MIWILDhab2

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Introduction and Developmental Background

Providing adequate amounts of appropriate habitat for species of interest is one of the many goals of forest owners and managers. Quality and quantity of habitat must be assessed, and its availability must be balanced with other identified needs from forests. Managers need tools to assess habitat trends and evaluate tradeoffs associated with existing habitat conditions and habitat management alternatives. The USDA Forest Service has spearheaded the creation of computer-based tools to help managers accomplish these tasks through the NED development effort. The NED software comprises a set of tools that enable a user to identify and inventory specific properties and management goals for those properties, then have the computer evaluate how well present or future conditions may meet those identified goals (Twery et al. 2005). MIWILDhab2 is an independent program from which the knowledge it contains will be added to the resources of forthcoming NED programs.

The Wildlife Division of the Michigan Department of Natural Resources required a planning tool which would allow the user to assess impacts of forest management

activities on wildlife and their habitats. They were familiar with NEWILD but wanted a tool specific to the species and habitats of Michigan. The resulting program, MIWILDhab was developed in a relatively short time, approximately 10 months. The information in the species/habitat matrices were the result of a rapid literature review and frequent discussions between the two biologists working on the project. The original database was biased towards the forested habitats of the Upper Peninsula of Michigan. MIWILDhab was subsequently used by MDNR Wildlife Division to assess management activities. It has also been used by the Michigan Gap Analysis Program (GAP) for development of their products.

Since MIWILDhab was first developed, the Forest Management Division of MDNR has changed their land-cover classification. The land cover types used in MIWILDhab were forestry driven and the State has since moved to a new classification developed for The Integrated Forest Monitoring Assessment and Prescription (IFMAP) project. The land cover classes in IFMAP were developed from classification of State-wide Landsat TM imagery. The approximate number of land cover classes in MIWILDhab was 40 compared to approximately 140 classes in IFMAP. Because IFMAP included many more additional classes, and the original literature reviews in MIWILDhab were limited, the decision was made to refine MIWILDhab to utilize the classes developed for IFMAP, incorporate additional literature, and have a greater spatial application than just the Upper Peninsula of Michigan.

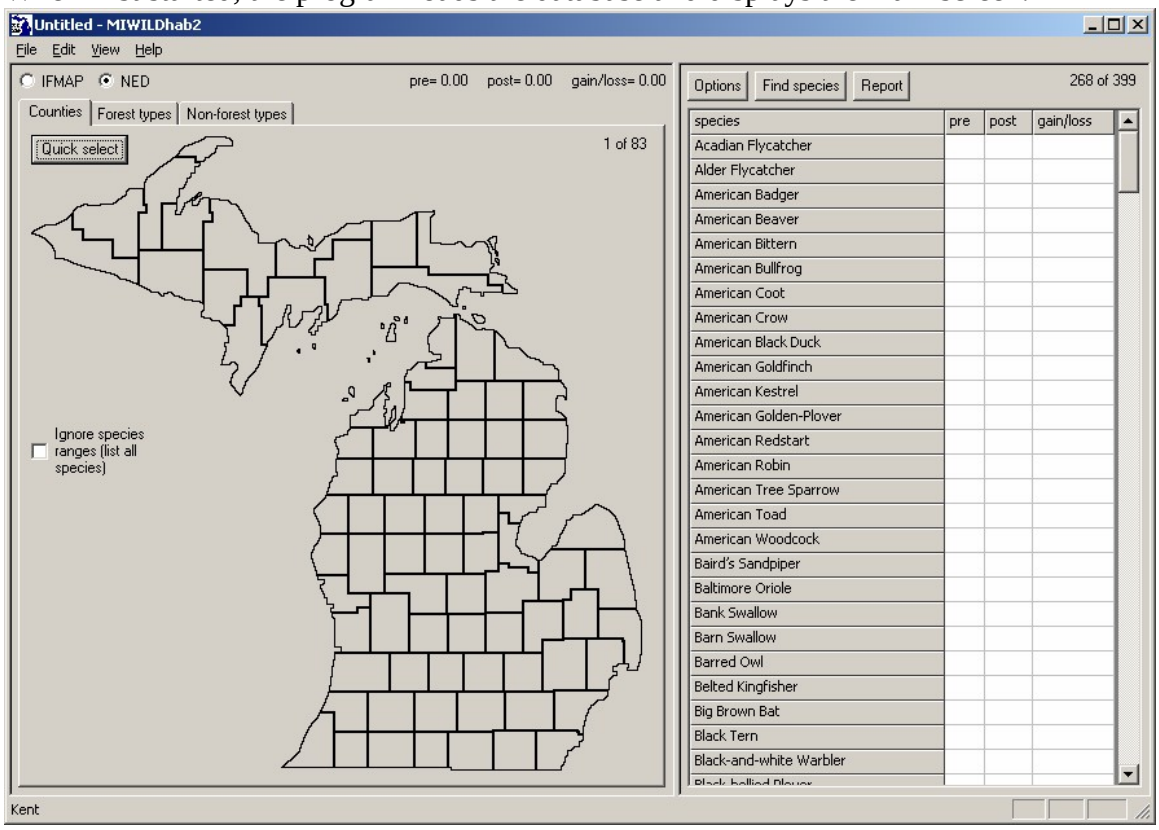
MIWILDhab2 was developed as a successor for the MIWILDhab program. It contains information and assessment tools for individuals interested in birds, mammals, reptiles and amphibians in Michigan. The wildlife information section provides data on wildlife species distribution by county, habitat requirements, a habitat use matrix, and citations from pertinent literature. The MIWILDhab2 program includes capabilities for inputting data for comparing pre-treatment and post-treatment habitat conditions. This provides managers with a tool to assess long-term habitat trends and evaluate trade-offs associated with different habitat management alternatives. It is intended to be part of a decision support system, providing information for resource managers at multiple spatial and temporal scales, thus providing context for making site-level decisions based on higher level habitat trend and condition.

