The SERPPAS Good Map: Using Spatial Data to Advance SERPPAS Objectives

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Clarifying Language for Purposes of this Effort

Focus Area: A focus area is a topic that SERPPAS has chosen to explore in order to help solve issues that arise for the partners within that topic, and are represented in the SERPPAS Strategic Plan. Examples: Threatened, Endangered & At-Risk Species, Prescribed Fire etc.

Work Group: A work group is made up of Steering Committee members and staff level members of SERPPAS that work collaboratively on the objectives laid out within a certain focus area.

Objectives: The over-arching goals of the work group, over a 3-year period, that would significantly help the partners achieve their individual missions in that focus area, as well as the mission of SERPPAS. These objectives are also represented in the SERPPAS Strategic Plan.

Use Case: A way in which the work group will use the Good Map (spatial data) to help advance the objectives of SERPPAS in a specific focus area.

Good Map: A term that implies the use of good data to depict priorities of a diverse group of partners in a visual way (on a map or many maps) that can be used to identify overlapping interests as well as areas where collaboration for mutual benefits can be achieved.

Introduction

One of the follow up actions that came out of the 2018 SERPPAS Principals Meeting was a focused effort on mapping the priorities of SERPPAS. It has been long recognized within SERPPAS that partners who effectively work together around shared priorities and a *'good map'* will achieve multiple and mutual benefits for all partners. Through a strategic planning process, SERPPAS worked hard to identify [specific focus areas and strategic objectives that will advance the mission of SERPPAS in the region](). The ability to envision these shared priority areas and to be able to target them for the ideal conservation/military/agricultural purposes would be extremely valuable to all partners to aid on the ground efforts and results. The SERPPAS Good Map aims to gather the necessary data to better identify and visualize the SERPPAS priorities that will help target resources, projects and ideas in appropriate locations across the region.

The ideal end product of the SERPPAS Good Map is a user friendly and shareable mapping tool that accurately displays the critical mission footprints of the SERPPAS partners in the 6 state region. The SERPPAS Good Map is used to better understand the overlapping interests and targeted areas for action across the SERPPAS region. With the ability to turn data layers on and off, the SERPPAS Good Map

achieves the desired level of analysis to present distinct and cross-cutting SERPPAS priorities. Rather than a repository for all possible applicable data, the development of the map is driven by fundamental questions raised by the SERPPAS partners. Using spatial data to answer these questions will aid the implementation of the SERPPAS strategic objectives and provide the partners with the ability to target projects, resources and ideas on the ground to achieve measurable outcomes.

To identify what those fundamental questions are, each focus area within SERPPAS (supported by a work group) has come up with 2-3 'Use Cases' to better understand how this Good Map can potentially be used to help implement the objectives of the SERPPAS Strategic Plan. The use cases are statements that will inform management actions for on the ground results related to accomplishing some of the objectives in the Strategic Plan. These use cases were reviewed and discussed at the SERPPAS Good Map Workshop to better understand what data or analysis is missing, what challenges or gaps exist and prioritizing next steps to make these use cases actionable. This also includes determining whether the SERPPAS Good Map is a process of using existing mapping tools with the needed/identified data, or whether an additional stand-alone tool needs to be created.

Fundamental Questions

1.) How much prescribed fire is being implemented in the Southeast, where is it occurring and for what purpose?

Use Case: Compile geospatial fire data at a regional scale and establish baseline/minimum data fields to track actual prescribed fire conducted annually to understand where we are compared to state and regional goals as well as where the gaps are where fire is needed, including but not limited to areas around military installations.

2.) What is the military mission footprint in the Southeast?

Use Case: Compile a military mission footprint as it relates to test and training impacts of land use change/compatibility to create a better depiction of the regional military mission to protect and to identify partnership priorities areas.

3.) What and where is the shared risk in the coastal areas of the Southeast between installations and communities?

Use Case: Use existing data to identify areas of shared risk to infrastructure, coastal at-risk species and water availability where SERPPAS can promote mutually beneficial resilience efforts (planning, protection, risk assessment) that benefit installations, communities and habitats in the form of a pilot project(s).

Purpose, Next Steps, Challenges & Needs: Regional Military Mission Footprint

Purpose
A military mission footprint or a "'Region of Influence' is the geopolitical area in which the installation operates, including both the base and other assets such as airspace and training areas. This area usually coincides with communities where the installation has contextual interests (economic, political, cultural, social, environmental, and legal) and where it focuses outreach and engagement resources." (Air Force

ICEMAP) Each military service and installation defines this footprint based on their testing and training needs and the encroachments factors influencing the mission.

