Abstract

Moore, Angela Caroleen. Development of an Interactive ArcIMS Prototype for the National Park Service Inventory and Monitoring Program (Under the direction of Dr. Hugh Devine.)

The National Park Service Inventory and Monitoring Program has a need to distribute collected information to users who do not have access to or significant experience with GIS software. Additionally, in the monitoring phase of the program, there is a need to update tabular data on a regular basis. The Valley Forge National Historic Park, Comprehensive Bird Survey was used to develop an interactive ArcIMS prototype. The Internet mapping prototype application has several functions. It displays spatial and non-spatial data stored in an extensive relational database, allows updates to tabular, non-spatial data, carries out advanced calculations, and displays spatial data based on queries to the non-spatial database. The chosen presentation medium for this mapping service is a common, JavaScript - enabled web browser such as Internet Explorer, Mozilla Firefox, or Netscape. The prototype can be viewed at http://152.1.32.120/vafobird/ . The application uses ESRI's ArcIMS 9.0 HTML viewer integrated with HTML forms, MySQL, PHP, and JavaScript to produce a comprehensive online Internet map service and database interface capable of linking between the spatial and non-spatial data. The prototype can be used as a model for developing other applications, and has extensive capabilities in customization.

Development of an Interactive ArcIMS Prototype for the National Park Service Inventory and Monitoring Program

by
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Biography

The author is from Franklin, NC. She left Franklin at 16 to finish high school at the North Carolina School of Science and Mathematics. Graduating in 1999, she continued her education at NC State University. She graduated in 2003 with a Bachelor of Science in Parks, Recreation, and Tourism Management with a concentration in Natural Resources. She then continued her studies at NC State, pursuing a Masters of Science in Natural Resources.

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1. Introduction

Internet mapping has advanced significantly since the simple display of static maps with basic HTML. (Ball 2005). Dynamic maps can now be displayed on the web with many of the same functions as desktop GIS software. As the needs for data distribution increase along with the capabilities of Internet mapping, the Internet has become a growing forum for the display, distribution, and analysis of spatial data (Dahanayake et al 2003). The National Park Service's Inventory and Monitoring Program (I&M Program) is no exception. The aim of the I&M Program (http://science.nature.nps.gov/im/index.htm 07-2005) is to catalog natural resources and vital environmental signs within the parks by tracking the physical, chemical, and biological elements that are indicators of the health and of the park resources (NPS(1) 2005). There is a need to deliver I&M data to novice GIS users for display and basic query, as well as more experienced GIS users who will update the database. By integrating a web-based Database Management System, MySQL, with ArcIMS, an Internet Map service, a prototype meeting both these needs has been developed. Interfaced with JavaScript and PHP, a hypertext preprocessing language, the application offers the user a familiar medium, the Internet, for viewing, querying, and updating data. The Interactive ArcIMS prototype developed uses Valley Forge National Historic Park's Comprehensive Bird Survey. This project is designed to demonstrate a variety of capabilities available to developers in creating an integrated web-based map service. The developed prototype displays spatial and non-spatial data, allows updates to tabular, non-spatial data, and carries out complex calculations. Additionally the application allows the user to query non-spatial data to display the spatial data on the ArcIMS map, and query the spatial data for additional non-spatial attributes.

2. Literature Review

2.1 Internet Applications

Although the Internet was originally a text-based communication instrument, it has developed into a tool capable of communicating multimedia, commerce, and analysis applications (Kahkonen et al 1999). Many organizations have recently begun to experience the efficient information exchange and work cooperation that is capable through the Internet. As a result, a continual development of better and more adept tools are being created to handle the increased demand for web-based information systems (Dahanayake et al 2003). Web applications are under an extreme amount of pressure to change and adapt to quickly developing technology, often causing current techniques to be inadequate. The result is a variety of new applications as well as ad-hoc methods for meeting the needs of the end-user (Bommel 2003).

2.2 GIS and the Internet

GIS assists in managing data by providing a venue to organize, access, retrieve, and manipulate spatial information (Longley et al 2002). Often this process is carried out by individual end-users with isolated desktop GIS installations. A progression from online data distribution, to display of static maps, to development of web platforms to host data, has allowed the Internet to meet a new set of needs for the GIS end-user (Kahkonen et al 1999). For example, in 2001, the United States Geological Survey began work on *The National Map,* an online interactive GIS that can be accessed with nothing but a web browser (http://nmviewogc.cr.usgs.gov/viewer.htm (07-2005)). The project was developed in order to meet the needs of the United States for up-to-date, base geographic data and maps (ESRI 2005). The National Map web interface allows users to search for a location, extract information for geographic areas of interest, download the desired data for a user defined area, or print a map they have created. (USGS 2005) Since the included data is seamlessly presented through the National Map, users have access to multiple data layers at a scale appropriate to their region or project. The Internet accommodates significant increase in use, provides a familiar interface, is compatible with various operating systems, allows significant customization and does not require specialized software (Longley et al 2002). MapQuest, one of the Internet's first successes, enabled users completely unaware of the concepts of GIS, to access a flat map file and sensible directions to their desired location (Ball 2005). Since then, Internet mapping has branched out into a variety of fields including environmental monitoring, tax parcel display, sales of remotely sensed imagery, and economic development. For example, the Kingsport Economic Development Partnership (KEDP), created an online GIS to display basic cartographic layers for the city, with the purpose of allowing potential investors to assess site availability before making a visit in person (Kidd 2005).

2.3 Web Development Software

Open source web development software such as Apache, MySQL, and PHP, have made it relatively easy for many users to host and set-up web servers. All websites must originate from a web server. A web server is software program that uses Hypertext Transfer Protocol (HTTP) to serve files that are interpreted and displayed as web pages to an end-user or client. Common web servers include Apache, the most widely installed web server, as well as Internet Information Server (IIS), and IBM's Lotus Domino servers (Search Web Services 2005). Each of these software packages allows information stored on a server or a computer to be accessed on the internet. Setting up a web server will allow HTML and client side script, such as Javascript, to be hosted from the server or computer on which the software is installed. Hypertext preprocessing languages such as PHP and ASP interpret the appropriate scripts, written side by side with the HTML in a web page, before the page is sent across the web to the end-user (Search Enterprise Linux 2005). These server-side scripting languages work well for dynamically accessing information stored in a Database Management System. Database Management Systems provide persistent storage, allow the data to be queried, allow user define databases and database schemas, and have concurrency control (Garcia-Molina 2002). Examples of Database Management Systems include MySQL, Oracle, and PostgreSQL. In order to extend the functionality and capabilities available to the web pages hosted from a web server, other software can be integrated with the web server. A common combination of applications to add to a web service is a Database Management System and some type of hypertext preprocessing language and interpreter. The hypertext preprocessing scripts can connect to the Database Management System during server side processing to query, edit, and display information from the database. For example, an online banking system using hypertext preprocessing and a Database Management System, would be able to have a single webpage would be able to display different account information depending on which user logged in. If "user1" logged in then during hypertext preprocessing the webpage would query the database and display information for "user1's account", but if "user2" logged in, it would be "user2's account" that was displayed." Since the connection is made server side, the user information and passwords needed to access the Database Management System are only visible on the server side and not to the client. A common example of this is installing the Database Management System MySQL and the hypertext preprocessor PHP. MySQL is a relational database management system that allows several related tables to be stored within a database. PHP is a recursive acronym that stands for PHP hypertext preprocessing. Installing PHP allows the webpage developer to insert PHP scripts side by side with HTML in the webpage source code. (PHP 2005) The PHP scripts can be written to dynamically query the MySQL database, depending on the variables sent to the PHP script. This allows for a single page of source code to display a dynamic set of information on the web.

2.4 Integration of GIS with Database Management Systems

Integrating GIS with a Database Management System allows for spatial data to be stored in its native environment, while text and numeric attribute data is managed by a system much more adept at handling complex relationships, constraints, and tabular query and display. For example, the National Park Service has developed a link between ArcGIS and Microsoft Access to allow users to select features in ArcMap 9.0 and link to tables, queries, forms, or reports in Microsoft Access (NPS(3) 2005). The concept of creating a link between a DBMS and GIS applications has also found its way to the Internet. An example of this is the St. Johns River Water Management District's Regulatory Permit Search Tool. On a somewhat large scale, this application has built a customized query tool into the GIS based ArcIMS HTML viewer, allowing users to select features of interest on the map as well as view attribute information. [1]Oracle, a Database Management System, and [2]ArcSDE, software for accessing large multi-user spatial data, are used to store the tabular and geo-spatial data, as opposed to ArcIMS housing the data. This system meets the needs of the project to create and deliver a large number of maps to a substantial user base. To allow customization of the tools and functions available, Active Server Page (ASP) and Javascript were built into this integrated application (ESRI(2) 2005). The wide availability of customization options is one of the many advantages of development of GIS applications for the Internet (Longley et al 2002).

2.5 GIS in the National Park Service Inventory and Monitoring Program

The aim of the National Park Service Inventory and Monitoring Program (I & M Program) is to examine natural resources and vital signs within the park by tracking physical, chemical, and biological elements that are indicators of the health and the state of park resources (NPS(1) 2005). Baseline inventories aid park managers by providing important information about the presence and location of natural resources including plants, animals, and water resources. The extensive information acquired through natural resource monitoring can help develop management plans, research, education and promotion of public understanding of park resources (NPS(1) 2005). The I&M Program is in the process of performing inventories in approximately 270 National Park System units with natural resources of importance. Part of the goal of

[1] Oracle is a trademark of the Oracle Corporation.
[2] ArcSDE is a trademark of ESRI.

these inventories is to detail the distribution of species within the parks. This includes the base cartographic data necessary for referencing survey information (NPS(2) 2005). GIS allows the display and analysis of the distribution and relative abundance of species within a given park. The Internet presents itself as an excellent medium for managing and displaying the Inventory and Monitoring Information that is collected. The public, as well as interested park employees, will have greater access to I&M data because no software outside of a simple web browser is needed to query, edit, or display the desired information. Web based applications also have the capability of bringing much of the functionality of a desktop GIS to mobile devices where the Internet is accessible (Stockus 1999). The integration and customization of these applications with additional software such as a hypertext preprocessor and a database management system would allow for live updates as fieldwork is carried out, if Internet access is available.

2.6 Adding Functionality to ArcIMS

There are several ArcIMS web pages being hosted on the web. Although some of these applications have been highly customized, others contain only out of the box functionality. For example Gallatin County Montana has displayed their wells and septic systems with an ArcIMS. This application contains very little customization. A few links to websites have been hard coded into the frames on the right side, and some data has been geocoded. Other than this the application simply utilizes the functionality and the graphics provided by ArcIMS. Some of these built in functions include zooming in, panning, printing, and The page can be found at http://mapserver.giac.montana.edu/maps/arcims/website/welsep/viewer.htm?Title=S eptic%20Assessment%20-%20Location%20of%20Wells/Septics (July 2005). Other ArcIMS applications have been highly customized to meet very specific needs of the end user. This customization often involves incorporating additional tabular data, customized tools, or new graphics. The Indiana Geological Survey has created a ArcIMS Atlas for Indiana. This application has customized functions, a highly customized graphic-user interface, and uses the Java viewer. One customized function developed for this application is a custom printing function that allows for the user to print larger maps, than the built in ArcIMS capabilities allow. Additionally a custom file organization and legend have been put in place, as well as, hard coded hyperlinks to the Indiana Geological Survey home page. The Indiana Atlas application can be found at http://129.79.145.5/arcims/statewide/viewer.htm (July 2005). As mentioned before the St. Johns River Water Management District has also developed a highly customized ArcIMS. This application integrates ArcSDE, Oracle, custom query tools, and custom graphics. The custom query tool allows the user to query the database for regulatory permits based on a choice of a variety of attributes. For example, if a user chose to query regulatory permits by county, a pop-up window would appear with a drop down list of counties. When the user selects the county they would like to query the permits in that county are selected and the associated attributes are displayed within the ArcIMS webpage. The application can be seen at http://arcimspub.sjrwmd.com/website/cupwell/viewer.htm?Title=SJRWMD%20GIS-RDBMS%20Web-based%20Front-end%20Tool (July 2005).

The prototype created for this research project will include the integration of a Database Management System, a customized query tool, and the ability to edit tabular data. The integration of a Database Management System into this prototype will only involve the use of ArcIMS HTML viewer, and not ArcSDE, allowing the prototype to be more lightweight than some of the previous examples. Hyperlinks will establish connections from the spatial data to the non-spatial data and from the non-spatial data to the spatial data. Additionally, adding an edit function to tabular data will open the door to field updates of tabular data where wireless internet is available, as well as a multi-user platform for updating tabular data, associated with spatial data, on the web.

3. Project Objectives

The goal of this research project is to build an Internet mapping prototype that displays spatial data stored in an extensive relational database, allows updates to tabular data, carries out advanced calculations, and displays the results of spatial queries to the non-spatial database. This prototype was developed for a target audience of both novice and experienced GIS users. The chosen presentation medium for this mapping service is a common, JavaScript-enabled web browser such as [3]Internet Explorer, [4]Mozilla Firefox, or [5]Netscape. More specifically, the objective of this project is to use ESRI's ArcIMS 9.0 software, integrated with MySQL, PHP, and Javascript, to produce a comprehensive online Internet map service and database interface for the NPS I&M Program.

[3] Internet Explorer is a trademark of Mocrosoft Corp.
[4] Mozilla Firefox is a trademark of the Mozilla Foundation
[5] Netscape is a trademark of Netscape

4. Methods and Software

4.1 National Park Service Inventory and Monitoring Program

The aim of inventorying and monitoring natural resources and vital signs within the park service is to track physical, chemical, and biological elements that are indicators of the health and the state of park resources. (NPS(1) 2005) The extensive information acquired through natural resource monitoring can help develop management plans, research, education and promotion of public understanding of park resources (NPS(1) 2005). Inventory data is used to develop a prototype, online GIS model for efficiently displaying and editing raw and processed data. Although the prototype is developed with inventory data, much of the update functionality could later be applied to a monitoring program.

4.1.1 Valley Forge National Historic Park

The prototype, online database management system was developed using bird inventory data from Valley Forge National Historic Park. The Comprehensive Bird Survey conducted in Valley Forge National Historic Park includes riparian, owl, raptor, point count, and road surveys (I&M 2005). The data for these surveys resides in a Microsoft Access database and an ESRI shapefile. A common field containing a LocationID relates the shapefile and Access database. The shapefile has a field in the attribute table called LocationID, and the Microsoft Access database has a table called tblLocations with a field LocationID. These identical fields contain unique identifiers that allow the creation of a relationship between the spatial and non-spatial data.

4.1.2.1 Spatial Data

The spatial data for the Comprehensive Bird Survey of Valley Forge is stored in an ESRI shapefile. The original shapefile was modified by adding a new field called LINK. This is the field that will be used later to hyperlink to the webpages housing the non-spatial data associated with the shapefile. The calculate function in ArcGIS 8.3 was used to populate the LINK field. Using the advanced option within this tool a Visual Basic script was used to pull information from the ID field and the POINT_TYPE field as seen in Figure 4.1.2.1.1. For example, for a row with an ID field equal to 1, and a POINT_TYPE equal to Owl, the Visual Basic script would populate the LINK attribute with "owl.php?locationID=VAFO_BIRDS_Owl_1". This is the latter part of a web address that will be concatenated with the IP address and folder location via the hyperlink tool in ArcIMS. The complete script used can be found in Appendix A.

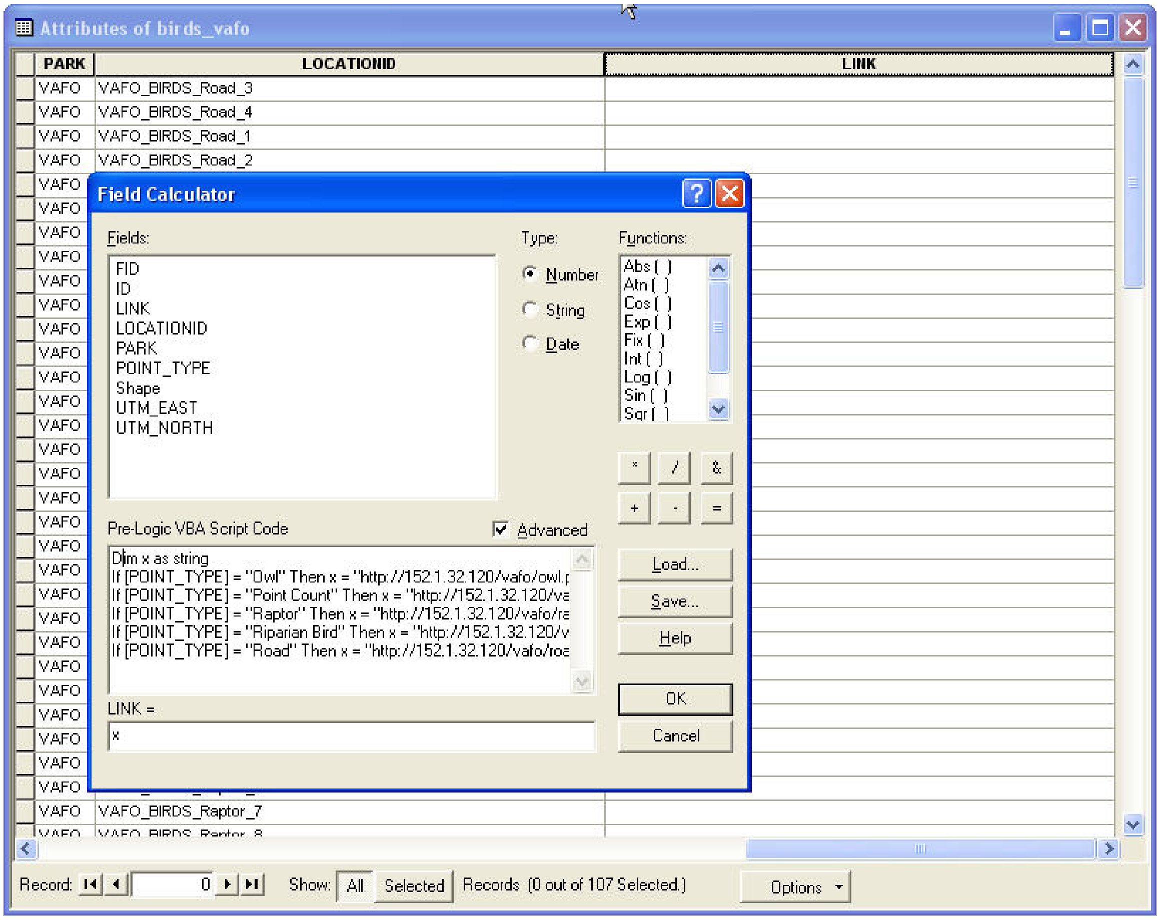

Figure 4.1.2.1.1: Populating the field LINK

4.1.2.2 Non-Spatial Data

The non-spatial data need to be stored in a database that provides long-term storage, provides a user interface, and allows multiple users to edit and display information at the same time. The data stored in the Microsoft Access Database is organized into several related tables. Microsoft Access is not built to handle the concurrent multi-user access and update that is necessary for this application. For this reason, the decision was made to move to an alternative, more robust Database Management System. Although the data did not remain in the Access database, it was kept in similarly structured tables. The relationships established in the Access Database can be seen in Appendix B. Since the same relationships were maintained in MySQL, this diagram exhibits the relationships that exist in the MySQL database as well.

4.1.2.2.1 The Database Structure

The Comprehensive Birds Survey for Valley Forge contains several tables, with several relationships. These tables and relationships were originally created and structured in Microsoft Access. Figure 4.1.2.2.1.1 shows the Access database, tables, and relationships. Each window represents a table. The primary keys, unique fields used to identify specific rows, are in bold, followed by the other attributes. Lines drawn between the windows represent relationships. A “1” next to the line and table represents a field used in the relationship that has unique values, an “∞” represents a field in the relationship that does not have unique values.

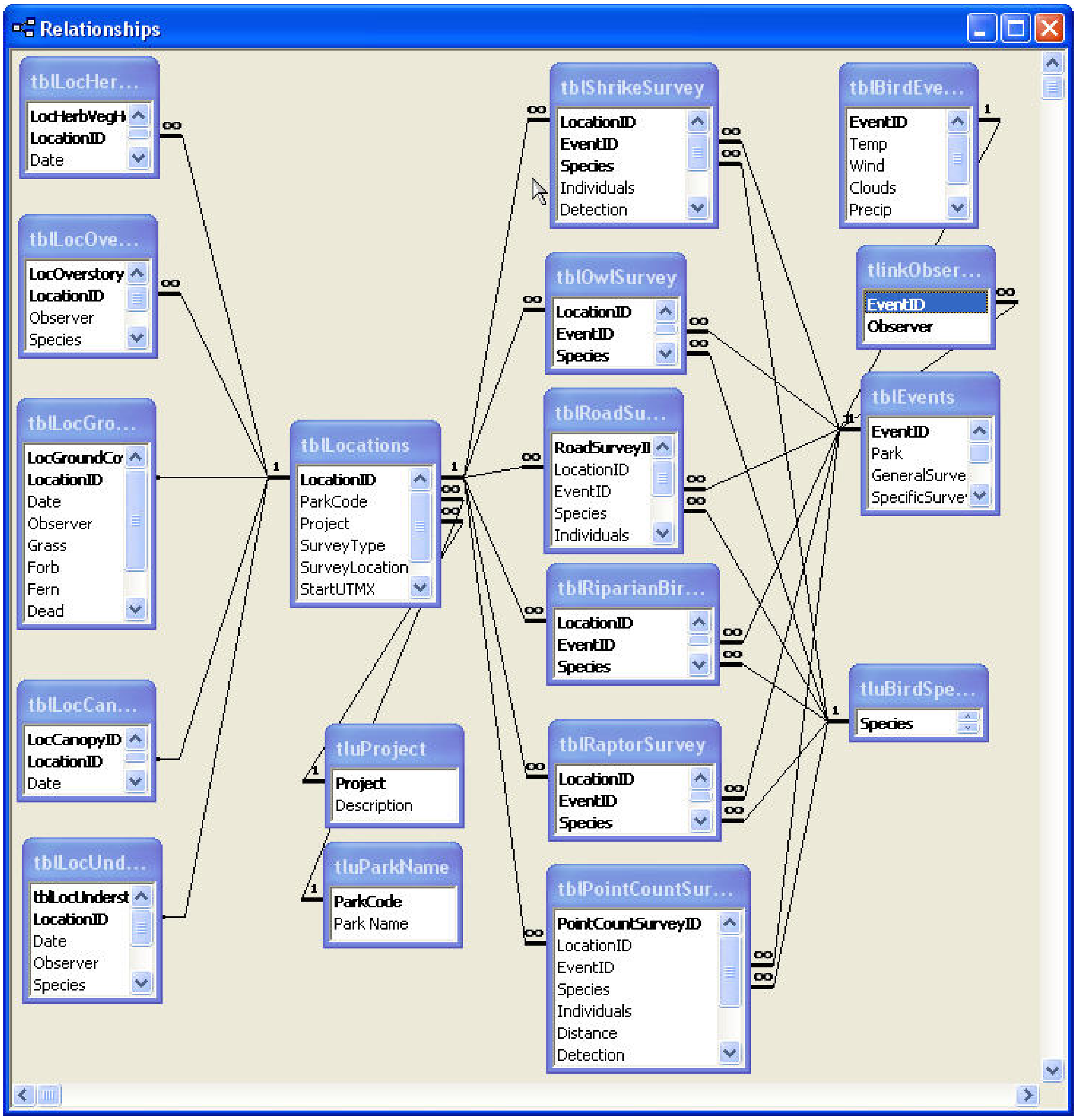

Figure 4.1.2.2.1.1 Microsoft Access Database Schema

The database is built around two main tables. The tblLocations table and the tblEvents table. The table tblLocations contains LocationIDs that represent each survey location in the database. The table tblEvents contains EventIDs that represent each visit to a survey location. These two tables contain basic information such as point location, park, date, and time of each LocationID, or EventID. The

LocationIDs and EventIDs are used as keys to a set of tables representing each of the surveys carried out in the park. These tables contain detailed information collected for the survey such as bird species, number of individuals, and detection method. With a LocationID of VAFO_OWL_BIRDS_6, and an EventID of VAFO_BIRDS_OWL_2000-Jan-06_19:15 the link established between tblLocations and tblOwlSurvey, and the link between tblEvents and tblOwlSurvey could be used to identify the survey information taken at given location and visit. In this case the information available through these links is that one eastern screech owl was detected by its song at LocationID VAFO_OWL_BIRDS_6, during EventID VAFO_BIRDS_OWL_2000-Jan-06_19:15. When the database was moved into MySQL from Access a very similar structure was maintained. In MySQL foreign key constraints were added to several of the tables in order to prevent improper data entry. Foreign key constraints are constraints that require data from one field to be contained in a field of another table as well.

4.2 Operating System

Windows XP was chosen as the operating system for running this web service. ArcIMS, an integral part of this project, will only run on Windows. Although Windows Server might be a more stable option for running this application, Windows XP was used due to availability. Linux would be another operating system to consider, if it were not for the constraint of ArcIMS. The option would exist to run ArcIMS on a Windows machine and run all other web services through Linux, but because all of the pages originate and depend on the information stored in ArcIMS, this would just increase downtime. For example, even if Linux machine was running 99.9% of the time and the Windows box only ran 99% of the time the application would be down for 1.1% of the time as opposed to just 1%.

4.3 Web Server

A web server uses a client/server relationship model where one computer functions as a client, which makes requests from another computer, the server as seen in Figure 4.3.1. Programs on a single computer can use this model, but by applying it over a network, information can be served to multiple locations. Web servers use Hypertext Transfer Protocol (HTTP), so that the files served produce web pages for web users, whose computers contain HTTP clients that forward their requests. Frequently other internet programs are integrated with a web server for building databases, preprocessing HTTP, serving email, and File Transfer Protocol (FTP). (Search Web Services 2005)

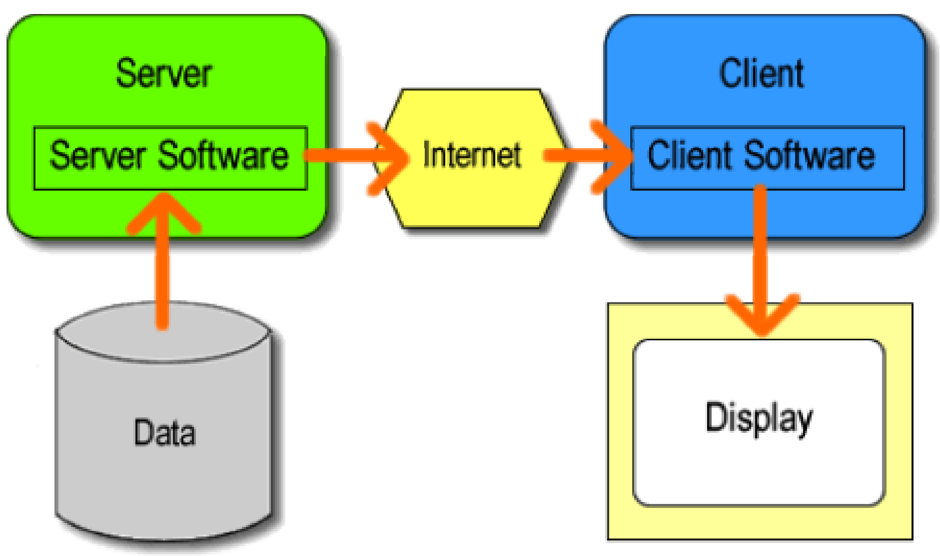

Figure 4.3.1: Client/Server Relationship

Choosing a web server involves examining how well different web servers work with the chosen operating system, what kind of server side programs and processing options are available, security concerns and capabilities, and cost.

4.3.1 Apache

Distributed under an open source license, and thus freely available, Apache is the most widely used web server on the Internet. (Search Web Services 2005) Widely used open source programs tend to be more stable and have fewer bugs than their costly counter parts, due to the complete availability of the source code. Additionally, Apache can easily be integrated with peripheral programs of interest to this project including ArcIMS, MySQL, and PHP. The installation of Apache, Java 2 SDK, Tomcat, and ArcIMS was done following the guide at http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=28450 (June 2005).

4.3.2 Tomcat

Tomcat is a servlet container that has been configured to run as an add-on to the Apache web server to handle dynamic content such as servlets or Java Server Pages. Although Tomcat could be set up as a stand-alone web server, this is typically not a good option because Apache handles static pages faster, is more configurable and robust, and can be integrated with PHP and other peripherals (Search Web Services(1) 2002).

4.4 Internet Mapping with ArcIMS 9.0

ESRI's ArcIMS 9.0 delivers the spatial data associated with this prototype. ArcIMS is a program designed for delivering dynamic maps, created from GIS data, over the web. Making GIS data readily available over the web gives access to users who do not have software locally installed on their computers. Additionally, data updates are immediately available to all users who use the website, as opposed to downloaded data which must be updated on an individual basis. ArcIMS has two types of viewers: the HTML viewer and the Java viewer. The Java viewer has a wider range of capabilities, but requires the Java Runtime Environment to be installed on the end user's computer. In order to allow the widest dispersion of the application and keep the user requirements to a minimum, the HTML viewer was chosen for this prototype.

4.4.1 The ArcIMS Java Viewer

The Java viewer allows the end-user more flexibility and functionality, but requires the end-user to have software for interpreting the applets contained in the viewer. Extended functionality and capabilities of the Java viewer include, the use of feature services, displaying multiple services, and allowing users to add their own data. Feature services send vector information to the user as opposed to an image created by the server, but feature services can only be used with the Java viewer. The advantage of a feature service is the extended functionality it offers. For example, users can change the display properties of a layer, the map does not have to fully reload after panning, and the user can download data. The Java viewer contains a set of HTML and Javascript files. These files are generated for each webpage designed in ArcIMS Designer. (ESRI Courses(1) 2005)

4.4.2 The ArcIMS HTML Viewer

The ArcIMS HTML Viewer is best choice when the ArcIMS will only contain one image service, and the user does not need to add their own data. ESRI recommends the HTML viewer unless the additional functionality of the Java viewer is needed. The major advantage of the HTML viewer is that it does not need any extended software to interpret applets in order to display the maps. A web browser is all that is required to display an ArcIMS using the HTML viewer. Some of the functions available through the HTML viewer include: pan, zoom, select, buffer, and print. The HTML viewer is a set of HTML and Javascript files that are generated for each webpage created in ArcIMS Designer (ESRI Courses(2) 2005).

4.4.3 Creating a Map Configuration File

An ArcIMS Web site needs two major components: an ArcIMS service, which will be discussed later, and a map configuration file known as an ArcXML (AXL) file. This file is in a format similar to XML. XML is a tag-based markup language much like HTML that is used to describe data. Figure 4.4.3.1 contains the code from a sample AXL file with a nested tag structure. The AXL file specifies the map units of the files to be displayed using the MAPUNITS tag. For example the MAPUNIT tag, which has a value of meters, is contained within the MAP tag, which is contained within the CONFIG tag, which is contained within the ARCXML tag. These tags are ArcXML's way of organizing and identifying the data stored within the AXL file.

```
<?xml version="1.0" encoding="UTF-8"?>

<ARCXML version="1.1">
  <CONFIG>
    <ENVIRONMENT>
      <LOCALE country="US" language="en" variant="" />
      <UIFONT color="0,0,0" name="SansSerif" size="12"
style="regular" />
      <SCREEN dpi="96" />
    </ENVIRONMENT>
    <MAP>
      <PROPERTIES>
      <ENVELOPE minx="459865.8186792459"
miny="4436899.683292418" maxx="464081.34854524053"
maxy="4440834.611428683" name="Initial_Extent" />
      <MAPUNITS units="meters" />
      </PROPERTIES>
      <WORKSPACES>
      <SHAPEWORKSPACE name="shp_ws-0"
directory="C:\ArcIMS\Shapefiles_VAFO" />
      </WORKSPACES>
      <LAYER type="featureclass" name="bird_vafo"
visible="true" id="0">
      <DATASET name="bird_vafo" type="point"
workspace="shp_ws-0" />
      <SIMPLERENDERER>
        <SIMPLEMARKERSYMBOL color="127,227,27" width="6" />
      </SIMPLERENDERER>
      </LAYER>
    </MAP>
  </CONFIG>
</ARCXML>
```

Figure 4.4.3.1 An Example of an AXL file.

An AXL file is similar to a map document (MXD file) in that it stores which layers are to be displayed, how they are displayed, and where they are stored, but it does not actually contain the data files being displayed. AXL files are created in ArcIMS Author in an environment similar to ArcMap.

4.4.4 Setting-up an ArcIMS Service.

ArcIMS services are used to publish the information in an AXL file to the web. Services are created, started, stopped, and managed from ArcIMS Administrator. The services send all of the information in the AXL file to the ArcIMS spatial server to be processed.

4.4.5 Designing the ArcIMS Web Page.

Once the ArcIMS AXL file and service are in place, a web page can be designed with ArcIMS Designer. ArcIMS Designer prompts the web page designer with series of windows for specifying the design of the webpage. It is here that the HTML viewer is specified, and tools can be turned on and off on the webpage. All available tools were left on for the purposes of this project in order to allow for maximum functionality. In a setting catering to a very specific end user group, it might be advisable to disallow some tools so the user is not overwhelmed by a barrage of unfamiliar buttons.

4.5 Database Management System – MySQL

Database Management Systems provide users with three primary capabilities: persistent storage, a programming interface, and atomicity. Persistent storage, or the ability to maintain and efficiently access very large amounts of data over time, addresses the need to maintain benchmark inventory data for the Valley Forge Comprehensive Bird Survey. Second, Database Management Systems provide some type of programming interface. The programming interface allows the data to be accessed and edited through some type of query language.   For example, if a user enters a book title a library's online catalog, the catalog queries the database containing book titles and other information and displays the results. Finally, a Database Management System supports transaction management, the concurrent access to data by several users. Database Management Systems support both isolation, the appearance that transactions occur one-at-a-time, and atomicity, the constraint that transactions execute wholly or not at all. Banks need this functionality in their Database Management Systems to handle transactions. Isolation is necessary so that two customers who share a joint account with one-hundred dollars do not both try to withdrawal that one hundred dollars and succeed. The Database Management System must use isolation to shut out one user, until the other users transaction to the same account has completed. If a customer were to go to an ATM and transfer one-hundred dollars from savings to checking, it would be crucial that this transaction executed entirely or not at all. If it partially executed the one-hundred dollars might be deducted from savings, but not deposited in checking. Atomicity prevents these types of errors from occurring. A concurrent access, or multi-user interface is crucial for a database that is displayed and managed over the World Wide Web, because several users can access the data at any given time (Garcia-Molina 2002).

When choosing a Database Management System several things such as cost, integration with other software, atomicity, consistency, and durability must be considered (Greenspun 2003). Microsoft Access is not built to handle a multi-user environment, so the decision was made to move the database. MySQL, an open source, relational database management system, was chosen to meet the needs of this project. Since Microsoft Access is also a relational Database Management System this facilitates ease in transferring data from one format to the other. MySQL is free, allows relationships to be built between tables, integrates easily with PHP (as well as running on most any operating system), and makes use of

Structured Query Language (SQL). MySQL is used to store all of the non-spatial data associated with the Valley Forge I&M Bird Survey. MySQL was installed after PHP and used the guide found at: http://www.ricocheting.com/server/mysql.html (July 2005).

4.5.1 Creating Databases and Tables

Before data can be put into MySQL, databases and tables must be set up to house the data. For example, the development of the MySQL database for non-spatial bird survey data of Valley Forge has a set of tables sharing several relationships. This made it both practical and logical to place all of these tables in a single database called VAFOBird. If this project also contained a survey on mammals in Valley Forge, a second database would be created to house the tables associated with the mammal survey. Doing this would mean that when queries were made to the data, the search for needed information would be immediately limited by the selection of one database or another. If these two sets of tables shared tables of information it would be advantageous to house them in the same database to allow relationships between the tables to be built.

Since several databases can be created inside MySQL, it is necessary to input which database is going to be accessed by subsequent commands. For example, to use the VAFOBird database the following command would be used. (As a convention for this paper source code lines will be numbered on the left side. These numbers are not a part of the code.)

```
USE VAFOBird;
```

After the database of interest is specified, tables can be created within that database. To create a table, you must know what the table will be named, what attributes will be in the table, what the data type of each attribute is, and what the primary key is. Take the following code creating the table tluParkName for example:

```
CREATE TABLE tluParkName(
ParkCode                VARCHAR(4)  NOT NULL,
ParkName                VARCHAR(255)      NULL,
PRIMARY KEY (ParkCode));
```

The text following the key words, CREATE TABLE, designates the table’s name. Following the table name is a list of attributes in the table and their data types. ParkCode is the first attribute in the table tluParkName. It is a string data type, designated by the key word VARCHAR, and can hold up to 4 letters, symbols, or numbers, as is represented by the (4). Following that is a statement that identifies the attribute as being able to have a NULL value or being restricted from having a null value. In this case, ParkCode cannot have a value of NULL, designated by the key words NOT NULL, but ParkName may have a null value denoted by the key word NULL. Every table must have a primary key. A primary key may be more than one attribute, but the primary key must be unique. If a unique attribute does not exist it is not uncommon to add an auto number field to meet this need. In this example the primary key is ParkCode, as it is identified in the final line of code. Primary keys cannot be NULL.

For each table existing in the original Microsoft Access database, a table was created in MySQL with the same name and the same attributes of similar data type. This allows the import of text files exported from Microsoft Access later on, as opposed to entry of individual pieces of data. A complete list of all CREATE TABLE statements used in this project can be found in Appendix C.

4.5.2 Foreign Key Constraints

Foreign key constraints exist to protect against a user creating child datum without a parent. A foreign key is an attribute that references a key in another table. For data to be in the child table it must exist in the parent table. If a foreign key exists, it is specified when the table is created, in the CREATE TABLE statement. Take the following CREATE TABLE statement, for the table tblPointCountSurvey, as an example:

```
CREATE TABLE tblPointCountSurvey(
PointCountSurveyID          INT             NOT NULL,
LocationID            VARCHAR(255)      NOT NULL,
EventID                     VARCHAR(60)     NOT NULL,
Species                     VARCHAR(255)    NOT NULL,
Individuals           INT               NULL,
Distance                    INT             NULL,
Detection             VARCHAR(50)       NULL,
Interval0_3           DOUBLE            NULL,
Interval3_5           DOUBLE            NULL,
Interval5_10                DOUBLE          NULL,
PRIMARY KEY (PointCountSurveyID),
FOREIGN KEY (LocationID)     REFERENCES tblLocations(LocationID),
FOREIGN KEY (EventID)     REFERENCES tblEvents(EventID),
FOREIGN KEY (Species)     REFERENCES tluBirdSpecies(Species));
```

As before, a table's name and attributes are specified followed by a primary key definition. The command FOREIGN KEY is followed by the name of the attribute in the table being created that is used as the child in the foreign key constraint. This is followed by the term REFERENCE and the table name and attribute name of the key being referenced. In this example, there are three foreign keys referencing three different tables. The LocationID attribute in the newly created table tblPointCountSurvey, references the attribute LocationID, in the already existing table tblLocations. This means that a LocationID input into tblPointCountSurvey, must already exist in the table tblLocations, in the attribute LocationID. In the case of this table, this is done so that field data cannot be input for a point (LocationID) that does not have any spatial information. In addition to requiring certain data to exist, this also helps prevent typos in child tables. For a typo to be accepted by the database, the typo would have to exist in the parent table.