Information sources

MIWILDhab2 was developed based upon additional literature review and the incorporation of comments from the Michigan Gap project. Additional literature reviews were conducted by faculty and students at Grand Valley State University. Sources include the Birds of North America species accounts (American Ornithologists Union), the Mammalian Species accounts (American Society of Mammalogists), and pertinent research articles. The literature review was not comprehensive but included many more additional sources than the original software.

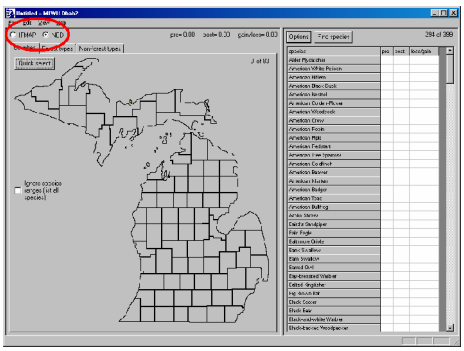
How to use the MIWILDhab2 program

When first started, the program loads the database and displays the main screen:

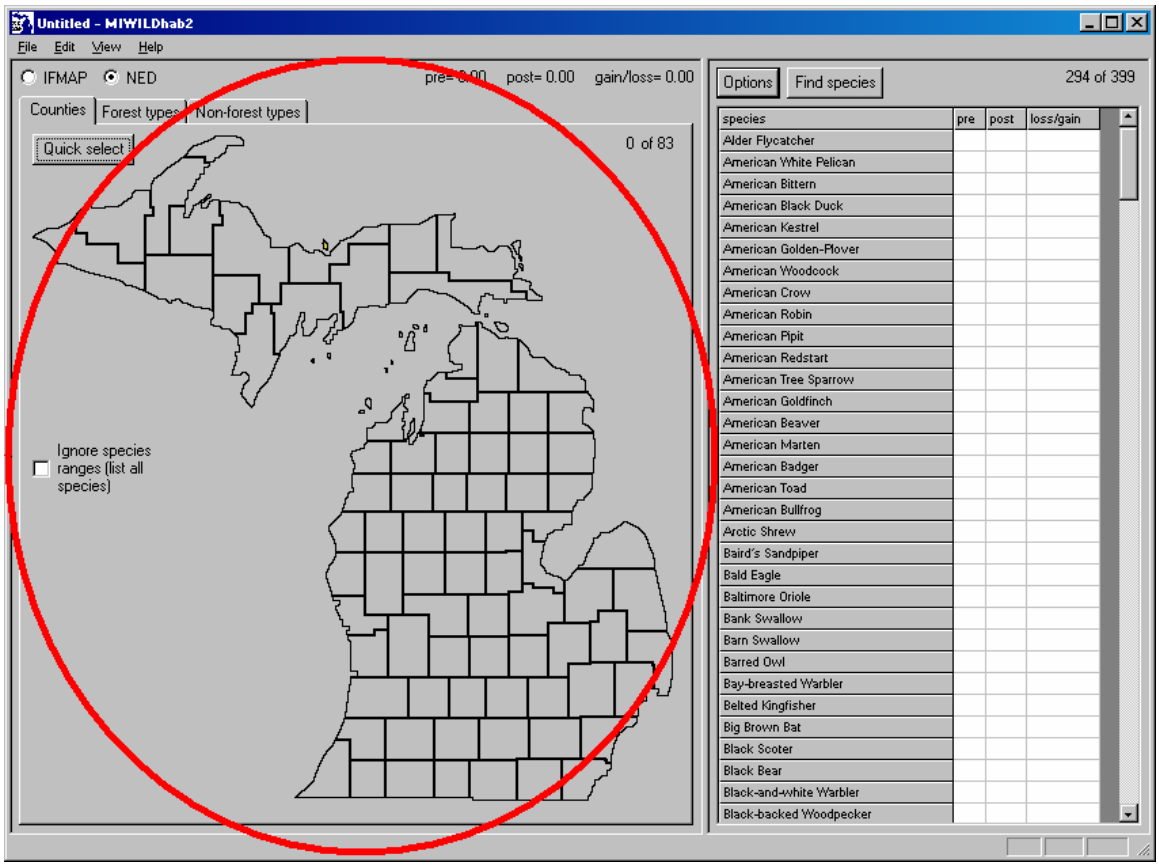


The left side of the screen has tabs to display counties, forest types and non-forest types. On the right is the species list. As the user selects counties and enters data for the cover types on the left, the species list on the right will automatically change.

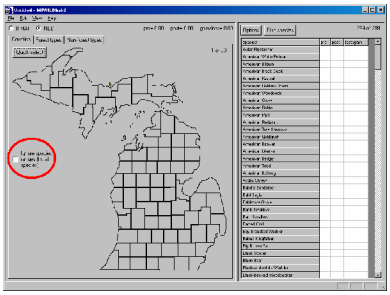
The user has the choice of using IFMAP or NED cover types. To choose the cover types, select one of the radio buttons at the top left of the screen. The selection affects the cover type list displayed on the Forest and Non-forest screens. For a list and description of IFMAP cover types see Appendix A. For descriptions of the NED forest types see Appendix B.