SERPPAS has a vested interest in sustaining the mission of all the services and their respective installations/bases and missions across the 6 state region, and a better understanding of how these mission footprints interact across the region is an important step. In order to better understand important corridors and areas of protection for this mission at a regional scale, being able to depict on a map the regional military mission footprint is a critical first step.

The goal of this effort would be to utilize publicly available and DoD-specific data that accurately depicts the composite regional military mission footprint, in order to identify where land use changes and activities could impact the mission and as a result communicate to federal, state, local and private partners where partnerships could reduce or eliminate these impacts. This process would help refine and define how to depict a military mission footprint (using spatial data) and could be used as a base layer for future Sentinel Landscape designations and for identifying overlaps with other SERPPAS focus area objectives (for example threatened, endangered and at-risk species).

Suggested Next Steps:
The actions associated with this effort are as follows:

1. Compile Defense Installations Spatial Data Infrastructure (DISDI) data for installations in the Southeast including Restricted Use Air Space, Low lying training routes (<750ft) and REPI project/installation areas as a common denominator for data resources (other data may be necessary at a later time).
2. Create a purpose and intent statement that describes exactly how and why the data is being used for SERPPAS.
3. Set up a process to review and refine the representation of the installations military mission footprints, using current Sentinel Landscape partnerships and other installation level partnerships.
4. Evaluate the need for a more formal approval process including top-down and bottom up approaches (Headquarters and installation level).

Challenges
There are challenges associated with this effort, including that each military service has their own definition of 'military mission footprint' and what that means. This is why the purpose and intent statement will be critical in helping the installations understand the reason for such an effort. A formal data call to the military services will be cumbersome and not well received; beginning with the 'common denominator' data will help avoid this but may not be as accurate. This will be an iterative process, not easily depicted by one map alone, and will continue to be refined as the process moves forward. There may also be challenges with data being shared, which is why this process begins with DoD-specific and publicly available data. This challenge may drive the need for a separate password-protected mapping tool to help store more installation-specific data that is not publicly available. This additional information would be needed to further define installation-specific military mission footprints, or the 'Region of Influence' to help govern SERPPAS interest.

Needs
At this point, funding has not been identified as a need for this effort. In the future, funding may be identified as a need to support a restricted-access mapping tool may be needed to visualize military

mission footprints, which will include more data and information than the initial common denominator data. As part of that effort, engagement from the military services will be needed to obtain and verify additional information and data to define more specific military mission footprints.

Purpose, Next Steps, Challenges & Needs: Regional Fire Tracking System

<u>Purpose</u>
It is well recognized among the SERPPAS partners that prescribed fire is a critical management tool used to restore and sustain fire dependent ecosystems and the species they support, as well as manage wildfire risk. Many of the SERPPAS partner agencies have made significant investments in the implementation of prescribed fire to reach local, state and regional land management goals, especially related to the restoration of the longleaf pine ecosystem. Prescribed fire is also used on and off military installations for fuels reduction and habitat management. While implementation of prescribed fire at the proper scale and frequency is essential, it has become increasingly important to be able to track the spatial extent and geolocation of these fires at a regional scale, across agencies and land holdings.

Many groups in the Southeast have identified the need for better data tracking for prescribed fire, and because of this, there are multiple efforts taking place around the region. SERPPAS has identified some major existing efforts that could contribute to the advancement of regional fire tracking in the Southeast:

NatureServe Geodatabase – This project has identified key regional and state land managers to contribute fire spatial footprint data and developed a standard set of minimum fields for polygonal data acquisition that can be adopted by all of the agencies when rolling up data to a regional scale (see SALCC fire geodatabase for set of minimum fields). Using this data, Natureserve has created a geodatabase that will be freely available on USGS ScienceBase and Data Basin for viewing and download and use by anyone who needs it. This project also ensured that there is a plan for efficiently updating the geodatabase on a yearly basis. Ultimately, this database was developed to help get a better understanding of how much burning is needed to reach restoration goals based on current acreages of community types, condition classes, and prescribed burning areas and the how close we are to meeting those goals.

