NOAA Habitat Priority Planner
Mississippi-Alabama Habitats Tool

The National Oceanic and Atmospheric Administration's (NOAA) Habitat Priority Planner (HPP) involves an interactive process in which stakeholders collaborate to identify habitats of special concern for a geographic region based on parameters developed using available datasets. In an iterative process, the HPP allows participants to readily set parameters, visualize priority habitats identified by those parameters, and change parameters as necessary to obtain the best overall results. The Mobile Bay National Estuary Program (MBNEP) applied the HPP by engaging its Coastal Habitats Coordination Team (CHCT), a group of 60 state and local resource professionals. Based on available datasets for the area, the CHCT developed metrics that most effectively prioritized habitat patches for ten focal habitat types. A unique aspect of the tool is that it is designed specifically to identify priority habitat.

OVERVIEW

Lead developer(s): Mobile Bay National Estuary Program (MBNEP), in collaboration with The Nature Conservancy (TNC) and the NOAA Coastal Services Center (CSC).[1]

Year developed: 2008.[1]

Geographic area: All of Mobile and Baldwin counties, Alabama (Figure 1).[2]

Resource types: The tool prioritizes for habitat types, four of which are aquatic resource types.[2]

Restoration/conservation: The tool targets habitat restoration (reestablishment and rehabilitation), enhancement, preservation, and acquisition.[1]
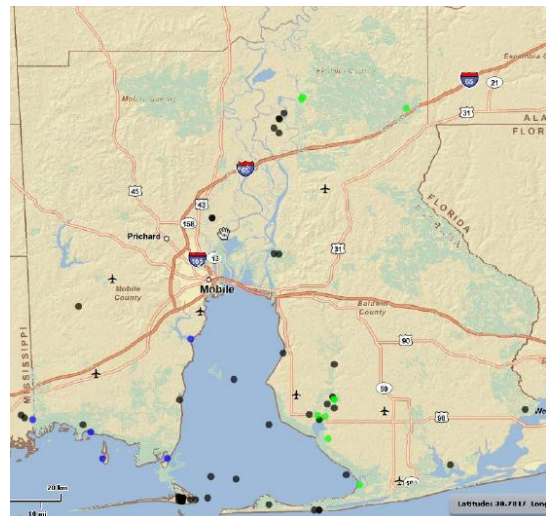

Figure 1. The HPP analyses priority habitat types for the coastal region of Alabama: Mobile and Baldwin counties. Used with permission from Mobile Bay National Estuary Program (MBNEP).

Stakeholders: Anyone interested in habitat management and protection in coastal Alabama.

Current status: The tool is currently used by non-regulatory programs, including the Forever Wild program and the Coastal Impact Assessment Program.[1]

PRIORITIZATION ANALYSIS

Determination of prioritization objectives: A stakeholder group developed and agreed upon ten distinct habitat types to target for prioritization, including freshwater wetlands, riparian buffers, longleaf pine, pine savannah, maritime forest, intertidal marshes and flats, beaches and dunes, submerged aquatic vegetation, oyster reefs, and rivers and streams.[2]

Determination of factors/weightings: HPP developers facilitated the CHCT in identifying prioritization selection criteria for each of its ten priority habitat types (four of which were aquatic).[3]

Landscape prioritization tool(s): The CHCT (consisting of more than 60 state and local scientists, non-profit staff, environmental professionals (consultants), and local/state officials) identified priority habitats for protection using the tool. The HPP was designed by the NOAA Coastal Services Center (CSC) to readily incorporate stakeholder input into planning and was applied by CHCT in the following steps to identify priority habitat areas:[2]

1) The CHCT identified ten focal habitat types for which prioritization analyses should be completed – four of these represented aquatic resources.
2) Staff from TNC and the CSC compiled data from local sources for each of these focal habitat types.
3) CHCT members were provided the list of available data for each focal habitat type in addition to a list of possible metrics (e.g., perimeter-to-area ratio, proximity to other habitat patches, etc.) that could be applied to each. CHCT members then used the available data to identify the appropriate metrics that could be used to prioritize habitat patches for each focal habitat type.
4) Using the metrics identified for each habitat type, the CSC identified priority habitat areas. After the results were presented, the CSC engaged the CHCT in validating or modifying the results to produce a final set of HPP priority habitat maps.
5) HHP priority habitat maps were incorporated into MBNEP's Habitat Mapper tool (see below).

