to be consistently and substantially lower. In fact, for every license type we compared, Georgia fees are lower than the regional average. For example, the cost of trout fishing and bear hunting privileges in Georgia is less than half the adjusted average price among southeastern states.[20] This price discrepancy is partly attributable to how the privileges are structured among license types. For example, in Georgia hunters are permitted to hunt black bear with the purchase of a big game license, while in other states an additional fee is required to hunt black bear. **Exhibit 21** compares Georgia license fees to the average fee among southeastern states, and Appendix H presents a state-by-state comparison of Georgia license fees and those of each state.

One reason Georgia license fees are lower than southeastern states is that fees have not been increased for resident hunting and fishing since 1992. However, WRD management recognizes the opportunity and the value of increasing Georgia license fees and, in August 2015, received public input on several license fee and structure

[20] Averages were adjusted by removing the highest and lowest among rates for each license type.

changes.[21] The results showed 90% of participants support a modest increase in fees and 85% support fee increases to match the southeastern average. However, WRD management cannot enact fee changes unilaterally because fees are set in state statute and require legislative approval (O.C.G.A., §27-2-23).

Exhibit 21
Georgia License Fees are Lower than Southeastern State Adjusted Averages



Source: DOAA Analysis

Senior License Fee Exemption

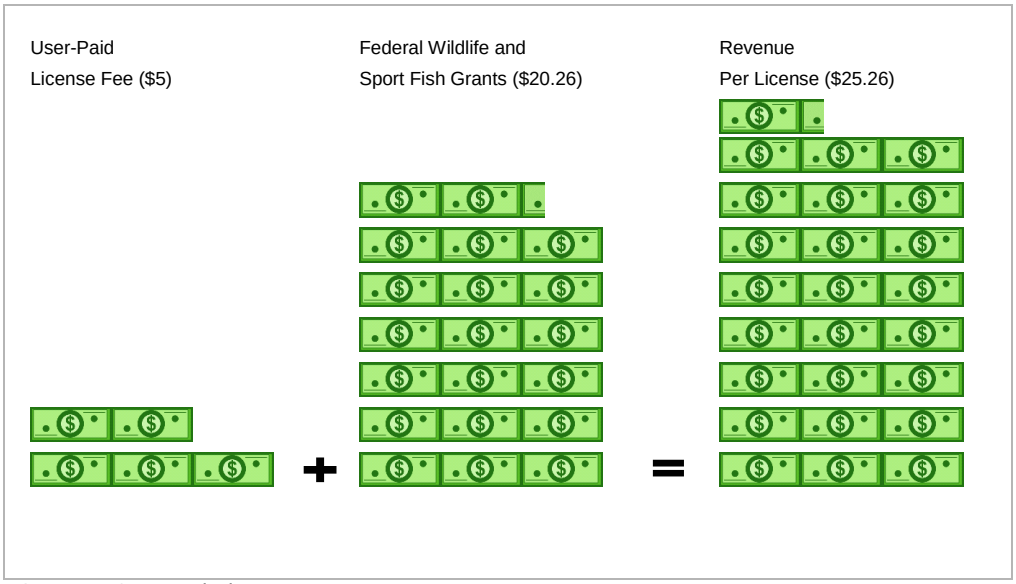
Currently, Georgia issues a free lifetime license to residents 65 and older. WRD records indicate that in fiscal year 2014, more than 29,000 Georgia resident seniors received a free lifetime license. Federal Wildlife and Federal Sport Fish Restoration grants provide the majority of the grant funding in Georgia for the management of wildlife and sport fish species. These funds are apportioned to state wildlife agencies based on a formula that includes (1) the geographic size of the state and (2) the number of paid certified hunting and fishing license holders. As a result, license holders who receive a free license are not counted as users in determining federal fund allotments. Therefore, the state forgoes substantial federal grant dollars. We conservatively estimate that the state could eventually increase federal grant funds by $3.0-$5.0 million annually if it charged a nominal lifetime ($55) fee for senior licenses.

We found that North Carolina, South Carolina, and Tennessee charge residents 65 and older license fees at a reduced cost. This allows them to count senior licenses as paid certified hunting and fishing license holders when reporting license numbers for apportionment of federal funds. However, Alabama and Florida have exemptions like Georgia for residents 65 and older.

[21] WRD collected opinions during a public comment period using an online survey and public forums throughout the state.

As shown in **Exhibit 22**, if seniors were charged a nominal $5 annual license fee, they would likely qualify as a paid certified license holder under the Federal Wildlife and Federal Sport Fish Restoration Fund grants and would therefore be counted in the allocation of federal grant dollars.[22] The result is revenue increase of $25.26 dollars per license holder, $5.00 license fee and $20.26 in federal grant funds (fiscal year 2013 figures applied).

Exhibit 22
Nominal Annual License Fee for Seniors would Yield Substantial Federal Grant Dollars

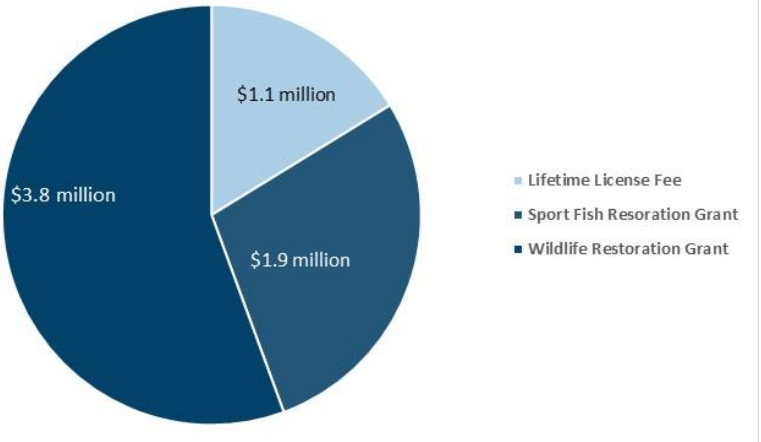


Source: DOAA Analysis

As shown in **Exhibit 23**, if 20,000 seniors purchase a lifetime license in year one for $55, revenues would increase by $1.1 million that year. According to WRD officials, the U.S. Fish and Wildlife Service applies a life expectancy of 79 years when counting lifetime license holders for federal grant apportionment. As a result, a senior lifetime license for a resident aged 65 will qualify as a paid certified hunting and fishing license holder for 14 years and will be counted in the allocation of federal grant distribution during that period. As a result, we estimate that an additional $5.7 million in federal revenue would be generated over the 14-year period. As additional cohorts of seniors purchase lifetime licenses each year, we conservatively estimate that the state could eventually increase federal grant funds by $3.0-$5.0 million annually.