4.5.3 Populating Tables with Existing Data

After the tables are set up, the data must be imported. Before the importation process was started, three tables in the Microsoft Access Database were edited. tblOwlSurvey, tblRaptorSurvey, and tblRiparianBirdSurvey were edited to have an auto number field to function as a primary key. These edits are reflected in the CREATE TABLE statements used while creating the MySQL database. Each table in the Microsoft Access database was exported as a text file. The text files were then imported into Microsoft Excel. This was done in order to change the format of the date and time fields to be compatible with the format of MySQL. Microsoft Access formatted the dates in the form, MM/DD/YYYY. MySQL stores dates in the form YYYY/MM/DD. After the date and time formats were converted in Excel, the files were again exported as comma-delimited text files. Since tables were created in MySQL with the same attributes and data types as the original Access tables, the exported text files were easily imported into the prepared tables in MySQL. For example, data for tluParkName, a table created in MySQL, would have its data imported as follows:

```
1      LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tluParkName.txt'
2      INTO TABLE tluParkName
3      FIELDS TERMINATED BY ',' ENCLOSED BY '"'
4      LINES TERMINATED BY '\r\n';
```

The first and second lines specify that data from the local file *C:/VAFO/txt/tluParkName.txt* will be loaded into the table tluParkName. The third line designates that the text file is comma delimited -- FIELDS TERMINATED BY ‘,’, and that text values are enclosed by double quotations -- ENCLOSED BY ‘”’. The final line specifies that the rows of the table are ended by a carriage return -- LINES TERMINATED BY ‘\r\n’;. If the text file was not comma-delimited, the values in the third and forth lines would be appropriate to the format of the text file. For each table in the database, this process was carried out to import the large amounts of raw data originating from the Microsoft Access database. A complete list of LOAD DATA statements can be seen in Appendix D.

4.5.4 Accessing Data Currently in MySQL

In order to code the PHP scripts it is first necessary to construct MySQL queries that will be used to query the Valley Forge Comprehensive Bird Survey database. Select queries allow the user to retrieve information from MySQL. When selecting data, there are a wide range of options. For instance, only specific attributes or rows are displayed, data is sorted or counted, or several options involving multiple tables. An example of a basic select statement that will select the two fields LocationID and EventID from the table tblPointCountSurvey is as follows:

```
SELECT LocationID, EventID FROM tblPointCountSurvey;
```

The key word SELECT is followed by the attributes, or columns, that the query will display. Each select statement must specify from which table the data is to be selected. This is done by using the key word FROM followed by the table name. The result of this select statement would be the display of all rows in the fields LocationID and EventID. Instead of listing fields to be displayed by a select statement an asterisk may be used after the SELECT key work to denote all fields.

The following example selects all of the rows and fields from the table tblPointCountSurvey.

```
SELECT * FROM tblPointCountSurvey;
```

would display all fields and all rows in the table tblPointCountSurvey. More often than not, it is not necessary or desirable to display all of the rows in a table. To limit the number of rows, a WHERE clause can be added to the select statement. To construct a where clause the key word WHERE is inserted after the FROM clause and followed by some type of condition, or conditions. The following example selects LocationID, EventID, and Species from the table PointCountSurvey when the attribute Species has a value of BOBO and 2 or more individuals were detected.

```
SELECT LocationID, EventID, Species
FROM tblPointCountSurvey
WHERE Species = “BOBO” AND Individuals >= 2;
```

This query will display the fields LocationID, EventID, and Species and all of the rows where Species has a value of BOBO and Individuals has a value greater than or equal to two. This project used several simple SELECT queries combined with PHP to dynamically display database data. Additionally, there were other SELECT queries that were based off of the same principles but were much more complex. These include nested select statements, summations, and counts. For a complete list of select statements used, see Appendix E.

4.5.5 Accessing Tables through Relationships

In some cases, data from more than one table is needed for display or calculations. In these situations, a join must be used. To join two or more tables, there must be a field common to both tables with the same type of data but not necessarily the same names. When two tables each have a field with the same name and data type, a natural join can be carried out. A natural join automatically creates a relationship between the two specified tables based on any common fields. For example:

```
SELECT Individuals
FROM tblPointCountSurvey NATURAL JOIN tblLocations
WHERE ParkCode = “VAFO”;
```

In this query, a column from tblPointCountSurvey will be displayed, but the condition for displaying that column is based on the value of the attribute ParkCode, which is in a different table, tblLocations. To use information from both of these tables, a natural join was done on the tables tblPointCountSurvey and tblLocations. These two tables share the field LocationID. Therefore, a relationship was established between these two tables based on that similarity. Nesting natural join statements can join several tables. For a list of all SELECT statements used in this project, see Appendix E.

4.5.6 Inserting New Data

At this point, all of the initial data has been imported into a MySQL database. As new data is gathered, and for the system to be fully editable, it must be possible to add new data to the database tables. In MySQL, an INSERT query is used to add a new row to any given table. The insert query specifies the data necessary to fill in at minimum the required fields in the stated table. For example, to insert data into the table tluParkName, the following would be done:

```
INSERT INTO tluParkName (ParkCode, ParkName)
VALUES(GRSM, “Great Smokey Mountains National Park”);
```

The INSERT INTO keywords are followed by the name of the table and the list of that tables attributes that are to inserted. The key word VALUES is followed by a list of the new values to be added to the new row of the specified table. The number of attributes specified in the insert clause must match the number and type of values inserted in the values clause.

4.5.7 Updating Current Data

Another edit function available is the UPDATE function, giving the ability to change existing data. When updating existing data in MySQL, a table must be specified, as well as the attributes to be updated. All values in a given row do not have to be updated. In the following example changes three of the attribute values for the row in tblPointCountSurvey with a value of tblPointCountSurveyID of 44.

```
UPDATE tblPointCountSurvey
SET
Distance = 9
Detection = “V”
Individuals = 2
WHERE tblPointCountSurveyID = 44;
```

Since this query restricts the rows being looked at to a single value of the primary key tblPointCountSurveyID, this update will only deal with one row in the table tblPointCountSurvey. All values other than Distance, Detection, and Individuals will remain the same. In the case of trying to update primary keys or attributes that are a part of foreign key constraints, there is a potential for error if the data entered would violate those constraints. In this case, the update will not execute at all because the system is atomic. For example the table tblPointCountSurvey has a foreign key constraint that any EventID in its table must also exist in the table tblEvents. If the EventID VAFO_BIRDS_POINTCOUNT_2000-May-03_07:01 was attempting to be updated to VAFO_BIRDS_2000 the MySQL statement would not execute because the parent table, tblEvents, does not have a value of EventiID VAFO_BIRDS_2000. If the user wanted to make this change, they would first have to make the change in the parent table, tblEvents.

4.5.8 Delete Current Data

Delete statements tend to be simpler than insert and update statements because they do not need specific fields and values to be specified. Instead, entire rows are deleted. What can make delete queries more complex is the need to comply with foreign key constraints. A row with a parent key of a foreign key constraint cannot be deleted until all child rows in other tables are also deleted. Take the following two tables for example.

```
tblEvents
+---------------------------------+----------+--------+
| EventID                         | ParkCode | Season |
+---------------------------------+----------+--------+
| VAFO_BIRDS_OWL_2000-Mar-08_00:10 | VAFO     | Winter |
| VAFO_BIRDS_OWL_2000-Feb-17_19:16 | VAFO     | Winter |
| VAFO_BIRDS_OWL_2001-Jan-08_20:23 | VAFO     | Winter |
+---------------------------------+----------+--------+

tblOwlSurvey
+---------------------------------+-------------+----------+
| EventID                         | Individuals |Detection |
+---------------------------------+-------------+----------+
| VAFO_BIRDS_OWL_2000-Feb-17_19:16 |           0 |*         |
| VAFO_BIRDS_OWL_2000-Mar-08_00:10 |           0 |*         |
| VAFO_BIRDS_OWL_2001-Jan-08_20:23 |           0 |*         |
+---------------------------------+-------------+----------+
```

Table tblOwlSurvey is the child of table tblEvents. In other words, a foreign key constraint has been placed on tblOwlSurvey so that any EventID occurring in it must also be in tblEvents. This means that if we wanted to delete all rows in tblEvents with the EventID = VAFO_BIRDS_OWL_2000-Mar-08_00:10, then the row with this EventID value would first have to be deleted from the table tblOwlSurvey. Just like one cannot insert a child without a parent one cannot delete a parent that has a child. To delete all rows in the table tblEvents with a specified EventID, two DELETE queries would have to be executed in the specified order.

```
DELETE
FROM tblOwlSurvey
WHERE EventID = “VAFO_BIRDS_OWL_2000-Mar-08_00:10”;
```

```
DELETE
FROM tblEvents
WHERE EventID = “VAFO_BIRDS_OWL_2000-Mar-08_00:10”;
```

If the table tblEvents had more child tables, tables with foreign key constraints referencing it, then those tables would also have to have the specified EventID deleted before it could be deleted from tblEvents. Deleting EventIDs is a function available in this prototype. Before deleting an EventID from tblEvents the EventID is deleted from all child tables.

4.6 Hypertext Preprocessing with PHP

Hypertext preprocessing allows data to be processed on the server before sending information to the end user. PHP is an open source scripting language that is embedded in a webpage alongside HTML. Prior to the web page being sent to the user, the PHP script is interpreted when the web server receives a request for a page ending in the PHP extension, “.php”. This server side interpretation allows PHP to safely and securely access server side programs, in this case MySQL. Since the resulting HTML can change depending on the interpretation of the PHP script, PHP pages are considered dynamic HTML pages. PHP scripts are interpreted differently each time they are read because of variables that are defined in the URL of the web address, or other variables passed from a previously visited webpage. As these variables are changed, so is the content of the web page. In this application the variable data comes from two different sources. The first source is the hyperlinks that will be placed in the ArcIMS. Each hyperlink contains a different variable value for LocationID that is passed through the URL. The second source is HTML forms. As the user inputs different information into the HTML form the variable values generated by the PHP from these forms will also be different. This dynamic contents allows a web page to display a variety of information and data, without creating a web pages for each and every possible scenario of variable entry. Although there are other hypertext preprocessing languages and interpreters on the market, PHP was the logical choice because it was free, widely used, and easily integrated into HTML forms. PHP was installed using the guide found at: http://www.ricocheting.com/server/php.html (June 2005).

4.6.1 Passing Variables through the URL

One or more variable is typically specified in the URL. This allows for a single webpage to display content dynamically depending on the value of the defined variables. For this project, the value of LocationID is always passed through the URL. LocationID is specified because this is the common field in the spatial and non-spatial data. Depending on the selected spatial data, non-spatial data will be displayed. For example, the web address associated with the website displaying owl survey information for LocationID VAFO_BIRDS_OWL_1 is http://152.1.41.32/vafo/owl.php?LocationID=VAFO_BIRDS_OWL_1 (as of July 2005). The reference to the saved web page code is http://152.1.41.32/vafo/owl.php. The question mark denotes that for the rest of the URL, variables will be defined. The value of the variable LocationID, which is used in the PHP code of owl.php, can be changed. This will result in different content being displayed by the web page.

4.6.2 Connecting to MySQL Databases with PHP

PHP is the link that connects the spatial data stored in ArcIMS to the non-spatial data stored in MySQL. Before the data in MySQL can be accessed by PHP, there must be a connection established to the database. Doing this involves coding the user name, password access, and database information for MySQL into the PHP script. Since the PHP scripting is interpreted on the server side, the user would never be able to see this information. Accessing the MySQL database that houses the raw non-spatial data is one of the primary uses of PHP in the development of this prototype. A complete collection of HTML and PHP used for the creation of the project associated with non-spatial data is included in Appendix F.

4.6.3 Querying the MySQL Database with PHP

Once a connection has been established with the MySQL database queries can be sent and the results can be saved in additional PHP variables for later display. A query to the MySQL database might look something like the script below.

```
1      $sparray_SQL = "SELECT SUM(individuals)".
2         " FROM tblOwlSurvey".
3         " WHERE LocationID = '$locationID' AND Individuals <> 0".
4         " GROUP BY species";
5      $sparray_RSLT = @mysql_query($sparray_SQL) or
6         die('sparray_SQL Query failed: ' . mysql_error());
7      $sparray = array();
8      while($row = @mysql_fetch_array($sparray_RSLT))
9            array_push($sparray, $row);
```

Breaking this script down, it is apparent that the first four lines are very similar to the MySQL statements that were discussed previously. The text of the MySQL statement is being saved in the variable $sparray_SQL. The major difference in this statement is the use of the variable $locationID whose value will be defined in the URL accessing the *.php web page. The use of this changing variable, as stated before, is what gives PHP script its dynamic nature. The fifth line is giving the variable $sparray_RSLT the value of the results of that query. Line six is part of an error catch that will display if the MySQL statement does not execute. The seventh line defines the variable $sparray as an array. This variable was set up as an array because it will hold the array of data that has been generated by the results of the MySQL query. The last two lines are a while loop. The while loop enters the results of the MySQL query into $sparray line by line. The loop executes the exact number of times that there are rows in the results from the MySQL query. To display the values of $sparray, another loop must be created. Since the array can be of variable length, the table housing its values must adjust to the size of the array. The code for displaying data from the owl survey, stored in $owlsur, in an HTML table is listed below.

```
1     <?
2           $owlsur = array();
3           while($row = @mysql_fetch_array($owl_RSLT))
4                 array_push($owlsur, $row);
5           for ($i = 0; $i < sizeof($owlsur); $i++)
6           {
7     ?>
8       <tr>
9     <td><? print("<a class=\"localnav\"href=\"javascript:spdecode(
10    '{$owlsur[$i]['Species']}')\">{$owlsur[$i]['Species']}</a>");
11    ?></td>
12      <td><? print($owlsur[$i]['Individuals']); ?></td>
13      <td><? print($owlsur[$i]['Detection']); ?></td>
14      <td><? print("<a class=\"localnav\"
15    href=\"javascript:deteventid(
16    '{$owlsur[$i]['EventID']}')\">{$owlsur[$i]['EventID']}</a>");
17    ?></td>
18      </tr>
19    <? } ?>
```

This code piece displays both PHP and HTML, since both are necessary to create an HTML table that is populated with values queried from the MySQL database with PHP. All PHP script must be between the <? ?> tags. All other code is treated as HTML. The first seven lines of this code establishes the while loop. The following lines are what are executed on each iteration of the while loop. Each iteration creates one line in the table. The print PHP command displays the values in parenthesis when the code is run through the PHP interpreter. The end result is an HTML table populated with the data stored in the array $owlsur.

4.6.4 Calculations with PHP

Now that information has been queried from the MySQL database, it can either be displayed or used to determine what other data will be displayed. For this application, in many cases, the raw data is simply displayed for the user. In other cases, it is desirable to process the data for the user before it is displayed. Very simple calculations can be carried out in PHP with basic operands. Often, the output from MySQL statements is not in the form of a single value, but it is in the form of an array. As part of the diversity web page for each survey type the Simpson and Shannon Diversity Indices are calculated. The Simpson Index is calculated using the equation seen in Figure 4.6.4.1. (TIEM(1) 2005) D is the Simpson Index, S is the number of species, and p is the number of individuals of each species type. The Shannon Index is calculated using the equation seen in Figure 4.6.4.2. H is the Shannon Index, S is the number of species and p is the number of individuals of each species.(TIEM(2) 2005)

$$D = \frac{1}{\sum_{i=1}^{S} p_i^2}$$

Where D = Simpson's Index
S = # of species
p = # of individuals of a species

Figure 4.6.4.1: Simpson Index

$$H = -\sum_{i=1}^{S} p_i \ln p_i$$

Where H = Shannon Index
S = # of species
p = # of individuals
of a species

Figure 4.6.4.2: Shannon Index

As part of the calculations for determining the Simpson Diversity Index, a sum of squares must be taken for all of the values in a given array. A while loop must be used to carry out this calculation.

```
$sumsquare = 0;
for($i = 0; $i < sizeof($sparray); $i++)
      $sumsquare += ($sparray[$i][0] * $sparray[$i][0]);

$simpindex = 1 - ($sumsquare - $sumind[0]) / ($sumind[0] *
($sumind[0] - 1));
```

The first line of code sets the values of the variable $sumsquare, which will hold the sum of the squares of all values in $sparray, to a values of 0. The next line sets up the incrementation so that the loop will run the exact number of times that there are data in $sparray. The third line squares the given datum from $sparray and adds it to the value of $sumsquare. The final two lines finish the calculation for the Simpson Diversity Index . The final results are then displayed with several other calculated values on a web page designed specifically for displaying diversity statistics as seen in Figure 4.6.4.1.

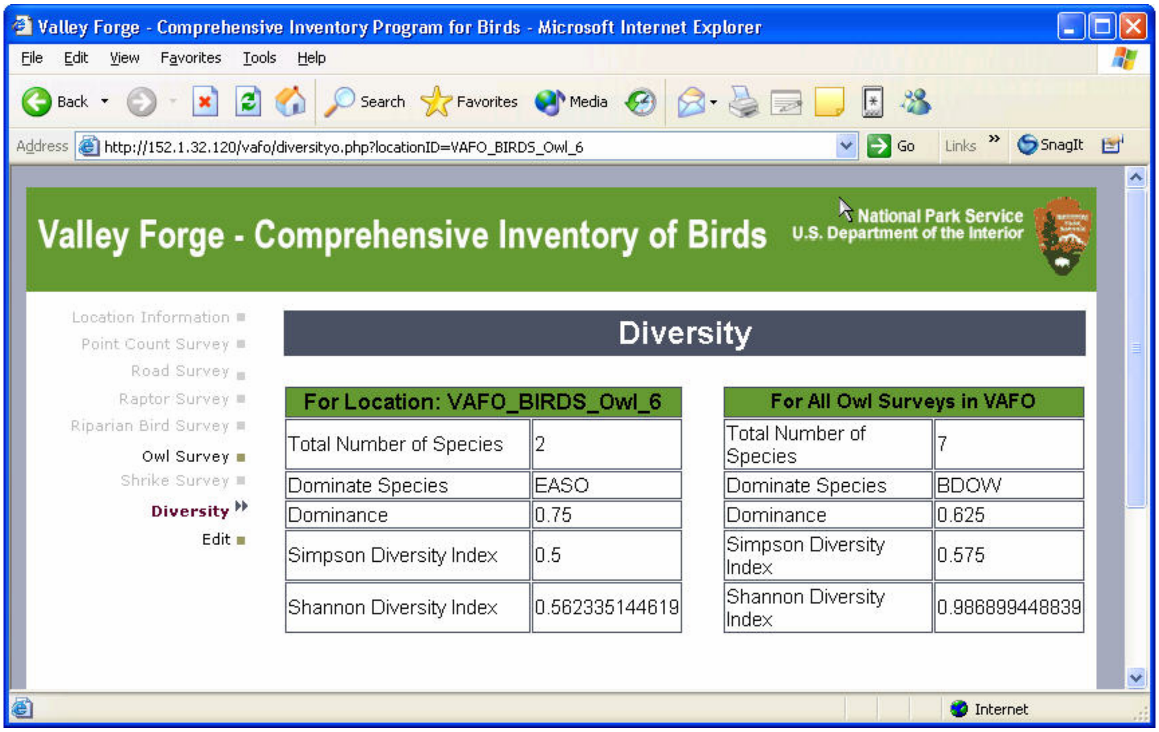

Figure 4.6.4.3 The diversity page displays calculated diversity statistics

These types of on-the-fly advanced calculations offer the user processed information as soon as new data is entered into the database. If desired, this could even be integrated with the data's dates to display a change in diversity over time. Traditional applications built for displaying and storing databases begin with a structured table or form to which the user must conform. Using PHP and HTML, the structure of the display is set up based on the data and the end user's needs.

4.7 Editing the MySQL Database with PHP

A web page is set up to allow information associated with specific EventIDs to be edited. New information can be inserted, or current information can be updated or deleted. To use this function, the user must specify a LocationID and a survey type and click a submit button. This displays all EventIDs associated with the input

LocationID, as well as some of the attributes of the EventIDs being displayed as seen in Figure 4.7.1.

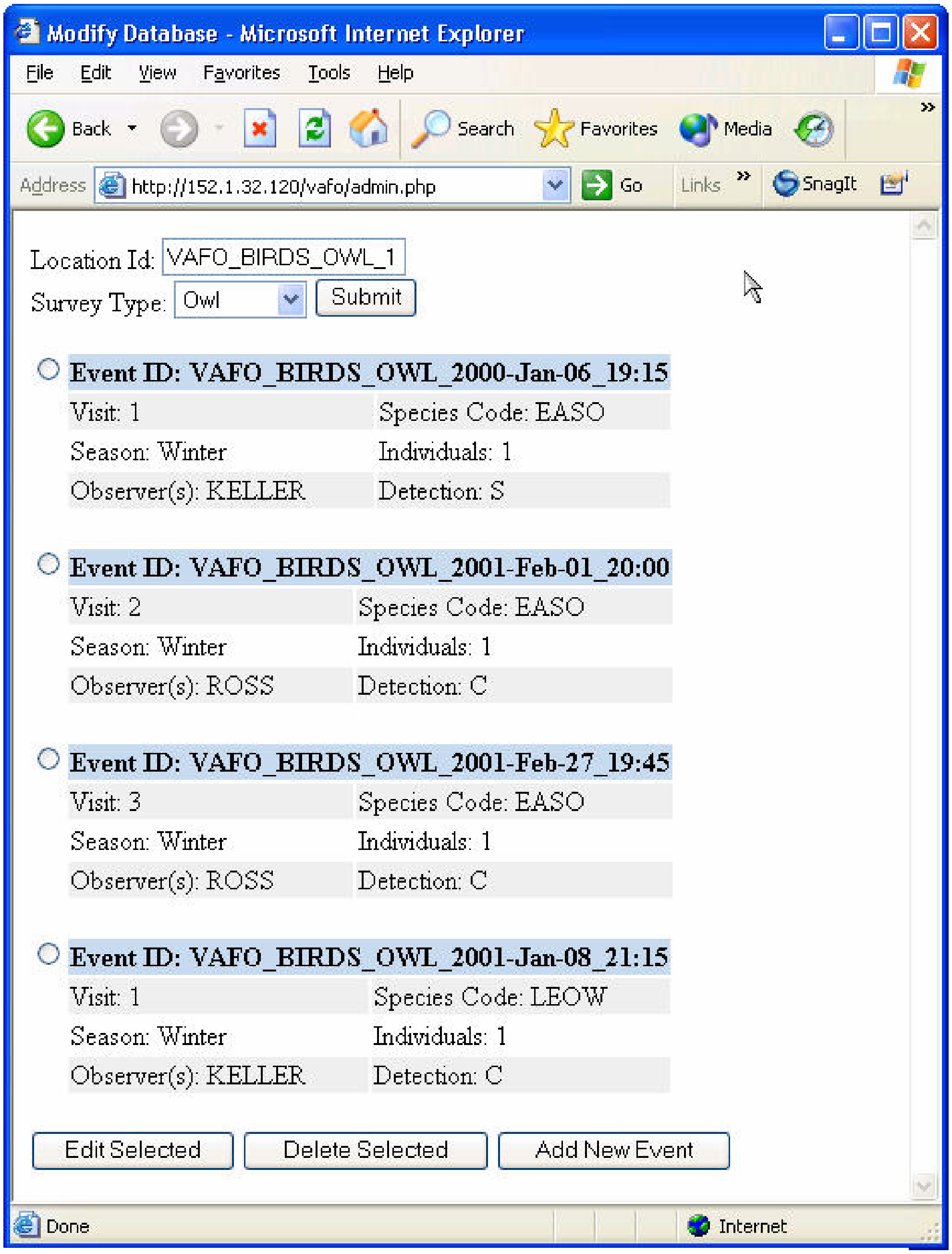

Figure 4.7.1 Webpage with EventID edit options.

The EventID information is displayed using a radio button form. This allows the user to choose exactly one EventID to edit. The user can then choose between updating the EventID, deleting the EventID, or inserting a new EventID associated with the given LocationID.

4.7.1 Inserting Data in the MySQL Database Using PHP

When the option to insert a new EventID is chosen a new web page is displayed with a form for imputing data into the MySQL database as seen in Figure 4.7.1.1.

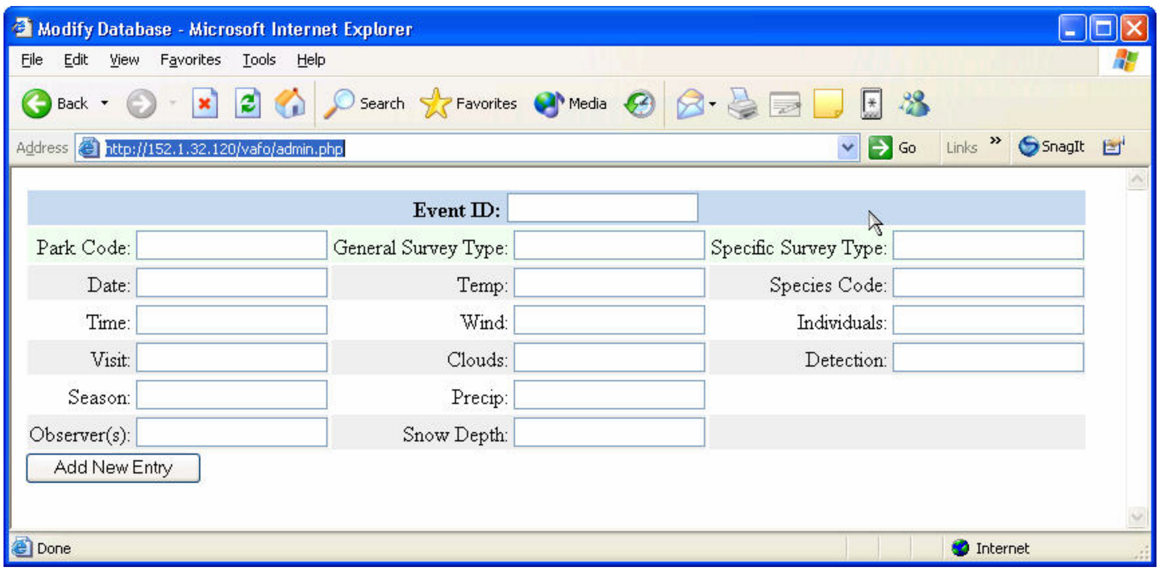

Figure 4.7.1.1: Page for inserting a new EventID, for a given LocationID

After the user has input all of the necessary data and clicks the Add New Entry button, PHP code will execute a series of INSERT queries in the same fashion that it would execute a SELECT query. The database and all associated web pages will reflect the new changes immediately.

4.7.2 Updating MySQL using PHP

If instead of choosing to insert a new EventID, the user selected a current EventID and clicked the Update button, the user would be presented with a screen identical to the insert screen, except that all current values for each attribute would be displayed in the form as seen in Figure 4.7.2.1. This allows the user to change the values and submit the form with the modified values.

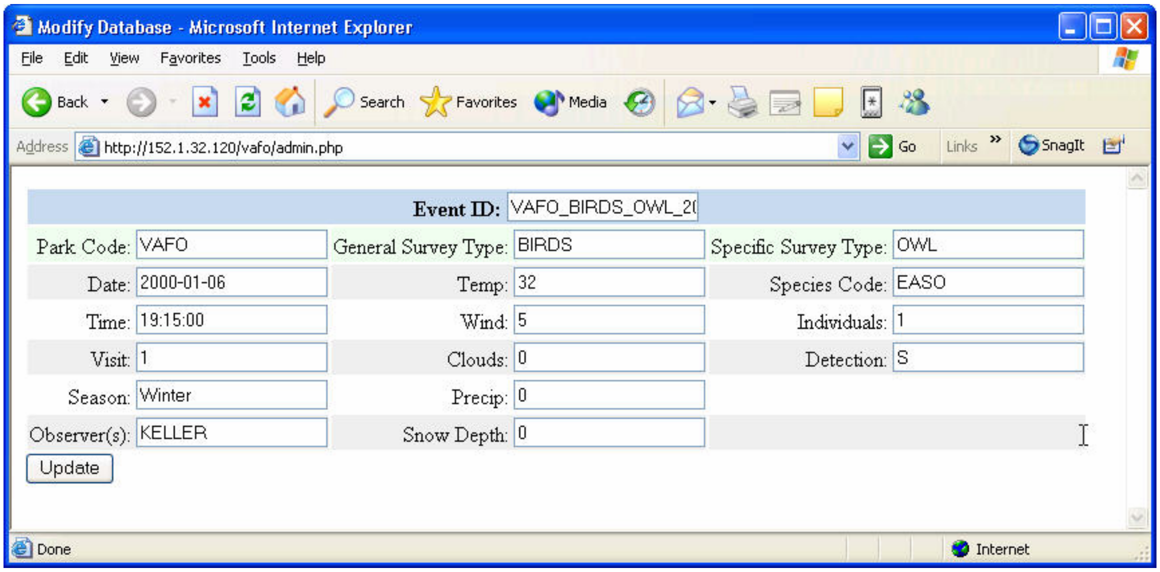

Figure 4.7.2.1 Web page for updating an EventID

4.7.3 Deleting EventIDs from a MySQL database with PHP

If the user selects an EventID and clicks the Delete button, a web page will display a message informing the user that the deletion was successful. The deleted EventID, will no longer appear on any of the projects webpages. To carry out the DELETE statement, delete queries run through PHP are done on all tables with the attribute EventID with a WHERE clause similar to the following:

```
WHERE EventID = “VAFO_BIRDS_OWL_2000-Jan-06_19:15”
```

The appropriate value of EventID would be inserted dependent on the user specifications. If a DELETE query is carried out on a table where the specified EventID does not exist, then the table will be left unchanged, and there will be no error in the execution of the query.

4.8 Extended Functionality with Javascript

In making the Valley Forge I & M Birds application, Javascript was used to cause linked pages to open in pop-up windows containing additional definitions or information. For example, clicking on the table heading labeled Detection, will yield a pop-up window with the rubric for the letters representing different detection methods as seen in Figure 4.8.1. Javascript is a scripting language that can be interspersed throughout the HTML on a webpage. Unlike PHP, javascript is interpreted by the end user's web browser instead of by the server prior to sending the requested information. Javascript can be used to create additional functionality. This allows for the developer to provide infrequently needed information to the user, without crowding the web pages with every possibly needed fact and figure. A user could click on the heading when the information was needed, or ignore the link when

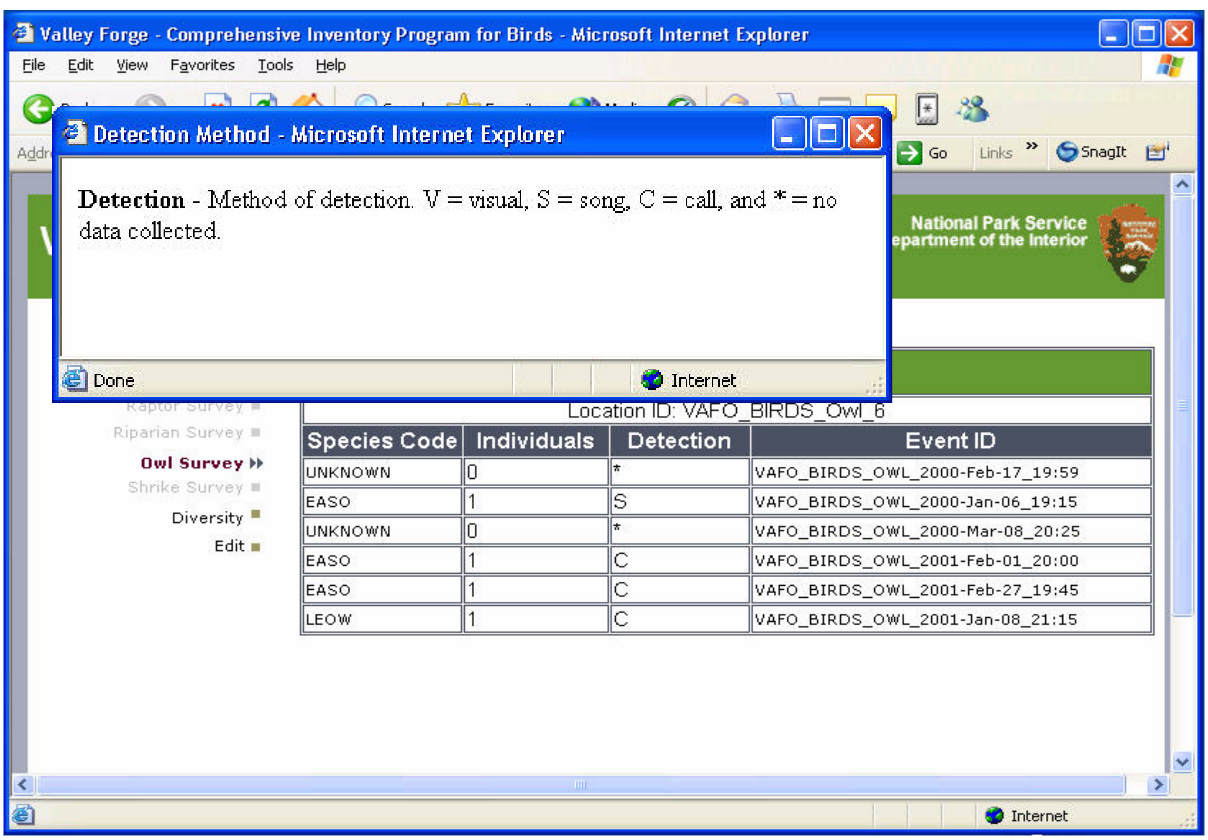

Figure 4.8.1 Extended Functionality with JavaScript

it was not. H6a

This is just one example of how using typical web interfaces integrated with ArcIMS or another internet map server can extend the functionality of spatial database systems, and allow an almost unlimited amount of customization. Pop-ups can also be used to display additional information queried from the MySQL database. This allows for the webpage to open pop-ups with infrequently used data from the MySQL database. Additionally this keeps the main data display from being overwhelmingly large to the user. For example, on the Owl Survey web page, the EventIDs listed under the EventID heading can be clicked on to open a pop-up that queries the MySQL database for additional information related to the given EventID as seen in Figure 4.8.2. The information displayed includes weather conditions, the date, and the EventID observers. This information has been queried from several tables within the MySQL database, based on a specific EventiID.

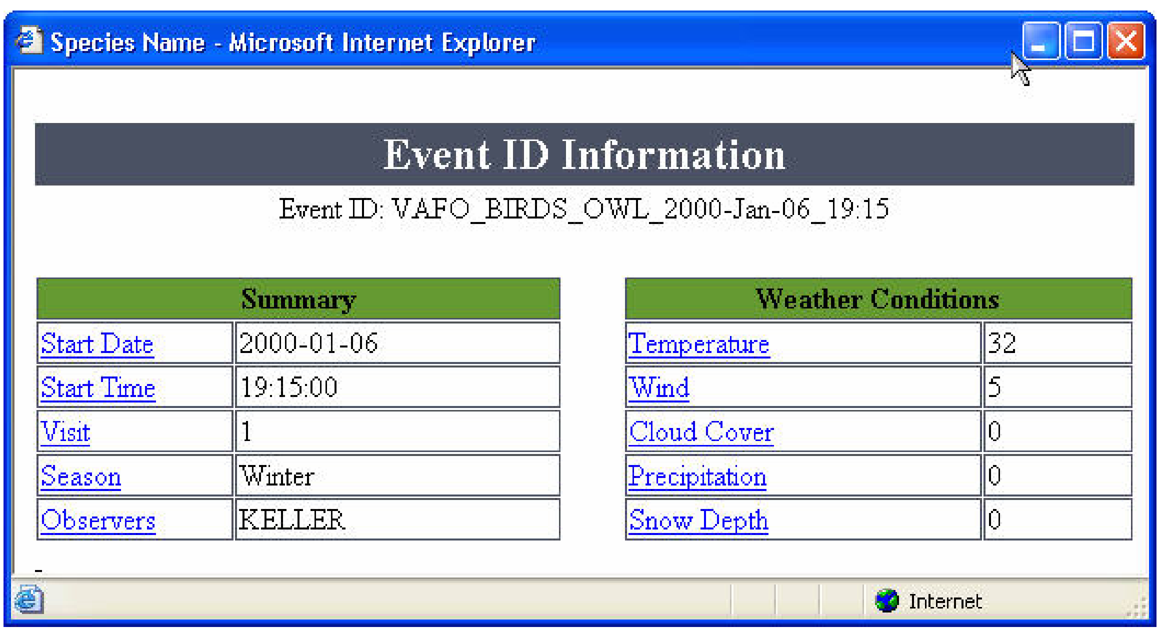

Figure 4.8.2: Javascript pop-up querying the MySQL database.

Javascript used in creating this application is integrated and commented in the complete source code in Appendix F.

4.9 Customizing ArcIMS

4.9.1 Activating and Coding the Hotlink Tool in ArcIMS

The hyperlink tool is used to create links from the Survey Point shapefile to web pages containing additional information and calculations associated with a given point feature. This is the function that allows the spatial data to connect to the non-spatial data housed in the MySQL database. The hotlink, or hyperlink, tool allows a user to click a feature on the map and open a link to a picture, website, or file. In this case the prototype being developed required a link to a webpage. Although not available through ArcDesigner, the hyperlink tool is available by editing the arcimsparam.js file. The arcimsparam.js file is a javascript file generated for each page created using ArcDesigner. This javascript file contains parameters specific to calling the webpage. Within the arcimsparam.js file there are several lines of code that can be uncommented and global variables whose values can be changed. Editing this file alters the way that the webpage displays and behaves. Instructions for adding the hyperlink tool by editing arcimsparam.js can be found in ESRI's ArcIMS 9 Customizing the HTML Viewer Manual, which comes with the software. The modified arcimsparam.js file can be found in Appendix G.

To add the hyperlink tool to the toolbar, the variable useHyperLink is set to true instead of false in arcimsparam.js. The list of layers with hyperlinks is stored in the variable hyperLinkLayers. Since this application only has one layer, Survey Point, with a hyperlink only the first row in hyperLinkLayers needs to be defined. The value assigned to hyperLinkLayers must be the value given exactly as it is seen in the viewer table of contents. A similar process is used to identify the field that houses the hyperlink. This is done by assigning values to the array hyperLinkFields. The code used for this application is as follows.

```
hyperLinkLayers[0] = “Survey Points”;
hyperLinkFields[0] = “LINK”;
```

Additionally, arrays can be set-up to automatically add on prefixes and/or suffixes to the hyperlink. It is usually advisable to use a prefix whenever possible, so that if the location of website or file being hyperlinked to is moved, it is only necessary to change a single value in the arcimsparam.js file instead of changing each field in the shapefile. The prefix for this application was set-up by defining the first row of the array hyperLinkPrefix.

```
hyperLinkPrefix[0] = “http://152.1.32.120/vafo/”
```

By activating the hyperlink tool for this field, a link is also added to the values in the hyperlinked field, LINK, in the attribute table. This allows a user to click directly in the attribute table and link to the given webpage as seen in Figure 4.10.1.1. This figure shows the attributes including the LINK field of selected attributes in ArcIMS at the bottom of the ArcIMS webpage. If the user clicks one of these links it opens a separate webpage with the associated non-spatial data as shown in Figure 4.10.1.1.