Riparian buffers (conservation) tool: CHCT members prioritized riparian buffers for conservation using four metrics that accounted for buffer width, buffer vegetation, buffer length, and buffer landscape position (Table 1).[2]

Prioritization objectives assessed:
- Habitat quality
- Suitability for preservation

Table 1. Factors and data sources selected by the CHCT to prioritize for riparian buffer conservation.[2]

Factor used in analysis	Data source(s)
Buffer is at least 30m wide on both sides	Alabama GAP land cover data
Buffer is composed of intact (naturally vegetated) vegetation	
Buffer is at least 500m long	
50% or more of the buffer area lies in a watershed prioritized for river and stream conservation (see below)	

Riparian buffers (restoration) tool: CHCT members prioritized riparian buffers for restoration using four metrics that accounted for buffer width, buffer vegetation, buffer length, and buffer landscape position (Table 2).[2]

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Prioritization objectives assessed:
- Habitat quality
- Feasibility of restoration

Table 2. Factors and data sources selected by the CHCT to prioritize for riparian buffer restoration.[2]

Factor used in analysis	Data source(s)
Buffer is at least 30m wide on both sides	Alabama GAP data
Buffer is composed of vegetation that is intact (naturally vegetated) or impaired (able to be restored to naturally vegetated)	
Buffer is at least 500m long	
50% or more of the buffer area lies in a watershed prioritized for restoration (see below)	

Freshwater wetlands tool: CHCT members prioritized freshwater wetlands using four metrics that accounted for wetland land cover classification, size, proximity to urban areas, and current status as a priority area (Table 3).[2]

Prioritization objectives:
- Habitat quality

Table 3. Factors and data sources selected by the CHCT to prioritize freshwater wetlands.[2]

Factor used in analysis	Data source(s)
Classified as floodplain forest or tidal swamp	Alabama GAP data
Wetland is between 1 and 10 ha in size	
Wetland is located more than 1000m from medium- or high-intensity developed areas	
Boat ramps, marinas, and TNC priority areas excluded from the analysis	Alabama GAP data; TNC

Watersheds (river and stream conservation): CHCT members prioritized watersheds for river and stream conservation based on metrics for impervious surface coverage and presence of impaired streams (Table 4).[2]

Prioritization objectives:
- Habitat quality
- Suitability for preservation

Table 4. Factors and data selected by the CHCT to prioritize watersheds for river and stream conservation.[2]

Factor used in analysis	Data source(s)
Is a 12-digit HUC watershed	Alabama GAP data
Contains less than 10% impervious surface	
Contains no impaired streams	EPA-identified impaired streams

<u>Watersheds (river and stream restoration):</u> CHCT members prioritized watersheds for river and stream restoration based on metrics for impervious surface coverage and presence of impaired streams (Table 5).[2]

Prioritization objectives:
- Habitat quality
- Feasibility of restoration

Table 5. Factors and data selected by the CHCT to prioritize watersheds for river and stream restoration.[2]

Factor used in analysis	Data source(s)
Is 12-digit HUC watershed	Alabama GAP data
Contains 10-25% impervious surface	
Contains impaired streams	EPA-identified impaired streams

<u>Intertidal marshes and flats (flood hazard protection) tool:</u> CHCT members prioritized intertidal marshes and flats for flood hazard protection using metrics that accounted for land cover classification, proximity to developed areas, and proximity to flood zones (Table 6).[2]

Prioritization objectives assessed:
- Flood mitigation

Table 6. Factors and data selected to prioritize intertidal marsh and flats for flood hazard mitigation.[2]

Factor used in analysis	Data source(s)
Classified as Mississippi Sound salt marsh or brackish tidal marsh	Alabama GAP data
Salt marsh is 30m or less from developed areas	
Salt marsh is 500 ft or less from the 100-year flood zone	Federal Emergency Management Agency's 100-year floodplain

<u>Intertidal marshes and flats (natural resource conservation) tool:</u> CHCT members prioritized intertidal marshes and flats for natural resource conservation using metrics that accounted for land cover classification, proximity to species of concern, and proximity to protected areas (Table 7).[2]

Prioritization objectives:
- Habitat quality

Table 7. Factors and data selected to prioritize intertidal marsh and flats for natural resource conservation.[2]

Factor used in analysis	Data source(s)
Classified as Mississippi Sound salt marsh or brackish tidal marsh	Alabama GAP data
Salt marsh within 100 feet of species of concern (beach mouse, sea turtle, oysters, and SAV)	
Salt marsh is 500 ft or less from a protected	