The County selections:

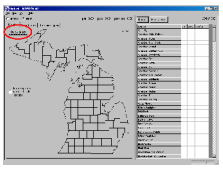


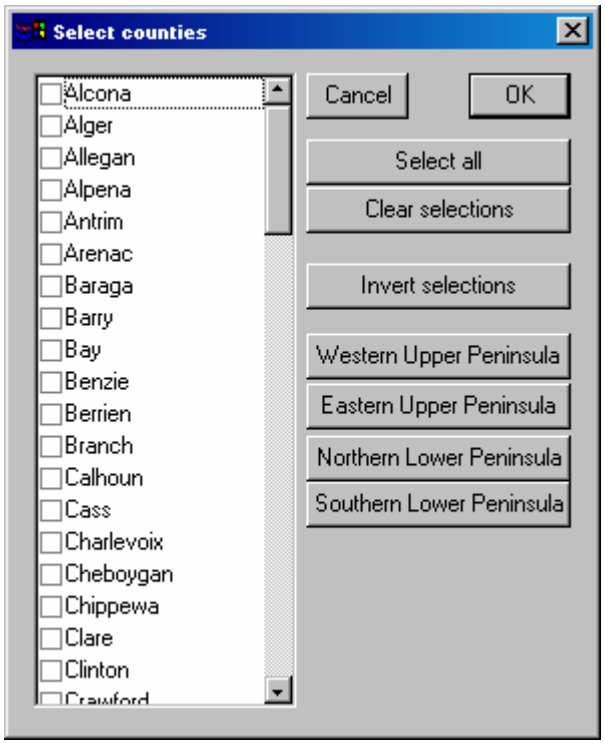
The first screen displayed on the left is the state county map. The county maps are used for species distributions – what species may be located in that particular county. When you click on a county, the name appears on the status-bar at the bottom of the screen. To select a county, double-click it on the screen. A selected county will be gold colored. The number of selected counties will be displayed in the upper-right corner of the screen. You can display a county information page by using the "Help" menu and selecting the second item, or by pressing the [F3] key. The page will list all species found in that county.



The displayed species are limited to those found in the counties selected. If the user wishes to ignore species ranges and include all species in MIWILD for analysis, they can check the "Ignore species ranges" checkbox.

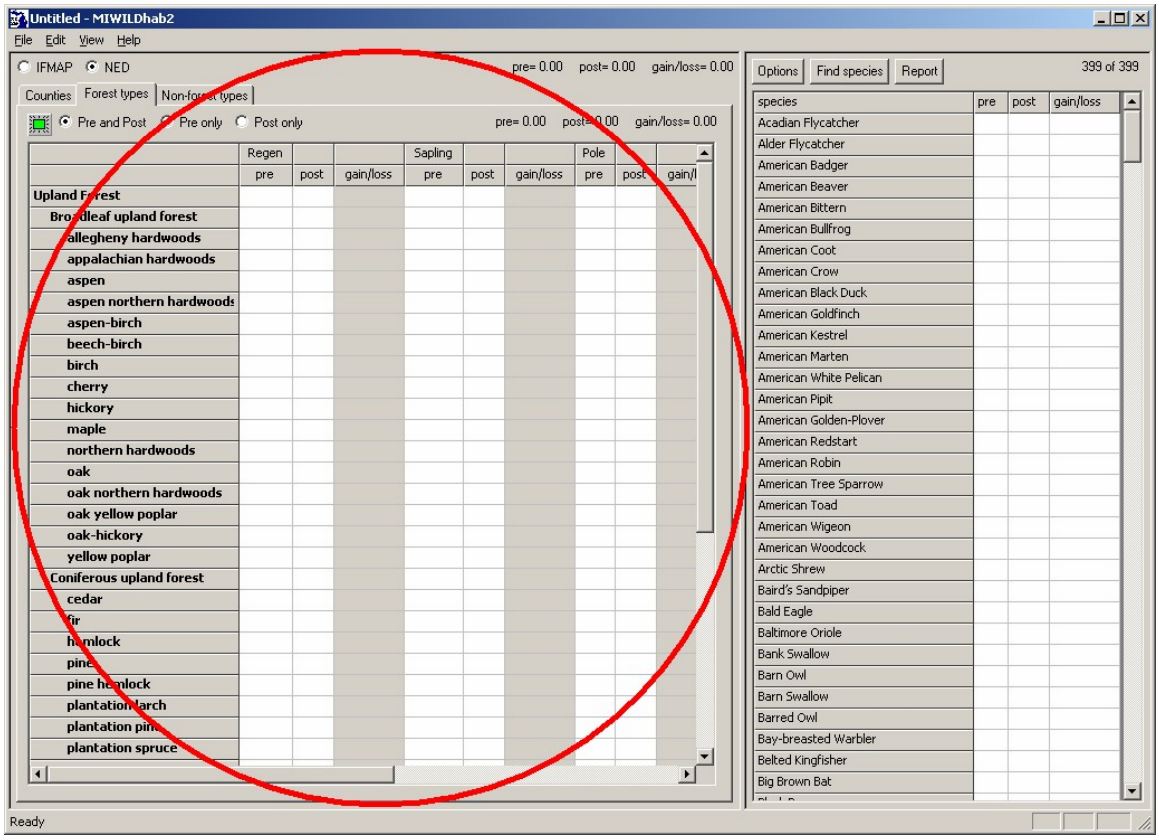
The  button on the county screen will display the following dialog:





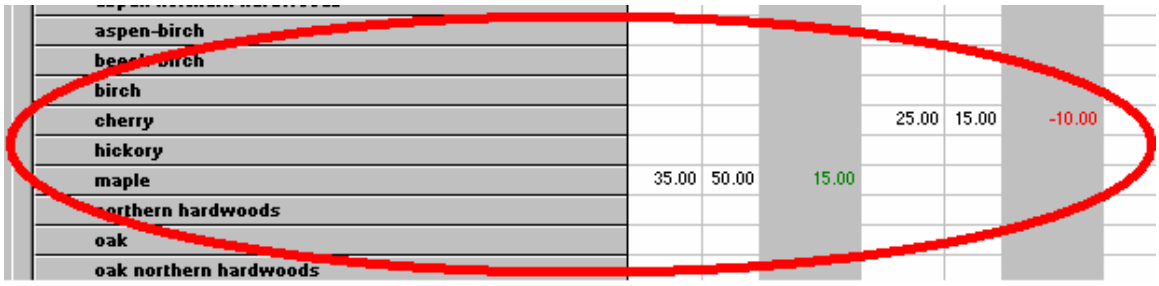
The counties are listed alphabetically and the user can select individual counties using the checkboxes. The user can also use the buttons on the right to modify the selected counties. The first two buttons will select all or clear all selections. The  button will check all counties that are not currently selected and un-check all counties currently selected.