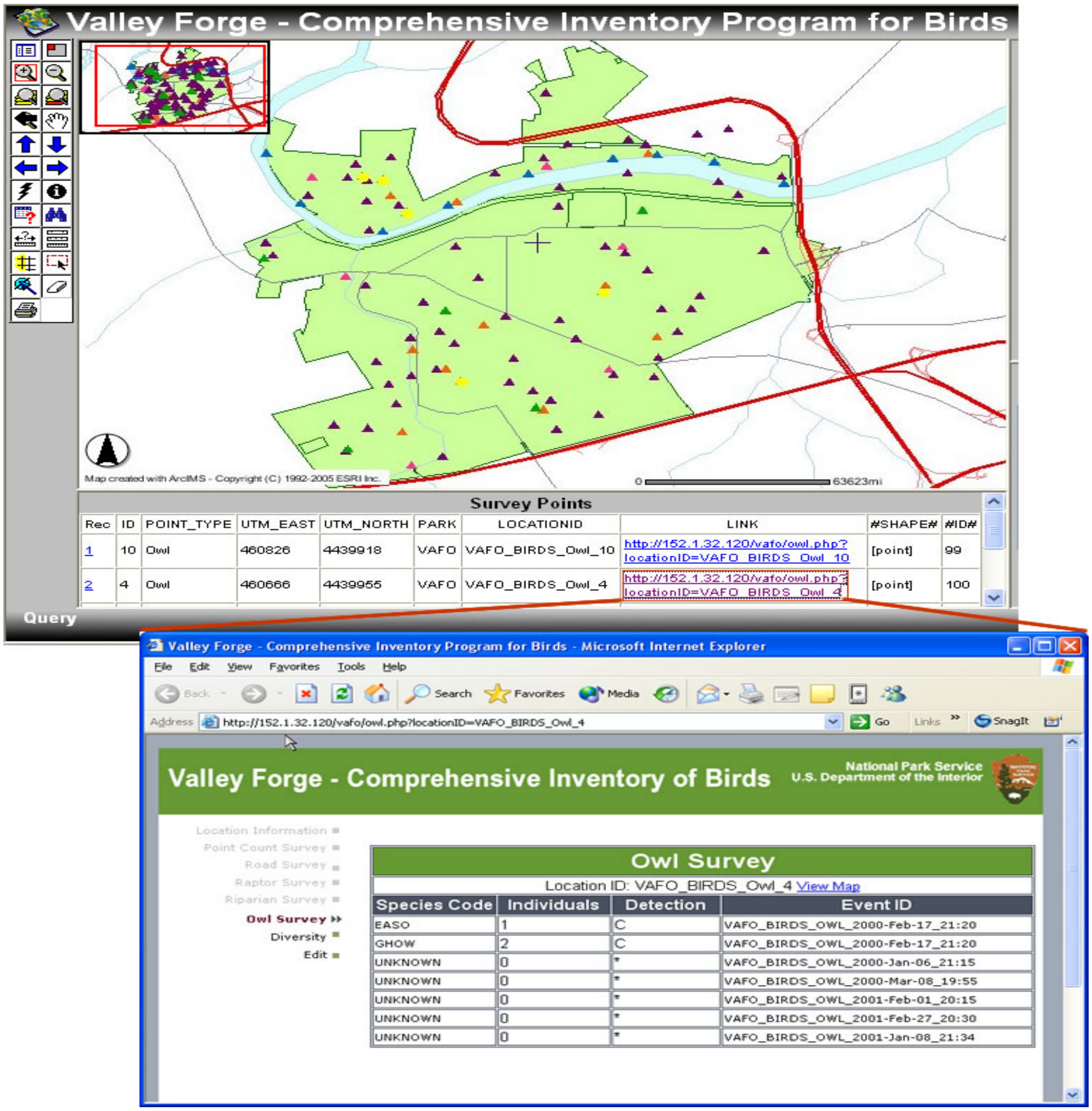

Figure 4.9.1.1: Spatial attribute table linked to the non-spatial data

In addition to enabling the hyperlink, the variable pixelTolerance was changed from a value of 2 to a value of 4 in arcimsparam.js. Changing this variable adjusts how accurate the user must click on the feature when using the hyperlink or identify tool.

Changing the value to 4 increased the allowable area making it easier for a user to accurately click on the desired feature.

4.9.2 Adding an HTML Form and Query Frame to the ArcIMS Webpage

A user may need to select spatial data based on queries to the non-spatial data. For example, if a user wanted to know which survey points had a specific bird species sighting they would need to query the tabular data associated with each of the locationID's, but desire a spatial display of the points resulting from the query. By adding an additional frame containing an HTML form to the ArcIMS webpage, users can query the MySQL database based on several tables and display the results' attribute table and locations on the map. This HTML form can be as complex or as simple as the designer chooses to make it.

4.9.2.1 Adding an Additional Frame to the Map Webpage

The webpage displaying the map of Valley Forge is actually a series of webpages displayed within a parent webpage. This is done with frames. The parent webpage, viewer.htm, contains information on how to divide the web browsers space into individual compartments or frames. It also specifies what those frames are named, and what webpages to initially load into each frame. For example the title bar has a frame to itself. The title bar webpage is called top.htm and is loaded into the frame TopFrame. The purpose of naming the frames is to allow links within the entire frameset to reference a different frame with a hyperlink or javascript function.

To create an additional frame for this application, the HTML in viewer.htm must be edited. The table of contents frame, TOCFrame, was split into two separate frames:

TOCFrame and Form. TOCFrame loads the same file, TOCFrame.htm, it originally loaded. The frame Form loads the page formvafo.html. The sizing was specified so that both of these frames would be 370 pixels wide, and that the TOCFrame would be 300 pixels tall. The frameset code for these two frames is as follows:

```
<FRAMESET ROWS="300,*">
<FRAME NAME="TOCFrame" SRC="TOCFrame.htm" MARGINWIDTH="0"
MARGINHEIGHT="0" SCROLLING="No" FRAMEBORDER="Yes" RESIZE="YES">');
<FRAME NAME="Form" SRC="../../vafo/formvafo.html" MARGINWIDTH="4"
MARGINHEIGHT="0" SCROLLING="Auto" FRAMEBORDER="Yes" RESIZE="YES">
</FRAMESET>
```

The full code for viewer.htm can be found in Appendix H.

4.9.2.2 Creating a Questionnaire to Query the Internet Map Service.

An HTML form is implemented to allow the user to answer specific questions about the non-spatial data, and then query the spatial data based on the chosen conditions placed on the non-spatial data. The results are displayed in the attribute table and in the map display. Each of the components used in the application development up to this point were used in developing this integrated questionnaire. Standard HTML forms are used to create the questionnaire interface. When the user submits the information, a PHP page is displayed. PHP works particularly well with HTML forms because it automatically stores all of the information submitted in the form into a set of variables.   These variables are used to construct a query that is sent to the MySQL database and returns an array of LocationID’s that meet the given criteria. The array of LocationID’s is then used to construct a query, which can be used with javascript, to use the query function within ArcIMS to query the map for the relevant features.

The form is created with three different types of input options: a multi-select list, radio buttons, and checkboxes. The list allows user to select one or more species of interest for which to search. The list is created within the overall form tag with the select tag. Inside the select tag, option tags are used to populate the list. The code below demonstrates this with an abridged list of species.

```
<select name="species[]" size="8" multiple>
<option value="ANY" selected>Any Species</option>
<option value="ACFL">ACFL - ACADIAN FLYCATCHER</option>
<option value="ALFL">ALFL - ALDER FLYCATCHER</option>
<option value="AMBD">AMBD - AMERICAN BLACK DUCK</option>
</select>
```

There are several options defined in the select tag. In order for the PHP to work properly, the form select must be named. Since multiple choices can be selected, it is named as an array, species[], denoted by the brackets following the variable name. The size option defines how many lines tall the select box will be. The key word “multiple” denotes that more than one item can be selected from the list by using the Ctrl or Shift button. Within the option tag, two preference are specified. In each option tag, the value is defined. The value is the string that will be passed to the PHP variable upon submission by the user. In the first option tag, the key word “selected” is used to denote that that choice should be selected upon the page loading.

The radio buttons work similar to the selection list. The difference is that only one radio button may be selected at any given time, and the options are displayed differently. The radio buttons are used to give a choice of the sex of the birds. Since this information is only included within the Riparian Survey, selecting Male or Female will limit the search to that survey. The input tag with the type defined as radio is used to create the radio buttons. Any radio buttons on the page with the same name are considered part of the same question and only one button in the set can be selected.

```
<input type="radio" name="sex" value="M">Male</label>
<br>
<label>
<input type="radio" name="sex" value="F">Female</label>
<br>
<label>
<input type="radio" name="sex" value="E" checked>Either</label>
```

Like the “selected” key word in the list tag, the “checked” key word in the input tag designates that that option should be selected upon loading the page. Checkboxes also use the input tag, but the type attribute is set to “checkbox” instead of “radio”. Each checkbox tag is given a different name, because each one is asking a separate yes or no question.

When the user clicks the submit button, the PHP page results.php is loaded. This page displays the same form again so that the user can carry out a new query, but it also processes the information from the previous query. In the form tag in the HTML page, the option method = post was used. This means that all of the information input by the user is automatically stored in a variable called $_POST[‘*name*’], where *name* is the name of the form component. For example, the variable created for the input from the radio button in this application is $_POST[‘sex’]. Using these variables, the results page constructs a MySQL statement to query the MySQL database for all LocationIDs that meet the given criteria. The LocationID’s are then stored in an array within PHP and used to construct a string, stored in the variable $squery. This string is a query formatted to be input into the javascript query function built into ArcIMS. A javascript variable is defined to be equal to the PHP variable $squery with the following code.

```
var javasquery = "<? print($squery); ?>";
```

Since the PHP script, the code within the <? ?> tags, is processed server side before it is sent to the user, and the javascript is processed by the end user's browser, the source code sent to the user will contain the dynamic value of $squery as opposed to the PHP script. Following this, the javascript carries out three more actions to execute the query. First, it sets the tool to the query tool. Second, it sets the active layer to the first layer, Survey Points. And finally, it calls the query function, passing the variable containing the query. The code for this is as follows:

```
parent.MapFrame.clickFunction('query');
parent.MapFrame.setActiveLayer(0);
parent.MapFrame.sendQueryString(javasquery);
```

The execution of this code causes the TextFrame in viewer.htm to load rows in the attribute table of interest, and it causes the MapFrame to display the map with all features of interest selected. All of this code executes upon results.php loading, meaning that when the user submits the questionnaire, the results are immediately displayed.

4.10 Linking back to the ArcIMS Map from the Survey Information.

After the user has used the hotlink tool to open a separate web browser for looking at a specific LocationID's data, there is a link on each page that will reopen the ArcIMS map in a new window and highlight the selected point as seen in Figure 4.10.1.

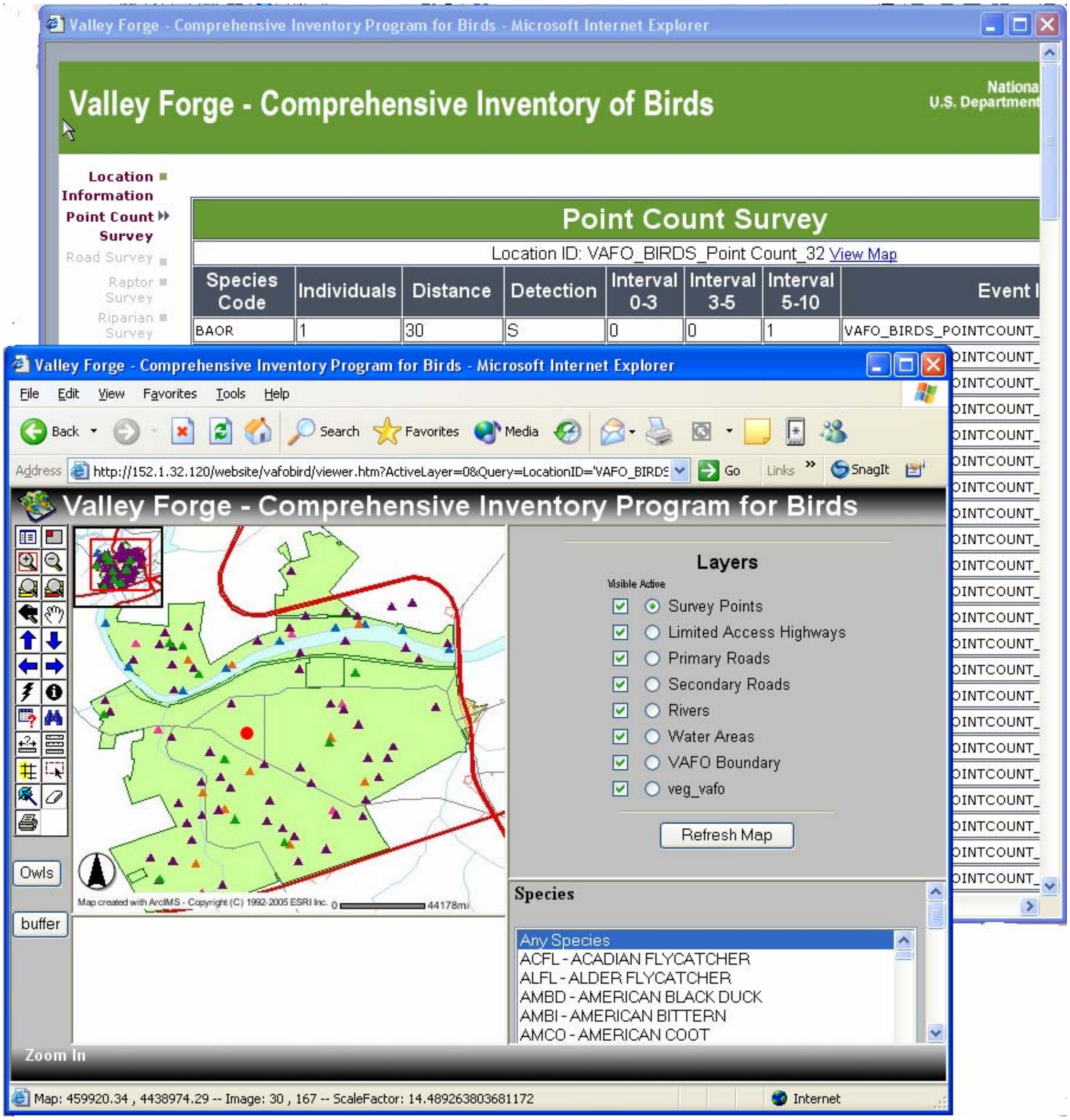

Figure 4.10.1 Database Webpage Link to ArcIMS

Additionally, there is a link on the diversity page that will reopen ArcIMS and highlight all of the points in the selected survey. These selections are made possible by passing a query through the URL of the link. For example, to open the ArcIMS viewer with the LocationID VAFO_BIRD_OWL_1 selected, the URL would be:

http://152.1.32.120/vafobird/viewer.htm/?ActiveLayer=0&Query=LocationID=

‘VAFO_BIRD_OWL_1’.

Since the LocationID changes, PHP is integrated with the HTML to create a link that dynamically fills in the correct LocationID. For example, the code would look as follows:

```
<a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=
LocationID='<? print(urldecode($locationID)); ?>'" target =
NEW><font size ="-1">View Map of Location</a>
```

The PHP script, everything between the <? and ?> tags, gets the LocationID from the URL, where it is passed to the webpage. The link is then displayed with the proper LocationID filled in. The URL of the ArcIMS page can be used to query other information. As an example, in this application it queries the Point Type on the diversity webpage. An example URL querying the map service for all points where an owl survey was done is:

http://152.1.32.120/website/vafobird/viewer.htm?ActiveLayer=0&Query=POINT_TYPE='Owl'.

This query will select several features as opposed to just one, since a primary key was not used to query the attribute table. The queries can be as complex or as simple as the user desires, but they must query the attribute table of a shapefile. Currently many browsers limit the length of a URL to 2048 characters. This must be taken into account when designing links that query the ArcIMS to ensure that the query does not get cut short.

4.11 Validation of Results

To ensure proper function, several test queries and calculations were carried out using the created application as well as another independent method. For basic selection queries, the queries that were programmed into the PHP script to execute when the page was loaded were manually input into a MySQL command prompt. The results were then compared to the displayed data on the appropriate webpage. There were no discrepancies found in the final version while conducting this type of test. A similar process was followed with updates, deletions, and inserts. To accurately carry out these tests, the database had to be destroyed and recreated in its original form to compare results. The reconstruction was done with a set of MySQL commands that could be all at once pasted into the MySQL command prompt and would destroy and recreate the database. This ensured identical create table statements and populate statements for each instance. After this, several edits were carried out using the project web pages. The new data was examined through the display pages and the new values noted. The database was then destroyed and recreated. These same edits were then carried out with the MySQL statements that should have been executing within the PHP of the web page. Select queries were then used to check the edit statements. No errors were found in the final version during this process.

To check the advanced calculations that were a combination of MySQL queries and PHP script, a more complex process was used. The values from the prototype application were noted for a given LocationID. The MySQL statements that were executed within the PHP code were manually entered into a MySQL command prompt. The results were copied into a text file and converted to comma delimited using the replace tool. The comma delimited text file was then imported into

Microsoft Excel. Once in Excel, calculations were set up within the table to carry out the calculations that would normally be carried out in PHP. This is actually less complex in Excel because of the ability to count the number of rows on a case-by-case basis instead of having a script calculate it for all cases. There were no errors found in the final prototype using this process to check advanced calculations.

5. Portability

The application developed for the Valley Forge I&M Birds Survey was created specifically for the database structure present in the Birds Survey. The portability of this application is dependent on the structure of the database for which it is being used. For example, a database of bird data for another park, with the exact same database structure could use the identical interface. The one exception to this would be changing the pages so that they were titled appropriately to the park, as opposed to all saying Valley Forge. Having the exact same database structure would mean that all of the tables had the same names, the same number of attributes, the same attribute names, and the same data types. For surveys of different organisms such as mammals or butterflies, a new set of .PHP pages and MySQL queries would have to be created, but the process would be the same and much of the structure and code could be pulled from the original project. For instance, a point count survey of mammals could collect the same types of data as a point count survey for birds. This would allow the user to reuse the script for the bird point count survey, but the user would have to change the table and attribute names in the MySQL query. Although applying this approach to a wide range of surveys and parks would require a reasonable amount of effort at first, it would allow for constant updates to the databases, and wide user accessibility. As a demonstration of portability an application was also set up for Gettysburg National Military Park Comprehensive Bird Survey. As of July 2005, this site could be seen at http://152.1.32.120/gettbird/ .

To move the application between different computers or servers, four sets of files need to be moved. The first set is the shapefiles and AXL file used to create the map service. Once on the new computer the AXL file should be opened to ensure it is properly referencing the shapefiles. Following this, a service should be set up in Arc Administrator using the vafobird.axl file. The second set of files are the files within the vafobird website folder. Only the edited files need to be copied. These include, arcimsparam.js and viewer.htm. Once the website is created within ArcDesigner, these files should replace the files in the newly created website folder. The third set of files to be transferred are the files stored within the Apache htdocs folders, or the files that display the database information in a set of separate webpages. These files should be copied into the Apache htdocs folder on the new computer. The final data to be transferred is the MySQL database. To do this, the database has to be recreated on the new computer by inputting each CREATE TABLE statement and loading text files containing current data. Now that all of the necessary files are on the new computer, some of the files must be edited. In arcimsparam.js, the value of HyperLinkPrefix must be changed to the appropriate IP Address and folder name for referencing the separate set of webpages used to display database information. Additionally, each file ending in .php will need to have the connection information edited to be appropriate to the new computer. The IP address should be changed to the IP address of the current computer, and the password should be changed to the password to the root account for MySQL. A detailed direction guide for transferring the application from one computer to a different computer can be found in Appendix I.

6. Results

The purpose of this project was to create an online database management model for spatial and non-spatial data that was easily editable and could carry out complex calculations on the fly with all current data. The stated purpose was carried out by integrating ArcIMS, to handle spatial data, with PHP and MySQL, to handle the non-spatial data. PHP and Javascript were used to integrate the spatial and non-spatial data. The end product allowed for: display of tabular non-spatial data based on a selected spatial feature, queries on the spatial data based on the non-spatial data, updates to the non-spatial data, and display and complex calculations with the non-spatial data. Accuracy tests were carried out on the I&M Valley Forge Comprehensive Bird Survey prototype to ensure that calculations, selections, and queries were being carried out properly. No inconsistencies were found during this process. The application was also recreated for the Bird Survey of Gettysburg National Military Park and tested for accuracy with no inconsistencies. Additionally, the original Valley Forge application was moved to another computer. These two exercises demonstrate the portability of the prototype application.

7. Discussion

The prototype developed using the Valley Forge Comprehensive Bird Survey data was designed to demonstrate to future developers and end users some of the capabilities available to ArcIMS designers when creating an Internet mapping service. This example can be used to demonstrate a method for linking spatial and non-spatial data, and allowing multi-user online edits of tabular data. The design decisions made when developing future applications on which data should be displayed, what queries should be readily available to the user, and what calculations should be done, would ideally be made jointly by the developer and the end user. An end user can examine the prototype to gain insight on what types of development can be done to meet their needs. Working with the individual designing the ArcIMS web page, an application customized to the needs of a specific park, program or the National Park Service as a whole, can be developed.

Documenting online, editable data presents a new challenge. Typically a set of metadata is produced with each edition of a dataset that is published. Since the tabular data through a system such as this one can be edited on a continuous bases it would be impractical to create new metadata each time the dataset is edited. The initial metadata for the tabular data should include the maintenance and update frequency, as well as a note under supplemental information giving more details on when the metadata is updated. The metadata for the tabular data for this prototype should only change in two ways. First, if there were new birds added to the species list the taxonomy section of the biological metadata would need to be amended.

Secondly as new attributes are added the attribute count will increase in the metadata. The decision on when to update metadata should be made prior to the metadata becoming outdated, and the policy included within the supplemental information section of the metadata. For example, a policy might be adopted that any time a 5% increase in the number of attributes documented in the metadata is reached the metadata must be updated, or once a year, or before long periods with no updates, which ever is more frequent. The policy on when to write new metadata can be made depending on the project, and frequency and timing of updates.

8. Future Applications

Although this prototype was created using the inventory data for Valley Forge, it would be very well suited for use with monitoring data as well. Since the monitoring phase of the Inventory and Monitoring Program is likely to involve repeated visits to the same location to collect the same data, the update function would provide an adept way of handling these edits. The format of the displayed information, as well as the calculations and queries to be carried out, can easily be varied to meet the needs of park administrators and/or biologists. For example if a park biologist frequently needed to locate all LocationID's where a bald eagle had been spotted, a tool could be built to select all points where one of these species had been spotted, as well as launching a web browser containing information from the database on the sightings. Ideally, if the target end users are consulted in the development of a similar application, it will be an easy solution for bringing GIS to individuals without software or expertise. The time needed to develop an application like the prototype for the Valley Forge Bird Survey can vary significantly depending on the skill set of the designer, the size of the database, and the complexity of the system being designed. Software installation and configuration takes from 2-4 hours. After this is done developing an application from scratch can take anywhere from a couple days to weeks, or in the case of an extremely large or complex system months.

This design also has applications outside of the Inventory and Monitoring Program and the National Park Service. For example, a county keeping track of parcels of land and attributes associated with each parcel might choose to implement a similar application so that several users could update parcel attributes at once, while others could query the online database and view the desired information.

Future research should include additional integration between the database management system and ArcIMS. Specifically, the current application must query the non-spatial data and use the results to query the spatial data. Developing a link that would make it possible to do a single query, as opposed to two linked queries, would be a beneficial application, that could allow more flexibility in creating queries. Additionally, with a more extensive integration between spatial and non-spatial data, an advanced user could use the program to construct queries of the non-spatial and spatial data from scratch. This could lead to an application that was well suited for to the needs of an advanced user. Although further integration is desirable, it is still recommended that the non-spatial data be stored separately in a Database Management System in order to take advantage of the inherent functionality such as autonomy, multi-user access, and live updates. Since the National Park Service is currently using Oracle, moving the Database Management System into Oracle would give more consistency with other applications and easier import and export of data on the server side. Oracle can be integrated with PHP similar to the way that MySQL works with PHP. Within the web page source code the connection statements would need to be changed if a move to Oracle was made, as well as some of the SQL query syntax, but overall the majority of the code could be used as is. With the internet continually growing new functionality will inevitably be created for HTML, PHP, MySQL, Javascript, and ArcIMS. As new capabilities and software is introduced the prototype application should be reevaluated to examine the ability to add new functionality, or manage the current applications more efficiently.

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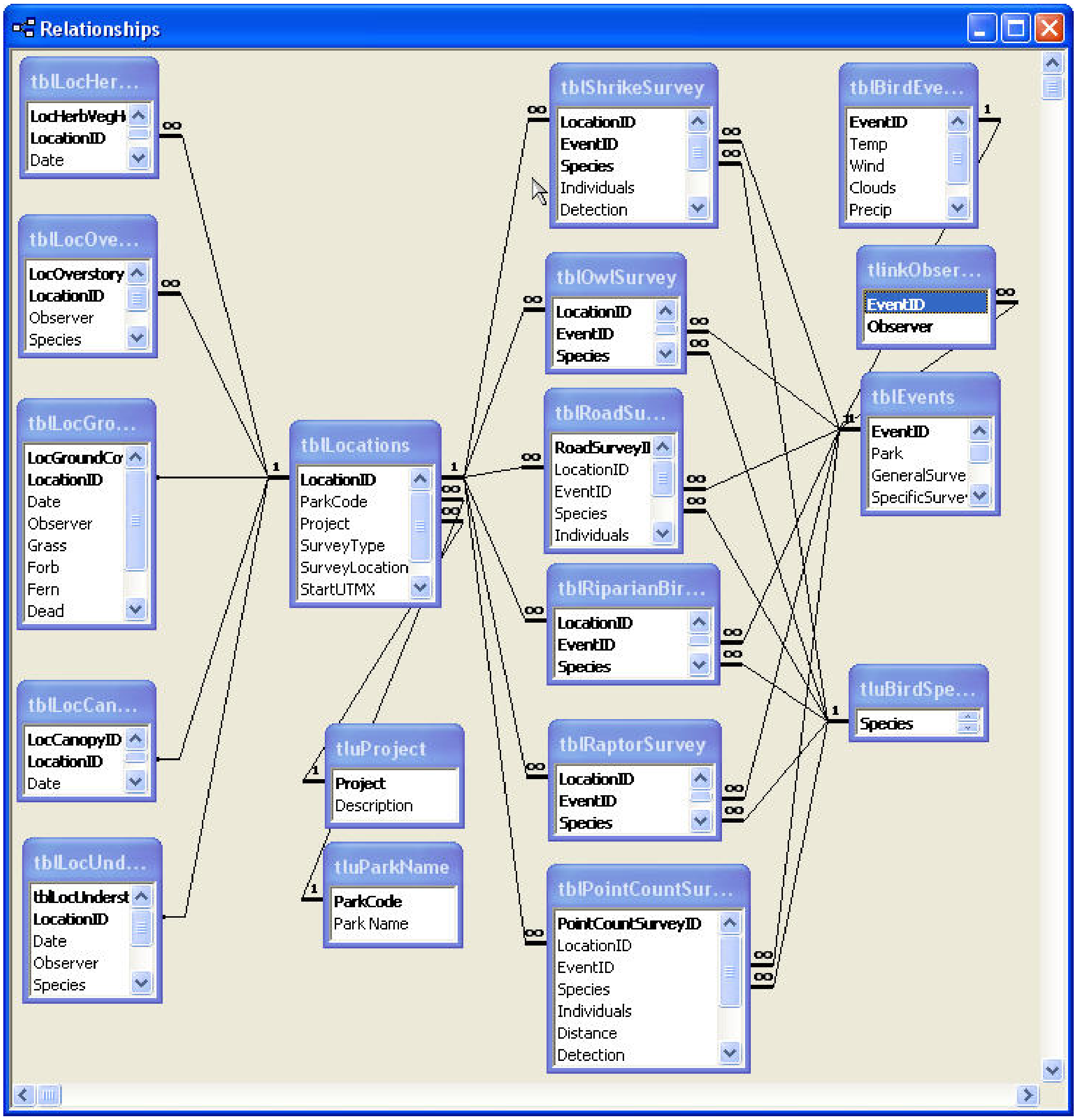
Appendix A:
Visual Basic Script for Calculation the LINK field

```
dim x as string

If [POINT_TYPE] = "Owl" Then x = "owl.php?locationID=VAFO_BIRDS_Owl_" & [ID]

If [POINT_TYPE] = "Point Count" Then x =
"pointcount.php?locationID=VAFO_BIRDS_Point+Count_" & [ID]

If [POINT_TYPE] = "Raptor" Then x =
"raptor.php?locationID=VAFO_BIRDS_Raptor_" & [ID]

If [POINT_TYPE] = "Riparian Bird" Then x =
"riparian.php?locationID=VAFO_BIRDS_Riparian+Bird_" & [ID]

If [POINT_TYPE] = "Road" Then x =
"road.php?locationID=VAFO_BIRDS_Road_" & [ID]
```

Appendix B:
Existing Relationships in the Original Microsoft Access Database



Appendix C:
CREATE TABLE Statements

tluParkName

```
CREATE TABLE tluParkName(
ParkCode                    VARCHAR(4)         NOT NULL,
ParkName                    VARCHAR(255)       NULL,
PRIMARY KEY (ParkCode));
```

tluProject

```
CREATE TABLE tluProject(
Project                     VARCHAR(10)        NOT NULL,
Description                 VARCHAR(255)       NULL,
PRIMARY KEY (Project));
```

tblEvents

```
CREATE TABLE tblEvents(
EventID                     VARCHAR(60)        NOT NULL,
ParkCode                    VARCHAR(4)         NOT NULL,
GeneralSurveyType           VARCHAR(50)        NULL,
SpecificSurveyType          VARCHAR(50)        NULL,
StartDate                   DATE               NULL,
StartTime                   TIME               NULL,
Visit                       INT                NULL,
Season                      VARCHAR(50)        NULL,
PRIMARY KEY (EventID),
FOREIGN KEY (ParkCode)      REFERENCES  tluParkName(ParkCode));
```

ttblBirdEvents

```
CREATE TABLE tblBirdEvents(
EventID                     VARCHAR(60)        NOT NULL,
Temp                        DOUBLE             NULL,
Wind                        DOUBLE             NULL,
Clouds                      DOUBLE             NULL,
Precip                      DOUBLE             NULL,
SnowDepth                   DOUBLE             NULL,
PRIMARY KEY (EventID),
FOREIGN KEY (EVENTID)       REFERENCES         tblEvents(EventID));
```

tblLocations

```
CREATE TABLE tblLocations(
LocationID                  VARCHAR(255)       NOT NULL,
ParkCode                    VARCHAR(4)         NOT NULL,
Project                     VARCHAR(10)        NOT NULL,
SurveyType                  VARCHAR(50)        NULL,
SurveyLocation              VARCHAR(50)        NULL,
StartUTMX                   DOUBLE             NULL,
StartUTMY                   DOUBLE             NULL,
PRIMARY KEY (LocationID),
FOREIGN KEY (ParkCode)      REFERENCES         tluParkName(ParkCode),
FOREIGN KEY (Project)       REFERENCES         tluProject(Project));
```

tblLocCanopy

```
CREATE TABLE tblLocCanopy(
LocCanopyID                INT                 NOT NULL,
LocationID                 VARCHAR(255)        NOT NULL,
Date                       DATE                NULL,
Canopy                     DOUBLE              NULL,
Observer                   VARCHAR(50) NULL,
PRIMARY KEY (LocCanopyID, LocationID),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID));
```

tblLocGroundCover

```
CREATE TABLE tblLocGroundCover(
LocGroundCoverID           INT                 NOT NULL,
LocationID                 VARCHAR(255)        NOT NULL,
Date                       DATE                NULL,
Observer                   VARCHAR(50)         NULL,
Grass                      INT                 NULL,
Forb                       INT                 NULL,
Fern                       INT                 NULL,
Dead                       INT                 NULL,
Bare                       INT                 NULL,
Log                        INT                 NULL,
PRIMARY KEY (LocGroundCoverID, LocationID),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID));
```

tblLocHerbVegHeight

```
CREATE TABLE tblLocHerbVegHeight(
LocHerbVegHeightID         INT                 NOT NULL,
LocationID                 VARCHAR(255)        NOT NULL,
DATE                       DATE                NULL,
Observer                   VARCHAR(50)         NULL,
VegHeight                  DOUBLE              NULL,
PRIMARY KEY (LocHerbVegHeightID, LocationID),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID));
```

tblLocOverstory

```
CREATE TABLE tblLocOverstory(
LocOverstoryID             INT                 NOT NULL,
LocationID                 VARCHAR(255)        NOT NULL,
Observer                   VARCHAR(50)         NULL,
Species                    VARCHAR(255)        NULL,
DBH                        DOUBLE              NULL,
Date                       DATE                NULL,
PRIMARY KEY (LocOverstoryID, LocationID),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID));
```

tblLocUnderstoryAndShrub

```
CREATE TABLE tblLocUnderstoryAndShrub(
tblLocUnderstoryAndShrubID INT                 NOT NULL,
LocationID                 VARCHAR(255)        NOT NULL,
Date                       DATE                NULL,
Observer                   VARCHAR(50)         NULL,
Species                    VARCHAR(50)         NULL,
Understory                 DOUBLE              NULL,
TallShrub                  DOUBLE              NULL,
ShortShrub                 DOUBLE              NULL,
PRIMARY KEY (tblLocUnderstoryAndShrubID, LocationID),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID));
```

tluBirdSpecies

```
CREATE TABLE tluBirdSpecies(
Species                    VARCHAR(255)      NOT NULL,
CommonName                 VARCHAR(255)      NULL,
PRIMARY KEY (Species));
```

tblOwlSurvey

```
CREATE TABLE tblOwlSurvey(
OwlSurveyID                INT               NOT NULL,
LocationID                 VARCHAR(255)      NOT NULL,
EventID                    VARCHAR(60)       NOT NULL,
Species                    VARCHAR(255)      NOT NULL,
Individuals                INT               NULL,
Detection                  VARCHAR(50)       NOT NULL,
PRIMARY KEY (OwlSurveyID),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID),
FOREIGN KEY (EventID)      REFERENCES  tblEvents(EventID),
FOREIGN KEY (Species)      REFERENCES  tluBirdSpecies(Species));
```

tblPointCountSurvey

```
CREATE TABLE tblPointCountSurvey(
PointCountSurveyID         INT               NOT NULL,
LocationID                 VARCHAR(255)      NOT NULL,
EventID                    VARCHAR(60)       NOT NULL,
Species                    VARCHAR(255)      NOT NULL,
Individuals                INT               NULL,
Distance                   INT               NULL,
Detection                  VARCHAR(50)       NULL,
Interval0_3                DOUBLE            NULL,
Interval3_5                DOUBLE            NULL,
Interval5_10               DOUBLE            NULL,
PRIMARY KEY (PointCountSurveyID),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID),
FOREIGN KEY (EventID)      REFERENCES  tblEvents(EventID),
FOREIGN KEY (Species)      REFERENCES  tluBirdSpecies(Species));
```

tblRaptorSurvey

```
CREATE TABLE tblRaptorSurvey(
RaptorSurveyID             INT               NOT NULL,
LocationID                 VARCHAR(255)      NOT NULL,
EventID                    VARCHAR(60)       NOT NULL,
Species                    VARCHAR(255)      NOT NULL,
Individuals                INT               NULL,
Detection                  VARCHAR(50)       NULL,
PRIMARY KEY (RaptorSurveyID),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID),
FOREIGN KEY (EventID)      REFERENCES  tblEvents(EventID),
FOREIGN KEY (Species)      REFERENCES  tluBirdSpecies(Species));
```

tblRiparianBirdSurvey

```
CREATE TABLE tblRiparianBirdSurvey(
RiparianBirdSurveyID             INT               NOT NULL,
LocationID                 VARCHAR(255)      NOT NULL,
EventID                    VARCHAR(60)       NOT NULL,
Species                    VARCHAR(255)      NOT NULL,
Individuals                INT               NULL,
Sex                        VARCHAR(50)       NULL,
```

```
PRIMARY KEY (RiparianBirdSurveyID),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID),
FOREIGN KEY (EventID)      REFERENCES  tblEvents(EventID),
FOREIGN KEY (Species)      REFERENCES  tluBirdSpecies(Species));
```

tblRoadSurvey

```
CREATE TABLE tblRoadSurvey(
RoadSurveyID               INT               NOT NULL,
LocationID                 VARCHAR(255)      NOT NULL,
EventID                    VARCHAR(60)       NOT NULL,
Species                    VARCHAR(255)      NOT NULL,
Individuals                INT               NULL,
Detection                  VARCHAR(50)       NULL,
Interval0_3                DOUBLE            NULL,
Interval3_5                DOUBLE            NULL,
PRIMARY KEY (RoadSurveyID),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID),
FOREIGN KEY (EventID)      REFERENCES  tblEvents(EventID),
FOREIGN KEY (Species)      REFERENCES  tluBirdSpecies(Species));
```

tblShrikeSurvey

```
CREATE TABLE tblShrikeSurvey(
LocationID                 VARCHAR(255)      NOT NULL,
EventID                    VARCHAR(60)       NOT NULL,
Species                    VARCHAR(255)      NOT NULL,
Individuals                INT               NULL,
Detection                  VARCHAR(50)       NULL,
Sex                        VARCHAR(50)       NULL,
Age                        VARCHAR(50)       NULL,
LocationComments           VARCHAR(50)       NULL,
PRIMARY KEY (LocationID, EventID, Species, Sex),
FOREIGN KEY (LocationID)   REFERENCES  tblLocations(LocationID),
FOREIGN KEY (EventID)      REFERENCES  tblEvents(EventID),
FOREIGN KEY (Species)      REFERENCES  tluBirdSpecies(Species));
```

tlinkObservers

```
CREATE TABLE tlinkObservers(
EventID                    VARCHAR(50)       NOT NULL,
Observer                   VARCHAR(50)       NOT NULL,
PRIMARY KEY (EventID, Observer),
FOREIGN KEY (EventID)      REFERENCEs  tblEvents(EventID));
```

Appendix D: Statements for Loading Text Files into Previously Created MySQL Tables

tluParkName

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tluParkName.txt'
INTO TABLE tluParkName
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tluProject

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tluProject.txt'
INTO TABLE tluProject
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblEvents

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblEvents.txt'
INTO TABLE tblEvents
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblBirdEvents

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblBirdEvents.txt'
INTO TABLE tblBirdEvents
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblLocations

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblLocations.txt'
INTO TABLE tblLocations
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblLocCanopy

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblLocCanopy.txt'
INTO TABLE tblLocCanopy
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblLocGroundCover

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblLocGroundCover.txt'
INTO TABLE tblLocGroundCover
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblLocHerbVegHeight

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblLocHerbVegHeight.txt'
INTO TABLE tblLocHerbVegHeight
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblLocOverstory

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblLocOverstory.txt'
INTO TABLE tblLocOverstory
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblLocUnderstoryAndShrub

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblLocUnderstoryAndShrub.txt'
INTO TABLE tblLocUnderstoryAndShrub
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tluBirdSpecies

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tluBirdSpecies.txt'
INTO TABLE tluBirdSpecies
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblOwlSurvey

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblOwlSurvey.txt'
INTO TABLE tblOwlSurvey
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblPointCountSurvey

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblPointCountSurvey.txt'
INTO TABLE tblPointCountSurvey
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblRaptorSurvey

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblRaptorSurvey.txt'
INTO TABLE tblRaptorSurvey
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblRiparianBirdSurvey

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblRiparianBirdSurvey.txt'
INTO TABLE tblRiparianBirdSurvey
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblRoadSurvey

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblRoadSurvey.txt'
INTO TABLE tblRoadSurvey
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tblShrikeSurvey

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tblShrikeSurvey.txt'
INTO TABLE tblShrikeSurvey
```

```
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

tlinkObservers

```
LOAD DATA LOCAL INFILE 'C:/VAFO/txt/tlinkObservers.txt'
INTO TABLE tlinkObservers
FIELDS TERMINATED BY ',' ENCLOSED BY '"'
LINES TERMINATED BY '\r\n';
```

Appendix E:
Select Queries

Since the select queries carried out in this prototype were integrated with PHP and used variables as a part of the query, variables have been listed within the queries in this appendix. All variables, as in PHP are proceded by a dollar sign, $. The purpose of this appendix is to demonstrate the structure of the queries carried out. These queries will not work in MySQL, unless the variables are replaced with appropriate values.