[22] Actual eligibility would be determined by the federal agency. DNR officials estimate that a $5 annual license fee for seniors would be sufficient to qualify.

Exhibit 23
Nominal Lifetime Senior License Fee Can Increase Federal Funds



	Year 1	Years 2-14	Total
Lifetime License Fee	$ 1,100,000	$ -	$ 1,100,000
Sport Fish Resoration Grant	$ 136,200	$ 1,770,600	$ 1,906,800
Wildlife Restoration Grant	$ 269,000	$ 3,497,000	$ 3,766,000
Total	$ 1,505,200	$ 5,267,600	$ 6,772,800

Source: DOAA Analysis

RECOMMENDATIONS

1. The General Assembly should consider increasing licensing fees to align with industry rates in the southeastern states for all major privileges. Funds derived from an increase could be used to support systemic improvements such as an information system or improved web design and content.

2. To increase Georgia's allotment of federal grants for registered license holders, the General Assembly should consider charging a nominal annual or lifetime fee for senior residents.

DNR Response: *WRD concurred with this finding. It noted that it will "provide all necessary requested support to the General Assembly in the event that a license fee proposal [is] introduced into any future legislative session." WRD also noted that, during the 2016 legislative session, a license fee was introduced but withdrawn. It indicated that "the language contained within that effort resulted from extensive interaction between WRD and the affected constituency" and that it will "retain that draft and associated public input in the event it is requested by the General Assembly."*

Appendices

Appendix A: Recommendations

WRD does not have a coherent and current set of written standards to guide land and species management.

1. WRD should collect old policy memorandum and operating standards, determine which are still applicable and which are not, and use them as a starting point to develop a complete and coherent set of activity and management instructions into a WRD operations manual.

2. WRD should establish a system/method—such as an intranet system—that that permits WRD employees throughout the state to be able to access current operating standards.

WRD has not strategically and effectively adopted information technology to collect and report information on land and species.

3. WRD should establish a land management database that tracks all land management activities, associated costs, outputs, and outcomes for each state-managed property. In addition, WRD should establish a species management database where data collected for the management of game species is accessible by all levels of management.

WRD has not established adequate long term habitat management plans or monitoring systems to track progress toward long term goals and objectives.

4. WRD upper management should adopt the current draft policies and procedures for creating long-term habitat management plans and monitoring activities and outcomes on properties.

5. WRD should create long-term habitat management plans for all applicable properties. WRD should prioritize properties for which long term habitat management plans are created and updated.

6. WRD should require that long-term habitat management plans include an explicitly stated time period, contain similar content and consistency across the unit, and are periodically reviewed/updated.

7. WRD should consider adopting a 10-year time frame for its long-term habitat plans.

WRD cannot efficiently and effectively evaluate habitat management activities and outcomes because managers lack access to data.

8. WRD should update land management operating procedures to clarify which units are the lead planning and activity managers for all properties. WRD should update land management operating procedures to clarify how units will coordinate work.

9. WRD should redesign annual plans to link to long term goals and objectives to allow managers to track land management progress.

10. WRD should maintain a comprehensive record of activities (timber harvest, prescribed burns, and major mechanical/chemical treatments) on all properties. GIS data systems should be considered ideal for capturing temporal and spatial data.

11. WRD should acquire information systems that allow local, middle, and upper managers to approve, review, and coordinate activities more efficiently and effectively.

WRD can improve species management plan design and content.

12. WRD should update/draft species management plans for all major game species. Plans should be time bound, contain clear goals, objectives, and management strategies. WRD should review the success/completion of goals and objectives at the end of the period as part of a monitoring process.

13. WRD should consider writing at least a basic management plan with the division's goals, objectives, and strategies as they relate to limiting the dispersion/density of feral hogs and coyotes. The plans should contain best practices management plan attributes and public involvement procedures.

WRD can improve species management by better coordinating oversight of game committees and making public participation approaches more transparent.

14. WRD upper management should work with each game committee to establish a consistent and appropriate planning schedule. We recommend that game committees meet at least semi-annually to align with the time cycle for changes to rules and regulations. In addition, WRD should explicitly adopt time cycles for game management plans (see finding 2.3 for more detailed analysis on this topic).

15. WRD should develop operating standards for how game species committees and upper management will work to decide the type of data to collect, as well as the methods and storage of data. In addition, WRD should strategically adopt information systems to facilitate better reporting capacity.

16. WRD should include public participation frameworks in both division-level operating standards and specific species management plans. Each plan should make clear the approach used and the criteria used in selecting the appropriate tier.

WRD internet content does not effectively provide users with information on outdoor recreational opportunities on properties, nor does it provide sophisticated search features or technical guidance to local land owners.

17. DNR and WRD management should improve the web content, format, and function for the division. Content should include information about the properties the state manages and advanced search features about the species the state protects. User testing should be incorporated into the work design procedures.

18. WRD should consider creating technical guidance web content to educate private and local public land owners on the best land management practices to support the agency's mission.

Georgia license fees are substantially lower than other southeastern states, and fee exemptions prevent the state from qualifying for significant federal grant funds.

19. The General Assembly should consider increasing licensing fees to align with industry rates in the southeastern states for all major privileges. Funds derived from an increase could be used to support systemic improvements such as an information system or improved web design and content.

20. To increase Georgia's allotment of federal grants for registered license holders, the General Assembly should consider charging a nominal annual or lifetime fee for senior residents.

Appendix B: Objectives, Scope, and Methodology

Objectives

This report examines the Wildlife Resources Division (WRD) within the Department of Natural Resources (DNR). The audits objectives are as follow:

1. Do WRD's license structure and fees align with market rates for major user activities? If not, what is the real/potential consequence?
2. Does WRD's website exhibits best practice for state wildlife agencies for user groups (e.g., hunters, anglers, boaters, hikers, campers, conservationists, private land owners, and local governments)? If not, what is the real/potential consequence?