The Forest types screen:



The second tab on the left-hand side of the main screen will display the forest types. When a forest type is selected on the grid, an information page for that cover type can be displayed by using the "Help" menu and selecting the second item, or by pressing the [F3] key. The information page will list all species associated with that forest type.

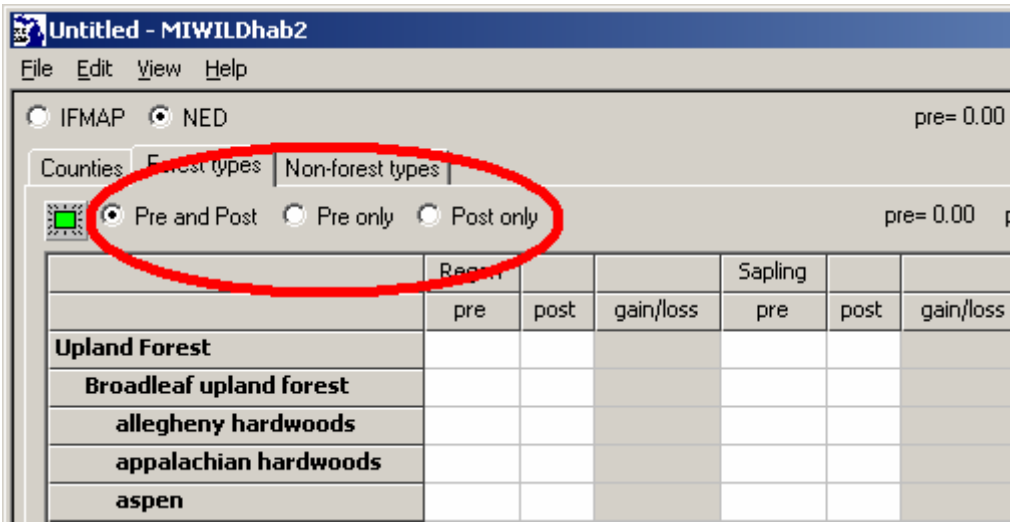
The white cells on the forest type screen are editable and the user enters area values for pre- and post- conditions for each forest type/size class combination. As values are entered, the "gain/loss" column for the size class is updated. For example if pre- and post- values for sapling size cherry are 25 and 15, and the pre- and post- values for regeneration maple are 35 and 50, the entries would look like this:



When entering data you can use the '+' or '-' key to add or subtract to the existing value in the cell. For example, if the cell already has the value 132 and you enter "+72" the cell will contain 204. After that, if you enter a "-49" the cell's value will be 155.

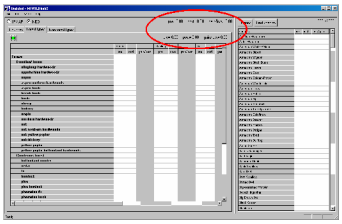
If you have both the pre and post values being displayed, the gray "gain/loss" columns change automatically as the user enters data. Red values indicate a loss and green values a gain in area for the forest type. As changes are made, the wildlife species list on the right will change. Those changes and the species list itself will be discussed below.

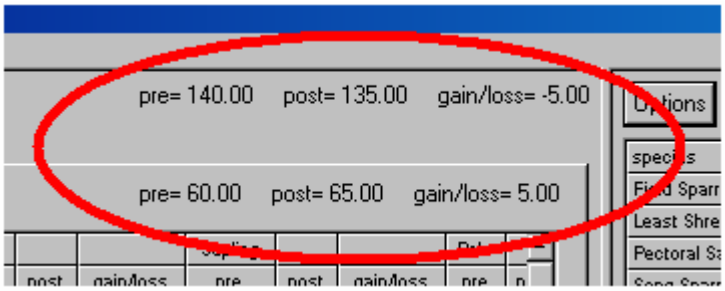
At the upper left of the forest type screen there are selections for what is displayed in the grid.



When entering data, it may be confusing to have both the pre and post values being displayed. Choosing to display either the "Pre only" or "Post only" radio button will simplify the screen. The depictions in this manual display both pre and post values.

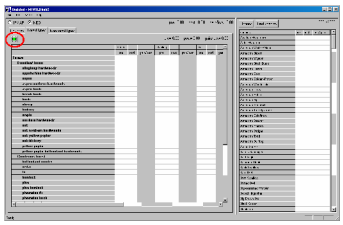
Near the top of the screen are two sets of totals:

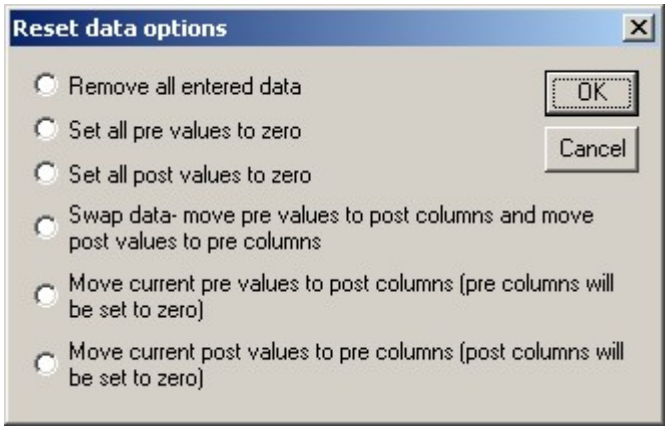




The lower set of values (in the Forest-type screen itself) contains the totals for all forest types/size classes. The values at the top are totals for both the Forest types and Non-forest types screens.