Selects information needed for the Point Count Survey web page.

```
SELECT Species, Individuals, Distance, Detection, Interval0_3,
Interval3_5, Interval5_10, EventID
FROM tblPointCountSurvey
WHERE LocationID = '$locationID';
```

Selects information need for the Road Survey web page.

```
SELECT Species, Individuals, Detection, Interval0_3, Interval3_5, EventID
FROM tblRoadSurvey
WHERE LocationID = '$locationID';
```

Selects information needed for the Raptor Survey web page.

```
SELECT Species, Individuals, Detection, EventID
FROM tblRaptorSurvey
WHERE LocationID = '$locationID';
```

Selects information needed for the Riparian Bird Survey web page.

```
SELECT Species, Individuals, Sex, EventID
FROM tblRiparianBirdSurvey
WHERE LocationID = '$locationID';
```

Selects information needed for the Owl Survey web page.

```
SELECT Species, Individuals, Detection, EventID
FROM tblOwlSurvey
WHERE LocationID = '$locationID';
```

Calculates the average canopy cover for the Location Summary web page.

```
SELECT AVG(Canopy)
FROM tblLocCanopy
WHERE LocationID = '$locationID'
GROUP BY LocationID;
```

Calculates the average vegetation height for the Location Summary web page.

```
SELECT AVG(VegHeight)
FROM tblLocHerbVegHeight
WHERE LocationID = '$locationID'
BY LocationID;
```

Calculates the number of overstory trees for the Location Summary web page.

```
SELECT COUNT(LocOverstoryID)
FROM tblLocOverstory
WHERE LocationID = '$locationID';
```

Calculates the number of understory trees for the Location Summary web page.

```
SELECT SUM(Understory)
FROM tblLocUnderstoryAndShrub
WHERE LocationID = '$locationID' OR Understory <> NULL
GROUP BY LocationID;
```

Calculates the number of tall shrubs for the Location Summary web page.

```
SELECT SUM(TallShrub)
FROM tblLocUnderstoryAndShrub
WHERE LocationID = '$locationID' OR TallShrub <> NULL
GROUP BY LocationID;
```

Calculates the number of short shrubs for the Location Summary web page.

```
SELECT SUM(ShortShrub)
FROM tblLocUnderstoryAndShrub
WHERE LocationID = '$locationID' OR ShortShrub <> NULL
GROUP BY LocationID;
```

Selects the value of the grass attribute for display on the Location Summary web page.

```
SELECT Grass
FROM tblLocGroundCover
WHERE LocationID = '$locationID’;
```

Selects the value of the forb attribute for display on the Location Summary web page.

```
SELECT Forb
FROM tblLocGroundCover
WHERE LocationID = '$locationID';
```

Selects the value of the fern attribute for display on the Location Summary web page.

```
SELECT Fern
FROM tblLocGroundCover
WHERE LocationID = '$locationID';
```

Selects the value of the dead attribute for display on the Location Summary web page.

```
SELECT Dead
FROM tblLocGroundCover
WHERE LocationID = '$locationID';
```

Selects the value of the bare attribute for display on the Location Summary web page.

```
SELECT Bare
```

```
FROM tblLocGroundCover
WHERE LocationID = '$locationID';
```

Selects the value of the log attribute for display on the Location Summary web page.

```
SELECT Log
FROM tblLocGroundCover
WHERE LocationID = '$locationID';
```

Selects or calculates the species, number of that species, average DBH, minimum DBH, and maximum DBH of trees for a given LocationID.

```
SELECT Species, Count(Species), AVG(DBH), MIN(DBH), MAX(DBH)
FROM tblLocOverstory
WHERE LocationID = '$locationID'
GROUP BY Species;
```

Selects species, number of understory trees, tall shrubs and short shrubs for the Location Summary web page.

```
SELECT Species, Understory, TallShrub, ShortShrub
FROM tblLocUnderstoryAndShrub
WHERE LocationID = '$locationID';
```

Counts the number of distinct species for a given LocationID for the diversity web pages.

```
SELECT COUNT(DISTINCT species)
FROM $tblsurvey
WHERE LocationID = '$locationID' AND species <> 'UNKNOWN';
```

Counts the number of distinct species for a given survey for the diversity web pages.

```
SELECT COUNT(DISTINCT species)
FROM $tblsurvey;
```

Determines the dominate species, and the dominate species count for a given LocationID for the diversity web pages.

```
SELECT species, max(totin)
FROM (SELECT species, SUM(individuals) AS totin, LocationID
FROM $tblsurvey
WHERE LocationID = '$locationID'
GROUP BY species) AS spesum
GROUP BY LocationID;
```

Determines the dominate species, and the dominate species count for a given survey for the diversity web pages.

```
SELECT species, max(sumin)
FROM((SELECT species, SUM(individuals) as sumin, ParkCode
FROM((SELECT species, individuals, ParkCode
FROM ($tblsurvey NATURAL JOIN tblLocations)
WHERE ParkCode = 'VAFO' AND SurveyType = 'Point Count' ) AS prkslct)
GROUP BY species) AS spsum)
```

```
GROUP BY ParkCode";
```

Calculates the total number of birds from the specified survey and LocationID for the diversity web pages.

```
SELECT SUM(individuals)
FROM $tblsurvey
WHERE LocationID = '$locationID'
GROUP BY LocationID;
```

Calculates the total number of birds of each species from the specified survey and LocationID for the diversity web pages.

```
SELECT SUM(individuals)
FROM $tblsurvey
WHERE LocationID = '$locationID' AND Individuals <> 0
GROUP BY species";
```

Calculates the total number of birds from the specified survey for the diversity web pages.

```
SELECT SUM(individuals)
FROM $tblsurvey NATURAL JOIN tblLocations
WHERE ParkCode = 'VAFO'
GROUP BY ParkCode;
```

Calculates the total number of birds of each species from the specified survey for the diversity web pages.

```
SELECT SUM(individuals)
FROM $tblsurvey NATURAL JOIN tblLocations
ParkCode = 'VAFO' AND Individuals <> 0
GROUP BY species;
```

Selects the data for populating the update event theme web page.

```
SELECT tblEvents.EventID, ParkCode, GeneralSurveyType, SpecificSurveyType,
StartDate, StartTime, Visit, Season, Observer, Temp, Wind, Clouds, Precip,
SnowDepth, Species, Individuals, $option
FROM (((tblEvents NATURAL JOIN tlinkObservers)NATURAL JOIN tblBirdEvents)
NATURAL JOIN $surveyTable)
WHERE LocationID='$locationID';
```

Appendix F:
Source Code of Developed Web Pages

owl.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
<HTML><HEAD>
<TITLE>Valley Forge - Comprehensive Inventory Program for Birds</TITLE>

<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>

<?

// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
   or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');


//check for GET data
if (isset($_GET["locationID"]))
    $locationID = $_GET["locationID"];
else
    die("Location ID not supplied.");


//OWL SURVEY PAGE
//Selects the owl survey information.
$owl_SQL = "SELECT Species, Individuals, Detection, EventID".
                    " FROM tblOwlSurvey".
                    " WHERE LocationID = '$locationID'";
$owl_RSLT = @mysql_query($owl_SQL) or die('owl_SQL Query failed: ' .
                    mysql_error());

?>

<!--javascript functions for creating pop-ups for specific links. -->
<script type="text/javascript">
<!--
function spcode() {
window.open( "popup/spcode.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function indiv() {
window.open( "popup/indiv.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function detec() {
window.open( "popup/detec.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function eventid() {
window.open( "popup/eventid.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function spdecode(code) {
window.open( "popup/spdecode.php?spdecode=" + code, "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function deteventid(code) {
window.open( "popup/eventid.php?eventid=" + code, "myWindow",
"status = 1, height = 500, width = 650, resizable = 1" )
```

```
}

//-->
</script>

</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->
<? $locationID = $_GET['locationID']; ?>
<TABLE class=mainborder cellSpacing=0 cellPadding=0
width="100%" bgColor=#ffffff border=0>
  <TBODY>
  <TR>
    <TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
      border=0></TD></TR>
  <TR>
    <TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1 border=0></TD>
    <TD><!-- banner -->
      <TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
      bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
        <TBODY>
        <TR class=mainnavbg vAlign=top background="images/backbanner.gif">
          <TD background=vafo_files/backbanner.gif><IMG height=78
            alt="NPS I&amp;M Program" hspace=0
            src="vafo_files/vafobirdbanner.gif" width=559 align=left
          border=0> </TD>
          <TD background=vafo_files/backbanner.gif><IMG height=78
            alt="National Park Service" hspace=0
            src="vafo_files/npsbanner.gif" width=235 align=right
          border=0> </TD></TR></TBODY></TABLE>
<!-- banner end -->
<!-- main navigation and section title -->
<!-- main navigation and section title end -->
<!-- local navigation and content -->
<TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0
width="100%" bgColor=#ffffff border=0>
<TBODY>
<TR vAlign=top bgColor=#ffffff><!-- local navigation -->
  <TD class=contentbg width=10 bgColor=#ffffff height=404></TD>
  <TD width=160><!-- basic navigation -->
       <TABLE class=contentbg cellSpacing=0 cellPadding=2 width="100%"
       bgColor=#ffffff border=0>
  <TBODY>
  <TR>
       <TD height="10">
       </TD>
       <TD height="10">
       </TD>
  </TR>
  <TR vAlign=top>
       <TD align=right height=20 class=localnavdisable>Location Information</TD>
              <TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
                width=10 border=0>
       </TD></TR>
         <TR vAlign=top>
              <TD align=right height=20 class=localnavdisable>Point Count Survey
       </TD>
              <TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
                width=10 border=0></TD></TR>
         <TR vAlign=top>
              <TD align=right height=20 class=localnavdisable>Road Survey
       </TD>
              <TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
                width=10 border=0>
       </TD></TR>
         <TR vAlign=top>
              <TD align=right height=20 class=localnavdisable>Raptor Survey
       </TD>
              <TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
                width=10 border=0></TD></TR>
         <TR vAlign=top>
              <TD align=right height=20 class=localnavdisable>Riparian Survey
       </TD>
```

```
            <TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
              width=10 border=0></TD></TR>
        <TR vAlign=top>
            <TD align=right height=20>
            <? print("<a class=\"localnavactive\" href=\"owl.php?locationID=".
            urlencode($locationID)."\">Owl Survey</A>"); ?>
      </TD>
            <TD><IMG height=10 alt="" src="vafo_files/arrows.gif"
              width=10 border=0>
      </TD></TR>

        <TR vAlign=top>
            <TD align=right height=20>
      <? print("<a class=\"localnav\" href=\"diversityo.php?locationID=".
      urlencode($locationID)."\">Diversity</A>"); ?>
</TD>
      <TD><IMG height=10 alt="" src="vafo_files/square.gif"
              width=10 border=0></TD></TR>
<TR vAlign=top>
      <TD align=right height=20>
      <? print("<a class=\"localnav\" href=\"admin.php?locationID=".
      urlencode($locationID)."\">Edit</A>"); ?>
      </TD>
                                 <TD><IMG height=10 alt=""
src="vafo_files/square.gif"
                                   width=10 border=0>
</TD></TR>
        </TBODY></TABLE></TD>
          <TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
            width=15 border=0> </TD><!-- local navigation end -->
          <TD class=contentbg vAlign=top align=middle>
          <!-- PAGE CONTENT - START -->


<p> </p>
<table width="600" border="1" cellspacing="1" cellpadding="1"
bordercolor="#485160">

  <tr bgcolor="#669933">
      <td height="34" colspan="4"> <div align="center">
      <font color="#FFFFFF" size="5"><strong>Owl
            Survey </strong></font></div></td>
  </tr>
  <tr>
      <td height="11" colspan="4"> <div align="center">Location ID:
      <? print(urldecode($locationID)); ?> <a href=
      "../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='
      <? print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">
      View Map</font></a></div></td>
  </tr>
  <tr bgcolor="#485160">
      <th width="110" height="12">
      <A class=tablesub HREF="javascript:spcode()">Species Code</A></th>
      <th width="99">
      <A class=tablesub HREF="javascript:indiv()">Individuals</A></th>
      <th width="95">
      <A class=tablesub HREF="javascript:detec()">Detection</A></th>
      <th width="283">
      <A class=tablesub HREF="javascript:eventid()">Event ID</A></th>
  </tr>


<!-- moves the owl query results into an array owlsur -->
      <?
      $owlsur = array();
      while($row = @mysql_fetch_array($owl_RSLT))
            array_push($owlsur, $row);

//populates a table with the owl survey information. -->
      for ($i = 0; $i < sizeof($owlsur); $i++)
      {
      ?>
```

```
      <tr>
        <td><? print("<a class=\"localnav\" href=\"
        javascript:spdecode('{$owlsur[$i]['Species']}')\"
        >{$owlsur[$i]['Species']}</a>"); ?></td>
        <td><? print($owlsur[$i]['Individuals']); ?></td>
        <td><? print($owlsur[$i]['Detection']); ?></td>
        <td><? print("<a class=\"localnav\" href=\"
        javascript:deteventid('{$owlsur[$i]['EventID']}')\"
        >{$owlsur[$i]['EventID']}</a>"); ?></td>
      </tr>
      <? } ?>


</table>
<br>
<p> </p>
<p> </p>

<br><br><br><br>

        </TBODY></TABLE><!-- InstanceEndEditable -->
        <!-- PAGE CONTENT - END -->
      <TABLE border=0>
      <!-- Kludge to force NS browsers to wrap left navigation cell.-->
        <TBODY>
        <TR>
             <TD vAlign=center align=middle><IMG height=1
               src="vafo_files/shim.gif" width=570></TD></TR>
               </TBODY></TABLE></TD>
  <TD width=10> </TD>
  <TD width=15> </TD></TR></TBODY></TABLE><IMG height=1 alt=""
  src="vafo_files/shim.gif" width=10 border=0> <!-- utility footer -->
  <TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
       border=0><TBODY>
       <TR vAlign=top>
         <TD vAlign=center align=left><IMG height=1 alt=""
              src="vafo_files/shim.gif" width=9 border=0> <A class=utility
              href="http://science.nature.nps.gov/im/brochure/index.htm">about
              I&amp;M Program</A></TD>
         <TD align=right><A class=utility
              href="http://www.nature.nps.gov/">NatureNet</A><SPAN
              class=utility> | </SPAN><A class=utility
              href="http://www.nps.gov/gis">NPS GIS</A><SPAN
              class=utility> | </SPAN><A class=utility
              href="http://www.nps.gov/">ParkNet</A><SPAN
              class=utility> | </SPAN><A class=utility
              href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1 alt=""
              src="vafo_files/shim.gif" width=9 border=0></TD></TR>
              </TBODY>
              </TABLE>
              <!-- utility footer end --></TD>
    <TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
  border=0></TD></TR>
  <TR>
    <TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
      border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd -->
      </BODY>
      </HTML>
```

pointcount.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
```

```
<HTML><HEAD><TITLE>Valley Forge - Comprehensive Inventory Program for
Birds</TITLE>

<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>

<?

// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');


//check for GET data
if (isset($_GET["locationID"]))
$locationID = $_GET["locationID"];
else
die("Location ID not supplied.");


//Point Count SURVEY PAGE

//selects the point count survey information from MySQL
$pointcount_SQL = "SELECT Species, Individuals, Distance, Detection,
Interval0_3, Interval3_5, Interval5_10, EventID".
" FROM tblPointCountSurvey".
" WHERE LocationID = '$locationID'";
$pointcount_RSLT = @mysql_query($pointcount_SQL) or die('pointcount_SQL
Query failed: ' . mysql_error());

?>

<!-- functions for creating the appropriate pop-up windows for specific
links. -->
<script type="text/javascript">
<!--
function spcode() {
window.open( "popup/spcode.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function indiv() {
window.open( "popup/indiv.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function distance() {
window.open( "popup/distance.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function detec() {
window.open( "popup/detec.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function int0() {
window.open( "popup/int0.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function int3() {
window.open( "popup/int3.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function int5() {
window.open( "popup/int5.html", "myWindow",
```

```
"status = 1, height = 120, width = 500, resizable = 1" )
}
function eventid() {
window.open( "popup/eventid.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function spdecode(code) {
window.open( "popup/spdecode.php?spdecode=" + code, "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function deteventid(code) {
window.open( "popup/eventid.php?eventid=" + code, "myWindow",
"status = 1, height = 500, width = 650, resizable = 1" )
}

//-->
</script>

</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->
<? $locationID = $_GET['locationID']; ?>
<TABLE class=mainborder cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff
border=0>
<TBODY>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1 border=0></TD>
<TD><!-- banner -->
<TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
<TBODY>
<TR class=mainnavbg vAlign=top background="images/backbanner.gif">
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="NPS I&amp;M Program" hspace=0
src="vafo_files/vafobirdbanner.gif" width=559 align=left
border=0> </TD>
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="National Park Service" hspace=0
src="vafo_files/npsbanner.gif" width=235 align=right
border=0> </TD></TR></TBODY></TABLE><!-- banner end --><!-- main
navigation and section title -->
<!-- main navigation and section title end --><!-- local navigation and
content -->
<TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff border=0>
<TBODY>
<TR vAlign=top bgColor=#ffffff><!-- local navigation -->
<TD class=contentbg width=10 bgColor=#ffffff height=404></TD><!-- TD
width="13" height="404"><IMG height="100%" alt="" src="../images/shim.gif"
width=13 border=0></TD -->
<TD width=160><!-- basic navigation -->
<TABLE class=contentbg cellSpacing=0 cellPadding=2 width="100%"
bgColor=#ffffff border=0><!-- InstanceBeginEditable name="NavContent" -->
<TBODY>
<TR>
<TD height="10">
</TD>
<TD height="10">
</TD>
</TR>
<TR vAlign=top>
```

```
<TD align=right height=20>
<? print("<a class=\"localnavactive\"
href=\"locationsum.php?locationID=".urlencode($locationID)."\">Location
Information</A>"); ?>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0></TD></TR>

<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnavactive\"
href=\"pointcount.php?locationID=".urlencode($locationID)."\">Point Count
Survey</A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/arrows.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Road Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0>
</TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Raptor Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Riparian Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Owl Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0>
</TD></TR>

<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"diversitypc.php?locationID=".urlencode($locationID)."\">Diversity</
A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"admin.php?locationID=".urlencode($locationID)."\">Edit</A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0>
</TD></TR>
</TBODY></TABLE></TD>
<TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
width=15 border=0> </TD><!-- local navigation end -->
<TD class=contentbg vAlign=top align=middle><!-- PAGE CONTENT - START --
><!-- InstanceBeginEditable name="PageContent" -->


<p> </p>
<table width="850" border="1" cellspacing="1" cellpadding="1"
bordercolor="#485160">
```

```
<tr bgcolor="#669933">
<td height="34" colspan="8"> <div align="center"><font color="#FFFFFF"
size="5"><strong>Point Count
Survey </strong></font></div></td>
</tr>
<tr>
<td height="11" colspan="8"> <div align="center">Location ID: <?
print(urldecode($locationID)); ?> <a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='<?
print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">View
Map</font></a></div></td>
</tr>
<tr bgcolor="#485160">
<th width="80" height="12"><A class=tablesub
HREF="javascript:spcode()">Species Code</A></th>
<th width="80"><A class=tablesub
HREF="javascript:indiv()">Individuals</A></th>
<th width="80"><A class=tablesub
HREF="javascript:distance()">Distance</A></th>
<th width="80"><A class=tablesub
HREF="javascript:detec()">Detection</A></th>
<th width="60"><A class=tablesub HREF="javascript:int0()">Interval 0-
3</A></th>
<th width="60"><A class=tablesub HREF="javascript:int3()">Interval 3-
5</A></th>
<th width="60"><A class=tablesub HREF="javascript:int5()">Interval 5-
10</A></th>
<th width="290"><A class=tablesub HREF="javascript:eventid()">Event
ID</A></th>
</tr>


<!-- moves the point count survey query results into an array called
pointcountsur -->
<?
$pointcountsur = array();
while($row = @mysql_fetch_array($pointcount_RSLT))
array_push($pointcountsur, $row);

//populates a table with the desired information.
for ($i = 0; $i < sizeof($pointcountsur); $i++)
{
?>
<tr>
<td><? print("<a class=\"localnav\"
href=\"javascript:spdecode('{$pointcountsur[$i]['Species']}')\">{$pointcou
ntsur[$i]['Species']}</a>"); ?></td>
<td><? print($pointcountsur[$i]['Individuals']); ?></td>
<td><? print($pointcountsur[$i]['Distance']); ?></td>
<td><? print($pointcountsur[$i]['Detection']); ?></td>
<td><? print($pointcountsur[$i]['Interval0_3']); ?></td>
<td><? print($pointcountsur[$i]['Interval3_5']); ?></td>
<td><? print($pointcountsur[$i]['Interval5_10']); ?></td>
<td><? print("<a class=\"localnav\"
href=\"javascript:deteventid('{$pointcountsur[$i]['EventID']}')\">{$pointc
ountsur[$i]['EventID']}</a>"); ?></td>
</tr>
<? } ?>


</table>
<br>
<p> </p>
```

```
<p> </p>

<br><br><br><br>

</TBODY></TABLE><!-- InstanceEndEditable --><!-- PAGE CONTENT - END -->
<TABLE border=0><!-- Kludge to force NS browsers to wrap left navigation
cell.-->
<TBODY>
<TR>
<TD vAlign=center align=middle><IMG height=1
src="vafo_files/shim.gif" width=570></TD></TR></TBODY></TABLE></TD>
<TD width=10> </TD>
<TD width=15> </TD></TR></TBODY></TABLE><IMG height=1 alt=""
src="vafo_files/shim.gif" width=10 border=0> <!-- utility footer -->
<TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
border=0><TBODY>
<TR vAlign=top>
<TD vAlign=center align=left><IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0> <A class=utility
href="http://science.nature.nps.gov/im/brochure/index.htm">about
I&amp;M Program</A></TD>
<TD align=right><A class=utility
href="http://www.nature.nps.gov/">NatureNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/gis">NPS GIS</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/">ParkNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0></TD></TR></TBODY></TABLE><!--
utility footer end --></TD>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd --></BODY></HTML>
```

locationsum.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
<HTML><HEAD><TITLE>Valley Forge - Comprehensive Inventory Program for
Birds</TITLE>

<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>

<?

// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
   or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');


//check for GET data
if (isset($_GET["locationID"]))
    $locationID = $_GET["locationID"];
else
    die("Location ID not supplied.");
```

```
//LOCATION SUMMARY PAGE

//calculates average canopy cover for LocationID
$canopy_SQL = "SELECT AVG(Canopy)".
             " FROM tblLocCanopy".
             " WHERE LocationID = '$locationID'".
             " GROUP BY LocationID";
$canopy_RSLT = @mysql_query($canopy_SQL) or die('canopy_SQL Query failed: ' .
mysql_error());
$canopy = @mysql_fetch_array($canopy_RSLT);

//calculates average vegitation height for LocationID
$vegHeight_SQL = "SELECT AVG(VegHeight)".
                " FROM tblLocHerbVegHeight".
                " WHERE LocationID = '$locationID'".
                " GROUP BY LocationID";
$vegHeight_RSLT = @mysql_query($vegHeight_SQL) or die('vegHeight_SQL Query failed:
' . mysql_error());
$vegHeight = @mysql_fetch_array($vegHeight_RSLT);

//Counts the number of Overstory trees for the LocationID
$locOverstoryID_SQL = "SELECT COUNT(LocOverstoryID)".
                      " FROM tblLocOverstory".
                      " WHERE LocationID = '$locationID'";
$locOverstoryID_RSLT = @mysql_query($locOverstoryID_SQL) or die('locOverstory_SQL
Query failed: ' . mysql_error());
$locOverstoryID = @mysql_fetch_array($locOverstoryID_RSLT);

//Calculates the number of Understory Trees for the LocationID
$understory_SQL = "SELECT SUM(Understory)".
                  " FROM tblLocUnderstoryAndShrub".
                  " WHERE LocationID = '$locationID' OR Understory <> NULL".
                  " GROUP BY LocationID";
$understory_RSLT = @mysql_query($understory_SQL) or die('understory_SQL Query
failed: ' . mysql_error());
$understory = @mysql_fetch_array($understory_RSLT);

//Sums the number of Tall Shrubs for the LocationID
$tallShrub_SQL = "SELECT SUM(TallShrub)".
                 " FROM tblLocUnderstoryAndShrub".
                 " WHERE LocationID = '$locationID' OR TallShrub <> NULL".
                 " GROUP BY LocationID";
$tallShrub_RSLT = @mysql_query($tallShrub_SQL) or die('tallShrub_SQL Query failed:
' . mysql_error());
$tallShrub = @mysql_fetch_array($tallShrub_RSLT);

//Sums the number of Short Shurbs for the LocationID.
$shortShrub_SQL = "SELECT SUM(ShortShrub)".
                  " FROM tblLocUnderstoryAndShrub".
                  " WHERE LocationID = '$locationID' OR ShortShrub <> NULL".
                  " GROUP BY LocationID";
$shortShrub_RSLT = @mysql_query($shortShrub_SQL) or die('shortShrub_SQL Query
failed: ' . mysql_error());
$shortShrub = @mysql_fetch_array($shortShrub_RSLT);

//Selects the grass attribute for the LocationID.
$grass_SQL = "SELECT Grass".
             " FROM tblLocGroundCover".
             " WHERE LocationID = '$locationID'";
$grass_RSLT = @mysql_query($grass_SQL) or die('grass_SQL Query failed: ' .
mysql_error());
$grass = @mysql_fetch_array($grass_RSLT);

//Selects the forb attribute for the LocationID.
$forb_SQL = "SELECT Forb".
             " FROM tblLocGroundCover".
             " WHERE LocationID = '$locationID'";
$forb_RSLT = @mysql_query($forb_SQL) or die('forb_SQL Query failed: ' .
mysql_error());
$forb = @mysql_fetch_array($forb_RSLT);

//Selects the fern attribute for the LocationID.
```

```
$fern_SQL = "SELECT Fern".
            " FROM tblLocGroundCover".
            " WHERE LocationID = '$locationID'";
$fern_RSLT = @mysql_query($fern_SQL) or die('fern_SQL Query failed: ' .
mysql_error());
$fern = @mysql_fetch_array($fern_RSLT);

//Selects the dead attribute for the LocationID.
$dead_SQL = "SELECT Dead".
            " FROM tblLocGroundCover".
            " WHERE LocationID = '$locationID'";
$dead_RSLT = @mysql_query($dead_SQL) or die('dead_SQL Query failed: ' .
mysql_error());
$dead = @mysql_fetch_array($dead_RSLT);

//Selects the bare attribute for the LocationID.
$bare_SQL = "SELECT Bare".
            " FROM tblLocGroundCover".
            " WHERE LocationID = '$locationID'";
$bare_RSLT = @mysql_query($bare_SQL) or die('bare_SQL Query failed: ' .
mysql_error());
$bare = @mysql_fetch_array($bare_RSLT);

//Selects the log attribute for the LocationID.
$log_SQL = "SELECT Log".
           " FROM tblLocGroundCover".
           " WHERE LocationID = '$locationID'";
$log_RSLT = @mysql_query($log_SQL) or die('log_SQL Query failed: ' .
mysql_error());
$log = @mysql_fetch_array($log_RSLT);

//Selects the species, the count of each species, the average dbh, the minimum dbh
and the maximum dbh for the locationID.
$species_SQL = "SELECT Species, Count(Species), AVG(DBH), MIN(DBH), MAX(DBH)".
               " FROM tblLocOverstory".
               " WHERE LocationID = '$locationID'".
               " GROUP BY Species";
$species_RSLT = @mysql_query($species_SQL) or die('species_SQL Query failed: ' .
mysql_error());

//Selects the species, number of understory, tall shrub, and short shrubs of that
species.
$multiSelect_SQL = "SELECT Species, Understory, TallShrub, ShortShrub".
                   " FROM tblLocUnderstoryAndShrub".
                   " WHERE LocationID = '$locationID'";
$multiSelect_RSLT = @mysql_query($multiSelect_SQL) or die('multiSelect_SQL Query
failed: ' . mysql_error());

?>

<!--The following functions are for executing the pop-up windows when the
appropriate link is clicked. -->
<script type="text/javascript">
<!--
function avgcan() {
window.open( "popup/avgcan.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function avgveg() {
window.open( "popup/avgveg.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function totover() {
window.open( "popup/totover.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function totunder() {
window.open( "popup/totunder.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function tottall() {
window.open( "popup/tottall.html", "myWindow",
```

```
"status = 1, height = 120, width = 400, resizable = 0" )
}
function totshort() {
window.open( "popup/totshort.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function grass() {
window.open( "popup/grass.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function forb() {
window.open( "popup/forb.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function fern() {
window.open( "popup/fern.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function dead() {
window.open( "popup/dead.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function bare() {
window.open( "popup/bare.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function log() {
window.open( "popup/log.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function species() {
window.open( "popup/species.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function count() {
window.open( "popup/count.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function avgdbh() {
window.open( "popup/avgdbh.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function mindbh() {
window.open( "popup/mindbh.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function maxdbh() {
window.open( "popup/maxdbh.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function uspecies() {
window.open( "popup/uspecies.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function under() {
window.open( "popup/under.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function tall() {
window.open( "popup/tall.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
function short() {
window.open( "popup/short.html", "myWindow",
"status = 1, height = 120, width = 400, resizable = 0" )
}
//-->
</script>

</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->
```

```
<? $locationID = $_GET['locationID']; ?>

<TABLE class=mainborder cellSpacing=0 cellPadding=0 width="100%" bgColor=#ffffff
border=0>
  <TBODY>
  <TR>
    <TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
      border=0></TD></TR>
  <TR>
    <TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1 border=0></TD>
    <TD><!-- banner -->
      <TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
      bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
        <TBODY>
        <TR class=mainnavbg vAlign=top background="images/backbanner.gif">
          <TD background=vafo_files/backbanner.gif><IMG height=78
            alt="NPS I&amp;M Program" hspace=0
            src="vafo_files/vafobirdbanner.gif" width=559 align=left
          border=0> </TD>
          <TD background=vafo_files/backbanner.gif><IMG height=78
            alt="National Park Service" hspace=0
            src="vafo_files/npsbanner.gif" width=235 align=right
          border=0> </TD></TR></TBODY></TABLE><!-- banner end --><!-- main
navigation and section title -->
      <!-- main navigation and section title end --><!-- local navigation and
content -->
      <TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0 width="100%"
      bgColor=#ffffff border=0>
        <TBODY>
        <TR vAlign=top bgColor=#ffffff><!-- local navigation -->
          <TD class=contentbg width=10 bgColor=#ffffff height=404></TD><!-- TD
width="13" height="404"><IMG height="100%" alt="" src="../images/shim.gif"
width=13 border=0></TD -->
          <TD width=160><!-- basic navigation -->
            <TABLE class=contentbg cellSpacing=0 cellPadding=2 width="100%"
            bgColor=#ffffff border=0><!-- InstanceBeginEditable name="NavContent"
-->
              <TBODY>
              <TR>
                    <TD height="10">
                    </TD>
                    <TD height="10">
                    </TD>
              </TR>
              <TR vAlign=top>
                <TD align=right height=20>
                <? print("<a class=\"localnavactive\"
href=\"locationsum.php?locationID=".urlencode($locationID)."\">Location
Information</A>"); ?>

                </TD>
                <TD><IMG height=10 alt="" src="vafo_files/arrows.gif"
                  width=10 border=0></TD></TR>


                    <TR vAlign=top>
                                          <TD align=right height=20>
                                          <? print("<a class=\"localnav\"
href=\"pointcount.php?locationID=".urlencode($locationID)."\">Point Count
Survey</A>"); ?>
                                        </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/square.gif"
                                            width=10 border=0></TD></TR>
                                        <TR vAlign=top>
                                          <TD align=right height=20
class=localnavdisable>Road Survey
                                        </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                            width=10 border=0>
                                        </TD></TR>
```

```
                                        <TR vAlign=top>
                                          <TD align=right height=20
class=localnavdisable>Raptor Survey
                                       </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"

                                            width=10 border=0></TD></TR>
                                        <TR vAlign=top>
                                          <TD align=right height=20
class=localnavdisable>Riparian Survey
                                       </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"

                                            width=10 border=0></TD></TR>
                                        <TR vAlign=top>
                                          <TD align=right height=20
class=localnavdisable>Owl Survey
                                       </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"

                                            width=10 border=0>
                                       </TD></TR>

                                        <TR vAlign=top>
                                          <TD align=right height=20>
                <? print("<a class=\"localnav\"
href=\"diversitypc.php?locationID=".urlencode($locationID)."\">Diversity</A>"); ?>
             </TD>
                <TD><IMG height=10 alt="" src="vafo_files/square.gif"
                  width=10 border=0></TD></TR>
<TR vAlign=top>
                                          <TD align=right height=20>
                                          <? print("<a class=\"localnav\"
href=\"admin.php?locationID=".urlencode($locationID)."\">Edit</A>"); ?>
                                       </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/square.gif"

                                            width=10 border=0>
                                       </TD></TR>
              </TBODY></TABLE></TD>
          <TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
            width=15 border=0> </TD><!-- local navigation end -->
          <TD class=contentbg vAlign=top align=middle><!-- PAGE CONTENT - START --
><!-- InstanceBeginEditable name="PageContent" -->


            <table width="600" border="0" cellspacing="1" cellpadding="1">
              <tr bgcolor="#485160">
                               <tr>
                                <td height="10"></td>
                              </tr>
                              <tr>
                                <td height="34" bgcolor="#485160"> <div
align="center"><font color="#FFFFFF" size="5"><strong>Location
                                    Information</strong></font></div></td>
                              </tr>
                              <tr>
<!--displays the selected locationID and a link back to the map with that
locationID selected.-->
                                <td height="24"> <div align="center">Location ID:
<? print(urldecode($locationID)); ?> <a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='<?
print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">View
Map</font></a></div></td>
                              </tr>
                            </table>
                            <br>
                            <table width="600" border="1" bordercolor="#ffffff"
align="center" cellpadding="1" cellspacing="1">
                              <td></td>
                              <tr>
```

```
                                  <th colspan="2" bordercolor="#485160"
bgcolor="#669933">Summary</th>
                                  <td width="37"> </td>
                                  <td colspan="2" bordercolor="#485160"
bgcolor="#669933"> <div align="center"><strong>Ground
                                      Cover</strong></div></td>
                                </tr>
                                <tr>
<!--The remainder of this table displays the locationID summary information.-->
                                  <td width="235" bordercolor="#485160"><A
class=tablelabel HREF="javascript:avgcan()">Average Canopy Cover</a></td>
                                  <td width="39" bordercolor="#485160"><?
print($canopy[0]); ?></td>
                                  <td> </td>
                                  <td width="194" bordercolor="#485160"><A
class=tablelabel HREF="javascript:grass()">Grass</A></td>
                                  <td width="79" bordercolor="#485160"><?
print($grass[0]); ?></td>
                                </tr>
                                <tr>
                                  <td bordercolor="#485160"><A class=tablelabel
HREF="javascript:avgveg()">Average Vegitation Height (inches)</A></td>
                                  <td bordercolor="#485160"><?
print($vegHeight[0]); ?></td>
                                  <td> </td>
                                  <td bordercolor="#485160"><A class=tablelabel
HREF="javascript:forb()">Forb</A></td>
                                  <td bordercolor="#485160"><? print($forb[0]);
?></td>
                                </tr>
                                <tr>
                                  <td height="21" bordercolor="#485160"><A
class=tablelabel HREF="javascript:totover()">Total Overstory trees</A></td>
                                  <td bordercolor="#485160"><?
print($locOverstoryID[0]); ?></td>
                                  <td> </td>
                                  <td bordercolor="#485160"><A class=tablelabel
HREF="javascript:fern()">Fern</A></td>
                                  <td bordercolor="#485160"><? print($fern[0]);
?></td>
                                </tr>
                                <tr>
                                  <td height="21" bordercolor="#485160"><A
class=tablelabel HREF="javascript:totunder()">Total Understory trees</A></td>
                                  <td bordercolor="#485160"><?
print($understory[0]); ?></td>
                                  <td> </td>
                                  <td bordercolor="#485160"><A class=tablelabel
HREF="javascript:dead()">Dead</A></td>
                                  <td bordercolor="#485160"><? print($dead[0]);
?></td>
                                </tr>
                                <tr>
                                  <td height="21" bordercolor="#485160"><A
class=tablelabel HREF="javascript:tottall()">Total Tall Shrubs</A></td>
                                  <td bordercolor="#485160"><?
print($tallShrub[0]); ?></td>
                                  <td height="4"> </td>
                                  <td height="4" bordercolor="#485160"><A
class=tablelabel HREF="javascript:bare()">Bare</A></td>
                                  <td height="4" bordercolor="#485160"><?
print($bare[0]); ?></td>
                                </tr>
                                <tr>
                                  <td height="10" bordercolor="#485160"><A
class=tablelabel HREF="javascript:totshort()">Total Short Shrubs</A></td>
                                  <td bordercolor="#485160"><?
print($shortShrub[0]); ?></td>
                                  <td height="2"> </td>
                                  <td height="2" bordercolor="#485160"><A
class=tablelabel HREF="javascript:log()">Log</A></td>
```

```
                                  <td height="2" bordercolor="#485160"><?
print($log[0]); ?></td>
                                </tr>
                                <td></td>
                              </table>
                              <br>
                              <table width="600" border="1" cellpadding="1"
cellspacing="1" bordercolor="#485160">
                                <tr bgcolor="#669933">
                                  <th colspan="5">Overstory Trees</th>
                                </tr>
                                <tr bgcolor="#485160">
                                  <th width="164"><font color="#FFFFFF"><A
class=tablesub HREF="javascript:species()">Species</A></font></th>
                                  <th width="51"><font color="#FFFFFF"><A
class=tablesub HREF="javascript:count()">Count</A></font></th>
                                  <th width="99"><font color="#FFFFFF"><A
class=tablesub HREF="javascript:avgdbh()">Average DBH</A></font></th>
                                  <th width="99"><font color="#FFFFFF"><A
class=tablesub HREF="javascript:mindbh()">Min DBH</A></font></th>
                                  <th width="159"><font color="#FFFFFF"><A
class=tablesub HREF="javascript:maxdbh()">Max DBH</A></font></th>
                                </tr>
<!--moves the overstory query results into an array overstoryTrees -->
                                        <?
                                        $overstoryTrees = array();
                                        while($row =
@mysql_fetch_array($species_RSLT))
                                               array_push($overstoryTrees, $row);

//Creates a table that contains all of the overstory trees data.
                                        for ($i = 0; $i < sizeof($overstoryTrees);
$i++)
                                        {
                                 ?>
                                <tr>
                                  <td><? print($overstoryTrees[$i]['Species']);
?></td>
                                  <td><? print($overstoryTrees[$i][1]);
//Count(Species)?></td>
                                  <td><? print($overstoryTrees[$i][2]); //AVG(DBH)
?></td>
                                  <td><? print($overstoryTrees[$i][3]); //MIN(DBH)
?></td>
                                  <td><? print($overstoryTrees[$i][4]); //MAX(DBH)
?></td>
                                </tr>
                                <? } ?>

                              </table>
                              <br>
                              <table width="600" border="1" cellpadding="1"
cellspacing="1" bordercolor="#485160">
                                <tr bgcolor="#669933">
                                  <th colspan="4">Understory Trees and Shrubs</th>
                                </tr>
                                <tr bgcolor="#485160">
                                  <th width="167"><font color="#FFFFFF"><A
class=tablesub HREF="javascript:uspecies()">Species</A></font></th>
                                  <th width="143"><font color="#FFFFFF"><A
class=tablesub HREF="javascript:under()">Understory</A></font></th>
                                  <th width="125"><font color="#FFFFFF"><A
class=tablesub HREF="javascript:tall()">Tall Shrubs</A></font></th>
                                  <th width="142"><font color="#FFFFFF"><A
class=tablesub HREF="javascript:short()">Short Shrubs</A></font></th>
                                </tr>
<!-- moves the understory query results into an array understoryTreesAndShrubs -->
                                <?
                                $understoryTreesAndShrubs = array();
                                while($row = @mysql_fetch_array($multiSelect_RSLT))
                                 array_push($understoryTreesAndShrubs, $row);
```