   Does Georgia WRD exhibit best practice for state wildlife agencies for habitat management plans? If not, what is the real/potential consequence?
3. Has WRD established management oversight methods/systems to ensure efficient and effective management of wildlife management areas? If not, what is the real/potential consequence?
4. Does Georgia WRD exhibit best practice for state wildlife agencies for game management species plans? If not, what is the real/potential consequence?

Scope

This audit generally covered activity related to strategic planning and operations of the game management unit within WRD, with consideration of support and coordinating units within WRD and DNR as applicable. The audit scope included activities during fiscal years 2010-2014, with consideration of earlier or later periods when relevant. Information used in this report was obtained by reviewing relevant state laws, agency rules and regulations, and division/unit policies and procedures. We interviewed personnel in DNR and WRD headquarters as well as regional field offices. We collected (1) data related to the DNR and WRD internet content, (2) prior work conducted by staff to consider license fee and structure, and (3) applicable operating standards and data related to habitat and species management.

Government auditing standards require that we report the scope of our work on internal control that is significant within the context of the audit objectives. All audit objectives are related to internal (management) control of WRD. Specific information related to the scope of our internal control work is described by objective in the methodology section below. No confidential/sensitive data has been omitted from this report.

Methodology

To determine whether WRD license structure and fees align with market rates for major user activities: We analyzed two aspects of license fees: annual resident license fees and fee exemptions for seniors (those 65 and older) and compared current Georgia rates to industry benchmarks.

To determine whether WRD's website exhibits best practice for state wildlife agencies for user groups (e.g., hunters, anglers, boaters, hikers, campers, conservationists, private land owners, and local governments): We considered the information needs of various user groups involved in outdoor activities, such as current and potential anglers, campers, hikers, and hunters. We considered the information needs of other land owners (both private and public). We compared web content to wildlife units in other states, as well as third party groups that promote outdoor activities.

To determine whether WRD had developed quality long-term habitat management plans for properties it manages and how well those strategies, objectives, and goals were being monitored: We restricted our review to only properties owned by DNR and managed by units within WRD. We analyzed all completed long-term habitat management plans, reviewed relevant policies and procedures, and compared practices in Georgia to those of wildlife management units in other states.

To determine whether WRD has established management oversight methods/systems to ensure efficient and effective management of wildlife management areas: We reviewed the annual habitat management work plans for all properties, and we selected the largest wildlife management area (for which WRD had developed a long term habitat plan) in three management regions for case study. We planned to inventory the management activities (e.g., timber harvest/reforestation, prescribed burns, and chemical/mechanical treatments) that occurred on each property during the period 2011-2015, compare those activities to planned strategies/objectives for the period, and determine how well those activities aligned with the long term goals stated in the habitat management plan. Because the record keeping for these activities was so sparse and inconsistent, we were unable to evaluate the efficacy of the management activities.

To determine whether WRD had implemented best practice in species management plans for a sample of major game and nuisance (fauna) species: We reviewed the management plans for three game species (white-tailed deer, black bear, and American alligator) and two nuisance species (feral hogs and coyotes). We compared the content of species management plans from other state wildlife management units to those maintained by WRD.

To determine whether WRD has established management oversight methods/systems to ensure efficient and effective management of game species: We reviewed the governance structure and some management planning activities WRD uses to manage game species. We reviewed species data collection efforts and data management, including work flow procedures, to determine if they are well designed and executed. We attempted to gather policies and procedures for species data collection and management, as well as for species management decisions. We interviewed staff charged with managing each species, as well staff at WRD headquarters. We compared the information systems Georgia uses to collect data on species, including tracking activities and species, to other states. Game species managers used ad-hoc data solutions to independently manage species data. Other states centralized storage of all species data onto a central server space and tracked activities and species utilizing GIS databases, allowing for the collection and analysis of geospatial data.

GAGAS Compliance Statement

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix C: Inventory of Long-Term Habitat Management Plans

Below is an inventory and map of long-term habitat management plans for properties owned by DNR and managed by WRD. It identifies which properties have a long-term habitat management plan, the unit within WRD responsible for developing/maintaining the management plan, the region of the state within which it is located, the WRD project/property name, the size of the property in acres, the year in which the first major parcel that makes up the property was acquired (if listed in DNR database), the year a long-term management plan was completed, and the year it is expected to expire (if applicable). The results reveal that WRD has created long-term habitat management plans for 37 of 60 properties (62%). Some of the properties without plans have been long held by the unit; many that have been completed do not adequately identify the time period for which the plan is relevant.