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area	

Calibration of the landscape prioritization tool(s): After these metrics were input into the HPP and resulting priority areas visualized, the CHCT refined the parameters based on their collective expertise and on-the-ground experience to improve results.[3]

Prioritization products: Aquatic habitat priority areas identified using the tools discussed above can be overlaid with other map features (e.g., county boundaries) using the Mississippi-Alabama Habitats Tool (Figure 2). Figure 3 shows map overlays for four prioritization outputs, including riparian buffers (Figure 3A), freshwater wetlands (Figure 3B), intertidal habitats (Figure 3C), and watersheds for streams and rivers (Figure 3D). In addition to visualizing priority habitat area, users can also overlay maps identifying the locations of planned, existing, and in-progress restoration and conservation activities throughout the estuary.[2]
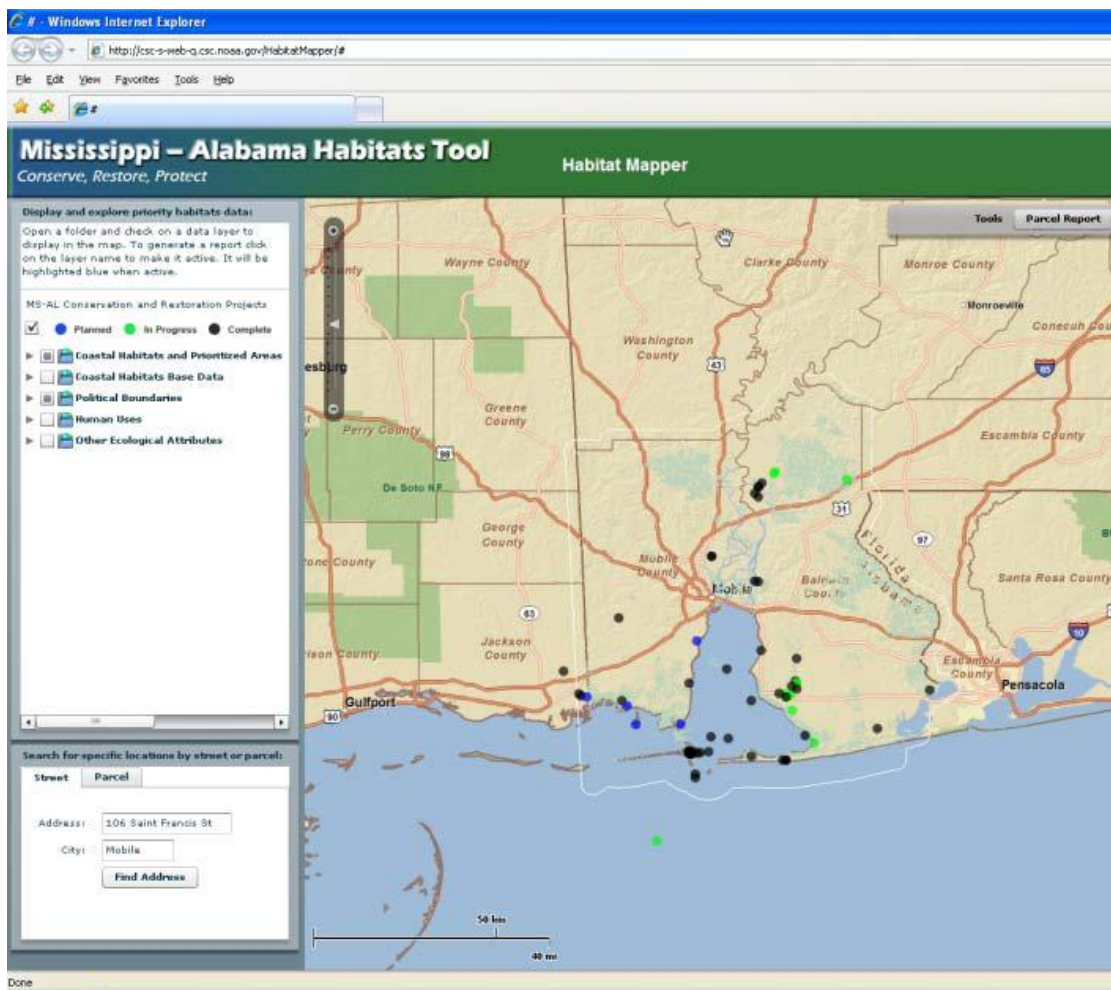