```
// creates a table that contains the understory tree information.
                                 for ($i = 0; $i <
sizeof($understoryTreesAndShrubs); $i++)
                                 {
                                 ?>
                                <tr>
                                  <td><?
print($understoryTreesAndShrubs[$i]['Species']); ?></td>
                                  <td><?
print($understoryTreesAndShrubs[$i]['Understory']); ?></td>
                                  <td><?
print($understoryTreesAndShrubs[$i]['TallShrub']); ?></td>
                                  <td><?
print($understoryTreesAndShrubs[$i]['ShortShrub']); ?></td>
                                </tr>
                                <? } ?>

        </table>

<br><br><br><br>

              </TBODY></TABLE><!-- InstanceEndEditable --><!-- PAGE CONTENT - END
-->
            <TABLE border=0><!-- Kludge to force NS browsers to wrap left
navigation cell.-->
              <TBODY>
              <TR>
                <TD vAlign=center align=middle><IMG height=1
                  src="vafo_files/shim.gif"
width=570></TD></TR></TBODY></TABLE></TD>
          <TD width=10> </TD>
          <TD width=15> </TD></TR></TBODY></TABLE><IMG height=1 alt=""
      src="vafo_files/shim.gif" width=10 border=0> <!-- utility footer -->
      <TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
        border=0><TBODY>
        <TR vAlign=top>
          <TD vAlign=center align=left><IMG height=1 alt=""
            src="vafo_files/shim.gif" width=9 border=0> <A class=utility
            href="http://science.nature.nps.gov/im/brochure/index.htm">about
            I&amp;M Program</A></TD>
          <TD align=right><A class=utility
            href="http://www.nature.nps.gov/">NatureNet</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://www.nps.gov/gis">NPS GIS</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://www.nps.gov/">ParkNet</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1 alt=""
            src="vafo_files/shim.gif" width=9
border=0></TD></TR></TBODY></TABLE><!-- utility footer end --></TD>
    <TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
  border=0></TD></TR>
  <TR>
    <TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
      border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd --></BODY></HTML>
```

raptor.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
<HTML><HEAD><TITLE>Valley Forge - Comprehensive Inventory Program for
Birds</TITLE>

<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>
```

```
<?

// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
   or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');


//check for GET data
if (isset($_GET["locationID"]))
    $locationID = $_GET["locationID"];
else
    die("Location ID not supplied.");


//RAPTOR SURVEY PAGE

//selects raptor survey information from MySQL.
$raptor_SQL = "SELECT Species, Individuals, Detection, EventID".
                   " FROM tblRaptorSurvey".
                   " WHERE LocationID = '$locationID'";
$raptor_RSLT = @mysql_query($raptor_SQL) or die('raptor_SQL Query failed: ' .
mysql_error());

?>

<!-- javascript functions for displaying pop-ups for specific links. -->
<script type="text/javascript">
<!--
function spcode() {
window.open( "popup/spcode.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function indiv() {
window.open( "popup/indiv.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function detec() {
window.open( "popup/detec.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function eventid() {
window.open( "popup/eventid.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function spdecode(code) {
window.open( "popup/spdecode.php?spdecode=" + code, "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function deteventid(code) {
window.open( "popup/eventid.php?eventid=" + code, "myWindow",
"status = 1, height = 500, width = 650, resizable = 1" )
}

//-->
</script>

</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->
<? $locationID = $_GET['locationID']; ?>
<TABLE class=mainborder cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff
border=0>
  <TBODY>
  <TR>
    <TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
      border=0></TD></TR>
```

```
  <TR>
    <TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1 border=0></TD>
    <TD><!-- banner -->
      <TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
      bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
        <TBODY>
        <TR class=mainnavbg vAlign=top background="images/backbanner.gif">
          <TD background=vafo_files/backbanner.gif><IMG height=78
            alt="NPS I&amp;M Program" hspace=0
            src="vafo_files/vafobirdbanner.gif" width=559 align=left
          border=0> </TD>
          <TD background=vafo_files/backbanner.gif><IMG height=78
            alt="National Park Service" hspace=0
            src="vafo_files/npsbanner.gif" width=235 align=right
          border=0> </TD></TR></TBODY></TABLE><!-- banner end --><!--
main navigation and section title -->
      <!-- main navigation and section title end --><!-- local navigation and
content -->
      <TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0
width="100%"
      bgColor=#ffffff border=0>
        <TBODY>
        <TR vAlign=top bgColor=#ffffff><!-- local navigation -->
          <TD class=contentbg width=10 bgColor=#ffffff height=404></TD><!-- TD
width="13" height="404"><IMG height="100%" alt="" src="../images/shim.gif"
width=13 border=0></TD -->
          <TD width=160><!-- basic navigation -->
            <TABLE class=contentbg cellSpacing=0 cellPadding=2 width="100%"
            bgColor=#ffffff border=0><!-- InstanceBeginEditable
name="NavContent" -->
              <TBODY>
              <TR>
                   <TD height="10">
                   </TD>
                   <TD height="10">
                   </TD>
              </TR>
              <TR vAlign=top>
                <TD align=right height=20 class=localnavdisable>Location
Information</TD>
                                        <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                          width=10 border=0></TD></TR>

                                      <TR vAlign=top>
                                        <TD align=right height=20
class=localnavdisable>Point Count Survey
                                     </TD>
                                        <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                          width=10 border=0></TD></TR>
                                      <TR vAlign=top>
                                        <TD align=right height=20
class=localnavdisable>Road Survey
                                     </TD>
                                        <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                          width=10 border=0>
                                     </TD></TR>
                                      <TR vAlign=top>
                                        <TD align=right height=20>
                                        <? print("<a class=\"localnavactive\"
href=\"raptor.php?locationID=".urlencode($locationID)."\">Raptor Survey</A>");
?>
                                     </TD>
                                        <TD><IMG height=10 alt=""
src="vafo_files/arrows.gif"
                                          width=10 border=0></TD></TR>
```

```
                                       <TR vAlign=top>
                                         <TD align=right height=20
class=localnavdisable>Riparian Survey
                                      </TD>
                                         <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                           width=10 border=0></TD></TR>
                                       <TR vAlign=top>
                                         <TD align=right height=20
class=localnavdisable>Owl Survey
                                      </TD>
                                         <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                           width=10 border=0>
                                      </TD></TR>

                                       <TR vAlign=top>
                                         <TD align=right height=20>
                <? print("<a class=\"localnav\"
href=\"diversityra.php?locationID=".urlencode($locationID)."\">Diversity</A>")
; ?>
             </TD>
                <TD><IMG height=10 alt="" src="vafo_files/square.gif"
                  width=10 border=0></TD></TR>
                                       <TR vAlign=top>
                                         <TD align=right height=20>
                                         <? print("<a class=\"localnav\"
href=\"admin.php?locationID=".urlencode($locationID)."\">Edit</A>"); ?>
                                      </TD>
                                         <TD><IMG height=10 alt=""
src="vafo_files/square.gif"
                                           width=10 border=0>
                                      </TD></TR>
              </TBODY></TABLE></TD>
          <TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
            width=15 border=0> </TD><!-- local navigation end -->
          <TD class=contentbg vAlign=top align=middle><!-- PAGE CONTENT -
START --><!-- InstanceBeginEditable name="PageContent" -->


<p> </p>
            <table width="600" border="1" cellspacing="1" cellpadding="1"
bordercolor="#485160">

                             <tr bgcolor="#669933">
                               <td height="34" colspan="4"> <div
align="center"><font color="#FFFFFF" size="5"><strong>Raptor
                                   Survey </strong></font></div></td>
                             </tr>
                             <tr>
                               <td height="11" colspan="4"> <div
align="center">Location ID: <? print(urldecode($locationID)); ?> <a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='<?
print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">View
Map</font></a></div></td>
                             </tr>
                             <tr bgcolor="#485160">
                               <th width="110" height="12"><A class=tablesub
HREF="javascript:spcode()">Species Code</A></th>
                               <th width="99"><A class=tablesub
HREF="javascript:indiv()">Individuals</A></th>
                               <th width="95"><A class=tablesub
HREF="javascript:detec()">Detection</A></th>
                               <th width="283"><A class=tablesub
HREF="javascript:eventid()">Event ID</A></th>
                             </tr>
```

```
<!-- moves the query results for the raptor survey into an array called
raptorsur -->
                                      <?
                                      $raptorsur = array();
                                      while($row =
@mysql_fetch_array($raptor_RSLT))
                                            array_push($raptorsur, $row);

//populates and creates a table with the raptor survey data.
                                      for ($i = 0; $i < sizeof($raptorsur);
$i++)
                                      {
                               ?>
                               <tr>
                                 <td><? print("<a class=\"localnav\"
href=\"javascript:spdecode('{$raptorsur[$i]['Species']}')\">{$raptorsur[$i]['S
pecies']}</a>"); ?></td>
                                 <td><? print($raptorsur[$i]['Individuals']);
?></td>
                                 <td><? print($raptorsur[$i]['Detection']);
?></td>
                                 <td><? print("<a class=\"localnav\"
href=\"javascript:deteventid('{$raptorsur[$i]['EventID']}')\">{$raptorsur[$i][
'EventID']}</a>"); ?></td>
                               </tr>
                               <? } ?>


                           </table>
                           <br>
                           <p> </p>
        <p> </p>

<br><br><br><br>

              </TBODY></TABLE><!-- InstanceEndEditable --><!-- PAGE CONTENT -
END -->
            <TABLE border=0><!-- Kludge to force NS browsers to wrap left
navigation cell.-->
              <TBODY>
              <TR>
                <TD vAlign=center align=middle><IMG height=1
                  src="vafo_files/shim.gif"
width=570></TD></TR></TBODY></TABLE></TD>
          <TD width=10> </TD>
          <TD width=15> </TD></TR></TBODY></TABLE><IMG height=1 alt=""
      src="vafo_files/shim.gif" width=10 border=0> <!-- utility footer -->
      <TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
        border=0><TBODY>
        <TR vAlign=top>
          <TD vAlign=center align=left><IMG height=1 alt=""
            src="vafo_files/shim.gif" width=9 border=0> <A class=utility
            href="http://science.nature.nps.gov/im/brochure/index.htm">about
            I&amp;M Program</A></TD>
          <TD align=right><A class=utility
            href="http://www.nature.nps.gov/">NatureNet</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://www.nps.gov/gis">NPS GIS</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://www.nps.gov/">ParkNet</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1 alt=""
            src="vafo_files/shim.gif" width=9
border=0></TD></TR></TBODY></TABLE><!-- utility footer end --></TD>
    <TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
  border=0></TD></TR>
  <TR>
    <TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
```

```
    border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd --></BODY></HTML>
```

riparian.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
<HTML><HEAD><TITLE>Valley Forge - Comprehensive Inventory Program for
Birds</TITLE>

<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>

<?

// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
   or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');


//check for GET data
if (isset($_GET["locationID"]))
    $locationID = $_GET["locationID"];
else
    die("Location ID not supplied.");


//RIPARIAN SURVEY PAGE

//selects the riparian bird survey data from MySQL.
$riparian_SQL = "SELECT Species, Individuals, Sex, EventID".
                   " FROM tblRiparianBirdSurvey".
                   " WHERE LocationID = '$locationID'";
$riparian_RSLT = @mysql_query($riparian_SQL) or die('riparian_SQL Query
failed: ' . mysql_error());

?>

<!-- javascript functions for displaying pop-ups for specific links. -->
<script type="text/javascript">
<!--
function spcode() {
window.open( "popup/spcode.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function indiv() {
window.open( "popup/indiv.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function sex() {
window.open( "popup/sex.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function eventid() {
window.open( "popup/eventid.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function spdecode(code) {
window.open( "popup/spdecode.php?spdecode=" + code, "myWindow",
```

```
"status = 1, height = 120, width = 500, resizable = 1" )
}
function deteventid(code) {
window.open( "popup/eventid.php?eventid=" + code, "myWindow",
"status = 1, height = 500, width = 650, resizable = 1" )
}

//-->
</script>

</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->
<? $locationID = $_GET['locationID']; ?>
<TABLE class=mainborder cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff
border=0>
  <TBODY>
  <TR>
    <TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
      border=0></TD></TR>
  <TR>
    <TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD>
    <TD><!-- banner -->
      <TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
      bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
        <TBODY>
        <TR class=mainnavbg vAlign=top background="images/backbanner.gif">
          <TD background=vafo_files/backbanner.gif><IMG height=78
            alt="NPS I&amp;M Program" hspace=0
            src="vafo_files/vafobirdbanner.gif" width=559 align=left
          border=0> </TD>
          <TD background=vafo_files/backbanner.gif><IMG height=78
            alt="National Park Service" hspace=0
            src="vafo_files/npsbanner.gif" width=235 align=right
          border=0> </TD></TR></TBODY></TABLE><!-- banner end --><!--
main navigation and section title -->
      <!-- main navigation and section title end --><!-- local navigation
and content -->
      <TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0
width="100%"
      bgColor=#ffffff border=0>
        <TBODY>
        <TR vAlign=top bgColor=#ffffff><!-- local navigation -->
          <TD class=contentbg width=10 bgColor=#ffffff height=404></TD><!-
- TD width="13" height="404"><IMG height="100%" alt=""
src="../images/shim.gif" width=13 border=0></TD -->
          <TD width=160><!-- basic navigation -->
            <TABLE class=contentbg cellSpacing=0 cellPadding=2
width="100%"
            bgColor=#ffffff border=0><!-- InstanceBeginEditable
name="NavContent" -->
              <TBODY>
              <TR>
                  <TD height="10">
                  </TD>
                  <TD height="10">
                  </TD>
              </TR>
              <TR vAlign=top>
                <TD align=right height=20 class=localnavdisable>Location
Information</TD>
                                        <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
```

```
                                            width=10 border=0></TD></TR>

                                        <TR vAlign=top>
                                          <TD align=right height=20
class=localnavdisable>Point Count Survey
                                      </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                            width=10 border=0></TD></TR>
                                        <TR vAlign=top>
                                          <TD align=right height=20
class=localnavdisable>Road Survey
                                      </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                            width=10 border=0>
                                      </TD></TR>
                                        <TR vAlign=top>
                                          <TD align=right height=20
class=localnavdisable>Raptor Survey
                                      </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                            width=10 border=0></TD></TR>
                                        <TR vAlign=top>
                                          <TD align=right height=20>
                                          <? print("<a
class=\"localnavactive\"
href=\"riparian.php?locationID=".urlencode($locationID)."\">Riparian Bird
Survey</A>"); ?>
                                      </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/arrows.gif"
                                            width=10 border=0></TD></TR>
                                        <TR vAlign=top>
                                          <TD align=right height=20
class=localnavdisable>Owl Survey
                                      </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                            width=10 border=0>
                                      </TD></TR>

                                        <TR vAlign=top>
                                          <TD align=right height=20>
                <? print("<a class=\"localnav\"
href=\"diversityri.php?locationID=".urlencode($locationID)."\">Diversity</
A>"); ?>
            </TD>
                <TD><IMG height=10 alt="" src="vafo_files/square.gif"
                  width=10 border=0></TD></TR>
                                        <TR vAlign=top>
                                          <TD align=right height=20>
                                          <? print("<a class=\"localnav\"
href=\"admin.php?locationID=".urlencode($locationID)."\">Edit</A>"); ?>
                                      </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/square.gif"
                                            width=10 border=0>
                                      </TD></TR>
              </TBODY></TABLE></TD>
          <TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
            width=15 border=0> </TD><!-- local navigation end -->
```

```
          <TD class=contentbg vAlign=top align=middle><!-- PAGE CONTENT -
START --><!-- InstanceBeginEditable name="PageContent" -->


<p> </p>
            <table width="600" border="1" cellspacing="1" cellpadding="1"
bordercolor="#485160">

                            <tr bgcolor="#669933">
                              <td height="34" colspan="4"> <div
align="center"><font color="#FFFFFF" size="5"><strong>Riparian
                                  Survey </strong></font></div></td>
                            </tr>
                            <tr>
                              <td height="11" colspan="4"> <div
align="center">Location ID: <? print(urldecode($locationID)); ?> <a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='<?
print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">View
Map</font></a></div></td>
                            </tr>
                            <tr bgcolor="#485160">
                              <th width="110" height="12"><A
class=tablesub HREF="javascript:spcode()">Species Code</A></th>
                              <th width="99"><A class=tablesub
HREF="javascript:indiv()">Individuals</A></th>
                              <th width="95"><A class=tablesub
HREF="javascript:sex()">Sex</A></th>
                              <th width="283"><A class=tablesub
HREF="javascript:eventid()">Event ID</A></th>
                            </tr>


<!-- moves the riparian bird survey query into an array called ripariansur
-->
                                    <?
                                    $ripariansur = array();
                                    while($row =
@mysql_fetch_array($riparian_RSLT))
                                          array_push($ripariansur, $row);

//populates and creates a table with the riparian bird survey data.
                                    for ($i = 0; $i <
sizeof($ripariansur); $i++)
                                    {
                              ?>
                              <tr>
                                <td><? print("<a class=\"localnav\"
href=\"javascript:spdecode('{$ripariansur[$i]['Species']}')\">{$ripariansu
r[$i]['Species']}</a>"); ?></td>
                                <td><?
print($ripariansur[$i]['Individuals']); ?></td>
                                <td><? print($ripariansur[$i]['Sex']);
?></td>
                                <td><? print("<a class=\"localnav\"
href=\"javascript:deteventid('{$ripariansur[$i]['EventID']}')\">{$riparian
sur[$i]['EventID']}</a>"); ?></td>
                              </tr>
                              <? } ?>


                          </table>
                          <br>
                          <p> </p>
        <p> </p>
```

```
<br><br><br><br>

              </TBODY></TABLE><!-- InstanceEndEditable --><!-- PAGE
CONTENT - END -->
            <TABLE border=0><!-- Kludge to force NS browsers to wrap left
navigation cell.-->
              <TBODY>
              <TR>
                <TD vAlign=center align=middle><IMG height=1
                  src="vafo_files/shim.gif"
width=570></TD></TR></TBODY></TABLE></TD>
          <TD width=10> </TD>
          <TD width=15> </TD></TR></TBODY></TABLE><IMG height=1
alt=""
      src="vafo_files/shim.gif" width=10 border=0> <!-- utility footer -->
      <TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
        border=0><TBODY>
        <TR vAlign=top>
          <TD vAlign=center align=left><IMG height=1 alt=""
            src="vafo_files/shim.gif" width=9 border=0> <A class=utility

href="http://science.nature.nps.gov/im/brochure/index.htm">about
            I&amp;M Program</A></TD>
          <TD align=right><A class=utility
            href="http://www.nature.nps.gov/">NatureNet</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://www.nps.gov/gis">NPS GIS</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://www.nps.gov/">ParkNet</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1
alt=""
            src="vafo_files/shim.gif" width=9
border=0></TD></TR></TBODY></TABLE><!-- utility footer end --></TD>
    <TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
  border=0></TD></TR>
  <TR>
    <TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
      border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd --
></BODY></HTML>
```

road.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
<HTML><HEAD><TITLE>Valley Forge - Comprehensive Inventory Program for
Birds</TITLE>

<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>

<?

// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
   or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');
```

```
//check for GET data
if (isset($_GET["locationID"]))
    $locationID = $_GET["locationID"];
else
    die("Location ID not supplied.");


//ROAD SURVEY PAGE

//selects the road survey data.
$road_SQL = "SELECT Species, Individuals, Detection, Interval0_3, Interval3_5,
EventID".
                   " FROM tblRoadSurvey".
                   " WHERE LocationID = '$locationID'";
$road_RSLT = @mysql_query($road_SQL) or die('road_SQL Query failed: ' .
mysql_error());

?>

<!-- javascript functions for displaying pop-ups for specific links. -->
<script type="text/javascript">
<!--
function spcode() {
window.open( "popup/spcode.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function indiv() {
window.open( "popup/indiv.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function detec() {
window.open( "popup/detec.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function int0() {
window.open( "popup/int0.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function int3() {
window.open( "popup/int3.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function eventid() {
window.open( "popup/eventid.html", "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function spdecode(code) {
window.open( "popup/spdecode.php?spdecode=" + code, "myWindow",
"status = 1, height = 120, width = 500, resizable = 1" )
}
function deteventid(code) {
window.open( "popup/eventid.php?eventid=" + code, "myWindow",
"status = 1, height = 500, width = 650, resizable = 1" )
}

//-->
</script>

</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->
<? $locationID = $_GET['locationID']; ?>
<TABLE class=mainborder cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff
border=0>
  <TBODY>
  <TR>
    <TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
      border=0></TD></TR>
```

```
  <TR>
    <TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1 border=0></TD>
    <TD><!-- banner -->
      <TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
      bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
        <TBODY>
        <TR class=mainnavbg vAlign=top background="images/backbanner.gif">
          <TD background=vafo_files/backbanner.gif><IMG height=78
            alt="NPS I&amp;M Program" hspace=0
            src="vafo_files/vafobirdbanner.gif" width=559 align=left
          border=0> </TD>
          <TD background=vafo_files/backbanner.gif><IMG height=78
            alt="National Park Service" hspace=0
            src="vafo_files/npsbanner.gif" width=235 align=right
          border=0> </TD></TR></TBODY></TABLE><!-- banner end --><!--
main navigation and section title -->
      <!-- main navigation and section title end --><!-- local navigation and
content -->
      <TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0
width="100%"
      bgColor=#ffffff border=0>
        <TBODY>
        <TR vAlign=top bgColor=#ffffff><!-- local navigation -->
          <TD class=contentbg width=10 bgColor=#ffffff height=404></TD><!-- TD
width="13" height="404"><IMG height="100%" alt="" src="../images/shim.gif"
width=13 border=0></TD -->
          <TD width=160><!-- basic navigation -->
            <TABLE class=contentbg cellSpacing=0 cellPadding=2 width="100%"
            bgColor=#ffffff border=0><!-- InstanceBeginEditable
name="NavContent" -->
              <TBODY>
              <TR>
                   <TD height="10">
                   </TD>
                   <TD height="10">
                   </TD>
              </TR>
              <TR vAlign=top>
                <TD align=right height=20 class=localnavdisable>Location
Information</TD>
                                        <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                          width=10 border=0></TD></TR>

                                      <TR vAlign=top>
                                        <TD align=right height=20
class=localnavdisable>Point Count Survey
                                     </TD>
                                        <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                          width=10 border=0></TD></TR>
                                      <TR vAlign=top>
                                        <TD align=right height=20>
                                        <? print("<a class=\"localnavactive\"
href=\"road.php?locationID=".urlencode($locationID)."\">Road Survey</A>"); ?>
                                     </TD>
                                        <TD><IMG height=10 alt=""
src="vafo_files/arrows.gif"
                                          width=10 border=0>
                                     </TD></TR>
                                      <TR vAlign=top>
                                        <TD align=right height=20
class=localnavdisable>Raptor Survey
                                     </TD>
                                        <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                          width=10 border=0></TD></TR>
                                      <TR vAlign=top>
```

```
                                          <TD align=right height=20
class=localnavdisable>Riparian Survey
                                      </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                            width=10 border=0></TD></TR>
                                        <TR vAlign=top>
                                          <TD align=right height=20
class=localnavdisable>Owl Survey
                                      </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/graysquare.gif"
                                            width=10 border=0>
                                      </TD></TR>

                                        <TR vAlign=top>
                                          <TD align=right height=20>
                <? print("<a class=\"localnav\"
href=\"diversityro.php?locationID=".urlencode($locationID)."\">Diversity</A>")
; ?>
             </TD>
                <TD><IMG height=10 alt="" src="vafo_files/square.gif"
                  width=10 border=0></TD></TR>
<TR vAlign=top>
                                          <TD align=right height=20>
                                          <? print("<a class=\"localnav\"
href=\"admin.php?locationID=".urlencode($locationID)."\">Edit</A>"); ?>
                                      </TD>
                                          <TD><IMG height=10 alt=""
src="vafo_files/square.gif"
                                            width=10 border=0>
                                      </TD></TR>
              </TBODY></TABLE></TD>
          <TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
            width=15 border=0> </TD><!-- local navigation end -->
          <TD class=contentbg vAlign=top align=middle><!-- PAGE CONTENT -
START --><!-- InstanceBeginEditable name="PageContent" -->


<p> </p>
            <table width="650" border="1" cellspacing="1" cellpadding="1"
bordercolor="#485160">

                             <tr bgcolor="#669933">
                               <td height="34" colspan="6"> <div
align="center"><font color="#FFFFFF" size="5"><strong>Road
                                   Survey </strong></font></div></td>
                             </tr>
                             <tr>
                               <td height="11" colspan="6"> <div
align="center">Location ID: <? print(urldecode($locationID)); ?> <a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='<?
print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">View
Map</font></a></div></td>
                             </tr>
                             <tr bgcolor="#485160">
                               <th width="80" height="12"><A class=tablesub
HREF="javascript:spcode()">Species Code</A></th>
                               <th width="80"><A class=tablesub
HREF="javascript:indiv()">Individuals</A></th>
                               <th width="80"><A class=tablesub
HREF="javascript:detec()">Detection</A></th>
                               <th width="60"><A class=tablesub
HREF="javascript:int0()">Interval 0-3</A></th>
                               <th width="60"><A class=tablesub
HREF="javascript:int3()">Interval 3-5</A></th>
                               <th width="290"><A class=tablesub
HREF="javascript:eventid()">Event ID</A></th>
```

```
                                </tr>


<!--moves the road survey query into an array called roadsur-->
                                        <?
                                        $roadsur = array();
                                        while($row =
@mysql_fetch_array($road_RSLT))
                                              array_push($roadsur, $row);

//populates and creates a table with the road survey data.
                                        for ($i = 0; $i < sizeof($roadsur);
$i++)
                                        {
                                  ?>
                                  <tr>
                                    <td><? print("<a class=\"localnav\"
href=\"javascript:spdecode('{$roadsur[$i]['Species']}')\">{$roadsur[$i]['Speci
es']}</a>"); ?></td>
                                    <td><? print($roadsur[$i]['Individuals']);
?></td>
                                    <td><? print($roadsur[$i]['Detection']);
?></td>
                                    <td><? print($roadsur[$i]['Interval0_3']);
?></td>
                                    <td><? print($roadsur[$i]['Interval3_5']);
?></td>
                                    <td><? print("<a class=\"localnav\"
href=\"javascript:deteventid('{$roadsur[$i]['EventID']}')\">{$roadsur[$i]['Eve
ntID']}</a>"); ?></td>
                                  </tr>
                                  <? } ?>


                              </table>
                              <br>
                              <p> </p>
        <p> </p>

<br><br><br><br>

              </TBODY></TABLE><!-- InstanceEndEditable --><!-- PAGE CONTENT -
END -->
            <TABLE border=0><!-- Kludge to force NS browsers to wrap left
navigation cell.-->
              <TBODY>
              <TR>
                <TD vAlign=center align=middle><IMG height=1
                  src="vafo_files/shim.gif"
width=570></TD></TR></TBODY></TABLE></TD>
          <TD width=10> </TD>
          <TD width=15> </TD></TR></TBODY></TABLE><IMG height=1 alt=""
      src="vafo_files/shim.gif" width=10 border=0> <!-- utility footer -->
      <TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
        border=0><TBODY>
        <TR vAlign=top>
          <TD vAlign=center align=left><IMG height=1 alt=""
            src="vafo_files/shim.gif" width=9 border=0> <A class=utility
            href="http://science.nature.nps.gov/im/brochure/index.htm">about
            I&amp;M Program</A> </TD>
          <TD align=right><A class=utility
            href="http://www.nature.nps.gov/">NatureNet</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://www.nps.gov/gis">NPS GIS</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://www.nps.gov/">ParkNet</A><SPAN
            class=utility> | </SPAN><A class=utility
            href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1 alt=""
```

```
            src="vafo_files/shim.gif" width=9
border=0></TD></TR></TBODY></TABLE><!-- utility footer end --></TD>
    <TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
  border=0></TD></TR>
  <TR>
    <TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
      border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd --></BODY></HTML>
```

diversityo.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
<HTML><HEAD><TITLE>Valley Forge - Comprehensive Inventory Program for
Birds</TITLE>

<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>

<?


// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');


//check for GET data
if (isset($_GET["locationID"]))
$locationID = $_GET["locationID"];
else
die("Location ID not supplied.");


//Counts the number of distinct species at the given locationID.
$sumsp_SQL = "SELECT COUNT(DISTINCT species)".
" FROM tblRoadSurvey".
" WHERE LocationID = '$locationID' AND species <> 'UNKNOWN'";
$sumsp_RSLT = @mysql_query($sumsp_SQL) or die('sumsp_SQL Query failed: ' .
mysql_error());
$sumsp = @mysql_fetch_array($sumsp_RSLT);

//Counts the number of distinct species in the given survey.
$sumparksp_SQL = "SELECT COUNT(DISTINCT species)".
" FROM tblRoadSurvey";
$sumparksp_RSLT = @mysql_query($sumparksp_SQL) or die('sumparksp_SQL Query
failed: ' . mysql_error());
$sumparksp = @mysql_fetch_array($sumparksp_RSLT);

//Selects the dominant species and the count of that species for the given
LocationID
$domsp_SQL = "SELECT species, SUM(individuals) AS sumin".
" FROM tblRoadSurvey".
" WHERE LocationID = '$locationID'".
" GROUP BY species".
" ORDER BY sumin DESC";
$domsp_RSLT = @mysql_query($domsp_SQL) or die('domsp_SQL Query failed: ' .
mysql_error());
$domsp = array();
while($row = @mysql_fetch_array($domsp_RSLT))
array_push($domsp, $row);
```

```
//Selects the dominant species and the count of that species for the given
survey.
$domparksp_SQL = "SELECT species, SUM(individuals) as sumin".
" FROM(tblRoadSurvey NATURAL JOIN tblLocations)".
" WHERE ParkCode = 'VAFO' AND SurveyType = 'Road'".
" GROUP BY species".
" ORDER BY sumin DESC";
$domparksp_RSLT = @mysql_query($domparksp_SQL) or die('domparksp_SQL Query
failed: ' . mysql_error());
$domparksp = array();
while($row = @mysql_fetch_array($domparksp_RSLT))
array_push($domparksp, $row);


//Sums the total number of individuals identified at the given LocationID.
$sumind_SQL = "SELECT SUM(individuals)".
" FROM tblRoadSurvey".
" WHERE LocationID = '$locationID'".
" GROUP BY LocationID";
$sumind_RSLT = @mysql_query($sumind_SQL) or die('sumind_SQL Query failed: ' .
mysql_error());
$sumind = @mysql_fetch_array($sumind_RSLT);

//Creates an array of the sums of species sightings for each species for the
specified LocationID.
$sparray_SQL = "SELECT SUM(individuals)".
" FROM tblRoadSurvey".
" WHERE LocationID = '$locationID' AND Individuals <> 0".
" GROUP BY species";
$sparray_RSLT = @mysql_query($sparray_SQL) or die('sparray_SQL Query failed: '
. mysql_error());
$sparray = array();
while($row = @mysql_fetch_array($sparray_RSLT))
array_push($sparray, $row);

//calculates the dominance for the given LocationID.
$dominance = $domsp[0][1] / $sumind[0];

//calculates the sum of the squares of the array sparray, for use in the
simpson index calculation.
$sumsquare = 0;
for($i = 0; $i < sizeof($sparray); $i++)
$sumsquare += ($sparray[$i][0] * $sparray[$i][0]);

//calculates the simpson index for the LocationID.
$simpindex = 1 - ($sumsquare - $sumind[0]) / ($sumind[0] * ($sumind[0] - 1));

//carries out a portion of the shannon index calculation for the locationID.
$sumlog = 0;
for($i = 0; $i < sizeof($sparray); $i++)
$sumlog += $sparray[$i][0] * log($sparray[$i][0]);

//calculates the shannon index for the LocationID.
$shanindex = (($sumind[0] * log($sumind[0])) - $sumlog) / $sumind[0];

//Creates an array of the sums of species sightings for each species for the
specified survey type
$sumindpark_SQL = "SELECT SUM(individuals)".
" FROM tblRoadSurvey NATURAL JOIN tblLocations".
" WHERE ParkCode = 'VAFO'".
" GROUP BY ParkCode";
$sumindpark_RSLT = @mysql_query($sumindpark_SQL) or die('sumindpark_SQL Query
failed: ' . mysql_error());
$sumindpark = @mysql_fetch_array($sumindpark_RSLT);

//Creates an array of the sums of species sightings for each species for the
specified survey.
$sparraypark_SQL = "SELECT SUM(individuals)".
```

```
" FROM tblRoadSurvey NATURAL JOIN tblLocations".
" WHERE ParkCode = 'VAFO' AND Individuals <> 0".
" GROUP BY species";
$sparraypark_RSLT = @mysql_query($sparraypark_SQL) or die('sparraypark_SQL
Query failed: ' . mysql_error());
$sparraypark = array();
while($row = @mysql_fetch_array($sparraypark_RSLT))
array_push($sparraypark, $row);

//calculates the dominance for the given survey type
$dominancepark = $domparksp[0][1] / $sumindpark[0];

//calculates the sum of the squares of the array sparray, for use in the
simpson index calculation.
$sumsquarepark = 0;
for($i = 0; $i < sizeof($sparraypark); $i++)
$sumsquarepark += $sparraypark[$i][0] * $sparraypark[$i][0];

//calculates the simpson index for the survey type.
$simpindexpark = 1 - ($sumsquarepark - $sumindpark[0])/($sumindpark[0] *
($sumindpark[0] - 1));

//carries out a portion of the shannon index calculation for the survey type.
$sumlogpark = 0;
for($i = 0; $i < sizeof($sparraypark); $i++)
$sumlogpark += $sparraypark[$i][0] * log($sparraypark[$i][0]);

//calculates the shannon index for the shannon index.
$shanindexpark = (($sumindpark[0] * log($sumindpark[0])) -
$sumlogpark)/$sumindpark[0];

?>

</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->

<? $locationID = $_GET['locationID']; ?>

<TABLE class=mainborder cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff
border=0>
<TBODY>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1 border=0></TD>
<TD><!-- banner -->
<TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
<TBODY>
<TR class=mainnavbg vAlign=top background="images/backbanner.gif">
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="NPS I&amp;M Program" hspace=0
src="vafo_files/vafobirdbanner.gif" width=559 align=left
border=0> </TD>
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="National Park Service" hspace=0
src="vafo_files/npsbanner.gif" width=235 align=right
border=0> </TD></TR></TBODY></TABLE><!-- banner end --><!-- main
navigation and section title -->
<!-- main navigation and section title end --><!-- local navigation and
content -->
<TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff border=0>
<TBODY>
<TR vAlign=top bgColor=#ffffff><!-- local navigation -->
```

```
<TD class=contentbg width=10 bgColor=#ffffff height=404></TD><!-- TD
width="13" height="404"><IMG height="100%" alt="" src="../images/shim.gif"
width=13 border=0></TD -->
<TD width=160><!-- basic navigation -->
<TABLE class=contentbg cellSpacing=0 cellPadding=2 width="100%"
bgColor=#ffffff border=0><!-- InstanceBeginEditable name="NavContent" -->
<TBODY>
<TR>
<TD height="10">
</TD>
<TD height="10">
</TD>
</TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Location Information</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>

<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Point Count Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"road.php?locationID=".urlencode($locationID)."\">Road Survey</A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0>
</TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Raptor Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Riparian Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Owl Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0>
</TD></TR>

<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnavactive\"
href=\"diversityro.php?locationID=".urlencode($locationID)."\">Diversity</A>")
; ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/arrows.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"admin.php?locationID=".urlencode($locationID)."\">Edit</A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0>
</TD></TR>

</TBODY></TABLE></TD>
<TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
width=15 border=0> </TD><!-- local navigation end -->
```

```
<TD class=contentbg vAlign=top align=middle><!-- PAGE CONTENT - START --><!--
InstanceBeginEditable name="PageContent" -->


<!-- The following table displays the diversity information for the
LocationID, and the survey type. -->
<table width="600" border="0" cellspacing="1" cellpadding="1">
<tr bgcolor="#485160">
<tr>
<td height="10"></td>
</tr>
<tr>
<td height="34" bgcolor="#485160"> <div align="center"><font color="#FFFFFF"
size="5"><strong>Diversity</strong></font></div></td>
</tr>
</table>
<br>
<table width="600" border="1" bordercolor="#ffffff" align="center"
cellpadding="1" cellspacing="1">
<td></td>
<tr>
<th colspan="2" bordercolor="#485160" bgcolor="#669933">For Location: <?
print(urldecode($locationID)); ?></th>
<td width="37"> </td>
<td colspan="2" bordercolor="#485160" bgcolor="#669933"> <div
align="center"><strong>For All Road Surveys in VAFO</strong></div></td>
</tr>
<tr>
<td width="235" bordercolor="#485160">Total Number of Species</td>
<td width="39" bordercolor="#485160"><? print($sumsp[0]); ?></td>
<td> </td>
<td width="194" bordercolor="#485160">Total Number of Species</td>
<td width="79" bordercolor="#485160"><? print($sumparksp[0]); ?></td>
</tr>
<tr>
<td bordercolor="#485160">Dominate Species</td>
<td bordercolor="#485160"><? print($domsp[0][0]); ?></td>
<td> </td>
<td bordercolor="#485160">Dominate Species</td>
<td bordercolor="#485160"><? print($domparksp[0][0]); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Dominance</td>
<td bordercolor="#485160"><? print($dominance); ?></td>
<td> </td>
<td bordercolor="#485160">Dominance</td>
<td bordercolor="#485160"><? print($dominancepark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Simpson Diversity Index</td>
<td bordercolor="#485160"><? print($simpindex); ?></td>
<td> </td>
<td bordercolor="#485160">Simpson Diversity Index</td>
<td bordercolor="#485160"><? print($simpindexpark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Shannon Diversity Index</td>
<td bordercolor="#485160"><? print($shanindex); ?></td>
<td height="4"> </td>
<td height="4" bordercolor="#485160">Shannon Diversity Index</td>
<td height="4" bordercolor="#485160"><? print($shanindexpark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="white"><a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='<?
print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">View Map of
Location</a></td>
<td bordercolor="white"></td>
```

```
<td height="4"> </td>
<td height="4" bordercolor="white"><a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=POINT_TYPE='Road'"
target = NEW><font size ="-1">View Map of Road Survey</a></td>
<td height="4" bordercolor="white"></td>
</tr>
<td></td>
</table>