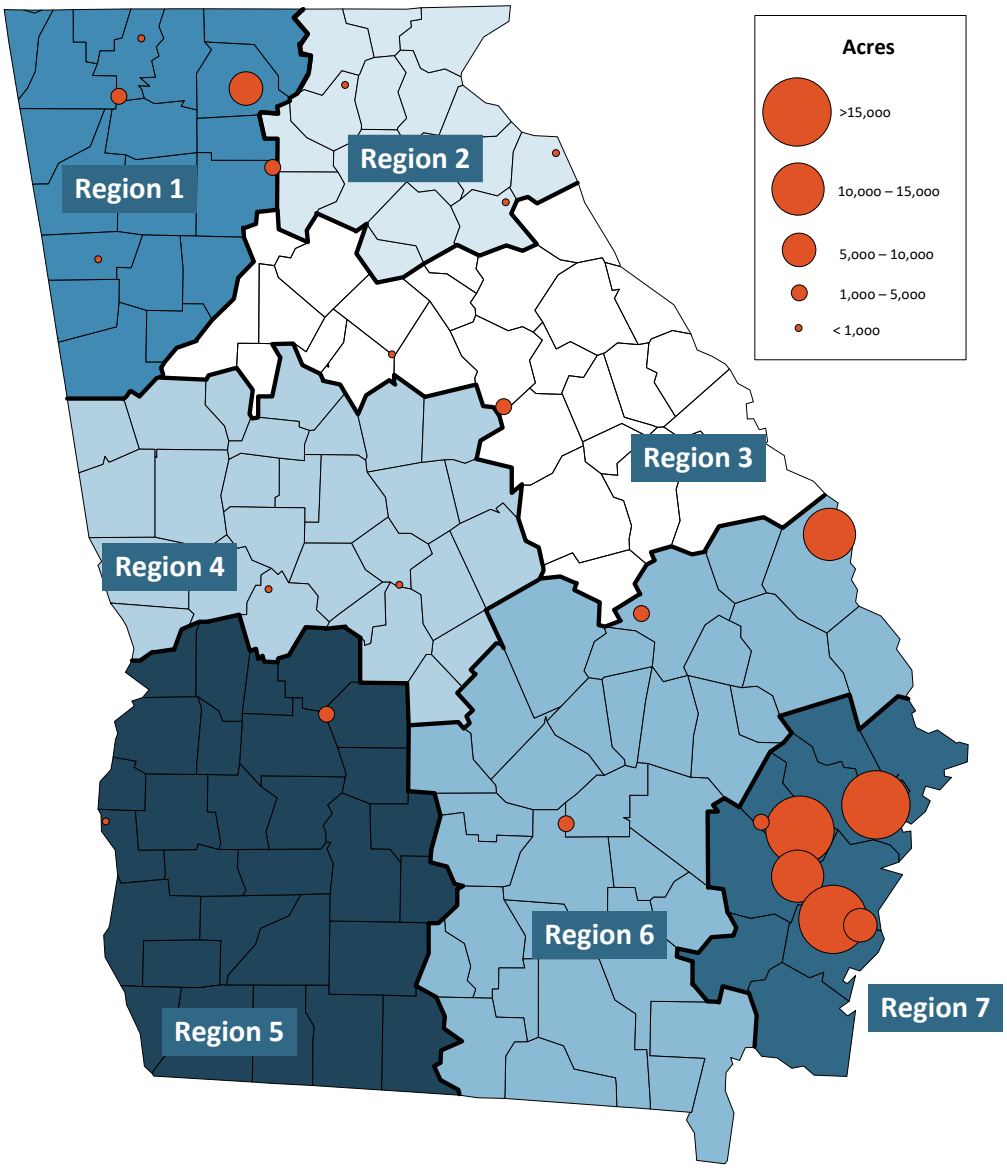
Status	#	Region	Property Name	Lead Unit	Size (Acres)[1]	Year First Major Parcel Acquired[2]	Year Most Recent Plan Created[3]	Year Plan Expires
Complete	1	1	Arrowhead	Game	400	Not in database	2010	2060
Complete	2	1	Crockford-Pigeon Mountain	Game	18,733	1975	(est) 1998	2048
Complete	3	1	Otting	Game	699	1994	2011	2061
Complete	4	1	Paulding Forest	Game	9,361	2007	2013	2063
Complete	5	1	Sheffield	Game	5,686	1991	(est) 2000	2050
Complete	6	1	Zahnd	Game	1,371	1940	2008	2058
Complete	7	2	Dawson Forest	Game	15,277	1980	2010	2060
Complete	8	2	Wilson Shoals	Game	2,837	1993	(est) 1996	2046
Complete	9	3	Big Dukes	Game	1,694	1999	(est) 1999	2049
Complete	10	3	Elbert County	Game	846	2001	2003	2053
Complete	11	3	Yuchi (includes Alexander)	Game	9,028	1989	(est) 1994	2044
Complete	12	4	Big Lazer	Game	5,832	1974	2011	2061
Complete	13	4	Chattahoochee Fall Line	Game	8,717	2014	(est) 2014	2064
Complete	14	4	Clybel	Game	6,237	1993	1994	2044
Complete	15	4	Joe Kruz	Game	3,692	1996	2010	2060
Complete	16	4	Oaky Woods	Game	11,153	1995	2014	2064
Complete	17	4	Ocmulgee	Game	9,990	1989	2010	2060
Complete	18	4	Sprewell Bluff	Nongame	1,702	2010	2009	2059
Complete	19	5	Albany Nursery	Game	298	1948	(est) 1995	2045
Complete	20	5	Chickasawhatchee	Game	19,704	2001	2006	2056
Complete	21	5	Doerun	Nongame	650	1994	2007	2057
Complete	22	5	Elmodel	Game	1,576	1997	(est) 1999	2049
Complete	23	5	Hannahatchee	Game	5,190	1989	Not listed	Unknown
Complete	24	5	Mayhaw	Game	4,681	1989	1997	2047
Complete	25	5	Montezuma Bluffs	Nongame	499	1993	2010	2060
Complete	26	5	River Creek	Game	2,589	2005	2006	2056
Complete	27	5	Silver Lake	Game	8,398	2008	2009	2059
Complete	28	6	Beaverdam	Game	5,606	1984	1999	2049
Complete	29	6	Big Hammock	Nongame	6,946	1973	(est) 2011	2061
Complete	30	6	Bullard Creek	Game	8,523	1989	1999	2049
Complete	31	6	Grand Bay	Game	2,444	1989	1998	2048
Complete	32	6	Horse Creek	Game	7,362	1981	1995	2045
Complete	33	6	Moody Forest	Nongame	2,600	2001	(est) 2009	2059
Complete	34	6	Riverbend	Game	3,511	1995	2001	2051
Complete	35	7	Griffin Ridge	Game	5,616	1994	1998	2048
Complete	36	7	Ossabaw Island	Game	25,152	1978	2000	2050
Complete	37	7	Sapelo Island	Game	9,852	1969	1998	2048

Status	#	Region	Property Name	Lead Unit	Size (Acres)[1]	Year First Major Parcel Acquired[2]	Year Most Recent Plan Created[3]	Year Plan Expires
Incomplete	1	1	Conasauga River	Game	131	1999	n/a	n/a
Incomplete	2	1	J L Lester	Game	477	1995	n/a	n/a
Incomplete	3	1	Johns Mountain	Game	2,641	1990	n/a	n/a
Incomplete	4	1	McGraw Ford	Game	1,965	2010	n/a	n/a
Incomplete	5	1	Rich Mountain - Cartecay	Game	5,217	2001	n/a	n/a
Incomplete	6	2	Broad River	Nongame	440	1996	n/a	n/a
Incomplete	7	2	Chestatee	Game	40	1993	n/a	n/a
Incomplete	8	2	Hart County	Game	969	1973	n/a	n/a
Incomplete	9	3	Oconee	Game	1,825	2001	n/a	n/a
Incomplete	10	3	Tuckahoe	Game	11,458	1990	n/a	n/a
Incomplete	11	3	Walton Public Dove Field	Game	200	Not in database	n/a	n/a
Incomplete	12	4	Echeconee Creek	Game	372	2014	n/a	n/a
Incomplete	13	4	Fall Line Sandshill	Nongame	876	2007	n/a	n/a
Incomplete	14	5	Flint River	Game	2,358	1993	n/a	n/a
Incomplete	15	5	Lake Walter F. George	Game	54	1975	n/a	n/a
Incomplete	16	6	Flat Tub	Game	4,648	2005	n/a	n/a
Incomplete	17	6	Ohoopee Dunes	Nongame	2,503	1995	n/a	n/a
Incomplete	18	7	Altamaha	Game	34,461	1954	n/a	n/a
Incomplete	19	7	Clayhole Swamp	Game	5,497	2005	n/a	n/a
Incomplete	20	7	Morgan Lake	Game	1,118	Not in database	n/a	n/a
Incomplete	21	7	Penholoway Swamp	Game	10,860	2005	n/a	n/a
Incomplete	22	7	Richmond Hill	Game	20,061	1979	n/a	n/a
Incomplete	23	7	Townsend	Game	20,824	2006	n/a	n/a