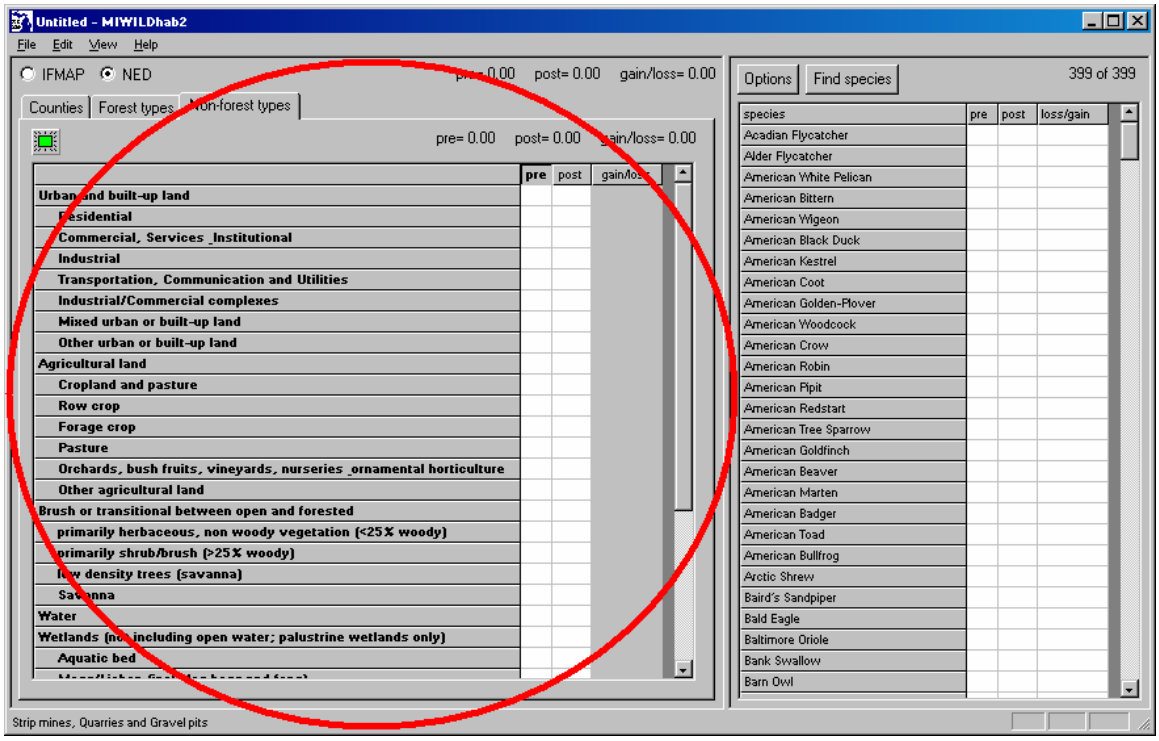
The  button, found in the upper-left of the screen, will display the following dialog:



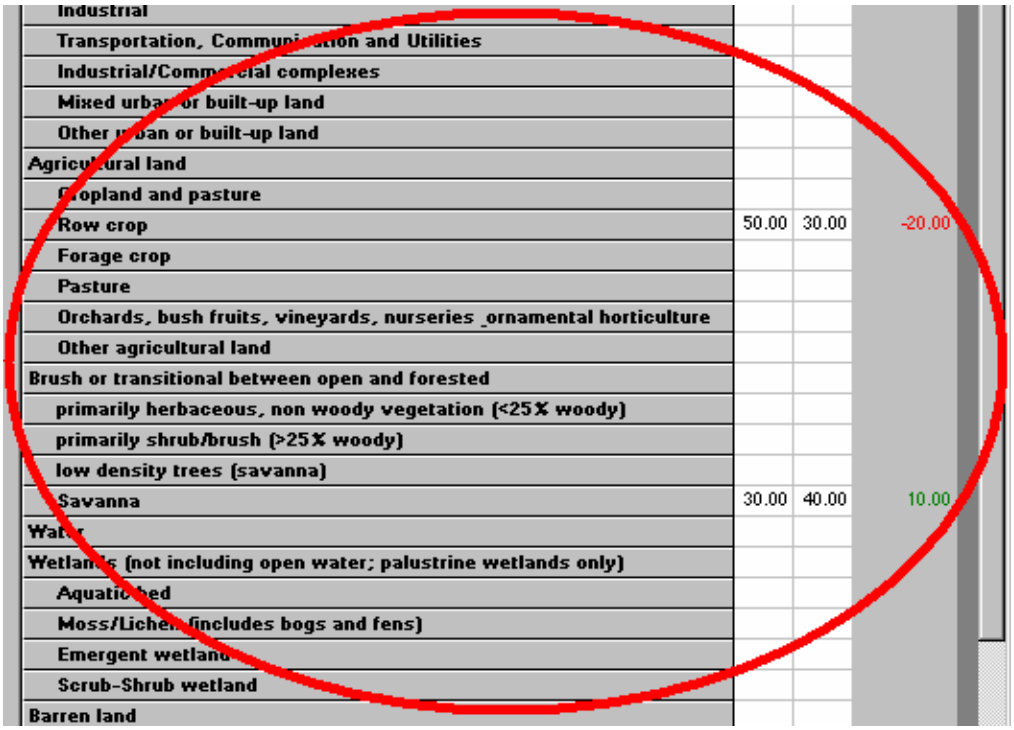


There are several choices for moving or zeroing out values in the grid. The first three options will remove or zero-out entered data. The "Swap data" option will switch values so that the current pre- values will become the new post- values and the current post-values will become the new pre- values. The last two options will swap data, and then zero either the pre- or post- data columns.