Figure 2. The Habitat Mapper Tool includes a user interface that identifies planned and completed conservation and restoration projects relative to habitat priorities. In addition, users can enter addresses or parcel numbers to examine priority habitats that specific lands support and can identify locations of existing wetland restoration and conservation efforts. The Habitat Mapper is accessible at http://habitats.disl.org/. Used with permission from Mobile Bay National Estuary Program (MBNEP).
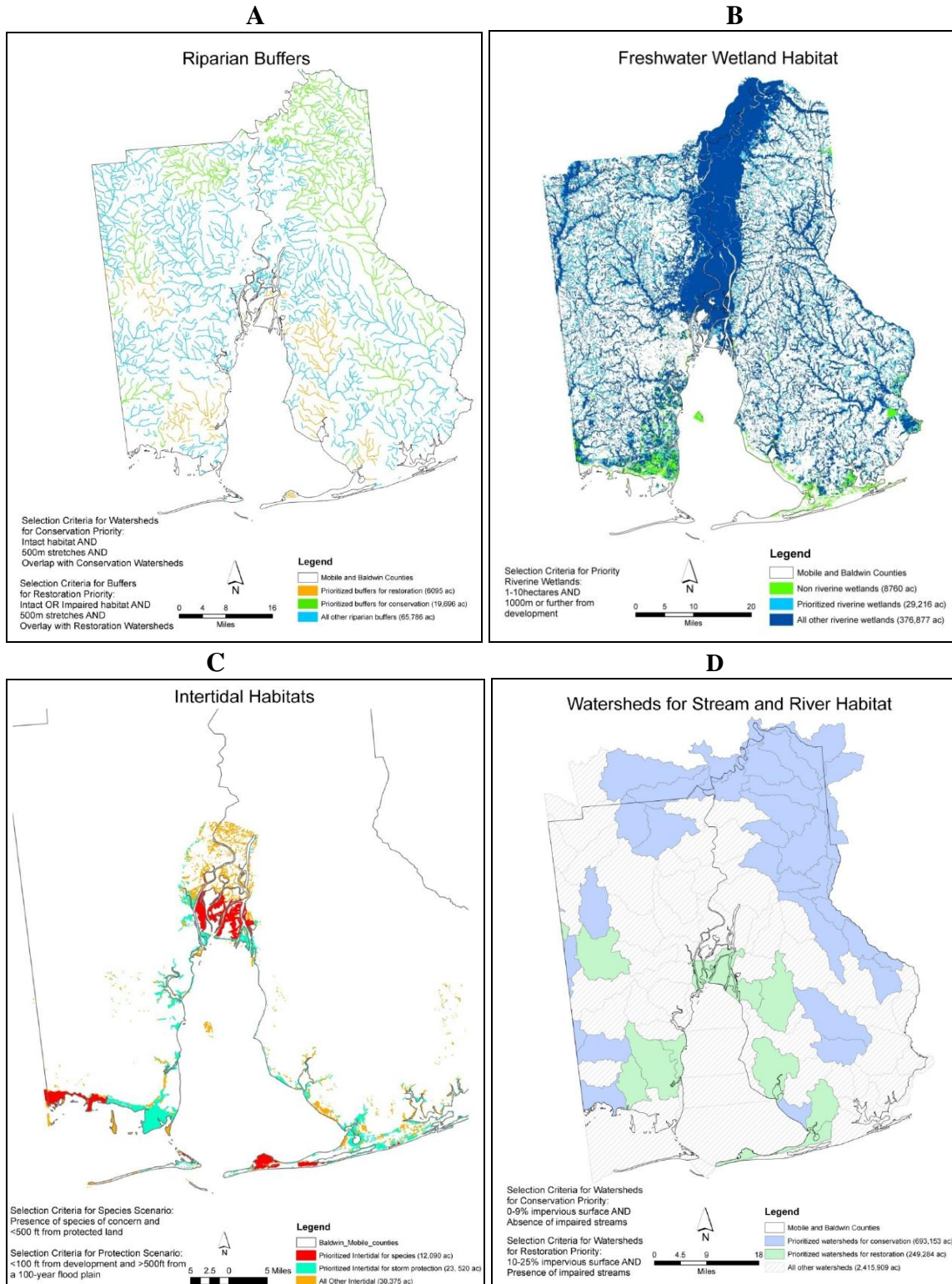
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Figure 3. The Habitat Mapper prioritized four aquatic resource types for Mobile and Baldwin counties: riparian buffer (A), freshwater wetland habitat (B), intertidal salt marshes and flats (C), and watersheds for stream and river habitat (D). Used with permission from Mobile Bay National Estuary Program (MBNEP).