Footnotes:
[1] We relied on WRD documents/data to establish size. We did not independently verify the accuracy of the size.
[2] We relied on DNR Real Estate Unit database record. We did not independently verify the accuracy of the acquisition year.
[3] For plans that did not clearly state the year in which it was created, we estimated the year based on factors/data presented within the plan. These are represented by (est).

Source: DNR Records

Appendix C (cont.): Map of Properties without Long-Term Management Plans



Source: DNR records

Appendix D: Lead Planning and Management Units

A 2004 policy memorandum issued by the DNR Commissioner indicates that the game management unit, the nongame management unit, or the fish management unit will serve as the lead unit for planning and executing on-site habitat management activities for property WRD manages. The policy identifies the lead unit based on property categories (wildlife management area, natural area, or public fishing area) and whether the activity is a planning or management activity.

As shown in the table below, the game management unit is identified as the lead for planning and management for wildlife management areas as well as the lead for management of natural areas. The nongame unit is the lead for planning for natural areas. The fish management unit is the lead for planning and management of public fishing areas.

Land Planning and On-Site Management Responsibilities

WRD Unit	Wildlife Management Areas		Natural Areas		Public Fishing Areas	
	Plan	Manage	Plan	Manage	Plan	Manage
Game Management	X	X		X		
Nongame Management			X			
Fish Management					X	X

Source: DNR Memo: Land Management Responsibilities (01/2004)

- **Property Categorization and Lead Planning Unit** – Since the release of this memorandum in 2004, WRD has eliminated the property category "natural areas" and reclassified them as wildlife management areas. This reclassification should have been supported with an update in policy to clarify the planning and management responsibility for the nongame and game management units. No updated policy was issued. And when we began the audit it was not clear that WRD had established clear responsibilities. WRD could not provide us with a master inventory of properties that identified which unit was the lead for planning activities.

- **Lead Management Authority** – According to the 2004 memorandum, "[t]he game management section holds the responsibility and has the authority for on-site management activities on both wildlife management areas and natural areas." However, nongame unit officials indicated (and staff in other units confirmed) that in the more than 10 years since the memorandum was issued, the nongame unit has taken a much more extensive role in conducting on-site land management activities. While we did not attempt to measure the degree of activities conducted by nongame staff, we did find evidence of nongame staff conducting prescribed burns on properties. These activities were not restricted to only properties formerly classified as natural areas.

Appendix E: Management Plans for Feral Hogs and Coyotes

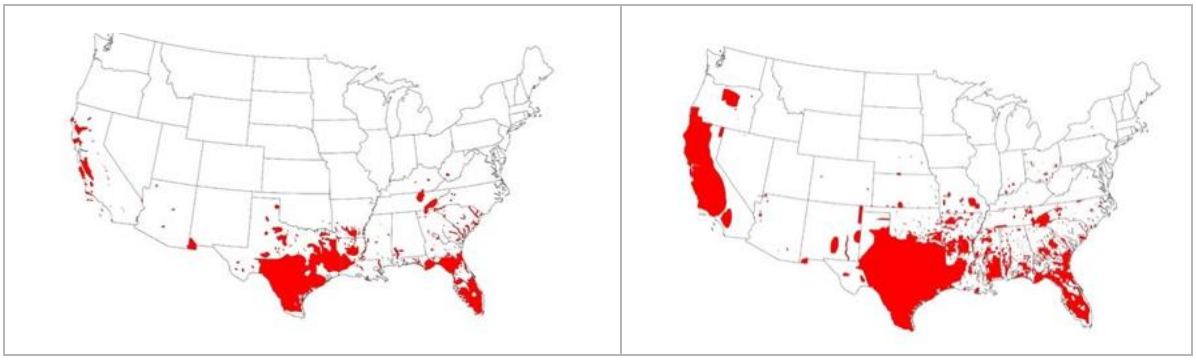
WRD has not developed a written management plan for either feral hogs or coyotes; however, the division has engaged in management activities related to both, including financing research studies, participating in multi-state management efforts, and educating stakeholders on effect management strategies.

WRD personnel indicated a written species management plan for feral hogs and coyotes has not been created because management plans have traditionally been reserved for species whose population has to be managed to prevent overharvesting, and the state does not actively restrict the number of feral hogs and coyotes a hunter/land owner can kill.

However, because WRD still has an active management role regarding these species - including educating stakeholders and the general public on population trends/dispersion, providing active consultation when appropriate, and providing best management strategies - we recommend WRD consider writing at least a basic management plan with the division's goals, objectives, and strategies as they relate to limiting the dispersion/density of these species.

- **Feral Hogs** – WRD personnel are involved with ongoing work by the USDA to study the dispersion and impact of feral hogs, but WRD has not written a management plan defining the goals, objectives, and strategies the unit will adopt to help address the growing population. Below is a map of the growing dispersion of feral hogs nationwide. The South and Southeast have experienced significant expansion of feral hogs in the last 20 years.