The Non-forest types screen:



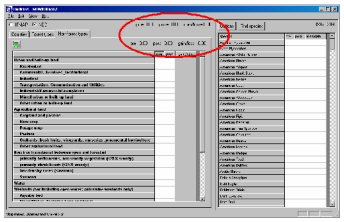
The last tab on the left side of the main screen will display the non-forest types. The white cells are editable and the user can enter area values for pre- and post- conditions for each non-forest type. As values are entered, the "gain/loss" column is updated. For example if pre- and post- values for Row crop are 50 and 30, and the pre- and post- values for Savanna are 30 and 40, the entries would look like this:

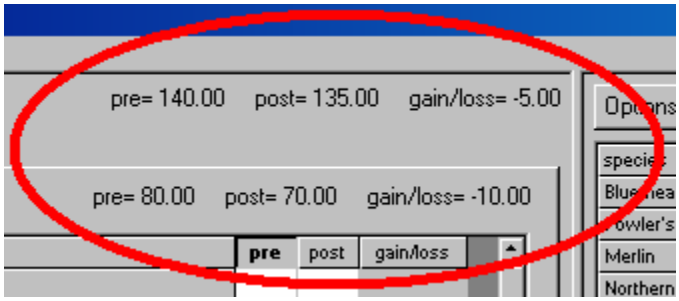


Industrial			
Transportation, Communication and Utilities			
Industrial/Commercial complexes			
Mixed urban or built-up land			
Other urban or built-up land			
Agricultural land			
Cropland and pasture			
Row crop	50.00	30.00	-20.00
Forage crop			
Pasture			
Orchards, bush fruits, vineyards, nurseries _ornamental horticulture			
Other agricultural land			
Brush or transitional between open and forested			
primarily herbaceous, non woody vegetation (<25% woody)			
primarily shrub/brush (>25% woody)			
low density trees (savanna)			
Savanna	30.00	40.00	10.00
Water			
Wetlands (not including open water; palustrine wetlands only)			
Aquatic bed			
Moss/Lichen (includes bogs and fens)			
Emergent wetland			
Scrub-Shrub wetland			
Barren land			

The gray "gain/loss" columns are automatically filled in as the user enters data. Red values indicate a loss and green values a gain in area for the habitat type. As changes are made, the wildlife species list on the right will change. Those changes and the species list itself will be discussed below.

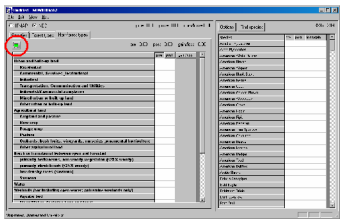
Near the top of the screen are two sets of totals:

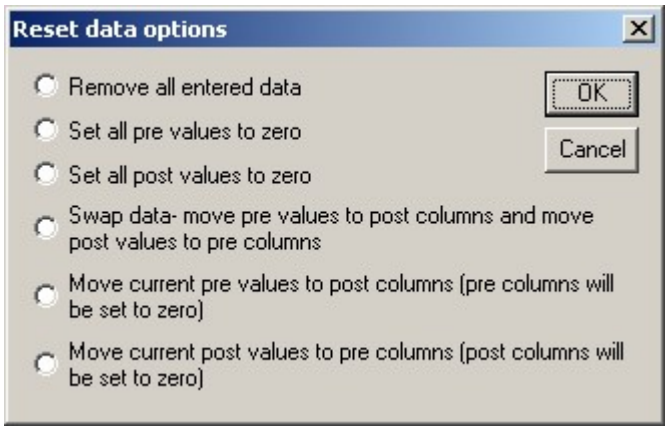




The lower set of values (in the Non-forest-type screen itself) contains the totals for all non-forest types. The values at the top are totals for both the Forest types and Non-forest types screens.

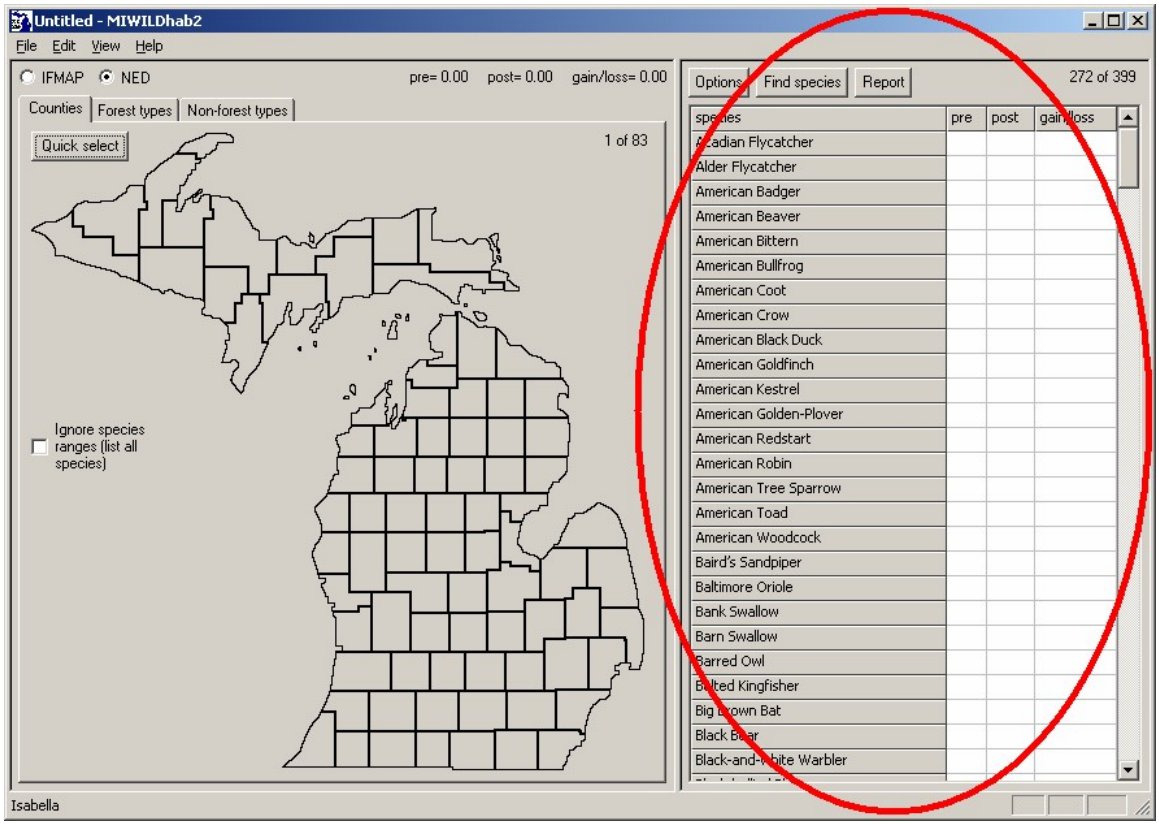
The  button, found in the upper-left of the screen, will display the following dialog:





There are several choices for moving or zeroing out values in the grid. The first three options will remove or zero-out entered data. The "Swap data" option will switch values so that the current pre- values will become the new post- values and the current post- values will become the new pre- values. The last two options will swap data, and then zero either the pre- or post- data columns.