<u>**IMPLEMENTATION**</u>

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Regulatory/non-regulatory programs:
- The Forever Wild program, a state-run program that identifies parcels for conservation use. The HPP tool verifies parcels identified by Forever Wild and informs Forever Wild of parcels containing priority habitat.[1]
- Outputs from the tool help counties identify and obtain funding to protect priority areas within their boundaries using funding from the Coastal Impact Assessment program. This program only awards funding for land protection if the selection of land to protect is supported by a federally-approved plan – maps generated using the Mississippi-Alabama Habitats Tool (MAHT) represents such a federally-approved plan.[1]
- Following the Gulf oil spill, the tool was used to identify critical habitat areas along the Mississippi Sound and Mobile Bay. The clean-up effort's contingency plan from 1997 was reconciled with the updated priority habitat maps developed by MBNEP.[1]
- Research purposes: MBNEP currently has a project underway with the National Aeronautics and Space Administration (NASA) to study land use land cover change throughout Mobile Bay between 1974 and 2008. This study will inform future iterations of priority habitat planning by identifying habitats under transition (wetland to upland or marsh to open water) and areas where habitat types have been stable through time. As a future selection criterion for input into HPP, the NASA work will strengthen the priority habitat patch identification process.[1]

Transferability:
- The method offers potential users a unique example of a prioritization tool designed specifically for habitat.[1]
- However, because the data used are very place-specific, the substantial investment in data mining that is required to build the tool may result in limited transferability of the tool for some users.[1]

Data gaps:
- Threatened and endangered species (including state species of concern) data.[2]
- High resolution salinity regimes data.[2]
- Armored shorelines data.[2]
- Habitat change data.[2]
- The following datasets need to be updated or improved:
  - Protected lands and acquisition boundaries.[2]
  - Construction control lines that do not extend to the edge of the two county boundaries.[2]
  - Inshore and offshore sediment.[2]
  - Bay oysters (only data on commercial or public reefs are available).[2]
  - Submerged aquatic vegetation (SAV).[2]

Barriers:
- Now that support from TNC and NOAA is no long available, MBNEP has limited technical capacity to re-run the tool using new data.[3]
- Funding.[1]
- Marketing the use of the tool.[3]

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- Promoting consideration of the results in political decisionmaking.[3]
- Property rights concerns (i.e., communicating habitat priorities without singling out private parcels).[1]

Future goals:
- MBNEP is currently working to migrate the tool to the NOAA Coastal Data Development Center (NCDDC), which is positioning itself to be the main data repository for the five-state Gulf region and is capable of providing long-term operational support to the Mississippi-Alabama Habitats Tool. The benefit for MBNEP is that NCDDC is knowledgeable about new datasets released for the region and would be able to update data used in the MAHT readily. MBNEP is also currently in the process of incorporating a Biological Condition Gradient (BCG) framework into the tool. Using this framework, the tool will begin to give more consideration to types of data that MBNEP believes best represent ecological conditions (e.g., adding an urbanization layer). MBNEP has hired an outside consultant to help them develop buy-in for the BCG framework and refine it for the Mobile Bay area.[1]
- MBNEP would like to see habitat priorities identified using the tool become widely-used as a source of information on the state of Mobile Bay estuary habitat. The tool could be used during land purchases to further understanding of the ecological value of the land within the surrounding landscape. In this way, the tool could make people more informed about sensitive habitats. The long-term vision for the tool is for it to guide compensatory mitigation projects as well as state environmental projects.[1]
- One challenge to meeting these goals is maintaining the public's desire to continue using the tool. In addition, keeping the tool up-to-date, ensuring that it remains accessible and user-friendly, and keeping people educated about it all remain challenges to keeping the tool mainstream. Increased training, data, time, money, staff, and marketing would all be useful to MBNEP in meeting these challenges.[1]

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[1] Interview on 8/1/2011 with Roberta Swann, Director of the Mobile Bay National Estuary Program.
[2] The Nature Conservancy, National Oceanic and Atmospheric Administration, and Mobile Bay National Estuary Program. 2009. Prioritization guide for coastal habitat protection and restoration in Mobile and Baldwin counties, Alabama. Accessed from: http://habitats.disl.org/HabitatMapperGuide.pdf.
[3] Feedback provided on 4/26/2012 by Roberta Swann, Director of Mobile Bay National Estuary Program.

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