<br><br><br><br>

</TBODY></TABLE><!-- InstanceEndEditable --><!-- PAGE CONTENT - END -->
<TABLE border=0><!-- Kludge to force NS browsers to wrap left navigation
cell.-->
<TBODY>
<TR>
<TD vAlign=center align=middle><IMG height=1
src="vafo_files/shim.gif" width=570></TD></TR></TBODY></TABLE></TD>
<TD width=10> </TD>
<TD width=15> </TD></TR></TBODY></TABLE><IMG height=1 alt=""
src="vafo_files/shim.gif" width=10 border=0> <!-- utility footer -->
<TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
border=0><TBODY>
<TR vAlign=top>
<TD vAlign=center align=left><IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0> <A class=utility
href="http://science.nature.nps.gov/im/brochure/index.htm">about
I&amp;M Program</A></TD>
<TD align=right><A class=utility
href="http://www.nature.nps.gov/">NatureNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/gis">NPS GIS</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/">ParkNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0></TD></TR></TBODY></TABLE><!--
utility footer end --></TD>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd --></BODY></HTML>
```

diversitypc.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
<HTML><HEAD><TITLE>Valley Forge - Comprehensive Inventory Program for
Birds</TITLE>

<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>

<?


// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');
```

```
//check for GET data
if (isset($_GET["locationID"]))
$locationID = $_GET["locationID"];
else
die("Location ID not supplied.");


//Counts the number of distinct species at the given locationID.
$sumsp_SQL = "SELECT COUNT(DISTINCT species)".
" FROM tblPointCountSurvey".
" WHERE LocationID = '$locationID' AND species <> 'UNKNOWN'";
$sumsp_RSLT = @mysql_query($sumsp_SQL) or die('sumsp_SQL Query failed: ' .
mysql_error());
$sumsp = @mysql_fetch_array($sumsp_RSLT);

//Counts the number of distinct species in the given survey.
$sumparksp_SQL = "SELECT COUNT(DISTINCT species)".
" FROM tblPointCountSurvey";
$sumparksp_RSLT = @mysql_query($sumparksp_SQL) or die('sumparksp_SQL Query
failed: ' . mysql_error());
$sumparksp = @mysql_fetch_array($sumparksp_RSLT);

//Selects the dominant species and the count of that species for the given
LocationID
$domsp_SQL = "SELECT species, SUM(individuals) AS sumin".
" FROM tblPointCountSurvey".
" WHERE LocationID = '$locationID'".
" GROUP BY species".
" ORDER BY sumin DESC";
$domsp_RSLT = @mysql_query($domsp_SQL) or die('domsp_SQL Query failed: ' .
mysql_error());
$domsp = array();
while($row = @mysql_fetch_array($domsp_RSLT))
array_push($domsp, $row);


//Selects the dominant species and the count of that species for the given
survey.
$domparksp_SQL = "SELECT species, SUM(individuals) as sumin".
" FROM(tblPointCountSurvey NATURAL JOIN tblLocations)".
" WHERE ParkCode = 'VAFO' AND SurveyType = 'Point Count'".
" GROUP BY species".
" ORDER BY sumin DESC";
$domparksp_RSLT = @mysql_query($domparksp_SQL) or die('domparksp_SQL Query
failed: ' . mysql_error());
$domparksp = array();
while($row = @mysql_fetch_array($domparksp_RSLT))
array_push($domparksp, $row);

//Sums the total number of individuals identified at the given LocationID.
$sumind_SQL = "SELECT SUM(individuals)".
" FROM tblPointCountSurvey".
" WHERE LocationID = '$locationID'".
" GROUP BY LocationID";
$sumind_RSLT = @mysql_query($sumind_SQL) or die('sumind_SQL Query failed: ' .
mysql_error());
$sumind = @mysql_fetch_array($sumind_RSLT);

//Creates an array of the sums of species sightings for each species for the
specified LocationID.
$sparray_SQL = "SELECT SUM(individuals)".
" FROM tblPointCountSurvey".
" WHERE LocationID = '$locationID' AND Individuals <> 0".
" GROUP BY species";
$sparray_RSLT = @mysql_query($sparray_SQL) or die('sparray_SQL Query failed: '
. mysql_error());
$sparray = array();
```

```
while($row = @mysql_fetch_array($sparray_RSLT))
array_push($sparray, $row);

//calculates the dominance for the given LocationID.
$dominance = $domsp[0][1] / $sumind[0];

//calculates the sum of the squares of the array sparray, for use in the
simpson index calculation.
$sumsquare = 0;
for($i = 0; $i < sizeof($sparray); $i++)
$sumsquare += ($sparray[$i][0] * $sparray[$i][0]);

//calculates the simpson index for the LocationID.
$simpindex = 1 - ($sumsquare - $sumind[0]) / ($sumind[0] * ($sumind[0] - 1));

//carries out a portion of the shannon index calculation for the locationID.
$sumlog = 0;
for($i = 0; $i < sizeof($sparray); $i++)
$sumlog += $sparray[$i][0] * log($sparray[$i][0]);

//calculates the shannon index for the LocationID.
$shanindex = (($sumind[0] * log($sumind[0])) - $sumlog) / $sumind[0];

//Creates an array of the sums of species sightings for each species for the
specified survey type
$sumindpark_SQL = "SELECT SUM(individuals)".
" FROM tblPointCountSurvey NATURAL JOIN tblLocations".
" WHERE ParkCode = 'VAFO'".
" GROUP BY ParkCode";
$sumindpark_RSLT = @mysql_query($sumindpark_SQL) or die('sumindpark_SQL Query
failed: ' . mysql_error());
$sumindpark = @mysql_fetch_array($sumindpark_RSLT);

//Creates an array of the sums of species sightings for each species for the
specified survey.
$sparraypark_SQL = "SELECT SUM(individuals)".
" FROM tblPointCountSurvey NATURAL JOIN tblLocations".
" WHERE ParkCode = 'VAFO' AND Individuals <> 0".
" GROUP BY species";
$sparraypark_RSLT = @mysql_query($sparraypark_SQL) or die('sparraypark_SQL
Query failed: ' . mysql_error());
$sparraypark = array();
while($row = @mysql_fetch_array($sparraypark_RSLT))
array_push($sparraypark, $row);

//calculates the dominance for the given survey type
$dominancepark = $domparksp[0][1] / $sumindpark[0];

//calculates the sum of the squares of the array sparray, for use in the
simpson index calculation.
$sumsquarepark = 0;
for($i = 0; $i < sizeof($sparraypark); $i++)
$sumsquarepark += $sparraypark[$i][0] * $sparraypark[$i][0];

//calculates the simpson index for the survey type.
$simpindexpark = 1 - ($sumsquarepark - $sumindpark[0])/($sumindpark[0] *
($sumindpark[0] - 1));

//carries out a portion of the shannon index calculation for the survey type.
$sumlogpark = 0;
for($i = 0; $i < sizeof($sparraypark); $i++)
$sumlogpark += $sparraypark[$i][0] * log($sparraypark[$i][0]);

//calculates the shannon index for the shannon index.
$shanindexpark = (($sumindpark[0] * log($sumindpark[0])) -
$sumlogpark)/$sumindpark[0];

?>
```

```
</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->

<? $locationID = $_GET['locationID']; ?>

<TABLE class=mainborder cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff
border=0>
<TBODY>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1 border=0></TD>
<TD><!-- banner -->
<TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
<TBODY>
<TR class=mainnavbg vAlign=top background="images/backbanner.gif">
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="NPS I&amp;M Program" hspace=0
src="vafo_files/vafobirdbanner.gif" width=559 align=left
border=0> </TD>
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="National Park Service" hspace=0
src="vafo_files/npsbanner.gif" width=235 align=right
border=0> </TD></TR></TBODY></TABLE><!-- banner end --><!-- main
navigation and section title -->
<!-- main navigation and section title end --><!-- local navigation and
content -->
<TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff border=0>
<TBODY>
<TR vAlign=top bgColor=#ffffff><!-- local navigation -->
<TD class=contentbg width=10 bgColor=#ffffff height=404></TD><!-- TD
width="13" height="404"><IMG height="100%" alt="" src="../images/shim.gif"
width=13 border=0></TD -->
<TD width=160><!-- basic navigation -->
<TABLE class=contentbg cellSpacing=0 cellPadding=2 width="100%"
bgColor=#ffffff border=0><!-- InstanceBeginEditable name="NavContent" -->
<TBODY>
<TR>
<TD height="10">
</TD>
<TD height="10">
</TD>
</TR>
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"locationsum.php?locationID=".urlencode($locationID)."\">Location
Information</A>"); ?>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0></TD></TR>

<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"pointcount.php?locationID=".urlencode($locationID)."\">Point Count
Survey</A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Road Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
```

```
width=10 border=0>
</TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Raptor Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Riparian Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Owl Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0>
</TD></TR>

<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnavactive\"
href=\"diversitypc.php?locationID=".urlencode($locationID)."\">Diversity</A>")
; ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/arrows.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"admin.php?locationID=".urlencode($locationID)."\">Edit</A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0>
</TD></TR>

</TBODY></TABLE></TD>
<TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
width=15 border=0> </TD><!-- local navigation end -->
<TD class=contentbg vAlign=top align=middle><!-- PAGE CONTENT - START --><!--
InstanceBeginEditable name="PageContent" -->


<!-- The following table displays the diversity information for the
LocationID, and the survey type. -->
<table width="600" border="0" cellspacing="1" cellpadding="1">
<tr bgcolor="#485160">
<tr>
<td height="10"></td>
</tr>
<tr>
<td height="34" bgcolor="#485160"> <div align="center"><font color="#FFFFFF"
size="5"><strong>Diversity</strong></font></div></td>
</tr>
</table>
<br>
<table width="600" border="1" bordercolor="#ffffff" align="center"
cellpadding="1" cellspacing="1">
<td></td>
<tr>
<th colspan="2" bordercolor="#485160" bgcolor="#669933">For Location: <?
print(urldecode($locationID)); ?></th>
<td width="37"> </td>
<td colspan="2" bordercolor="#485160" bgcolor="#669933"> <div
align="center"><strong>For All Point Count Surveys in VAFO</strong></div></td>
</tr>
<tr>
<td width="235" bordercolor="#485160">Total Number of Species</td>
```

```
<td width="39" bordercolor="#485160"><? print($sumsp[0]); ?></td>
<td> </td>
<td width="194" bordercolor="#485160">Total Number of Species</td>
<td width="79" bordercolor="#485160"><? print($sumparksp[0]); ?></td>
</tr>
<tr>
<td bordercolor="#485160">Dominate Species</td>
<td bordercolor="#485160"><? print($domsp[0][0]); ?></td>
<td> </td>
<td bordercolor="#485160">Dominate Species</td>
<td bordercolor="#485160"><? print($domparksp[0][0]); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Dominance</td>
<td bordercolor="#485160"><? print($dominance); ?></td>
<td> </td>
<td bordercolor="#485160">Dominance</td>
<td bordercolor="#485160"><? print($dominancepark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Simpson Diversity Index</td>
<td bordercolor="#485160"><? print($simpindex); ?></td>
<td> </td>
<td bordercolor="#485160">Simpson Diversity Index</td>
<td bordercolor="#485160"><? print($simpindexpark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Shannon Diversity Index</td>
<td bordercolor="#485160"><? print($shanindex); ?></td>
<td height="4"> </td>
<td height="4" bordercolor="#485160">Shannon Diversity Index</td>
<td height="4" bordercolor="#485160"><? print($shanindexpark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="white"><a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='<?
print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">View Map of
Location</a></td>
<td bordercolor="white"></td>
<td height="4"> </td>
<td height="4" bordercolor="white"><a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=POINT_TYPE='Point
Count'" target = NEW><font size ="-1">View Map of Point Count Survey</a></td>
<td height="4" bordercolor="white"></td>
</tr>
<td></td>
</table>

<br><br><br><br>

</TBODY></TABLE><!-- InstanceEndEditable --><!-- PAGE CONTENT - END -->
<TABLE border=0><!-- Kludge to force NS browsers to wrap left navigation
cell.-->
<TBODY>
<TR>
<TD vAlign=center align=middle><IMG height=1
src="vafo_files/shim.gif" width=570></TD></TR></TBODY></TABLE></TD>
<TD width=10> </TD>
<TD width=15> </TD></TR></TBODY></TABLE><IMG height=1 alt=""
src="vafo_files/shim.gif" width=10 border=0> <!-- utility footer -->
<TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
border=0><TBODY>
<TR vAlign=top>
<TD vAlign=center align=left><IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0> <A class=utility
href="http://science.nature.nps.gov/im/brochure/index.htm">about
I&amp;M Program</A></TD>
<TD align=right><A class=utility
```

```
href="http://www.nature.nps.gov/">NatureNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/gis">NPS GIS</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/">ParkNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0></TD></TR></TBODY></TABLE><!--
utility footer end --></TD>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd --></BODY></HTML>
```

diversityra.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
<HTML><HEAD><TITLE>Valley Forge - Comprehensive Inventory Program for
Birds</TITLE>

<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>

<?


// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');


//check for GET data
if (isset($_GET["locationID"]))
$locationID = $_GET["locationID"];
else
die("Location ID not supplied.");


//Counts the number of distinct species at the given locationID.
$sumsp_SQL = "SELECT COUNT(DISTINCT species)".
" FROM tblRaptorSurvey".
" WHERE LocationID = '$locationID' AND species <> 'UNKNOWN'";
$sumsp_RSLT = @mysql_query($sumsp_SQL) or die('sumsp_SQL Query failed: ' .
mysql_error());
$sumsp = @mysql_fetch_array($sumsp_RSLT);

//Counts the number of distinct species in the given survey.
$sumparksp_SQL = "SELECT COUNT(DISTINCT species)".
" FROM tblRaptorSurvey";
$sumparksp_RSLT = @mysql_query($sumparksp_SQL) or die('sumparksp_SQL Query
failed: ' . mysql_error());
$sumparksp = @mysql_fetch_array($sumparksp_RSLT);

//Selects the dominant species and the count of that species for the given
LocationID
$domsp_SQL = "SELECT species, SUM(individuals) AS sumin".
" FROM tblRaptorSurvey".
" WHERE LocationID = '$locationID'".
" GROUP BY species".
" ORDER BY sumin DESC";
```

```
$domsp_RSLT = @mysql_query($domsp_SQL) or die('domsp_SQL Query failed: ' .
mysql_error());
$domsp = array();
while($row = @mysql_fetch_array($domsp_RSLT))
array_push($domsp, $row);


//Selects the dominant species and the count of that species for the given
survey.
$domparksp_SQL = "SELECT species, SUM(individuals) as sumin".
" FROM(tblRaptorSurvey NATURAL JOIN tblLocations)".
" WHERE ParkCode = 'VAFO' AND SurveyType = 'Raptor'".
" GROUP BY species".
" ORDER BY sumin DESC";
$domparksp_RSLT = @mysql_query($domparksp_SQL) or die('domparksp_SQL Query
failed: ' . mysql_error());
$domparksp = array();
while($row = @mysql_fetch_array($domparksp_RSLT))
array_push($domparksp, $row);

//Sums the total number of individuals identified at the given LocationID.
$sumind_SQL = "SELECT SUM(individuals)".
" FROM tblRaptorSurvey".
" WHERE LocationID = '$locationID'".
" GROUP BY LocationID";
$sumind_RSLT = @mysql_query($sumind_SQL) or die('sumind_SQL Query failed: ' .
mysql_error());
$sumind = @mysql_fetch_array($sumind_RSLT);

//Creates an array of the sums of species sightings for each species for the
specified LocationID.
$sparray_SQL = "SELECT SUM(individuals)".
" FROM tblRaptorSurvey".
" WHERE LocationID = '$locationID' AND Individuals <> 0".
" GROUP BY species";
$sparray_RSLT = @mysql_query($sparray_SQL) or die('sparray_SQL Query failed: '
. mysql_error());
$sparray = array();
while($row = @mysql_fetch_array($sparray_RSLT))
array_push($sparray, $row);

//calculates the dominance for the given LocationID.
$dominance = $domsp[0][1] / $sumind[0];

//calculates the sum of the squares of the array sparray, for use in the
simpson index calculation.
$sumsquare = 0;
for($i = 0; $i < sizeof($sparray); $i++)
$sumsquare += ($sparray[$i][0] * $sparray[$i][0]);

//calculates the simpson index for the LocationID.
$simpindex = 1 - ($sumsquare - $sumind[0]) / ($sumind[0] * ($sumind[0] - 1));

//carries out a portion of the shannon index calculation for the locationID.
$sumlog = 0;
for($i = 0; $i < sizeof($sparray); $i++)
$sumlog += $sparray[$i][0] * log($sparray[$i][0]);

//calculates the shannon index for the LocationID.
$shanindex = (($sumind[0] * log($sumind[0])) - $sumlog) / $sumind[0];

//Creates an array of the sums of species sightings for each species for the
specified survey type
$sumindpark_SQL = "SELECT SUM(individuals)".
" FROM tblRaptorSurvey NATURAL JOIN tblLocations".
" WHERE ParkCode = 'VAFO'".
" GROUP BY ParkCode";
```

```
$sumindpark_RSLT = @mysql_query($sumindpark_SQL) or die('sumindpark_SQL Query
failed: ' . mysql_error());
$sumindpark = @mysql_fetch_array($sumindpark_RSLT);

//Creates an array of the sums of species sightings for each species for the
specified survey.
$sparraypark_SQL = "SELECT SUM(individuals)".
" FROM tblRaptorSurvey NATURAL JOIN tblLocations".
" WHERE ParkCode = 'VAFO' AND Individuals <> 0".
" GROUP BY species";
$sparraypark_RSLT = @mysql_query($sparraypark_SQL) or die('sparraypark_SQL
Query failed: ' . mysql_error());
$sparraypark = array();
while($row = @mysql_fetch_array($sparraypark_RSLT))
array_push($sparraypark, $row);

//calculates the dominance for the given survey type
$dominancepark = $domparksp[0][1] / $sumindpark[0];

//calculates the sum of the squares of the array sparray, for use in the
simpson index calculation.
$sumsquarepark = 0;
for($i = 0; $i < sizeof($sparraypark); $i++)
$sumsquarepark += $sparraypark[$i][0] * $sparraypark[$i][0];

//calculates the simpson index for the survey type.
$simpindexpark = 1 - ($sumsquarepark - $sumindpark[0])/($sumindpark[0] *
($sumindpark[0] - 1));

//carries out a portion of the shannon index calculation for the survey type.
$sumlogpark = 0;
for($i = 0; $i < sizeof($sparraypark); $i++)
$sumlogpark += $sparraypark[$i][0] * log($sparraypark[$i][0]);

//calculates the shannon index for the shannon index.
$shanindexpark = (($sumindpark[0] * log($sumindpark[0])) -
$sumlogpark)/$sumindpark[0];

?>

</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->

<? $locationID = $_GET['locationID']; ?>

<TABLE class=mainborder cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff
border=0>
<TBODY>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1 border=0></TD>
<TD><!-- banner -->
<TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
<TBODY>
<TR class=mainnavbg vAlign=top background="images/backbanner.gif">
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="NPS I&amp;M Program" hspace=0
src="vafo_files/vafobirdbanner.gif" width=559 align=left
border=0> </TD>
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="National Park Service" hspace=0
src="vafo_files/npsbanner.gif" width=235 align=right
border=0> </TD></TR></TBODY></TABLE><!-- banner end --><!-- main
navigation and section title -->
```

```
<!-- main navigation and section title end --><!-- local navigation and
content -->
<TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff border=0>
<TBODY>
<TR vAlign=top bgColor=#ffffff><!-- local navigation -->
<TD class=contentbg width=10 bgColor=#ffffff height=404></TD><!-- TD
width="13" height="404"><IMG height="100%" alt="" src="../images/shim.gif"
width=13 border=0></TD -->
<TD width=160><!-- basic navigation -->
<TABLE class=contentbg cellSpacing=0 cellPadding=2 width="100%"
bgColor=#ffffff border=0><!-- InstanceBeginEditable name="NavContent" -->
<TBODY>
<TR>
<TD height="10">
</TD>
<TD height="10">
</TD>
</TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Location Information</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>

<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Point Count Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Road Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0>
</TD></TR>
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"raptor.php?locationID=".urlencode($locationID)."\">Raptor Survey</A>");
?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Riparian Bird Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Owl Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0>
</TD></TR>

<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnavactive\"
href=\"diversityra.php?locationID=".urlencode($locationID)."\">Diversity</A>")
; ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/arrows.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"admin.php?locationID=".urlencode($locationID)."\">Edit</A>"); ?>
</TD>
```

```
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0>
</TD></TR>

</TBODY></TABLE></TD>
<TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
width=15 border=0> </TD><!-- local navigation end -->
<TD class=contentbg vAlign=top align=middle><!-- PAGE CONTENT - START --><!--
InstanceBeginEditable name="PageContent" -->


<!-- The following table displays the diversity information for the
LocationID, and the survey type. -->
<table width="600" border="0" cellspacing="1" cellpadding="1">
<tr bgcolor="#485160">
<tr>
<td height="10"></td>
</tr>
<tr>
<td height="34" bgcolor="#485160"> <div align="center"><font color="#FFFFFF"
size="5"><strong>Diversity</strong></font></div></td>
</tr>
</table>
<br>
<table width="600" border="1" bordercolor="#ffffff" align="center"
cellpadding="1" cellspacing="1">
<td></td>
<tr>
<th colspan="2" bordercolor="#485160" bgcolor="#669933">For Location: <?
print(urldecode($locationID)); ?></th>
<td width="37"> </td>
<td colspan="2" bordercolor="#485160" bgcolor="#669933"> <div
align="center"><strong>For All Raptor Surveys in VAFO</strong></div></td>
</tr>
<tr>
<td width="235" bordercolor="#485160">Total Number of Species</td>
<td width="39" bordercolor="#485160"><? print($sumsp[0]); ?></td>
<td> </td>
<td width="194" bordercolor="#485160">Total Number of Species</td>
<td width="79" bordercolor="#485160"><? print($sumparksp[0]); ?></td>
</tr>
<tr>
<td bordercolor="#485160">Dominate Species</td>
<td bordercolor="#485160"><? print($domsp[0][0]); ?></td>
<td> </td>
<td bordercolor="#485160">Dominate Species</td>
<td bordercolor="#485160"><? print($domparksp[0][0]); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Dominance</td>
<td bordercolor="#485160"><? print($dominance); ?></td>
<td> </td>
<td bordercolor="#485160">Dominance</td>
<td bordercolor="#485160"><? print($dominancepark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Simpson Diversity Index</td>
<td bordercolor="#485160"><? print($simpindex); ?></td>
<td> </td>
<td bordercolor="#485160">Simpson Diversity Index</td>
<td bordercolor="#485160"><? print($simpindexpark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Shannon Diversity Index</td>
<td bordercolor="#485160"><? print($shanindex); ?></td>
<td height="4"> </td>
<td height="4" bordercolor="#485160">Shannon Diversity Index</td>
<td height="4" bordercolor="#485160"><? print($shanindexpark); ?></td>
```

```
</tr>
<tr>
<td height="21" bordercolor="white"><a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='<?
print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">View Map of
Location</a></td>
<td bordercolor="white"></td>
<td height="4"> </td>
<td height="4" bordercolor="white"><a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=POINT_TYPE='Raptor'"
target = NEW><font size ="-1">View Map of Raptor Survey</a></td>
<td height="4" bordercolor="white"></td>
</tr>
<td></td>
</table>

<br><br><br><br>

</TBODY></TABLE><!-- InstanceEndEditable --><!-- PAGE CONTENT - END -->
<TABLE border=0><!-- Kludge to force NS browsers to wrap left navigation
cell.-->
<TBODY>
<TR>
<TD vAlign=center align=middle><IMG height=1
src="vafo_files/shim.gif" width=570></TD></TR></TBODY></TABLE></TD>
<TD width=10> </TD>
<TD width=15> </TD></TR></TBODY></TABLE><IMG height=1 alt=""
src="vafo_files/shim.gif" width=10 border=0> <!-- utility footer -->
<TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
border=0><TBODY>
<TR vAlign=top>
<TD vAlign=center align=left><IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0> <A class=utility
href="http://science.nature.nps.gov/im/brochure/index.htm">about
I&amp;M Program</A></TD>
<TD align=right><A class=utility
href="http://www.nature.nps.gov/">NatureNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/gis">NPS GIS</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/">ParkNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0></TD></TR></TBODY></TABLE><!--
utility footer end --></TD>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd --></BODY></HTML>
```

diversityri.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
<HTML><HEAD><TITLE>Valley Forge - Comprehensive Inventory Program for
Birds</TITLE>
<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>

<?
```

```
// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');


//check for GET data
if (isset($_GET["locationID"]))
$locationID = $_GET["locationID"];
else
die("Location ID not supplied.");


//Counts the number of distinct species at the given locationID.
$sumsp_SQL = "SELECT COUNT(DISTINCT species)".
" FROM tblRiparianBirdSurvey".
" WHERE LocationID = '$locationID' AND species <> 'UNKNOWN'";
$sumsp_RSLT = @mysql_query($sumsp_SQL) or die('sumsp_SQL Query failed: ' .
mysql_error());
$sumsp = @mysql_fetch_array($sumsp_RSLT);

//Counts the number of distinct species in the given survey.
$sumparksp_SQL = "SELECT COUNT(DISTINCT species)".
" FROM tblRiparianBirdSurvey";
$sumparksp_RSLT = @mysql_query($sumparksp_SQL) or die('sumparksp_SQL Query
failed: ' . mysql_error());
$sumparksp = @mysql_fetch_array($sumparksp_RSLT);

//Selects the dominant species and the count of that species for the given
LocationID
$domsp_SQL = "SELECT species, SUM(individuals) AS sumin".
" FROM tblRiparianBirdSurvey".
" WHERE LocationID = '$locationID'".
" GROUP BY species".
" ORDER BY sumin DESC";
$domsp_RSLT = @mysql_query($domsp_SQL) or die('domsp_SQL Query failed: ' .
mysql_error());
$domsp = array();
while($row = @mysql_fetch_array($domsp_RSLT))
array_push($domsp, $row);


//Selects the dominant species and the count of that species for the given
survey.
$domparksp_SQL = "SELECT species, SUM(individuals) as sumin".
" FROM(tblRiparianBirdSurvey NATURAL JOIN tblLocations)".
" WHERE ParkCode = 'VAFO' AND SurveyType = 'Riparian Bird'".
" GROUP BY species".
" ORDER BY sumin DESC";
$domparksp_RSLT = @mysql_query($domparksp_SQL) or die('domparksp_SQL Query
failed: ' . mysql_error());
$domparksp = array();
while($row = @mysql_fetch_array($domparksp_RSLT))
array_push($domparksp, $row);

//Sums the total number of individuals identified at the given LocationID.
$sumind_SQL = "SELECT SUM(individuals)".
" FROM tblRiparianBirdSurvey".
" WHERE LocationID = '$locationID'".
" GROUP BY LocationID";
$sumind_RSLT = @mysql_query($sumind_SQL) or die('sumind_SQL Query failed: ' .
mysql_error());
$sumind = @mysql_fetch_array($sumind_RSLT);

//Creates an array of the sums of species sightings for each species for the
specified LocationID.
$sparray_SQL = "SELECT SUM(individuals)".
```

```
" FROM tblRiparianBirdSurvey".
" WHERE LocationID = '$locationID' AND Individuals <> 0".
" GROUP BY species";
$sparray_RSLT = @mysql_query($sparray_SQL) or die('sparray_SQL Query failed: '
. mysql_error());
$sparray = array();
while($row = @mysql_fetch_array($sparray_RSLT))
array_push($sparray, $row);

//calculates the dominance for the given LocationID.
$dominance = $domsp[0][1] / $sumind[0];

//calculates the sum of the squares of the array sparray, for use in the
simpson index calculation.
$sumsquare = 0;
for($i = 0; $i < sizeof($sparray); $i++)
$sumsquare += ($sparray[$i][0] * $sparray[$i][0]);

//calculates the simpson index for the LocationID.
$simpindex = 1 - ($sumsquare - $sumind[0]) / ($sumind[0] * ($sumind[0] - 1));

//carries out a portion of the shannon index calculation for the locationID.
$sumlog = 0;
for($i = 0; $i < sizeof($sparray); $i++)
$sumlog += $sparray[$i][0] * log($sparray[$i][0]);

//calculates the shannon index for the LocationID.
$shanindex = (($sumind[0] * log($sumind[0])) - $sumlog) / $sumind[0];

//Creates an array of the sums of species sightings for each species for the
specified survey type
$sumindpark_SQL = "SELECT SUM(individuals)".
" FROM tblRiparianBirdSurvey NATURAL JOIN tblLocations".
" WHERE ParkCode = 'VAFO'".
" GROUP BY ParkCode";
$sumindpark_RSLT = @mysql_query($sumindpark_SQL) or die('sumindpark_SQL Query
failed: ' . mysql_error());
$sumindpark = @mysql_fetch_array($sumindpark_RSLT);

//Creates an array of the sums of species sightings for each species for the
specified survey.
$sparraypark_SQL = "SELECT SUM(individuals)".
" FROM tblRiparianBirdSurvey NATURAL JOIN tblLocations".
" WHERE ParkCode = 'VAFO' AND Individuals <> 0".
" GROUP BY species";
$sparraypark_RSLT = @mysql_query($sparraypark_SQL) or die('sparraypark_SQL
Query failed: ' . mysql_error());
$sparraypark = array();
while($row = @mysql_fetch_array($sparraypark_RSLT))
array_push($sparraypark, $row);

//calculates the dominance for the given survey type
$dominancepark = $domparksp[0][1] / $sumindpark[0];

//calculates the sum of the squares of the array sparray, for use in the
simpson index calculation.
$sumsquarepark = 0;
for($i = 0; $i < sizeof($sparraypark); $i++)
$sumsquarepark += $sparraypark[$i][0] * $sparraypark[$i][0];

//calculates the simpson index for the survey type.
$simpindexpark = 1 - ($sumsquarepark - $sumindpark[0])/($sumindpark[0] *
($sumindpark[0] - 1));

//carries out a portion of the shannon index calculation for the survey type.
$sumlogpark = 0;
for($i = 0; $i < sizeof($sparraypark); $i++)
$sumlogpark += $sparraypark[$i][0] * log($sparraypark[$i][0]);
```

```
//calculates the shannon index for the shannon index.
$shanindexpark = (($sumindpark[0] * log($sumindpark[0])) -
$sumlogpark)/$sumindpark[0];

?>

</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->

<? $locationID = $_GET['locationID']; ?>

<TABLE class=mainborder cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff
border=0>
<TBODY>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1 border=0></TD>
<TD><!-- banner -->
<TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
<TBODY>
<TR class=mainnavbg vAlign=top background="images/backbanner.gif">
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="NPS I&amp;M Program" hspace=0
src="vafo_files/vafobirdbanner.gif" width=559 align=left
border=0> </TD>
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="National Park Service" hspace=0
src="vafo_files/npsbanner.gif" width=235 align=right
border=0> </TD></TR></TBODY></TABLE><!-- banner end --><!-- main
navigation and section title -->
<!-- main navigation and section title end --><!-- local navigation and
content -->
<TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff border=0>
<TBODY>
<TR vAlign=top bgColor=#ffffff><!-- local navigation -->
<TD class=contentbg width=10 bgColor=#ffffff height=404></TD><!-- TD
width="13" height="404"><IMG height="100%" alt="" src="../images/shim.gif"
width=13 border=0></TD -->
<TD width=160><!-- basic navigation -->
<TABLE class=contentbg cellSpacing=0 cellPadding=2 width="100%"
bgColor=#ffffff border=0><!-- InstanceBeginEditable name="NavContent" -->
<TBODY>
<TR>
<TD height="10">
</TD>
<TD height="10">
</TD>
</TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Location Information</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>

<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Point Count Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Road Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
```

```
width=10 border=0>
</TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Raptor Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"riparian.php?locationID=".urlencode($locationID)."\">Riparian Bird
Survey</A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Owl Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0>
</TD></TR>

<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnavactive\"
href=\"diversityri.php?locationID=".urlencode($locationID)."\">Diversity</A>")
; ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/arrows.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"admin.php?locationID=".urlencode($locationID)."\">Edit</A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0>
</TD></TR>

</TBODY></TABLE></TD>
<TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
width=15 border=0> </TD><!-- local navigation end -->
<TD class=contentbg vAlign=top align=middle><!-- PAGE CONTENT - START --><!--
InstanceBeginEditable name="PageContent" -->

<!-- The following table displays the diversity information for the
LocationID, and the survey type. -->

<table width="600" border="0" cellspacing="1" cellpadding="1">
<tr bgcolor="#485160">
<tr>
<td height="10"></td>
</tr>
<tr>
<td height="34" bgcolor="#485160"> <div align="center"><font color="#FFFFFF"
size="5"><strong>Diversity</strong></font></div></td>
</tr>
</table>
<br>
<table width="600" border="1" bordercolor="#ffffff" align="center"
cellpadding="1" cellspacing="1">
<td></td>
<tr>
<th colspan="2" bordercolor="#485160" bgcolor="#669933">For Location: <?
print(urldecode($locationID)); ?></th>
<td width="37"> </td>
```

```
<td colspan="2" bordercolor="#485160" bgcolor="#669933"> <div
align="center"><strong>For All Riparian Bird Surveys in
VAFO</strong></div></td>
</tr>
<tr>
<td width="235" bordercolor="#485160">Total Number of Species</td>
<td width="39" bordercolor="#485160"><? print($sumsp[0]); ?></td>
<td> </td>
<td width="194" bordercolor="#485160">Total Number of Species</td>
<td width="79" bordercolor="#485160"><? print($sumparksp[0]); ?></td>
</tr>
<tr>
<td bordercolor="#485160">Dominate Species</td>
<td bordercolor="#485160"><? print($domsp[0][0]); ?></td>
<td> </td>
<td bordercolor="#485160">Dominate Species</td>
<td bordercolor="#485160"><? print($domparksp[0][0]); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Dominance</td>
<td bordercolor="#485160"><? print($dominance); ?></td>
<td> </td>
<td bordercolor="#485160">Dominance</td>
<td bordercolor="#485160"><? print($dominancepark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Simpson Diversity Index</td>
<td bordercolor="#485160"><? print($simpindex); ?></td>
<td> </td>
<td bordercolor="#485160">Simpson Diversity Index</td>
<td bordercolor="#485160"><? print($simpindexpark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Shannon Diversity Index</td>
<td bordercolor="#485160"><? print($shanindex); ?></td>
<td height="4"> </td>
<td height="4" bordercolor="#485160">Shannon Diversity Index</td>
<td height="4" bordercolor="#485160"><? print($shanindexpark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="white"><a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='<?
print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">View Map of
Location</a></td>
<td bordercolor="white"></td>
<td height="4"> </td>
<td height="4" bordercolor="white"><a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=POINT_TYPE='Riparian
Bird'" target = NEW><font size ="-1">View Map of Riparian Bird Survey</a></td>
<td height="4" bordercolor="white"></td>
</tr>
<td></td>
</table>

<br><br><br><br>

</TBODY></TABLE><!-- InstanceEndEditable --><!-- PAGE CONTENT - END -->
<TABLE border=0><!-- Kludge to force NS browsers to wrap left navigation
cell.-->
<TBODY>
<TR>
<TD vAlign=center align=middle><IMG height=1
src="vafo_files/shim.gif" width=570></TD></TR></TBODY></TABLE></TD>
<TD width=10> </TD>
<TD width=15> </TD></TR></TBODY></TABLE><IMG height=1 alt=""
src="vafo_files/shim.gif" width=10 border=0> <!-- utility footer -->
<TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
border=0><TBODY>
```

```
<TR vAlign=top>
<TD vAlign=center align=left><IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0> <A class=utility
href="http://science.nature.nps.gov/im/brochure/index.htm">about
I&amp;M Program</A></TD>
<TD align=right><A class=utility
href="http://www.nature.nps.gov/">NatureNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/gis">NPS GIS</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/">ParkNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0></TD></TR></TBODY></TABLE><!--
utility footer end --></TD>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd --></BODY></HTML>
```

diversityro.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<!-- saved from url=(0042)http://science.nature.nps.gov/im/links.htm -->
<!-- the style sheet, some graphics, and general format for this page
were copied from http://science.nature.nps.gov/im/ -->
<HTML><HEAD><TITLE>Valley Forge - Comprehensive Inventory Program for
Birds</TITLE>

<LINK href="vafo_files/im.css"
type=text/css rel=stylesheet>

<?


// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');


//check for GET data
if (isset($_GET["locationID"]))
$locationID = $_GET["locationID"];
else
die("Location ID not supplied.");


//Counts the number of distinct species at the given locationID.
$sumsp_SQL = "SELECT COUNT(DISTINCT species)".
" FROM tblRoadSurvey".
" WHERE LocationID = '$locationID' AND species <> 'UNKNOWN'";
$sumsp_RSLT = @mysql_query($sumsp_SQL) or die('sumsp_SQL Query failed: ' .
mysql_error());
$sumsp = @mysql_fetch_array($sumsp_RSLT);

//Counts the number of distinct species in the given survey.
$sumparksp_SQL = "SELECT COUNT(DISTINCT species)".
" FROM tblRoadSurvey";
$sumparksp_RSLT = @mysql_query($sumparksp_SQL) or die('sumparksp_SQL Query
failed: ' . mysql_error());
$sumparksp = @mysql_fetch_array($sumparksp_RSLT);
```

```
//Selects the dominant species and the count of that species for the given
LocationID
$domsp_SQL = "SELECT species, SUM(individuals) AS sumin".
" FROM tblRoadSurvey".
" WHERE LocationID = '$locationID'".
" GROUP BY species".
" ORDER BY sumin DESC";
$domsp_RSLT = @mysql_query($domsp_SQL) or die('domsp_SQL Query failed: ' .
mysql_error());
$domsp = array();
while($row = @mysql_fetch_array($domsp_RSLT))
array_push($domsp, $row);

//Selects the dominant species and the count of that species for the given
survey.
$domparksp_SQL = "SELECT species, SUM(individuals) as sumin".
" FROM(tblRoadSurvey NATURAL JOIN tblLocations)".
" WHERE ParkCode = 'VAFO' AND SurveyType = 'Road'".
" GROUP BY species".
" ORDER BY sumin DESC";
$domparksp_RSLT = @mysql_query($domparksp_SQL) or die('domparksp_SQL Query
failed: ' . mysql_error());
$domparksp = array();
while($row = @mysql_fetch_array($domparksp_RSLT))
array_push($domparksp, $row);


//Sums the total number of individuals identified at the given LocationID.
$sumind_SQL = "SELECT SUM(individuals)".
" FROM tblRoadSurvey".
" WHERE LocationID = '$locationID'".
" GROUP BY LocationID";
$sumind_RSLT = @mysql_query($sumind_SQL) or die('sumind_SQL Query failed: ' .
mysql_error());
$sumind = @mysql_fetch_array($sumind_RSLT);

//Creates an array of the sums of species sightings for each species for the
specified LocationID.
$sparray_SQL = "SELECT SUM(individuals)".
" FROM tblRoadSurvey".
" WHERE LocationID = '$locationID' AND Individuals <> 0".
" GROUP BY species";
$sparray_RSLT = @mysql_query($sparray_SQL) or die('sparray_SQL Query failed: '
. mysql_error());
$sparray = array();
while($row = @mysql_fetch_array($sparray_RSLT))
array_push($sparray, $row);

//calculates the dominance for the given LocationID.
$dominance = $domsp[0][1] / $sumind[0];

//calculates the sum of the squares of the array sparray, for use in the
simpson index calculation.
$sumsquare = 0;
for($i = 0; $i < sizeof($sparray); $i++)
$sumsquare += ($sparray[$i][0] * $sparray[$i][0]);

//calculates the simpson index for the LocationID.
$simpindex = 1 - ($sumsquare - $sumind[0]) / ($sumind[0] * ($sumind[0] - 1));

//carries out a portion of the shannon index calculation for the locationID.
$sumlog = 0;
for($i = 0; $i < sizeof($sparray); $i++)
$sumlog += $sparray[$i][0] * log($sparray[$i][0]);

//calculates the shannon index for the LocationID.
$shanindex = (($sumind[0] * log($sumind[0])) - $sumlog) / $sumind[0];
```

```
//Creates an array of the sums of species sightings for each species for the
specified survey type
$sumindpark_SQL = "SELECT SUM(individuals)".
" FROM tblRoadSurvey NATURAL JOIN tblLocations".
" WHERE ParkCode = 'VAFO'".
" GROUP BY ParkCode";
$sumindpark_RSLT = @mysql_query($sumindpark_SQL) or die('sumindpark_SQL Query
failed: ' . mysql_error());
$sumindpark = @mysql_fetch_array($sumindpark_RSLT);

//Creates an array of the sums of species sightings for each species for the
specified survey.
$sparraypark_SQL = "SELECT SUM(individuals)".
" FROM tblRoadSurvey NATURAL JOIN tblLocations".
" WHERE ParkCode = 'VAFO' AND Individuals <> 0".
" GROUP BY species";
$sparraypark_RSLT = @mysql_query($sparraypark_SQL) or die('sparraypark_SQL
Query failed: ' . mysql_error());
$sparraypark = array();
while($row = @mysql_fetch_array($sparraypark_RSLT))
array_push($sparraypark, $row);

//calculates the dominance for the given survey type
$dominancepark = $domparksp[0][1] / $sumindpark[0];

//calculates the sum of the squares of the array sparray, for use in the
simpson index calculation.
$sumsquarepark = 0;
for($i = 0; $i < sizeof($sparraypark); $i++)
$sumsquarepark += $sparraypark[$i][0] * $sparraypark[$i][0];

//calculates the simpson index for the survey type.
$simpindexpark = 1 - ($sumsquarepark - $sumindpark[0])/($sumindpark[0] *
($sumindpark[0] - 1));

//carries out a portion of the shannon index calculation for the survey type.
$sumlogpark = 0;
for($i = 0; $i < sizeof($sparraypark); $i++)
$sumlogpark += $sparraypark[$i][0] * log($sparraypark[$i][0]);

//calculates the shannon index for the shannon index.
$shanindexpark = (($sumindpark[0] * log($sumindpark[0])) -
$sumlogpark)/$sumindpark[0];

?>

</HEAD>
<BODY bgColor=#ffffff><!-- border around page -->

<? $locationID = $_GET['locationID']; ?>

<TABLE class=mainborder cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff
border=0>
<TBODY>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1 border=0></TD>
<TD><!-- banner -->
<TABLE class=mainnavbg cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff background=vafo_files/backbanner.gif border=0>
<TBODY>
<TR class=mainnavbg vAlign=top background="images/backbanner.gif">
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="NPS I&amp;M Program" hspace=0
src="vafo_files/vafobirdbanner.gif" width=559 align=left
```

```
border=0> </TD>
<TD background=vafo_files/backbanner.gif><IMG height=78
alt="National Park Service" hspace=0
src="vafo_files/npsbanner.gif" width=235 align=right
border=0> </TD></TR></TBODY></TABLE><!-- banner end --><!-- main
navigation and section title -->
<!-- main navigation and section title end --><!-- local navigation and
content -->
<TABLE class=contentbg height=404 cellSpacing=0 cellPadding=0 width="100%"
bgColor=#ffffff border=0>
<TBODY>
<TR vAlign=top bgColor=#ffffff><!-- local navigation -->
<TD class=contentbg width=10 bgColor=#ffffff height=404></TD><!-- TD
width="13" height="404"><IMG height="100%" alt="" src="../images/shim.gif"
width=13 border=0></TD -->
<TD width=160><!-- basic navigation -->
<TABLE class=contentbg cellSpacing=0 cellPadding=2 width="100%"
bgColor=#ffffff border=0><!-- InstanceBeginEditable name="NavContent" -->
<TBODY>
<TR>
<TD height="10">
</TD>
<TD height="10">
</TD>
</TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Location Information</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>

<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Point Count Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"road.php?locationID=".urlencode($locationID)."\">Road Survey</A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0>
</TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Raptor Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Riparian Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0></TD></TR>
<TR vAlign=top>
<TD align=right height=20 class=localnavdisable>Owl Survey
</TD>
<TD><IMG height=10 alt="" src="vafo_files/graysquare.gif"
width=10 border=0>
</TD></TR>

<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnavactive\"
href=\"diversityro.php?locationID=".urlencode($locationID)."\">Diversity</A>")
; ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/arrows.gif"
width=10 border=0></TD></TR>
```

```
<TR vAlign=top>
<TD align=right height=20>
<? print("<a class=\"localnav\"
href=\"admin.php?locationID=".urlencode($locationID)."\">Edit</A>"); ?>
</TD>
<TD><IMG height=10 alt="" src="vafo_files/square.gif"
width=10 border=0>
</TD></TR>

</TBODY></TABLE></TD>
<TD width=15><IMG height="100%" alt="" src="vafo_files/shim.gif"
width=15 border=0> </TD><!-- local navigation end -->
<TD class=contentbg vAlign=top align=middle><!-- PAGE CONTENT - START --><!--
InstanceBeginEditable name="PageContent" -->


<!-- The following table displays the diversity information for the
LocationID, and the survey type. -->
<table width="600" border="0" cellspacing="1" cellpadding="1">
<tr bgcolor="#485160">
<tr>
<td height="10"></td>
</tr>
<tr>
<td height="34" bgcolor="#485160"> <div align="center"><font color="#FFFFFF"
size="5"><strong>Diversity</strong></font></div></td>
</tr>
</table>
<br>
<table width="600" border="1" bordercolor="#ffffff" align="center"
cellpadding="1" cellspacing="1">
<td></td>
<tr>
<th colspan="2" bordercolor="#485160" bgcolor="#669933">For Location: <?
print(urldecode($locationID)); ?></th>
<td width="37"> </td>
<td colspan="2" bordercolor="#485160" bgcolor="#669933"> <div
align="center"><strong>For All Road Surveys in VAFO</strong></div></td>
</tr>
<tr>
<td width="235" bordercolor="#485160">Total Number of Species</td>
<td width="39" bordercolor="#485160"><? print($sumsp[0]); ?></td>
<td> </td>
<td width="194" bordercolor="#485160">Total Number of Species</td>
<td width="79" bordercolor="#485160"><? print($sumparksp[0]); ?></td>
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<tr>
<td bordercolor="#485160">Dominate Species</td>
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<td> </td>
<td bordercolor="#485160">Dominate Species</td>
<td bordercolor="#485160"><? print($domparksp[0][0]); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Dominance</td>
<td bordercolor="#485160"><? print($dominance); ?></td>
<td> </td>
<td bordercolor="#485160">Dominance</td>
<td bordercolor="#485160"><? print($dominancepark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="#485160">Simpson Diversity Index</td>
<td bordercolor="#485160"><? print($simpindex); ?></td>
<td> </td>
<td bordercolor="#485160">Simpson Diversity Index</td>
<td bordercolor="#485160"><? print($simpindexpark); ?></td>
</tr>
<tr>
```

```
<td height="21" bordercolor="#485160">Shannon Diversity Index</td>
<td bordercolor="#485160"><? print($shanindex); ?></td>
<td height="4"> </td>
<td height="4" bordercolor="#485160">Shannon Diversity Index</td>
<td height="4" bordercolor="#485160"><? print($shanindexpark); ?></td>
</tr>
<tr>
<td height="21" bordercolor="white"><a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=LocationID='<?
print(urldecode($locationID)); ?>'" target = NEW><font size ="-1">View Map of
Location</a></td>
<td bordercolor="white"></td>
<td height="4"> </td>
<td height="4" bordercolor="white"><a
href="../website/vafobird/viewer.htm?ActiveLayer=0&Query=POINT_TYPE='Road'"
target = NEW><font size ="-1">View Map of Road Survey</a></td>
<td height="4" bordercolor="white"></td>
</tr>
<td></td>
</table>

<br><br><br><br>

</TBODY></TABLE><!-- InstanceEndEditable --><!-- PAGE CONTENT - END -->
<TABLE border=0><!-- Kludge to force NS browsers to wrap left navigation
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<TD vAlign=center align=middle><IMG height=1
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<TABLE class=mainborder cellSpacing=0 cellPadding=4 width="100%"
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href="http://www.nps.gov/gis">NPS GIS</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://www.nps.gov/">ParkNet</A><SPAN
class=utility> | </SPAN><A class=utility
href="http://inside.nps.gov/">InsideNPS</A> <IMG height=1 alt=""
src="vafo_files/shim.gif" width=9 border=0></TD></TR></TBODY></TABLE><!--
utility footer end --></TD>
<TD><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR>
<TR>
<TD colSpan=3><IMG height=1 alt="" src="vafo_files/shim.gif" width=1
border=0></TD></TR></TBODY></TABLE><!-- InstanceEnd --></BODY></HTML>
```

admin.php

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">

<html>
<head>
<title>Modify Database</title>
<style type="text/css">
<!--
table.eventBlock {
```

```
display:block;
position:relative;
top:-20px;
right:-20px;
}

tr.row1 {
background-color:#EEEEEE;
}

tr.row2 {
background-color:#FFFFFF;
}

tr.specialRow {
background-color:#EEFFEE;
}

th {
background-color:#C7DAEA;
}
-->
</style>
</head>
<body>
<?
//test location ID: VAFO_BIRDS_Owl_1

// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');


//check for POST data
if (isset($_POST["locationID"]))
$locationID = $_POST["locationID"];

if (isset($_POST["surveyType"]))
$surveyType = $_POST["surveyType"];

if (!isset($_POST["add"]) && !isset($_POST["delete"]) &&
!isset($_POST["edit"]) && !isset($_POST["addEvent"]) &&
!isset($_POST["editEvent"]))

if (isset($_POST["surveyType"]))
{
$id_SQL = "SELECT max(" . $surveyType . "SurveyID)" .
"FROM tbl" . $surveyType . "Survey";
$id_RSLT = @mysql_query($id_SQL) or die('id_SQL Query failed: ' .
mysql_error());
$id = @mysql_fetch_array($id_RSLT);
$id[0] = $id[0] + 1;
}

{
?>
<form name="parameters" action="<? print($_SERVER['PHP_SELF']); ?>"
method="post">
Location Id:
<input type="text" name="locationID" value="VAFO_BIRDS_OWL_1">
<br />
Survey Type:
<select name="surveyType">
<option value="Owl" selected>Owl
<option value="RiparianBird">Riparian
<option value="Raptor">Raptor
```

```
<option value="Road">Road
<option value="PointCount">Point Count
</select>
<input type="submit" value="Submit">
</form>

<?
}



if (isset($_POST["locationID"]) && isset($_POST["surveyType"]))
{
$surveyTable = "tbl" . $surveyType . "Survey";
$surveyID = $surveyType . "SurveyID";

//attribute is different for the RiparianBird table
if ($surveyType == "RiparianBird")
{
$option = "Sex";
}
if ($surveyType == "Raptor")
{
$option = "Detection";
}
if ($surveyType == "Owl")
{
$option = "Detection";
}
if ($surveyType == "Road")
{
$option = "Detection, Interval0_3, Interval3_5";
}
if ($surveyType == "PointCount")
{
$option = "Distance, Detection, Interval0_3, Interval3_5, Interval5_10";
}
$event_SQL = "SELECT tblEvents.EventID, ParkCode, GeneralSurveyType,
SpecificSurveyType, StartDate, StartTime, Visit, Season, Observer, Temp, Wind,
Clouds, Precip, SnowDepth, Species, Individuals, {$option}".
" FROM (((tblEvents NATURAL JOIN tlinkObservers)NATURAL JOIN tblBirdEvents)
NATURAL JOIN {$surveyTable})".
" WHERE LocationID='{$locationID}'";

$event_RSLT = @mysql_query($event_SQL) or die('event_SQL Query failed: ' .
mysql_error());
$event = array();
while ($row = @mysql_fetch_array($event_RSLT))
array_push($event, $row);

if (!isset($_POST["add"]) && !isset($_POST["delete"]) &&
!isset($_POST["edit"]) && !isset($_POST["addEvent"]) &&
!isset($_POST["editEvent"]))
{
?>
<form name="radioselect" action="<? print($_SERVER['PHP_SELF']); ?>"
method="post">
<?
for ($i = 0; $i < sizeof($event); $i++)
{
?>
<input type="radio" name="eventNum" value="<? print($i); ?>" />
<table class="eventBlock">
<th colspan="2">Event ID: <? print($event[$i]['EventID']); ?></th>
<tr class="row1">
<td>Visit: <? print($event[$i]['Visit']); ?></td>
<td>Species Code: <? print($event[$i]['Species']); ?></td>
```

```
</tr>
<tr class="row2">
<td>Season: <? print($event[$i]['Season']); ?></td>
<td>Individuals: <? print($event[$i]['Individuals']); ?></td>
</tr>
<tr class="row1">
<td>Observer(s): <? print($event[$i]['Observer']); ?></td>
<td><? print($option); ?>: <? print($event[$i]["{$option}"]); ?></td>
</tr>
</table>

<?
}
?>
<input type="hidden" name="locationID" value="<? print($locationID); ?>" />
<input type="hidden" name="surveyType" value="<? print($surveyType); ?>" />

<input type="submit" name="edit" value="Edit Selected" />
<input type="submit" name="delete" value="Delete Selected" />
<input type="submit" name="add" value="Add New Event" />
</form>
<?
}
}

if (isset($_POST['edit']))
{
$eventNum = $_POST['eventNum'];
//
?>
<?
if($surveyType == "Owl" OR $surveyType == "Raptor" OR $surveyType ==
"RiparianBird")
{
?>

<form name="addevent" action="<? print($_SERVER['PHP_SELF']); ?>"
method="post">
<table>
<th colspan="3">Event ID: <input type="text" name="eventID" value="<?
print($event[$eventNum]['EventID']); ?>" /></th>
<tr class="specialRow">
<td align="right">Park Code: <input style="align:right;" type="text"
name="park" value="<? print($event[$eventNum]['ParkCode']); ?>" /></td>
<td align="right">General Survey Type: <input style="align:right;" type="text"
name="generalSurveyType" value="<?
print($event[$eventNum]['GeneralSurveyType']); ?>" /></td>
<td align="right">Specific Survey Type: <input style="align:right;"
type="text" name="specificSurveyType" value="<?
print($event[$eventNum]['SpecificSurveyType']); ?>" /></td>
</tr>
<tr class="row1">
<td align="right">Date (YYYY-MM-DD): <input style="align:right;" type="text"
name="date" value="<? print($event[$eventNum]['StartDate']); ?>" /></td>
<td align="right">Temp (F): <input style="align:right;" type="text"
name="temp" value="<? print($event[$eventNum]['Temp']); ?>" /></td>
<td align="right">Species Code: <input style="align:right;" type="text"
name="species" value="<? print($event[$eventNum]['Species']); ?>" /></td>
</tr>
<tr class="row2">
<td align="right">Time(HH:MM:SS): <input style="align:right;" type="text"
name="time" value="<? print($event[$eventNum]['StartTime']); ?>" /></td>
<td align="right">Wind: <input style="align:right;" type="text" name="wind"
value="<? print($event[$eventNum]['Wind']); ?>" /></td>
<td align="right">Individuals: <input type="text" name="individuals" value="<?
print($event[$eventNum]['Individuals']); ?>" /></td>
</tr>
<tr class="row1">
```

```
<td align="right">Visit: <input style="align:right;" type="text" name="visit"
value="<? print($event[$eventNum]['Visit']); ?>" /></td>
<td align="right">Clouds: <input style="align:right;" type="text"
name="clouds" value="<? print($event[$eventNum]['Clouds']); ?>" /></td>
<td align="right"><? print($option); ?>: <input type="text" name="<?
print($option); ?>" value="<? print($event[$eventNum]["{$option}"]); ?>"
/></td>
</tr>
<tr class="row2">
<td align="right">Season: <input type="text" name="season" value="<?
print($event[$eventNum]['Season']); ?>" /></td>
<td align="right">Precip: <input type="text" name="precip" value="<?
print($event[$eventNum]['Precip']); ?>" /></td>
<td align="right"> </td>
</tr>
<tr class="row1">
<td align="right">Observer(s): <input type="text" name="observer" value="<?
print($event[$eventNum]['Observer']); ?>" /></td>
<td align="right">Snow Depth: <input type="text" name="snowDepth" value="<?
print($event[$eventNum]['SnowDepth']); ?>" /></td>
<td align="right"> </td>
</tr>
</table>

<input type="hidden" name="locationID" value="<? print($locationID); ?>" />
<input type="hidden" name="surveyType" value="<? print($surveyType); ?>" />
<input type="hidden" name="eventNum" value="<? print($eventNum); ?>" />

<input type="submit" name="editEvent" value="Update">
</form>

<?
}
if ($surveyType == "Road")
{
?>

<form name="addevent" action="<? print($_SERVER['PHP_SELF']); ?>"
method="post">
<table>
<th colspan="3">Event ID: <input type="text" name="eventID" value="<?
print($event[$eventNum]['EventID']); ?>" /></th>
<tr class="specialRow">
<td align="right">Park Code: <input style="align:right;" type="text"
name="park" value="<? print($event[$eventNum]['ParkCode']); ?>" /></td>
<td align="right">General Survey Type: <input style="align:right;" type="text"
name="generalSurveyType" value="<?
print($event[$eventNum]['GeneralSurveyType']); ?>" /></td>
<td align="right">Specific Survey Type: <input style="align:right;"
type="text" name="specificSurveyType" value="<?
print($event[$eventNum]['SpecificSurveyType']); ?>" /></td>
</tr>
<tr class="row1">
<td align="right">Date (YYYY-MM-DD): <input style="align:right;" type="text"
name="date" value="<? print($event[$eventNum]['StartDate']); ?>" /></td>
<td align="right">Temp (F): <input style="align:right;" type="text"
name="temp" value="<? print($event[$eventNum]['Temp']); ?>" /></td>
<td align="right">Species Code: <input style="align:right;" type="text"
name="species" value="<? print($event[$eventNum]['Species']); ?>" /></td>
</tr>
<tr class="row2">
<td align="right">Time(HH:MM:SS): <input style="align:right;" type="text"
name="time" value="<? print($event[$eventNum]['StartTime']); ?>" /></td>
<td align="right">Wind: <input style="align:right;" type="text" name="wind"
value="<? print($event[$eventNum]['Wind']); ?>" /></td>
<td align="right">Individuals: <input type="text" name="individuals" value="<?
print($event[$eventNum]['Individuals']); ?>" /></td>
</tr>
```

```
<tr class="row1">
<td align="right">Visit: <input style="align:right;" type="text" name="visit"
value="<? print($event[$eventNum]['Visit']); ?>" /></td>
<td align="right">Clouds: <input style="align:right;" type="text"
name="clouds" value="<? print($event[$eventNum]['Clouds']); ?>" /></td>
<td align="right">Detection: <input type="text" name="Detection" value="<?
print($event[$eventNum]['Detection']); ?>" /></td>
</tr>
<tr class="row2">
<td align="right">Season: <input type="text" name="season" value="<?
print($event[$eventNum]['Season']); ?>" /></td>
<td align="right">Precip: <input type="text" name="precip" value="<?
print($event[$eventNum]['Precip']); ?>" /></td>
<td align="right">Interval0_3: <input type="text" name="Interval0_3" value="<?
print($event[$eventNum]['Interval0_3']); ?>" /></td>
</tr>
<tr class="row1">
<td align="right">Observer(s): <input type="text" name="observer" value="<?
print($event[$eventNum]['Observer']); ?>" /></td>
<td align="right">Snow Depth: <input type="text" name="snowDepth" value="<?
print($event[$eventNum]['SnowDepth']); ?>" /></td>
<td align="right">Interval3_5: <input type="text" name="Interval3_5" value="<?
print($event[$eventNum]['Interval3_5']); ?>" /></td>
</tr>
</table>

<input type="hidden" name="locationID" value="<? print($locationID); ?>" />
<input type="hidden" name="surveyType" value="<? print($surveyType); ?>" />
<input type="hidden" name="eventNum" value="<? print($eventNum); ?>" />

<input type="submit" name="editEvent" value="Update">
</form>

<?
}
if ($surveyType == "PointCount")
{
?>

<form name="addevent" action="<? print($_SERVER['PHP_SELF']); ?>"
method="post">
<table>
<th colspan="3">Event ID: <input type="text" name="eventID" value="<?
print($event[$eventNum]['EventID']); ?>" /></th>
<tr class="specialRow">
<td align="right">Park Code: <input style="align:right;" type="text"
name="park" value="<? print($event[$eventNum]['ParkCode']); ?>" /></td>
<td align="right">General Survey Type: <input style="align:right;" type="text"
name="generalSurveyType" value="<?
print($event[$eventNum]['GeneralSurveyType']); ?>" /></td>
<td align="right">Specific Survey Type: <input style="align:right;"
type="text" name="specificSurveyType" value="<?
print($event[$eventNum]['SpecificSurveyType']); ?>" /></td>
</tr>
<tr class="row1">
<td align="right">Date (YYYY-MM-DD): <input style="align:right;" type="text"
name="date" value="<? print($event[$eventNum]['StartDate']); ?>" /></td>
<td align="right">Temp (F): <input style="align:right;" type="text"
name="temp" value="<? print($event[$eventNum]['Temp']); ?>" /></td>
<td align="right">Species Code: <input style="align:right;" type="text"
name="species" value="<? print($event[$eventNum]['Species']); ?>" /></td>
</tr>
<tr class="row2">
<td align="right">Time(HH:MM:SS): <input style="align:right;" type="text"
name="time" value="<? print($event[$eventNum]['StartTime']); ?>" /></td>
<td align="right">Wind: <input style="align:right;" type="text" name="wind"
value="<? print($event[$eventNum]['Wind']); ?>" /></td>
```

```
<td align="right">Individuals: <input type="text" name="individuals" value="<?
print($event[$eventNum]['Individuals']); ?>" /></td>
</tr>
<tr class="row1">
<td align="right">Visit: <input style="align:right;" type="text" name="visit"
value="<? print($event[$eventNum]['Visit']); ?>" /></td>
<td align="right">Clouds: <input style="align:right;" type="text"
name="clouds" value="<? print($event[$eventNum]['Clouds']); ?>" /></td>
<td align="right">Detection: <input type="text" name="Detection" value="<?
print($event[$eventNum]['Detection']); ?>" /></td>
</tr>
<tr class="row2">
<td align="right">Season: <input type="text" name="season" value="<?
print($event[$eventNum]['Season']); ?>" /></td>
<td align="right">Precip: <input type="text" name="precip" value="<?
print($event[$eventNum]['Precip']); ?>" /></td>
<td align="right">Interval0_3: <input type="text" name="Interval0_3" value="<?
print($event[$eventNum]['Interval0_3']); ?>" /></td>
</tr>
<tr class="row1">
<td align="right">Observer(s): <input type="text" name="observer" value="<?
print($event[$eventNum]['Observer']); ?>" /></td>
<td align="right">Snow Depth: <input type="text" name="snowDepth" value="<?
print($event[$eventNum]['SnowDepth']); ?>" /></td>
<td align="right">Interval3_5: <input type="text" name="Interval3_5" value="<?
print($event[$eventNum]['Interval3_5']); ?>" /></td>
</tr>
<tr class="row1">
<td align="right">Interval5_10: <input type="text" name="Interval5_10"
value="<? print($event[$eventNum]['Interval5_10']); ?>" /></td>
<td align="right"> </td>
<td align="right"> </td>
</tr>

</table>

<input type="hidden" name="locationID" value="<? print($locationID); ?>" />
<input type="hidden" name="surveyType" value="<? print($surveyType); ?>" />
<input type="hidden" name="eventNum" value="<? print($eventNum); ?>" />

<input type="submit" name="editEvent" value="Update">
</form>

<?
}
?>

<?
}
else if (isset($_POST['add']))
{
?>

<?
if($surveyType == "Owl" OR $surveyType == "Raptor" OR $surveyType ==
"RiparianBird")
{

$specieslist_SQL = "SELECT *".
" FROM tluBirdSpecies";
$specieslist_RSLT = @mysql_query($specieslist_SQL) or die('speicieslist_SQL
Query failed: ' .
mysql_error());
$specieslist = array();
while($row = @mysql_fetch_array($specieslist_RSLT))
array_push($specieslist, $row);
?>
```

```
<form name="addevent" action="<? print($_SERVER['PHP_SELF']); ?>"
method="post">
<table>
<th colspan="3">Event ID: <input type="text" name="eventID" /></th>
<tr class="specialRow">
<td align="right">Park Code: <select name="park" size="1"><option
value="VAFO">VAFO</td>
<td align="right">General Survey Type: <select name="generalSurveyType"
size="1"><option value="BIRDS">BIRDS</td>
<td align="right">Specific Survey Type: <select name="specificSurveyType"
size="1">
<option value="OWL">OWL
<option value="POINTCOUNT">POINT COUNT
<option value="RAPTOR">RAPTOR
<option value="RIPARIAN">RIPARIAN
<option value="ROAD">ROAD
</td>
</tr>
<tr class="row1">
<td align="right">Date: <input style="align:right;" type="text" name="date"
/></td>
<td align="right">Temp: <input style="align:right;" type="text" name="temp"
/></td>
<td align="right">Species Code: <select name="species" size="1">
<?
for ($i = 0; $i < sizeof($specieslist); $i++)
{
print("<option
value=\"{$specieslist[$i]['Species']}\">{$specieslist[$i]['Species']} -
{$specieslist[$i]['CommonName']}");
}
?>

</td>

</tr>
<tr class="row2">
<td align="right">Time: <input style="align:right;" type="text" name="time"
/></td>
<td align="right">Wind: <input style="align:right;" type="text" name="wind"
/></td>
<td align="right">Individuals: <input type="text" name="individuals" /></td>
</tr>
<tr class="row1">
<td align="right">Visit: <input style="align:right;" type="text" name="visit"
/></td>
<td align="right">Clouds: <input style="align:right;" type="text"
name="clouds" /></td>
<td align="right"><? print($option); ?>:
<?
if($option == "Detection")
{
?>
<select name="<? print($option); ?>" size="1">
<option value="V">Visual
<option value="C">Call
<option value="S">Song
<option value="VC">Visual and Call
<option value="VS">Visual and Song
<option value="CS">Call and Song
<option value="VCS">Visual, Call, and Song
<option value="*">None
<?
}
if($option == "Sex")
{
?>
<select name="<? print($option); ?>" size="1">
```

```
<option value="F">Female
<option value="M">Male
<option value="E">Either
<option value="*">None
<?
}
?>
</td>

</tr>
<tr class="row2">
<td align="right">Season: <select name="season" size="1">
<option value="WINTER">Winter
<option value="SPRING">Spring
<option value="FALL">Fall
<option value="BREED">Breed
</td>
<td align="right">Precip: <input type="text" name="precip" /></td>
<td align="right"> </td>
</tr>
<tr class="row1">
<td align="right">Observer(s): <input type="text" name="observer" /></td>
<td align="right">Snow Depth: <input type="text" name="snowDepth" /></td>
<td align="right"> </td>
</tr>
</table>

<input type="hidden" name="locationID" value="<? print($locationID); ?>" />
<input type="hidden" name="surveyType" value="<? print($surveyType); ?>" />

<input type="submit" name="addEvent" value="Add New Entry">
</form>

<?
}
if ($surveyType == "Road")
{
$specieslist_SQL = "SELECT *".
" FROM tluBirdSpecies";
$specieslist_RSLT = @mysql_query($specieslist_SQL) or die('speicieslist_SQL
Query failed: ' .
mysql_error());
$specieslist = array();
while($row = @mysql_fetch_array($specieslist_RSLT))
array_push($specieslist, $row);
?>

<form name="addevent" action="<? print($_SERVER['PHP_SELF']); ?>"
method="post">
<table>
<th colspan="3">Event ID: <input type="text" name="eventID" /></th>
<tr class="specialRow">
<td align="right">Park Code: <select name="park" size="1"><option
value="VAFO">VAFO</td>
<td align="right">General Survey Type: <select name="generalSurveyType"
size="1"><option value="BIRDS">BIRDS</td>
<td align="right">Specific Survey Type: <select name="specificSurveyType"
size="1">
<option value="OWL">OWL
<option value="POINTCOUNT">POINT COUNT
<option value="RAPTOR">RAPTOR
<option value="RIPARIAN">RIPARIAN
<option value="ROAD">ROAD
</td>
</tr>
<tr class="row1">
<td align="right">Date: <input style="align:right;" type="text" name="date"
/></td>
```

```
<td align="right">Temp: <input style="align:right;" type="text" name="temp"
/></td>
<td align="right">Species Code: <select name="species" size="1">
<?
for ($i = 0; $i < sizeof($specieslist); $i++)
{
print("<option
value=\"{$specieslist[$i]['Species']}\">{$specieslist[$i]['Species']} -
{$specieslist[$i]['CommonName']}");
}
?>
</td>

</tr>
<tr class="row2">
<td align="right">Time: <input style="align:right;" type="text" name="time"
/></td>
<td align="right">Wind: <input style="align:right;" type="text" name="wind"
/></td>
<td align="right">Individuals: <input type="text" name="individuals" /></td>
</tr>
<tr class="row1">
<td align="right">Visit: <input style="align:right;" type="text" name="visit"
/></td>
<td align="right">Clouds: <input style="align:right;" type="text"
name="clouds" /></td>
<td align="right">Detection:
<select name="Detection" size="1">
<option value="V">Visual
<option value="C">Call
<option value="S">Song
<option value="VC">Visual and Call
<option value="VS">Visual and Song
<option value="CS">Call and Song
<option value="VCS">Visual, Call, and Song
<option value="*">None
</td>
</tr>
<tr class="row2">
<td align="right">Season: <select name="season" size="1">
<option value="WINTER">Winter
<option value="SPRING">Spring
<option value="FALL">Fall
<option value="BREED">Breed
</td>
<td align="right">Precip: <input type="text" name="precip" /></td>
<td align="right">Interval0_3: <input type="text" name="Interval0_3" /></td>
</tr>
<tr class="row1">
<td align="right">Observer(s): <input type="text" name="observer" /></td>
<td align="right">Snow Depth: <input type="text" name="snowDepth" /></td>
<td align="right">Interval3_5: <input type="text" name="Interval3_5" /></td>
</tr>
</table>

<input type="hidden" name="locationID" value="<? print($locationID); ?>" />
<input type="hidden" name="surveyType" value="<? print($surveyType); ?>" />

<input type="submit" name="addEvent" value="Add New Entry">
</form>

<?
}
if ($surveyType == "PointCount")
{
$specieslist_SQL = "SELECT *".
" FROM tluBirdSpecies";
```

```
$specieslist_RSLT = @mysql_query($specieslist_SQL) or die('speicieslist_SQL
Query failed: ' .
mysql_error());
$specieslist = array();
while($row = @mysql_fetch_array($specieslist_RSLT))
array_push($specieslist, $row);
?>

<form name="addevent" action="<? print($_SERVER['PHP_SELF']); ?>"
method="post">
<table>
<th colspan="3">Event ID: <input type="text" name="eventID" /></th>
<tr class="specialRow">
<td align="right">Park Code: <select name="park" size="1"><option
value="VAFO">VAFO</td>
<td align="right">General Survey Type: <select name="generalSurveyType"
size="1"><option value="BIRDS">BIRDS</td>
<td align="right">Specific Survey Type: <select name="specificSurveyType"
size="1">
<option value="OWL">OWL
<option value="POINTCOUNT">POINT COUNT
<option value="RAPTOR">RAPTOR
<option value="RIPARIAN">RIPARIAN
<option value="ROAD">ROAD
</td>
</tr>
<tr class="row1">
<td align="right">Date: <input style="align:right;" type="text" name="date"
/></td>
<td align="right">Temp: <input style="align:right;" type="text" name="temp"
/></td>
<td align="right">Species Code: <select name="species" size="1">
<?
for ($i = 0; $i < sizeof($specieslist); $i++)
{
print("<option
value=\"{$specieslist[$i]['Species']}\">{$specieslist[$i]['Species']} -
{$specieslist[$i]['CommonName']}");
}
?>
</td>

</tr>
<tr class="row2">
<td align="right">Time: <input style="align:right;" type="text" name="time"
/></td>
<td align="right">Wind: <input style="align:right;" type="text" name="wind"
/></td>
<td align="right">Individuals: <input type="text" name="individuals" /></td>
</tr>
<tr class="row1">
<td align="right">Visit: <input style="align:right;" type="text" name="visit"
/></td>
<td align="right">Clouds: <input style="align:right;" type="text"
name="clouds" /></td>
<td align="right">Detection:
<select name="Detection" size="1">
<option value="V">Visual
<option value="C">Call
<option value="S">Song
<option value="VC">Visual and Call
<option value="VS">Visual and Song
<option value="CS">Call and Song
<option value="VCS">Visual, Call, and Song
<option value="*">None
</td>
</tr>
<tr class="row2">
```

```
<td align="right">Season: <select name="season" size="1">
<option value="WINTER">Winter
<option value="SPRING">Spring
<option value="FALL">Fall
<option value="BREED">Breed
</td>
<td align="right">Precip: <input type="text" name="precip" /></td>
<td align="right">Interval0_3: <input type="text" name="Interval0_3" /></td>
</tr>
<tr class="row1">
<td align="right">Observer(s): <input type="text" name="observer" /></td>
<td align="right">Snow Depth: <input type="text" name="snowDepth" /></td>
<td align="right">Interval3_5: <input type="text" name="Interval3_5" /></td>
</tr>
<tr class="row1">
<td align="right">Interval5_10: <input type="text" name="Interval5_10" /></td>
<td align="right"> </td>
<td align="right"> </td>
</tr>
</table>

<input type="hidden" name="locationID" value="<? print($locationID); ?>" />
<input type="hidden" name="surveyType" value="<? print($surveyType); ?>" />
<input type="submit" name="addEvent" value="Add New Entry">
</form>
<?
}
?>

<?
}
else if (isset($_POST['delete']))
{
$eventNum = $_POST['eventNum'];

$delete1_SQL = "DELETE FROM {$surveyTable}".
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$delete1_RSLT = @mysql_query($delete1_SQL) or die('delete1_SQL Query failed: '
. mysql_error());

$delete2_SQL = "DELETE FROM tlinkObservers".
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$delete2_RSLT = @mysql_query($delete2_SQL) or die('delete2_SQL Query failed: '
. mysql_error());

$delete3_SQL = "DELETE FROM tblBirdEvents".
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$delete3_RSLT = @mysql_query($delete3_SQL) or die('delete3_SQL Query failed: '
. mysql_error());

$delete4_SQL = "DELETE FROM tblEvents".
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$delete4_RSLT = @mysql_query($delete4_SQL) or die('delete4_SQL Query failed: '
. mysql_error());

?>
<p>Delete was successful!</p>
<p>Back to <a href="admin.php">Admin Home</a></p>
<?
}


if (isset($_POST['editEvent']))
{
$eventNum = $_POST['eventNum'];

$tblEvents_SQL = "UPDATE tblEvents".
" SET".
```

```
" ParkCode = '{$_POST['park']}',".
" GeneralSurveyType = '{$_POST['generalSurveyType']}',".
" SpecificSurveyType = '{$_POST['specificSurveyType']}',".
" StartDate = '{$_POST['date']}',".
" StartTime = '{$_POST['time']}',".
" Visit = {$_POST['visit']},".
" Season = '{$_POST['season']}'".
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$tblEvents_RSLT = @mysql_query($tblEvents_SQL) or die('tblEvents_SQL Query
failed: ' . mysql_error());

$tblBirdEvents_SQL = "UPDATE tblBirdEvents".
" SET".
" Temp = {$_POST['temp']},".
" Wind = {$_POST['wind']},".
" Clouds = {$_POST['clouds']},".
" Precip = {$_POST['precip']},".
" SnowDepth = {$_POST['snowDepth']}".
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$tblBirdEvents_RSLT = @mysql_query($tblBirdEvents_SQL) or
die('tblBirdEvents_SQL Query failed: ' . mysql_error());

$tlinkObservers_SQL = "UPDATE tlinkObservers".
" SET".
" Observer = '{$_POST['observer']}'".
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$tlinkObservers_RSLT = @mysql_query($tlinkObservers_SQL) or
die('tlinkObservers_SQL Query failed: ' . mysql_error());


if($surveyType == "Owl" OR $surveyType == "Raptor")
{


$surveyTableUpdate_SQL = "UPDATE {$surveyTable}".
" SET".
" Species = '{$_POST['species']}',".
" Individuals = '{$_POST['individuals']}',".
" Detection = '{$_POST['Detection']}'".
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$surveyTableUpdate_RSLT = @mysql_query($surveyTableUpdate_SQL) or
die('surveyTableUpdate_SQL Query failed: ' . mysql_error());

}
if($surveyType == "RiparianBird")
{


$surveyTableUpdate_SQL = "UPDATE {$surveyTable}".
" SET".
" Species = '{$_POST['species']}',".
" Individuals = '{$_POST['individuals']}',".
" Sex = '{$_POST['Sex']}'".
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$surveyTableUpdate_RSLT = @mysql_query($surveyTableUpdate_SQL) or
die('surveyTableUpdate_SQL Query failed: ' . mysql_error());

}
if ($surveyType == "Road")
{

$surveyTableUpdate_SQL = "UPDATE {$surveyTable}".
" SET".
" Species = '{$_POST['species']}',".
" Individuals = '{$_POST['individuals']}',".
" Detection = '{$_POST['Detection']}',".
" Interval0_3 = '{$_POST['Interval0_3']}',".
" Interval3_5 = '{$_POST['Interval3_5']}'".
```

```
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$surveyTableUpdate_RSLT = @mysql_query($surveyTableUpdate_SQL) or
die('surveyTableUpdate_SQL Query failed: ' . mysql_error());

}
if ($surveyType == "PointCount")
{

$surveyTableUpdate_SQL = "UPDATE {$surveyTable}".
" SET".
" Species = '{$_POST['species']}',".
" Individuals = '{$_POST['individuals']}',".
" Detection = '{$_POST['Detection']}',".
" Interval0_3 = '{$_POST['Interval0_3']}',".
" Interval3_5 = '{$_POST['Interval3_5']}',".
" Interval5_10 = '{$_POST['Interval5_10']}'".
" WHERE EventID = '{$event[$eventNum]['EventID']}'";
$surveyTableUpdate_RSLT = @mysql_query($surveyTableUpdate_SQL) or
die('surveyTableUpdate_SQL Query failed: ' . mysql_error());

}



?>
<p>Edit was successful!</p>
<p>Back to <a href="admin.php">Admin Home</a></p>
<?
}
else if (isset($_POST['addEvent']))
{

$tblEvents_SQL = "INSERT INTO tblEvents (EventID, ParkCode, GeneralSurveyType,
SpecificSurveyType, StartDate, StartTime, Visit, Season)".
" VALUES('{$_POST['eventID']}', '{$_POST['park']}',
'{$_POST['generalSurveyType']}', '{$_POST['specificSurveyType']}',
{$_POST['date']}, {$_POST['time']}, {$_POST['visit']}, '{$_POST['season']}')";
$tblEvents_RSLT = @mysql_query($tblEvents_SQL) or die('tblEvents_SQL Query
failed: ' . mysql_error());

$tblBirdEvents_SQL = "INSERT INTO tblBirdEvents (EventID, Temp, Wind, Clouds,
Precip, SnowDepth)".
" VALUES('{$_POST['eventID']}', {$_POST['temp']}, {$_POST['wind']},
{$_POST['clouds']}, {$_POST['precip']}, {$_POST['snowDepth']})";
$tblBirdEvents_RSLT = @mysql_query($tblBirdEvents_SQL) or
die('tblBirdEvents_SQL Query failed: ' . mysql_error());

$tlinkObservers_SQL = "INSERT INTO tlinkObservers (EventID, Observer)".
" VALUES('{$_POST['eventID']}', '{$_POST['observer']}')";
$tlinkObservers_RSLT = @mysql_query($tlinkObservers_SQL) or
die('tlinkObservers_SQL Query failed: ' . mysql_error());

if($surveyType == "Owl" OR $surveyType == "Raptor")
{

$surveyTableInsert_SQL = "INSERT INTO {$surveyTable} ({$surveyType}SurveyID,
LocationID, EventID, Species, Individuals, Detection)".
" VALUES('{$id}', '{$locationID}', '{$_POST['eventID']}',
'{$_POST['species']}', '{$_POST['individuals']}', '{$_POST['Detection']}')";
$surveyTableInsert_RSLT = @mysql_query($surveyTableInsert_SQL) or
die('surveyTableInsert_SQL Query failed: ' . mysql_error());

}
if($surveyType == "RiparianBird")
{

$surveyTableInsert_SQL = "INSERT INTO {$surveyTable} ({$surveyType}SurveyID,
LocationID, EventID, Species, Individuals, Sex)".
```

```
" VALUES('{$id}', '{$locationID}', '{$_POST['eventID']}',
'{$_POST['species']}', '{$_POST['individuals']}', '{$_POST['Sex']}')";
$surveyTableInsert_RSLT = @mysql_query($surveyTableInsert_SQL) or
die('surveyTableInsert_SQL Query failed: ' . mysql_error());

}
if ($surveyType == "Road")
{

$surveyTableInsert_SQL = "INSERT INTO {$surveyTable} ({$surveyType}SurveyID,
LocationID, EventID, Species, Individuals, Detection, Interval0_3,
Interval3_5)".
" VALUES('{$id}', '{$locationID}', '{$_POST['eventID']}',
'{$_POST['species']}', '{$_POST['individuals']}', '{$_POST['Detection']}',
'{$_POST['Interval0_3']}', '{$_POST['Interval3_5']}')";
$surveyTableInsert_RSLT = @mysql_query($surveyTableInsert_SQL) or
die('surveyTableInsert_SQL Query failed: ' . mysql_error());

}
if ($surveyType == "PointCount")
{

$surveyTableInsert_SQL = "INSERT INTO {$surveyTable} ({$surveyType}SurveyID,
LocationID, EventID, Species, Individuals, Detection, Interval0_3,
Interval3_5, Interval5_10)".
" VALUES('{$id}', '{$locationID}', '{$_POST['eventID']}',
'{$_POST['species']}', '{$_POST['individuals']}', '{$_POST['Detection']}',
'{$_POST['Interval0_3']}', '{$_POST['Interval3_5']}',
'{$_POST['Interval5_10']}')";
$surveyTableInsert_RSLT = @mysql_query($surveyTableInsert_SQL) or
die('surveyTableInsert_SQL Query failed: ' . mysql_error());

}

?>
<p>Insert was successful!</p>
<p>Back to <a href="admin.php">Admin Home</a></p>
<?
}

mysql_close($link);
?>
</body>
</html>
```