The Wildland Fire Management Application (WFMAP) was developed to support the US Army IMCOM Wildland Fire Program nationally. WFMAP allows users to create, save, view, analyze, and download wildland fire data. It includes multiple web pages that display rolled up metrics and individual fire data in map, chart, and tabular formats. The user interacts with the data via a user-friendly web browser interface requiring no knowledge of geographic information systems or database software. Primary data collected in WFMAP includes the mapped fire perimeter, size, cause, date and time of occurrence, and generalized information regarding the number of individuals and types of equipment used to control the fire, though other data can be tracked. The map interface allows users to input new fire data by on-screen digitizing, uploading GPS files, or by selecting burn unit polygons. The data is quality controlled via automated and manual methods. All data can be searched and subsets or entire datasets can be downloaded. The system can also support regular automated data exports to outside organizations in formats suitable to ingestion by their systems. WFMAP tracks spatial and temporal fire trends, prescribed fire goal achievement, as well as individual fire information. Data access can be limited to specific personnel or made available across individuals or organizations. Rollup reporting of data across

an individual property or across multiple properties is available to authorized users, providing big-picture information.

Tall Timbers Research Station – Developing a comprehensive spatially explicit map of fire occurrence remains one of the most critical needs for conservation in the southeast. Not only are the vast majority of endangered species and ecosystems reliant on frequent fire, but fire risk analysis and fire behavior modeling are critical inputs sensitive to fire history. Beginning in September, 2017, Tall Timbers Research, Inc., started development of a robust spatial database for more precise mapping and tracking of fire occurrence in Florida, using satellite-based products. In addition, tools were developed to report fire history metrics (such as fire frequency and time-since-burn) in specific fire-dependent ecological systems or fire-dependent species habitats. In order to advance this project into other states beyond Florida, additional funding is needed.

While these are individually excellent as stand-alone products, together they will provide a full picture of prescribed fire on the landscape, especially on private lands where tracking is not always captured. The NatureServe Geodatabase helps integrate fire spatial footprint data tracked by various groups, the Army mapping application can be a template for getting more fire spatial footprint data into such databases, and the work at Tall Timbers Research Station fills in gaps in fire footprint data in private land and other areas where data will be harder to get. To move forward together towards one goal of better fire tracking in the SE, it is recommended that these projects continue to be funded and work together in a coordinated fashion.

Suggested Next Steps:

1. Continue to coordinate the existing efforts among various organizations currently working on fire tracking and spatial mapping.
2. Develop a proposal to coordinate the existing efforts, to continue and expand the NatureServe fire tracking database including but not limited to a process for uploading fire data from fire managers, to incorporate the Army WFMAP, and to continue and expand the Tall Timbers Research Station work.
3. Consider MOU with agencies to alleviate data sharing and privacy issues.
4. Ask the SERPPAS Principals to support the development of this coordinated database/tracking system, and the collection of data in a consistent way that can feed into a database.

Challenges
There are many challenges associated with regional fire tracking, however the biggest obstacle to success is the lack of comprehensive polygonal burn records/data for all burns conducted each year within the area of interest. Agencies have made great strides in the last five years, so most large federal agencies now collect this data and have it available. Part of the purpose of a coordinated regional approach would be to encourage the collection of consistent data to get a better regional picture of where fire is happening and where it is needed. There are also privacy issues related to collecting or sharing this data. Depending on the agency or owner of the land, some spatial data is not able to be shared at a granular level. This is where remote sensing can be helpful for filling in gaps. It is also a lot of work to collect the type of data needed to accurately represent the extent of prescribed fire, which means that capacity to collect the data is also a challenge. Another big challenge is the lack of funding to maintain tracking systems once they are developed.

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Needs
While there are already experts willing and able to work on this project, funding has been identified as a need to move these forward. Each of the projects above describes a unique piece of a larger goal to accurately track prescribed fire on public and private lands in the Southeast Region. Due to the geographic scope and the complexity of the projects, funding will be needed to coordinate these efforts as well as maintain them long-term. Right now, NRCS has secured funding to advance these efforts, but more may be needed.

Purpose, Next Steps, Challenges & Needs: Coastal Resilience in the Southeast

Purpose
The Southeast is facing various changes, ranging from increased flooding, storm surge, coastal erosion, and extreme temperature and precipitation variations, to the effects of increased coastal population, urban sprawl and developmental pressures on coastal industries and activities. These challenges pose and opportunity for military installations, communities and organizations/agencies in the Southeast to consider the need for actions to improve resiliency.