Feral Hog Distribution



1988 **2009**

Source: *A Landowner's Guide for Wild Pig Management: Practical Methods for Wild Pig Control*, Mississippi State University Extension Service (2011)

- **Coyotes** – WRD has financed research on the effect the coyotes are having on other wildlife (e.g., fawn) in recent years and is currently financing a study of the distribution/range of the species in the Georgia and the Southeast. The South and Southeast have experienced a significant increase the population and distribution of coyotes in recent years. We could not find a definitive map of the dispersion of coyotes in the state, but researchers indicated that they occupy all counties in Georgia now and likely several barrier islands along the coast.

Appendix F: Sample Black Bear Management Plans

Below are excerpts from the Virginia Department of Game and Inland Fisheries 2012-2021 black bear management plan and the Georgia's WRD 1999 black bear management plan. After comparing the structure and clarity of the goals, objectives, and strategies, we conclude that Georgia WRD's plan can be improved to meet industry best practice. Our assessment of the goals, objectives, and strategies is presented below.

	Virginia Black Bear Plan	**Georgia Black Bear Plan**
Goals	Clearly states goal .	Goal is not explicitly stated but can be inferred.
Objectives	Clearly presents objectives that specifically support the goal.	None stated.
Strategies	States specific strategies to meet the identified objectives.	Unclear what strategies are to be used, and no objectives listed for strategies to be used to accomplish.
	GOAL 1: POPULATION VIABILITY: Ensure the long-term viability of bear populations in each of the eight Viability Regions in Virginia through comprehensive research, monitoring, management, education, and protection programs. **OBJECTIVE 1.** To determine the viability status of the northern Piedmont and northern Tidewater black bear populations by 01/01/2017. **POTENTIAL STRATEGIES** a. Identify boundaries that define the geographic scale of black bear populations in each Viability Region. b. Describe the status of black bear populations in terms of population size, distribution, population trends, and demographic characteristics (e.g., birth rates, mortality rates) in the northern Piedmont and northern Tidewater black bear populations. c. Because unbiased estimates of population size, distribution, population trends, and demographic characteristics will usually be unavailable, develop indices of these parameters from hunter harvests, field observations, bear-related complaints, and other field monitoring. Bear populations with limited harvests and harvest data will require implementation of monitoring indices that are not based on harvests in some areas (e.g., archery deer hunter observations, human-bear problem trends).	**GOALS AND STRATEGIES FOR ACHIEVING GOALS** Population Goals The bear population in North Georgia is at a level where stabilization should occur. Most suitable habitat is presently occupied. As a result bears frequently are found in nuisance situations which can lead to the death of a bear. Harvest Goals Harvest goals of 20% can only be achieved by increasing bear hunting opportunities. Currently, the majority of bears are being taken on WMAs (68% during the last 3 hunting seasons) even though there are more hunting opportunities outside the WMA system. In north Georgia, all counties that have a bear population are currently open to hunting by archery and firearms hunters, therefore, the only opportunity for increasing hunting pressure in this situation is to increase the length of the season. If an over harvest of the bear population should occur, a reduction in the harvest, particularly on WMAs, could be achieved by reducing the length of the season or limiting the type of hunting allowed (e.g. archery only or more limited firearms hunting). Bear hunting in north Georgia has traditionally resulted in the majority of the harvest being composed of males. In the unlikely event that a preponderance of females was being harvested over several seasons, timing of the season would be adjusted until later in the year, after females have gone to their dens, to favor the harvest of males.

Appendix G: Sample Wildlife Management Area Webpages

Below are examples of wildlife management area profile pages. One is produced by the Ohio Division of Wildlife, one is produced by a third party group, OhRanger.com. Both are similar to each other, and both offer better content and quality than WRD for wildlife management areas.

The Ohio Division of Wildlife presents a page containing a map of the surrounding area, a link to Google Maps, the office address and phone number, and a number of tabs with details about the property history and purpose, wildlife, and recreational opportunities. Icons depict what opportunities exist on the property and allow users to quickly determine what outdoor activities are permitted. The OhRanger.com provides similar information for wildlife management areas in Georgia that are managed by WRD. The company has created a unique web page for each property, an area map, a link to Google Maps for directions, regional office contact information, detailed descriptions of recreational opportunities, and easily identifiable icons for each recreational opportunity.

Each area has a unique web page with all major content

Overview map shows general information about the property boundary and layout.

Hyperlink has additional map

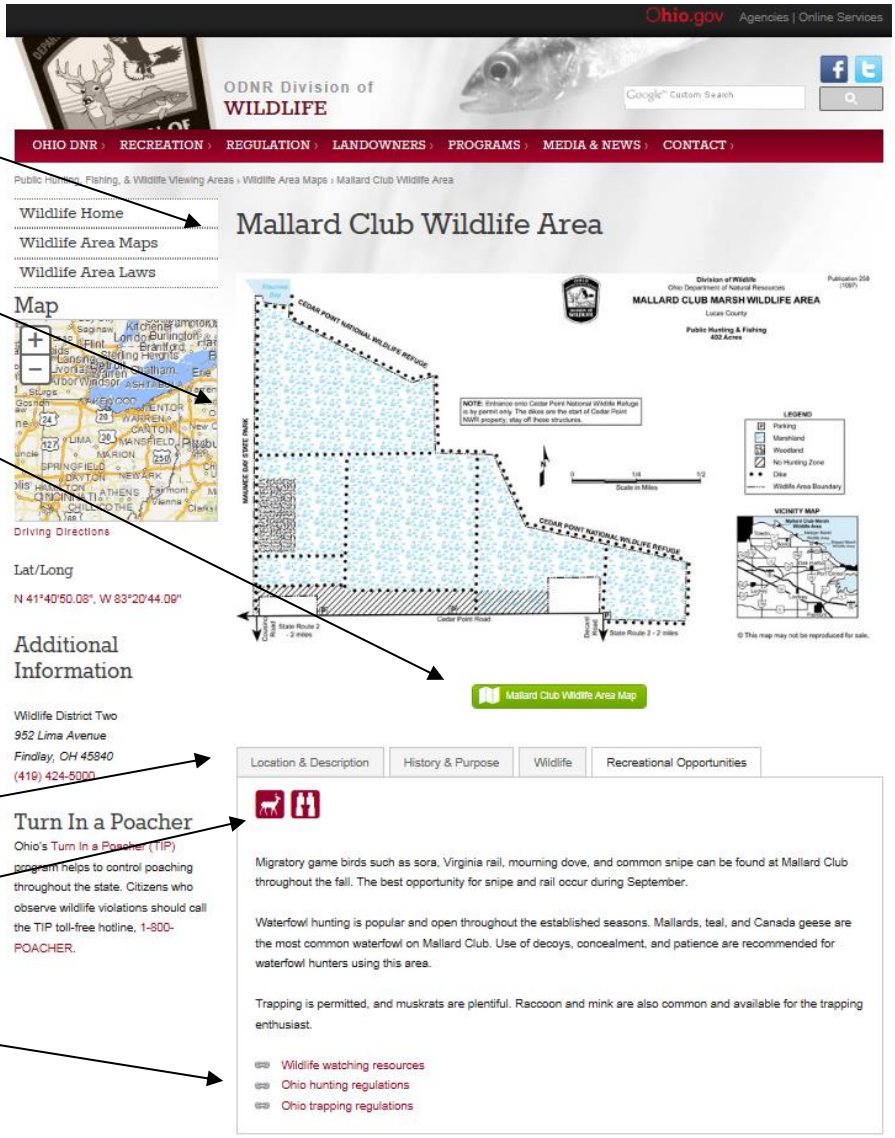
Link to Google map for driving directions