The Species List screen:

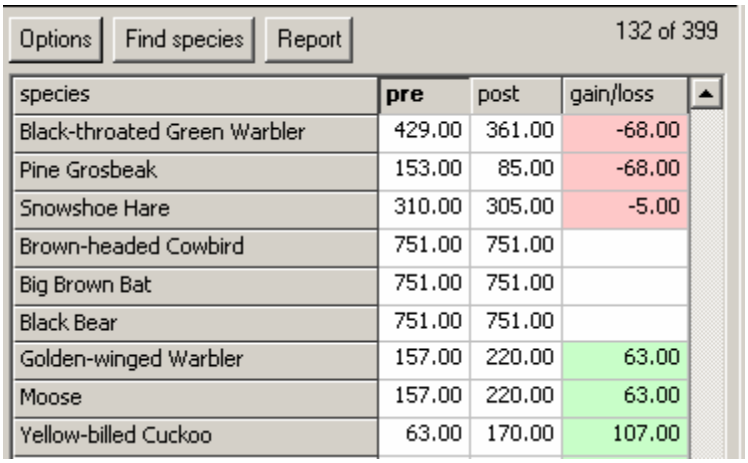


The species list is on the right side of the screen. There are 399 vertebrate species in MIWILD, 22 amphibians, 30 reptiles, 287 birds and 60 mammals. This is a fairly extensive list and includes not only year-round residents like raccoons but also seasonal residents like neo-tropical migrants that breed in the state (e.g. Scarlet Tanager), a few that only winter in Michigan (e.g. American Tree Sparrow), and those species that may briefly stop in Michigan on migration between wintering and breeding grounds (e.g. numerous shorebirds).

The user makes no entries in this table. The changes are made automatically as counties are selected or as data is entered into either the Forest or Non-forest screens. The numbers at the top-right of the screen are the number of species being displayed in the table.

An information page can be displayed for each selected wildlife species by accessing the Help Menu or by simply pressing the [F2] key. The page is an HTML file and is displayed in your default browser. The information page includes pertinent literature relating to species habitat requirements. The information page also contains what we call a "rule". A rule is a verbal statement depicting the habitat requirements of the species. In MIWILDhab2 there are two rules for each species – one based on the IFMAP

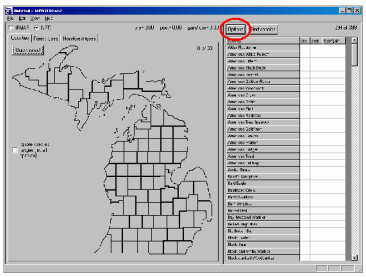
classification and the other the NED classification. A complete list of potential cover types used by the species is included after the rule.
Depending on what has been entered, the species screen may look like this:

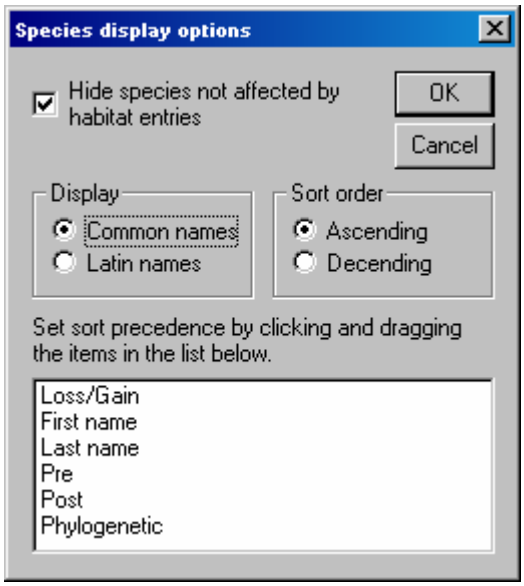


species	pre	post	gain/loss
Black-throated Green Warbler	429.00	361.00	-68.00
Pine Grosbeak	153.00	85.00	-68.00
Snowshoe Hare	310.00	305.00	-5.00
Brown-headed Cowbird	751.00	751.00	
Big Brown Bat	751.00	751.00	
Black Bear	751.00	751.00	
Golden-winged Warbler	157.00	220.00	63.00
Moose	157.00	220.00	63.00
Yellow-billed Cuckoo	63.00	170.00	107.00

The pre and post columns contain the total values from the Forest and Non-forest grids for those habitats associated with that species. The last column is the difference between the pre and post columns. Cells with red background are species that have lost habitat. Cells with a green background show gains in habitat. White cells are species that have no loss or gain in available habitat area.

The Options button will display the following dialog:

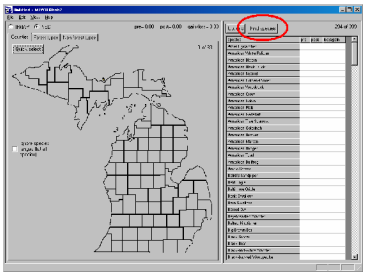


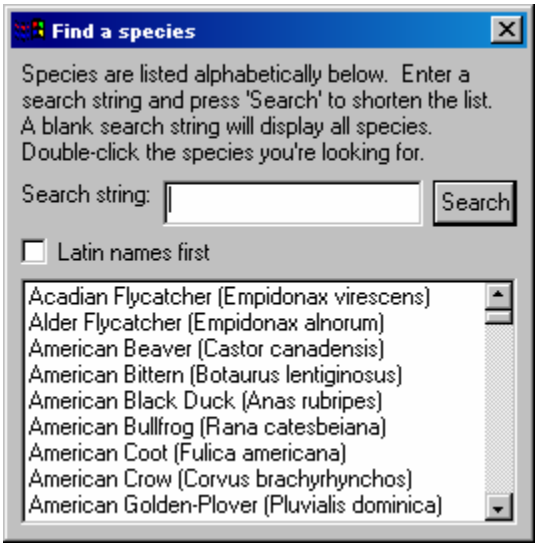


The "Hide species not affect by habitat entries" button is used to remove species from the list that are not associated with habitats that have entries in either the Forest types or Non-forest types screens. If this is un-checked, all species are listed whether or not they are affected by the habitat entries.