Identifying the most significant risks and vulnerabilities due to these challenges, especially those that impact coastal military installations and communities in the region, will help determine how SERPPAS can effectively engage to minimize these risks. Regional coordination on these issues can further enhance military installation mission sustainment by minimizing the potential for new coastal species placement on the endangered species list and/or critical habitat designated in the vicinity of military installations. It can also prioritize watershed protection for increased water supply resilience to installations and surrounding communities and increase the geographical effectiveness of protecting military installations and communities to coastal and severe weather events.

Prior to jumping right into mapping, the SERPPAS Coastal Resilience and Regional Adaptation work group would like to engage in multiple efforts that are on-going that will help SERPPAS identify where they can add value, as well as make sure the right partners are engaged.

Suggested Next Steps:

1. Identify what 'coastal' means to SERPPAS and priorities of SERPPAS in these areas.
2. Engage NOAA, NMFS, and other critical partners to compile the necessary and accurate data.
3. Collaborate with USACE SAD South Atlantic Coastal Study to help identify vulnerabilities at and around installations on the coast.
4. Utilize already available data to create prototype maps that help identify critical coastal infrastructure, at-risk species and habitat locations, and existing protected areas and where these overlap.
5. Connect with the DoD Water Resources and Climate Resilience office about piloting resilience planning to test different tools and approaches and further refine and define resilience planning for DoD.
6. Utilize the August 2019 Coastal Resilience Meeting (SERPPAS & Sea Grant Programs) to explore exactly how the Good Map may help inform SERPPAS coastal resilience efforts.

Challenges
One of the biggest challenges for this focus area is the magnitude of the issues surrounding a changing climate and it's impacts. It can be hard to identify how and where to focus on resilience, as it is an effort

that cannot be achieved by one group or partner alone. Another challenge is that the changes being seen are local and can be different based on geography, which makes it harder to approach at a regional scale. This also makes it difficult for SERPPAS to identify exactly what regional actions will be value add. Somewhat due to these challenges, SERPPAS has decided to focus on the coast as it can be easier to identify specific coastal vulnerabilities and actions towards resilience due to the importance of military readiness being threatened by more frequent and intense storms.

<u>Needs</u>
SERPPAS has identified the need to engage partners that have not necessarily been engaged in SERPPAS in recent years such as NOAA, NMFs, FEMA and state emergency management agencies to name a few. SERPPAS also identified the need to engage these stakeholders to have a specific conversation about these coastal risks and threats and way to partner on resilience. Funding was received to host this meeting, and the hope is that it will help to specifically identify where installations and communities can work together on resilience.

Mapping Support & Future Direction

The Southeast Conservation Adaptation Strategy (SECAS) has provided in-kind support of the SERPPAS Good Map effort in the form of identifying and collecting needed data-sets, creating prototype maps to understand and view progress for each use case and assisting with the facilitation of the overall process. The use cases developed by the work groups are identifying critical information and data needs that will be fundamental in building layers for a regional SERPPAS Good Map.

In order to better understand and define the functionality and usability of such a map, a pilot project to test the SERPPAS Good Map in a smaller geographic area has been put forth by the work groups. This potential pilot project could take place within an existing Sentinel Landscape, where SERPPAS could apply these data layers and help identify exactly how the Good Map can be used to implement projects on the ground based on the SERPPAS priorities. For now, already established mapping applications such as SECAS and the REPI Interactive Map have been identified to help host this information and create the maps needed to explore these use cases. Over time and as the effort develops, it may become clear that a completely separate and stand-alone mapping application is needed to fully realize the SERPPAS Good Map and pilot project could help inform this decision.

The SERPPAS Good Map effort is intended to be an on-going process that is complimentary to the strategic planning process in SERPPAS. Based on the priorities of the partner agencies, spatial data is used to identify partnership priority areas (including the identification of where spatial data is missing), to mutually advance the objectives of the SERPPAS Partnership. It is the hope of the partnership that this effort will create a baseline of spatial data and information from which to build upon. As time passes and progress is made, new needs will be identified as well as new priority focuses based on the SERPPAS partners which will in turn influence the focuses of the SERPPAS Good Map.

Resources

[SERPPAS Strategic Plan 2018 - 2020](#)
[SECAS](#)
[REPI Interactive Map](#)
[NatureServe White Paper](#)

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