Office address and telephone number

Tabs with details about the property history & purpose, wildlife, and recreational opportunities

Easy to understand icons depicting what recreational opportunities are permitted

Links to additional hunting and nonhunting resources



Source: Ohio Division of Wildlife

A unique webpage for property

Overview provides a description of the property

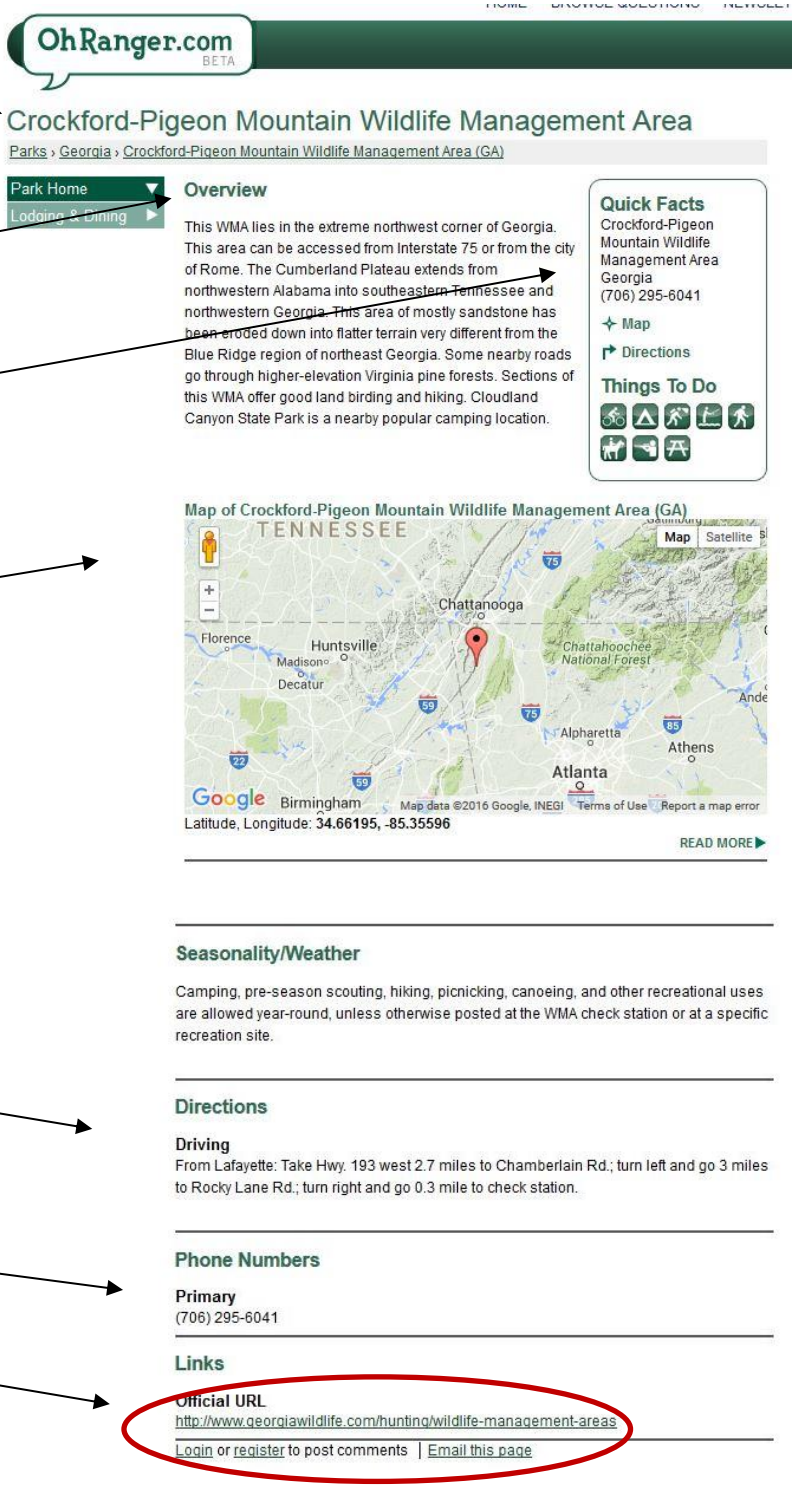
Quick Facts provide telephone number and hyperlinks to map, directions, and activity descriptions

Map displays location within Georgia (scalable)