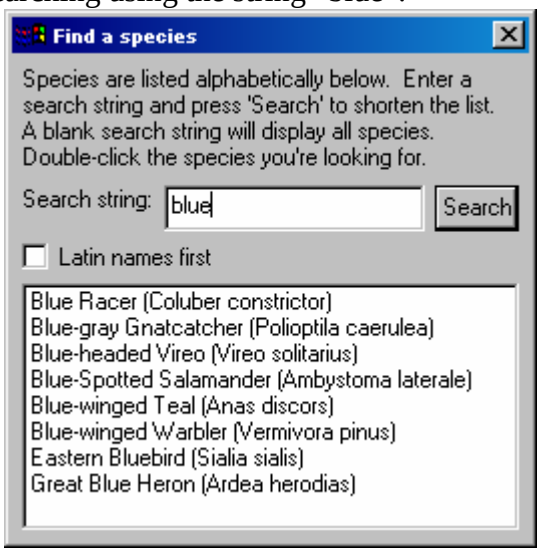
The list at the bottom of this dialog affects how the species list is sorted. The species are first sorted by the top item in the list (in this case, "Loss/Gain"). Species that have the same value will be sorted by the second item on the list, and so on. To change the order of the sort items, click and drag them to new positions.

The Find species button will display the following dialog:



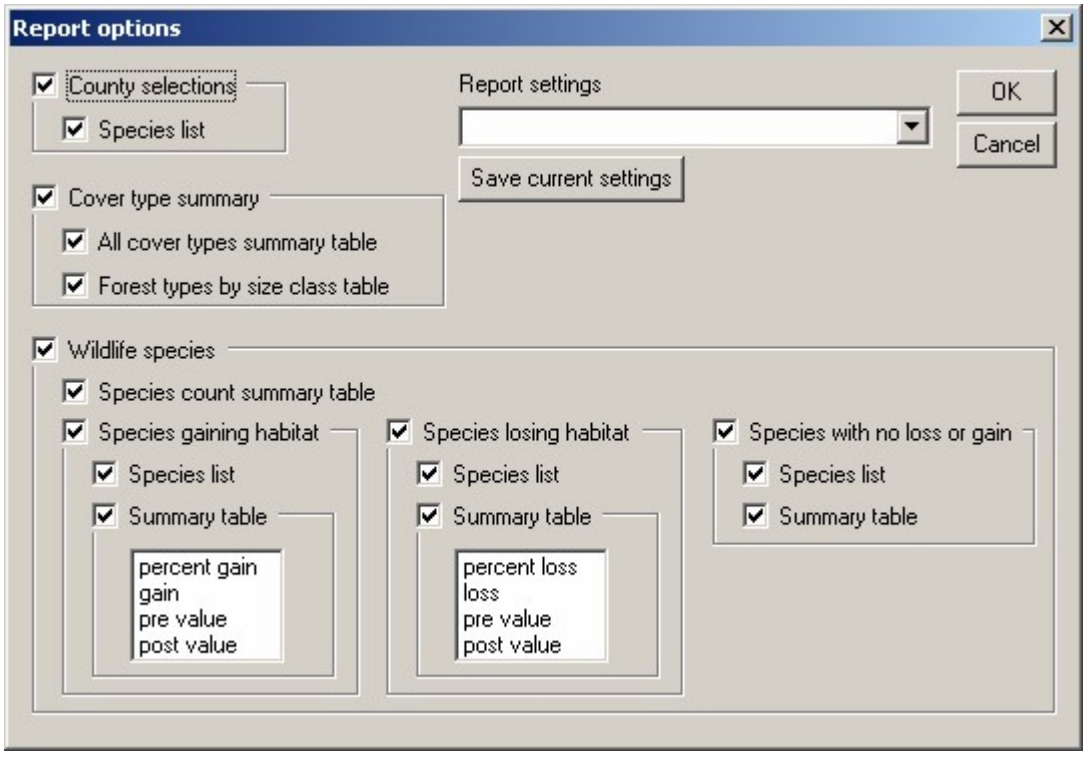


When the search string is empty, all species will be listed in alphabetical order. Enter a search string and press the Search button to display a subset of species. For example, here are the results of searching using the string "blue":



Any species containing the string will be displayed. When you find the species you want, double-click it in the list and it will be found on the main screen. You may enter any string, and matches will be found using either the common or latin name.

The Report button will generate an HTML report. The following dialog will be displayed



There are options for including or excluding elements of the report. Only a few of these options will be discussed below. The rest will be apparent after a few reports are generated. When the OK button is pressed, the report will be generated and displayed in the default HTML browser.

If the summary table for the Species gaining habitat or Species losing habitat is selected, there are list boxes containing the list of columns in the table. The columns can be re-arranged by clicking and dragging to new positions. This also controls how the contents of the table are sorted. The rows are first sorted by the top item in the list (in this case "percent gain" and "percent loss"). Table rows that have the same value will then be sorted by the second item on the list, and so on.

At the top of the dialog there is a combo-box that contains different report settings. The list will always contain "Full report with everything", "Last report settings" and "Nothing selected". To save the dialog options use the Save current settings button. An edit-box will be displayed where you can enter a name for the dialog selections. The new dialog settings will be available in the combo-box whenever this dialog is displayed. To rename a previously saved set of options, pick it from the combo-box. An edit-box will be displayed where the name can be changed. To delete a previously saved set of options, pick it from the combo-box and empty the edit-box containing the name.