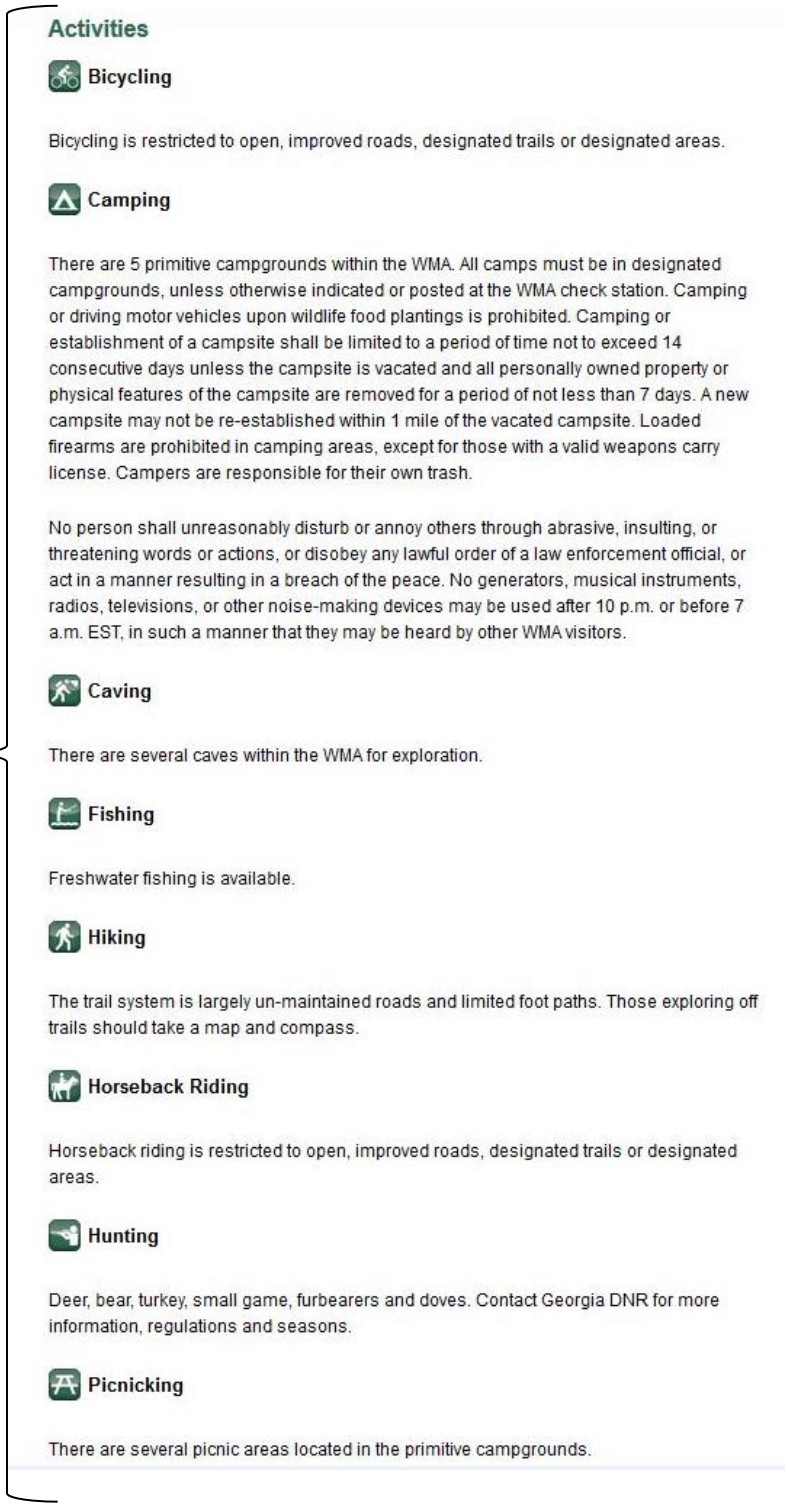
Driving directions from nearest city

Telephone of regional WRD office

Hyperlink to DNR WRD property webpage (See analysis in this report that describe deficiencies of that site)



Activities provide information on recreational opportunities, including descriptions, rules and regulations, and other details such as the number and type of campsites and the type of game hunting permitted.



Activities

Bicycling

Bicycling is restricted to open, improved roads, designated trails or designated areas.

Camping

There are 5 primitive campgrounds within the WMA. All camps must be in designated campgrounds, unless otherwise indicated or posted at the WMA check station. Camping or driving motor vehicles upon wildlife food plantings is prohibited. Camping or establishment of a campsite shall be limited to a period of time not to exceed 14 consecutive days unless the campsite is vacated and all personally owned property or physical features of the campsite are removed for a period of not less than 7 days. A new campsite may not be re-established within 1 mile of the vacated campsite. Loaded firearms are prohibited in camping areas, except for those with a valid weapons carry license. Campers are responsible for their own trash.

No person shall unreasonably disturb or annoy others through abrasive, insulting, or threatening words or actions, or disobey any lawful order of a law enforcement official, or act in a manner resulting in a breach of the peace. No generators, musical instruments, radios, televisions, or other noise-making devices may be used after 10 p.m. or before 7 a.m. EST, in such a manner that they may be heard by other WMA visitors.

Caving

There are several caves within the WMA for exploration.

Fishing

Freshwater fishing is available.

Hiking

The trail system is largely un-maintained roads and limited foot paths. Those exploring off trails should take a map and compass.

Horseback Riding

Horseback riding is restricted to open, improved roads, designated trails or designated areas.

Hunting

Deer, bear, turkey, small game, furbearers and doves. Contact Georgia DNR for more information, regulations and seasons.

Picnicking

There are several picnic areas located in the primitive campgrounds.

Source: OhRanger.com

Appendix H: Annual Resident License Price of Southeastern States

The table below presents the annual resident license price for hunting, fishing, and land access privileges for 2015.

STATE	PUBLIC LAND ACCESS	FISH AND HUNT	FRESH WATER	TROUT	HUNT (BASIC)	DEER (BIG GAME)	BEAR	WATER FOWL
Alabama	$17.15	$30.00	$12.85	N/A	$17.15	$25.75	N/A	$23.15
Florida	$26.50	$32.50	$17.00	N/A	$17.00	$22.00	$117.00	$22.00
Georgia	$19.00	$17.00	$9.00	$14.00	$10.00	$19.00	$19.00	$15.50
North Carolina	$15.00	$25.00	$20.00	$33.00	$20.00	$33.00	$43.00	$33.00
South Carolina	$30.50	$22.00	$10.00	$10.00	$12.00	$18.00	$43.00	$17.50
Tennessee	N/A	$28.00	$28.00	$46.00	$28.00	$56.00	$56.00	$59.00

Source: DOAA analysis

The Performance Audit Division was established in 1971 to conduct in-depth reviews of state-funded programs. Our reviews determine if programs are meeting goals and objectives; measure program results and effectiveness; identify alternate methods to meet goals; evaluate efficiency of resource allocation; assess compliance with laws and regulations; and provide credible management information to decision-makers. For more information, contact us at (404)656-2180 or visit our website at www.audits.ga.gov.