formvafo.html

```
<html>


<body bgcolor="Silver">

<!--User input form, used to determine what non-spatial data to query. -->
<form action="results.php" method="POST">
  <strong>Species</strong>
<br><br>
<!--creates the list form for selecting species of interest. -->
  <select name="species[]" size="8" multiple>
      <option value="ANY" selected>Any Species</option>
      <option value="ACFL">ACFL - ACADIAN FLYCATCHER</option>
      <option value="ALFL">ALFL - ALDER FLYCATCHER</option>
      <option value="AMBD">AMBD - AMERICAN BLACK DUCK</option>
      <option value="AMBI">AMBI - AMERICAN BITTERN</option>
      <option value="AMCO">AMCO - AMERICAN COOT</option>
      <option value="AMCR">AMCR - AMERICAN CROW</option>
```

```
<option value="AMGO">AMGO - AMERICAN GOLDFINCH</option>
<option value="AMKE">AMKE - AMERICAN KESTREL</option>
<option value="AMPI">AMPI - AMERICAN PIPIT</option>
<option value="AMRE">AMRE - AMERICAN REDSTART</option>
<option value="AMRO">AMRO - AMERICAN ROBIN</option>
<option value="AMWI">AMWI - AMERICAN WIGEON</option>
<option value="AMWO">AMWO - AMERICAN WOODCOCK</option>
<option value="ATSP">ATSP - AMERICAN TREE SPARROW</option>
<option value="BAEA">BAEA - BALD EAGLE</option>
<option value="BANS">BANS - BANK SWALLOW</option>
<option value="BAOR">BAOR - BALTIMORE ORIOLE</option>
<option value="BARS">BARS - BARN SWALLOW</option>
<option value="BAWW">BAWW - BLACK-AND-WHITE WARBLER</option>
<option value="BBCU">BBCU - BLACK-BILLED CUCKOO</option>
<option value="BBWA">BBWA - BAY-BREASTED WARBLER</option>
<option value="BCCH">BCCH - BLACK-CAPPED CHICKADEE</option>
<option value="BCNH">BCNH - BLACK-CROWNED NIGHT-HERON</option>
<option value="BDOW">BDOW - BARRED OWL</option>
<option value="BEKI">BEKI - BELTED KINGFISHER</option>
<option value="BEWR">BEWR - BEWICK'S WREN</option>
<option value="BGGN">BGGN - BLUE-GRAY GNATCATCHER</option>
<option value="BHCO">BHCO - BROWN-HEADED COWBIRD</option>
<option value="BHVI">BHVI - BLUE-HEADED VIREO</option>
<option value="BITH">BITH - BICKNELL'S THRUSH</option>
<option value="BLBW">BLBW - BLACKBURNIAN WARBLER</option>
<option value="BLGR">BLGR - BLUE GROSBEAK</option>
<option value="BLJA">BLJA - BLUE JAY</option>
<option value="BLPW">BLPW - BLACKPOLL WARBLER</option>
<option value="BLSC">BLSC - BLACK SCOTER</option>
<option value="BLVU">BLVU - BLACK VULTURE</option>
<option value="BNOW">BNOW - BARN OWL</option>
<option value="BOBO">BOBO - BOBOLINK</option>
<option value="BOGU">BOGU - BONAPARTE'S GULL</option>
<option value="BRCR">BRCR - BROWN CREEPER</option>
<option value="BRTH">BRTH - BROWN THRASHER</option>
<option value="BRWA">BRWA - </option>
<option value="BTBW">BTBW - BLACK-THROATED BLUE WARBLER</option>
<option value="BTNW">BTNW - BLACK-THROATED GREEN WARBLER</option>
<option value="BUFF">BUFF - BUFFLEHEAD</option>
<option value="BWHA">BWHA - BROAD-WINGED HAWK</option>
<option value="BWTE">BWTE - BLUE-WINGED TEAL</option>
<option value="BWWA">BWWA - BLUE-WINGED WARBLER</option>
<option value="CACH">CACH - CAROLINA CHICKADEE</option>
<option value="CAEG">CAEG - CATTLE EGRET</option>
<option value="CAGO">CAGO - CANADA GOOSE</option>
<option value="CANV">CANV - CANVASBACK</option>
<option value="CARW">CARW - CAROLINA WREN</option>
<option value="CAWA">CAWA - CANADA WARBLER</option>
<option value="CEDW">CEDW - CEDAR WAXWING</option>
<option value="CERW">CERW - CERULEAN WARBLER</option>
<option value="CHSP">CHSP - CHIPPING SPARROW</option>
<option value="CHSW">CHSW - CHIMNEY SWIFT</option>
<option value="CLRA">CLRA - CLAPPER RAIL</option>
<option value="CLSW">CLSW - CLIFF SWALLOW</option>
<option value="CMWA">CMWA - CAPE MAY WARBLER</option>
<option value="COGO">COGO - COMMON GOLDENEYE</option>
<option value="COGR">COGR - COMMON GRACKLE</option>
<option value="COHA">COHA - COOPER'S HAWK</option>
<option value="COLO">COLO - COMMON LOON</option>
<option value="COME">COME - COMMON MERGANSER</option>
<option value="COMO">COMO - COMMON MOORHEN</option>
<option value="CONI">CONI - COMMON NIGHTHAWK</option>
<option value="CORA">CORA - COMMON RAVEN</option>
<option value="CORE">CORE - COMMON REDPOLL</option>
<option value="COSN">COSN - COMMON SNIPE</option>
<option value="COTE">COTE - COMMON TERN</option>
<option value="COWA">COWA - CONNECTICUT WARBLER</option>
<option value="COYE">COYE - COMMON YELLOWTHROAT</option>
```

```
<option value="CSWA">CSWA - CHESTNUT-SIDED WARBLER</option>
<option value="DCCO">DCCO - DOUBLE-CRESTED CORMORANT</option>
<option value="DEJU">DEJU - DARK-EYED JUNCO</option>
<option value="DICK">DICK - DICKCISSEL</option>
<option value="DOWO">DOWO - DOWNY WOODPECKER</option>
<option value="EABL">EABL - EASTERN BLUEBIRD</option>
<option value="EAKI">EAKI - EASTERN KINGBIRD</option>
<option value="EAME">EAME - EASTERN MEADOWLARK</option>
<option value="EAPH">EAPH - EASTERN PHOEBE</option>
<option value="EASO">EASO - EASTERN SCREECH OWL</option>
<option value="EATO">EATO - EASTERN TOWHEE</option>
<option value="EAWP">EAWP - EASTERN WOOD-PEWEE</option>
<option value="EMPI">EMPI - </option>
<option value="EUST">EUST - EUROPEAN STARLING</option>
<option value="EVGR">EVGR - EVENING GROSBEAK</option>
<option value="FICR">FICR - FISH CROW</option>
<option value="FISP">FISP - FIELD SPARROW</option>
<option value="FOSP">FOSP - FOX SPARROW</option>
<option value="GADW">GADW - GADWALL</option>
<option value="GBBG">GBBG - GREAT BLACK-BACKED GULL</option>
<option value="GBHE">GBHE - GREAT BLUE HERON</option>
<option value="GCFL">GCFL - GREAT CRESTED FLYCATCHER</option>
<option value="GCKI">GCKI - GOLDEN-CROWNED KINGLET</option>
<option value="GCTH">GCTH - GRAY-CHEEKED THRUSH</option>
<option value="GHOW">GHOW - GREAT HORNED OWL</option>
<option value="GLIB">GLIB - GLOSSY IBIS</option>
<option value="GOEA">GOEA - GOLDEN EAGLE</option>
<option value="GRCA">GRCA - GRAY CATBIRD</option>
<option value="GREG">GREG - GREAT EGRET</option>
<option value="GRHE">GRHE - GREEN-BACKED HERON</option>
<option value="GRSC">GRSC - GREATER SCAUP</option>
<option value="GRSP">GRSP - GRASSHOPPER SPARROW</option>
<option value="GRYE">GRYE - GREATER YELLOWLEGS</option>
<option value="GWFG">GWFG - GREATER WHITE-FRONTED GOOSE</option>
<option value="GWTE">GWTE - GREEN-WINGED TEAL</option>
<option value="GWWA">GWWA - GOLDEN-WINGED WARBLER</option>
<option value="HAWO">HAWO - HAIRY WOODPECKER</option>
<option value="HEGU">HEGU - HERRING GULL</option>
<option value="HESP">HESP - HENSLOW'S SPARROW</option>
<option value="HETH">HETH - HERMIT THRUSH</option>
<option value="HOFI">HOFI - HOUSE FINCH</option>
<option value="HOGR">HOGR - HORNED GREBE</option>
<option value="HOLA">HOLA - HORNED LARK</option>
<option value="HOME">HOME - HOODED MERGANSER</option>
<option value="HOSP">HOSP - HOUSE SPARROW</option>
<option value="HOWA">HOWA - HOODED WARBLER</option>
<option value="HOWR">HOWR - HOUSE WREN</option>
<option value="INBU">INBU - INDIGO BUNTING</option>
<option value="KEWA">KEWA - KENTUCKY WARBLER</option>
<option value="KILL">KILL - KILLDEER</option>
<option value="KIRA">KIRA - KING RAIL</option>
<option value="LAGU">LAGU - LAUGHING GULL</option>
<option value="LALO">LALO - LAPLAND LONGSPUR</option>
<option value="LBBG">LBBG - LESSER BLACK-BACKED GULL</option>
<option value="LBHE">LBHE - LITTLE BLUE HERON</option>
<option value="LEBI">LEBI - LEAST BITTERN</option>
<option value="LEFL">LEFL - LEAST FLYCATCHER</option>
<option value="LEOW">LEOW - LONG-EARED OWL</option>
<option value="LESA">LESA - LEAST SANDPIPER</option>
<option value="LESC">LESC - LESSER SCAUP</option>
<option value="LEYE">LEYE - LESSER YELLOWLEGS</option>
<option value="LISP">LISP - LINCOLN'S SPARROW</option>
<option value="LOSH">LOSH - LOGGERHEAD SHRIKE</option>
<option value="LOWA">LOWA - LOUISIANA WATERTHRUSH</option>
<option value="MALL">MALL - MALLARD</option>
<option value="MAWA">MAWA - MAGNOLIA WARBLER</option>
<option value="MAWR">MAWR - MARSH WREN</option>
<option value="MERL">MERL - MERLIN</option>
```

```
<option value="MODO">MODO - MOURNING DOVE</option>
<option value="MOWA">MOWA - MOURNING WARBLER</option>
<option value="MUSW">MUSW - MUTE SWAN</option>
<option value="NAWA">NAWA - NASHVILLE WARBLER</option>
<option value="NOBO">NOBO - NORTHERN BOBWHITE</option>
<option value="NOCA">NOCA - NORTHERN CARDINAL</option>
<option value="NOFL">NOFL - NORTHERN FLICKER</option>
<option value="NOGO">NOGO - NORTHERN GOSHAWK</option>
<option value="NOHA">NOHA - NORTHERN HARRIER</option>
<option value="NOMO">NOMO - NORTHERN MOCKINGBIRD</option>
<option value="NOPA">NOPA - NORTHERN PARULA</option>
<option value="NOPI">NOPI - NORTHERN PINTAIL</option>
<option value="NOSH">NOSH - NORTHERN SHOVELER</option>
<option value="NOWA">NOWA - NORTHERN WATERTHRUSH</option>
<option value="NRWS">NRWS - NORTHERN ROUGH-WINGED SWALLOW</option>
<option value="NSHR">NSHR - NORTHERN SHRIKE</option>
<option value="NSWO">NSWO - NORTHERN SAW-WHET OWL</option>
<option value="OCWA">OCWA - ORANGE-CROWNED WARBLER</option>
<option value="OLDS">OLDS - OLDSQUAW</option>
<option value="OROR">OROR - ORCHARD ORIOLE</option>
<option value="OSFL">OSFL - OLIVE-SIDED FLYCATCHER</option>
<option value="OSPR">OSPR - OSPREY</option>
<option value="OVEN">OVEN - OVENBIRD</option>
<option value="PAWA">PAWA - PALM WARBLER</option>
<option value="PBGR">PBGR - PIED-BILLED GREBE</option>
<option value="PEFA">PEFA - PEREGRINE FALCON</option>
<option value="PESA">PESA - PECTORAL SANDPIPER</option>
<option value="PHVI">PHVI - PHILADELPHIA VIREO</option>
<option value="PIGR">PIGR - PINE GROSBEAK</option>
<option value="PISI">PISI - PINE SISKIN</option>
<option value="PIWA">PIWA - PINE WARBLER</option>
<option value="PIWO">PIWO - PILEATED WOODPECKER</option>
<option value="PRAW">PRAW - PRAIRIE WARBLER</option>
<option value="PROW">PROW - PROTHONOTARY WARBLER</option>
<option value="PUFI">PUFI - PURPLE FINCH</option>
<option value="PUMA">PUMA - PURPLE MARTIN</option>
<option value="RBGR">RBGR - ROSE-BREASTED GROSBEAK</option>
<option value="RBGU">RBGU - RING-BILLED GULL</option>
<option value="RBME">RBME - RED-BREASTED MERGANSER</option>
<option value="RBNU">RBNU - RED-BREASTED NUTHATCH</option>
<option value="RBWO">RBWO - RED-BELLIED WOODPECKER</option>
<option value="RCKI">RCKI - RUBY-CROWNED KINGLET</option>
<option value="RECR">RECR - RED CROSSBILL</option>
<option value="REDH">REDH - REDHEAD</option>
<option value="REVI">REVI - RED-EYED VIREO</option>
<option value="RHWO">RHWO - RED-HEADED WOODPECKER</option>
<option value="RLHA">RLHA - ROUGH-LEGGED HAWK</option>
<option value="RNDU">RNDU - RING-NECKED DUCK</option>
<option value="RNGR">RNGR - RING-NECKED GREBE</option>
<option value="RNPH">RNPH - RING-NECKED PHEASANT</option>
<option value="RODO">RODO - ROCK DOVE</option>
<option value="RSHA">RSHA - RED-SHOULDERED HAWK</option>
<option value="RTHA">RTHA - RED-TAILED HAWK</option>
<option value="RTHU">RTHU - RUBY-THROATED HUMMINGBIRD</option>
<option value="RUBL">RUBL - RUSTY BLACKBIRD</option>
<option value="RUDU">RUDU - RUDDY DUCK</option>
<option value="RUGR">RUGR - RUFFED GROUSE</option>
<option value="RWBL">RWBL - RED-WINGED BLACKBIRD</option>
<option value="SAVS">SAVS - SAVANNAH SPARROW</option>
<option value="SCTA">SCTA - SCARLET TANAGER</option>
<option value="SEOW">SEOW - SHORT-EARED OWL</option>
<option value="SEPL">SEPL - SEMIPALMATED PLOVER</option>
<option value="SESA">SESA - SEMIPALMATED SANDPIPER</option>
<option value="SEWR">SEWR - SEDGE WREN</option>
<option value="SNBU">SNBU - SNOW BUNTING</option>
<option value="SNEG">SNEG - SNOWY EGRET</option>
<option value="SNGO">SNGO - SNOW GOOSE</option>
<option value="SORA">SORA - SORA</option>
```

```
        <option value="SOSA">SOSA - SOLITARY SANDPIPER</option>
        <option value="SOSP">SOSP - SONG SPARROW</option>
        <option value="SPSA">SPSA - SPOTTED SANDPIPER</option>
        <option value="SSHA">SSHA - SHARP-SHINNED HAWK</option>
        <option value="SUTA">SUTA - SUMMER TANAGER</option>
        <option value="SWSP">SWSP - SWAMP SPARROW</option>
        <option value="SWTH">SWTH - SWAINSON'S THRUSH</option>
        <option value="SWWA">SWWA - SWAINSON'S WARBLER</option>
        <option value="TEWA">TEWA - TENNESSEE WARBLER</option>
        <option value="TRHE">TRHE - TRICOLORED HERON</option>
        <option value="TRSW">TRSW - TREE SWALLOW</option>
        <option value="TUSW">TUSW - TUNDRA SWAN</option>
        <option value="TUTI">TUTI - TUFTED TITMOUSE</option>
        <option value="TUVU">TUVU - TURKEY VULTURE</option>
        <option value="UNKNOWN">UNKNOWN - UNKNOWN</option>
        <option value="UPSA">UPSA - UPLAND SANDPIPER</option>
        <option value="VEER">VEER - VEERY</option>
        <option value="VESP">VESP - VESPER SPARROW</option>
        <option value="VIRA">VIRA - VIRGINIA RAIL</option>
        <option value="WAVI">WAVI - WARBLING VIREO</option>
        <option value="WBNU">WBNU - WHITE-BREASTED NUTHATCH</option>
        <option value="WCSP">WCSP - WHITE-CROWNED SPARROW</option>
        <option value="WESA">WESA - WESTERN SANDPIPER</option>
        <option value="WEVI">WEVI - WHITE-EYED VIREO</option>
        <option value="WEWA">WEWA - WORM-EATING WARBLER</option>
        <option value="WIFL">WIFL - WILLOW FLYCATCHER</option>
        <option value="WITU">WITU - WILD TURKEY</option>
        <option value="WIWA">WIWA - WILSON'S WARBLER</option>
        <option value="WIWR">WIWR - WINTER WREN</option>
        <option value="WODU">WODU - WOOD DUCK</option>
        <option value="WOTH">WOTH - WOOD THRUSH</option>
        <option value="WPWI">WPWI - WHIP-POOR-WILL</option>
        <option value="WTSP">WTSP - WHITE-THROATED SPARROW</option>
        <option value="WWCR">WWCR - WHITE-WINGED CROSSBILL</option>
        <option value="WWSC">WWSC - WHITE-WINGED SCOTER</option>
        <option value="YBCH">YBCH - YELLOW-BREASTED CHAT</option>
        <option value="YBCU">YBCU - YELLOW-BILLED CUCKOO</option>
        <option value="YBFL">YBFL - YELLOW-BELLIED FLYCATCHER</option>
        <option value="YBSA">YBSA - YELLOW-BELLIED SAPSUCKER</option>
        <option value="YCNH">YCNH - YELLOW-CROWNED NIGHT-HERON</option>
        <option value="YEWA">YEWA - YELLOW WARBLER</option>
        <option value="YRWA">YRWA - YELLOW-RUMPED WARBLER</option>
        <option value="YTVI">YTVI - YELLOW-THROATED VIREO</option>
        <option value="YTWA">YTWA - YELLOW-THROATED WARBLER</option>
    </select>

    <p>
      <label> </label>
      <br>
      <strong>Sex</strong><br>
      <font size="-1">Choosing male or female will limit the search to Riparian,
      Road, and Point Count Surveys. </font>
  <!--Form that queries the user for the sex of the birds of interest. -->
    <blockquote>
      <label>
      <input type="radio" name="sex" value="M">
      Male</label>
      <br>
      <label>
      <input type="radio" name="sex" value="F">
      Female</label>
      <br>
      <label>
      <input type="radio" name="sex" value="E" checked>
      Either</label>
        </blockquote>
    <strong></p>Detection Method</strong><br>
```

```
  <font size="-1"> Checking any of these boxes will limit the search to the
Owl,
  Raptor, Road, and Point Count Surveys. Checking multiple boxes will search
for
  all options that are either option, or both.</font>
<!--Form that queries the user for what kind of detection methods should be
queried. -->
  <blockquote>
  <input type="checkbox" name="vcheck" value="V">
  Visual<br>
  <input type="checkbox" name="scheck" value="S">
  Song<br>
  <input type="checkbox" name="ccheck" value="C">
  Call
  </blockquote>
  <div align="left"><br>
    <br>
<!-- submit button -->
    <input name="button1" type="submit" value="Display">
  </div>
</form>
</body>
</html>
```

results.php

```
<html>
<body bgcolor ="Silver">
<?

// Connecting, selecting database cinna.nrrc.ncsu.edu
$link = @mysql_connect('152.1.32.120', 'root', 'shoelace')
or die('Could not connect: ' . mysql_error());

@mysql_select_db('vafobird') or die('Could not select database');

//assigns checkbox POST variables to new variables
$vcheck = $_POST['vcheck'];
$scheck = $_POST['scheck'];
$ccheck = $_POST['ccheck'];

//assigns list array POST variable to a new array
$species = array();
for($i=0; $i < sizeof($_POST['species']); $i++)
{
array_push($species, ($_POST['species'][$i]));
}

//assings the radio POST variable to a new variable
$sex = $_POST['sex'];

//Adds all necessary conditions to the WHERE clause for the checkbox variables
if(isset($vcheck)) {
$where = "WHERE (Detection LIKE '%V%'";
if(isset($scheck)) {
$where = $where . " OR Detection LIKE '%S%'";
}
if(isset($ccheck)) {
$where = $where . " OR Detection LIKE '%C%'";
}
} else {
if(isset($scheck)) {
$where = "WHERE (Detection LIKE '%S%'";
if(isset($ccheck)) {
$where = $where . " OR Detection LIKE '%C%'";
}
} else {
```

```
if(isset($ccheck)) {
$where = "WHERE (Detection LIKE '%C%'";
}
}
}
if(isset($where))
$where .= ")";

//Adds all necessary conditions to the WHERE clause for the species array
variable.
if($species[0] != "ANY")
{
if(isset($where))
{
for ($i=0; $i < sizeof($species); $i++)
{
if ($i == 0)
$where .= " AND (Species= '" . $species[$i] . "'";
else
$where .= " OR Species= '" . $species[$i] . "'";
}
$where .= ")";

}
else
{
for ($i = 0; $i < sizeof($species); $i++)
{
if ($i == 0)
$where .= "WHERE (Species= '" . $species[$i] . "'";
else
$where .= " OR Species= '" . $species[$i] . "'";
}
$where .= ")";
}
}

//Adds all necessary conditions to the Where clause for the radio button
variable.
if ($sex != "E") {
if(isset($where)) {
$where .= " AND (Sex = '" . $sex . "')";
} else {
$where .= "WHERE (Sex = '" . $sex . "')";
}
}

//Limits the selection to Valley Forge National Historic Park
if (isset($where))
$where .= " AND LocationID LIKE 'VAFO%'";
else
$where = "WHERE LocationID LIKE 'VAFO%'";

//Creates an array containing all necessary From clauses
$tables = array();
if (isset($vcheck) OR isset($scheck) OR isset($ccheck))
{
if ($sex == "E")
{
$tables[0] = "FROM tblRoadSurvey ";
$tables[1] = "FROM tblPointCountSurvey ";
$tables[2] = "FROM tblOwlSurvey ";
$tables[3] = "FROM tblRaptorSurvey ";
}
}
else
{
if ($sex == "E")
```

```
{
$tables[0] = "FROM tblRoadSurvey ";
$tables[1] = "FROM tblPointCountSurvey ";
$tables[2] = "FROM tblOwlSurvey ";
$tables[3] = "FROM tblRaptorSurvey ";
$tables[4] = "FROM tblRiparianBirdSurvey ";
}
else
{
$tables[0] = "FROM tblRiparianBirdSurvey ";
}
}

//Constructs the MySQL statement for selecting LocationIDs of interest.
for ($i = 0; $i < sizeof($tables); $i++)
{
if ($i == 0)
$location_SQL = "SELECT LocationID " . $tables[$i] . $where;
else
$location_SQL .= " UNION SELECT LocationID " . $tables[$i] . $where;
}
$location_RSLT = @mysql_query($location_SQL) or die('location_SQL Query
failed: ' . mysql_error());
$location = array();
while ($row = @mysql_fetch_array($location_RSLT))
array_push($location, $row);

//set the value of $squery to an intial value of Empty.
$squery = "Empty";

//changes the value of $squery to the query formatted for the ArcIMS
javascript query function.
for ($i = 0; $i < sizeof($location); $i++)
{
if ($i == 0)
$squery = "LOCATIONID LIKE \u0022" . $location[$i][0] . "\u0022";
else
$squery .= " OR LOCATIONID=\u0022" . $location[$i][0] . "\u0022";
}

?>

<!--Javascript for executing the query in ArcIMS. -->
<SCRIPT LANGUAGE="JavaScript" TYPE="text/javascript">
function selectSurvey() {

//sets javasquery to the query constructed in PHP for querying the spatial
data
var javasquery = "<? print($squery); ?>";

//Sets the tool to the query tool
parent.MapFrame.clickFunction('query');
//Sets the active layer to Survey Points
parent.MapFrame.setActiveLayer(0);
//Executes the query function, which is built into ArcIMS
parent.MapFrame.sendQueryString(javasquery);

}
//Calls the javascript function selectsurvey which executes the query.
onload = selectSurvey;
</SCRIPT>

<!--User input form, used to determine what non-spatial data to query.-->
<form action="results.php" method="POST">
<strong>Species</strong>
<br><br>
<!--creates the list form for selecting species of interest.-->
<select name="species[]" size="8" multiple>
```

```
<option value="ANY" selected>Any Species</option>
<option value="ACFL">ACFL - ACADIAN FLYCATCHER</option>
<option value="ALFL">ALFL - ALDER FLYCATCHER</option>
<option value="AMBD">AMBD - AMERICAN BLACK DUCK</option>
<option value="AMBI">AMBI - AMERICAN BITTERN</option>
<option value="AMCO">AMCO - AMERICAN COOT</option>
<option value="AMCR">AMCR - AMERICAN CROW</option>
<option value="AMGO">AMGO - AMERICAN GOLDFINCH</option>
<option value="AMKE">AMKE - AMERICAN KESTREL</option>
<option value="AMPI">AMPI - AMERICAN PIPIT</option>
<option value="AMRE">AMRE - AMERICAN REDSTART</option>
<option value="AMRO">AMRO - AMERICAN ROBIN</option>
<option value="AMWI">AMWI - AMERICAN WIGEON</option>
<option value="AMWO">AMWO - AMERICAN WOODCOCK</option>
<option value="ATSP">ATSP - AMERICAN TREE SPARROW</option>
<option value="BAEA">BAEA - BALD EAGLE</option>
<option value="BANS">BANS - BANK SWALLOW</option>
<option value="BAOR">BAOR - BALTIMORE ORIOLE</option>
<option value="BARS">BARS - BARN SWALLOW</option>
<option value="BAWW">BAWW - BLACK-AND-WHITE WARBLER</option>
<option value="BBCU">BBCU - BLACK-BILLED CUCKOO</option>
<option value="BBWA">BBWA - BAY-BREASTED WARBLER</option>
<option value="BCCH">BCCH - BLACK-CAPPED CHICKADEE</option>
<option value="BCNH">BCNH - BLACK-CROWNED NIGHT-HERON</option>
<option value="BDOW">BDOW - BARRED OWL</option>
<option value="BEKI">BEKI - BELTED KINGFISHER</option>
<option value="BEWR">BEWR - BEWICK'S WREN</option>
<option value="BGGN">BGGN - BLUE-GRAY GNATCATCHER</option>
<option value="BHCO">BHCO - BROWN-HEADED COWBIRD</option>
<option value="BHVI">BHVI - BLUE-HEADED VIREO</option>
<option value="BITH">BITH - BICKNELL'S THRUSH</option>
<option value="BLBW">BLBW - BLACKBURNIAN WARBLER</option>
<option value="BLGR">BLGR - BLUE GROSBEAK</option>
<option value="BLJA">BLJA - BLUE JAY</option>
<option value="BLPW">BLPW - BLACKPOLL WARBLER</option>
<option value="BLSC">BLSC - BLACK SCOTER</option>
<option value="BLVU">BLVU - BLACK VULTURE</option>
<option value="BNOW">BNOW - BARN OWL</option>
<option value="BOBO">BOBO - BOBOLINK</option>
<option value="BOGU">BOGU - BONAPARTE'S GULL</option>
<option value="BRCR">BRCR - BROWN CREEPER</option>
<option value="BRTH">BRTH - BROWN THRASHER</option>
<option value="BRWA">BRWA - </option>
<option value="BTBW">BTBW - BLACK-THROATED BLUE WARBLER</option>
<option value="BTNW">BTNW - BLACK-THROATED GREEN WARBLER</option>
<option value="BUFF">BUFF - BUFFLEHEAD</option>
<option value="BWHA">BWHA - BROAD-WINGED HAWK</option>
<option value="BWTE">BWTE - BLUE-WINGED TEAL</option>
<option value="BWWA">BWWA - BLUE-WINGED WARBLER</option>
<option value="CACH">CACH - CAROLINA CHICKADEE</option>
<option value="CAEG">CAEG - CATTLE EGRET</option>
<option value="CAGO">CAGO - CANADA GOOSE</option>
<option value="CANV">CANV - CANVASBACK</option>
<option value="CARW">CARW - CAROLINA WREN</option>
<option value="CAWA">CAWA - CANADA WARBLER</option>
<option value="CEDW">CEDW - CEDAR WAXWING</option>
<option value="CERW">CERW - CERULEAN WARBLER</option>
<option value="CHSP">CHSP - CHIPPING SPARROW</option>
<option value="CHSW">CHSW - CHIMNEY SWIFT</option>
<option value="CLRA">CLRA - CLAPPER RAIL</option>
<option value="CLSW">CLSW - CLIFF SWALLOW</option>
<option value="CMWA">CMWA - CAPE MAY WARBLER</option>
<option value="COGO">COGO - COMMON GOLDENEYE</option>
<option value="COGR">COGR - COMMON GRACKLE</option>
<option value="COHA">COHA - COOPER'S HAWK</option>
<option value="COLO">COLO - COMMON LOON</option>
<option value="COME">COME - COMMON MERGANSER</option>
<option value="COMO">COMO - COMMON MOORHEN</option>
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<option value="CONI">CONI - COMMON NIGHTHAWK</option>
<option value="CORA">CORA - COMMON RAVEN</option>
<option value="CORE">CORE - COMMON REDPOLL</option>
<option value="COSN">COSN - COMMON SNIPE</option>
<option value="COTE">COTE - COMMON TERN</option>
<option value="COWA">COWA - CONNECTICUT WARBLER</option>
<option value="COYE">COYE - COMMON YELLOWTHROAT</option>
<option value="CSWA">CSWA - CHESTNUT-SIDED WARBLER</option>
<option value="DCCO">DCCO - DOUBLE-CRESTED CORMORANT</option>
<option value="DEJU">DEJU - DARK-EYED JUNCO</option>
<option value="DICK">DICK - DICKCISSEL</option>
<option value="DOWO">DOWO - DOWNY WOODPECKER</option>
<option value="EABL">EABL - EASTERN BLUEBIRD</option>
<option value="EAKI">EAKI - EASTERN KINGBIRD</option>
<option value="EAME">EAME - EASTERN MEADOWLARK</option>
<option value="EAPH">EAPH - EASTERN PHOEBE</option>
<option value="EASO">EASO - EASTERN SCREECH OWL</option>
<option value="EATO">EATO - EASTERN TOWHEE</option>
<option value="EAWP">EAWP - EASTERN WOOD-PEWEE</option>
<option value="EMPI">EMPI - </option>
<option value="EUST">EUST - EUROPEAN STARLING</option>
<option value="EVGR">EVGR - EVENING GROSBEAK</option>
<option value="FICR">FICR - FISH CROW</option>
<option value="FISP">FISP - FIELD SPARROW</option>
<option value="FOSP">FOSP - FOX SPARROW</option>
<option value="GADW">GADW - GADWALL</option>
<option value="GBBG">GBBG - GREAT BLACK-BACKED GULL</option>
<option value="GBHE">GBHE - GREAT BLUE HERON</option>
<option value="GCFL">GCFL - GREAT CRESTED FLYCATCHER</option>
<option value="GCKI">GCKI - GOLDEN-CROWNED KINGLET</option>
<option value="GCTH">GCTH - GRAY-CHEEKED THRUSH</option>
<option value="GHOW">GHOW - GREAT HORNED OWL</option>
<option value="GLIB">GLIB - GLOSSY IBIS</option>
<option value="GOEA">GOEA - GOLDEN EAGLE</option>
<option value="GRCA">GRCA - GRAY CATBIRD</option>
<option value="GREG">GREG - GREAT EGRET</option>
<option value="GRHE">GRHE - GREEN-BACKED HERON</option>
<option value="GRSC">GRSC - GREATER SCAUP</option>
<option value="GRSP">GRSP - GRASSHOPPER SPARROW</option>
<option value="GRYE">GRYE - GREATER YELLOWLEGS</option>
<option value="GWFG">GWFG - GREATER WHITE-FRONTED GOOSE</option>
<option value="GWTE">GWTE - GREEN-WINGED TEAL</option>
<option value="GWWA">GWWA - GOLDEN-WINGED WARBLER</option>
<option value="HAWO">HAWO - HAIRY WOODPECKER</option>
<option value="HEGU">HEGU - HERRING GULL</option>
<option value="HESP">HESP - HENSLOW'S SPARROW</option>
<option value="HETH">HETH - HERMIT THRUSH</option>
<option value="HOFI">HOFI - HOUSE FINCH</option>
<option value="HOGR">HOGR - HORNED GREBE</option>
<option value="HOLA">HOLA - HORNED LARK</option>
<option value="HOME">HOME - HOODED MERGANSER</option>
<option value="HOSP">HOSP - HOUSE SPARROW</option>
<option value="HOWA">HOWA - HOODED WARBLER</option>
<option value="HOWR">HOWR - HOUSE WREN</option>
<option value="INBU">INBU - INDIGO BUNTING</option>
<option value="KEWA">KEWA - KENTUCKY WARBLER</option>
<option value="KILL">KILL - KILLDEER</option>
<option value="KIRA">KIRA - KING RAIL</option>
<option value="LAGU">LAGU - LAUGHING GULL</option>
<option value="LALO">LALO - LAPLAND LONGSPUR</option>
<option value="LBBG">LBBG - LESSER BLACK-BACKED GULL</option>
<option value="LBHE">LBHE - LITTLE BLUE HERON</option>
<option value="LEBI">LEBI - LEAST BITTERN</option>
<option value="LEFL">LEFL - LEAST FLYCATCHER</option>
<option value="LEOW">LEOW - LONG-EARED OWL</option>
<option value="LESA">LESA - LEAST SANDPIPER</option>
<option value="LESC">LESC - LESSER SCAUP</option>
<option value="LEYE">LEYE - LESSER YELLOWLEGS</option>
```

```
<option value="LISP">LISP - LINCOLN'S SPARROW</option>
<option value="LOSH">LOSH - LOGGERHEAD SHRIKE</option>
<option value="LOWA">LOWA - LOUISIANA WATERTHRUSH</option>
<option value="MALL">MALL - MALLARD</option>
<option value="MAWA">MAWA - MAGNOLIA WARBLER</option>
<option value="MAWR">MAWR - MARSH WREN</option>
<option value="MERL">MERL - MERLIN</option>
<option value="MODO">MODO - MOURNING DOVE</option>
<option value="MOWA">MOWA - MOURNING WARBLER</option>
<option value="MUSW">MUSW - MUTE SWAN</option>
<option value="NAWA">NAWA - NASHVILLE WARBLER</option>
<option value="NOBO">NOBO - NORTHERN BOBWHITE</option>
<option value="NOCA">NOCA - NORTHERN CARDINAL</option>
<option value="NOFL">NOFL - NORTHERN FLICKER</option>
<option value="NOGO">NOGO - NORTHERN GOSHAWK</option>
<option value="NOHA">NOHA - NORTHERN HARRIER</option>
<option value="NOMO">NOMO - NORTHERN MOCKINGBIRD</option>
<option value="NOPA">NOPA - NORTHERN PARULA</option>
<option value="NOPI">NOPI - NORTHERN PINTAIL</option>
<option value="NOSH">NOSH - NORTHERN SHOVELER</option>
<option value="NOWA">NOWA - NORTHERN WATERTHRUSH</option>
<option value="NRWS">NRWS - NORTHERN ROUGH-WINGED SWALLOW</option>
<option value="NSHR">NSHR - NORTHERN SHRIKE</option>
<option value="NSWO">NSWO - NORTHERN SAW-WHET OWL</option>
<option value="OCWA">OCWA - ORANGE-CROWNED WARBLER</option>
<option value="OLDS">OLDS - OLDSQUAW</option>
<option value="OROR">OROR - ORCHARD ORIOLE</option>
<option value="OSFL">OSFL - OLIVE-SIDED FLYCATCHER</option>
<option value="OSPR">OSPR - OSPREY</option>
<option value="OVEN">OVEN - OVENBIRD</option>
<option value="PAWA">PAWA - PALM WARBLER</option>
<option value="PBGR">PBGR - PIED-BILLED GREBE</option>
<option value="PEFA">PEFA - PEREGRINE FALCON</option>
<option value="PESA">PESA - PECTORAL SANDPIPER</option>
<option value="PHVI">PHVI - PHILADELPHIA VIREO</option>
<option value="PIGR">PIGR - PINE GROSBEAK</option>
<option value="PISI">PISI - PINE SISKIN</option>
<option value="PIWA">PIWA - PINE WARBLER</option>
<option value="PIWO">PIWO - PILEATED WOODPECKER</option>
<option value="PRAW">PRAW - PRAIRIE WARBLER</option>
<option value="PROW">PROW - PROTHONOTARY WARBLER</option>
<option value="PUFI">PUFI - PURPLE FINCH</option>
<option value="PUMA">PUMA - PURPLE MARTIN</option>
<option value="RBGR">RBGR - ROSE-BREASTED GROSBEAK</option>
<option value="RBGU">RBGU - RING-BILLED GULL</option>
<option value="RBME">RBME - RED-BREASTED MERGANSER</option>
<option value="RBNU">RBNU - RED-BREASTED NUTHATCH</option>
<option value="RBWO">RBWO - RED-BELLIED WOODPECKER</option>
<option value="RCKI">RCKI - RUBY-CROWNED KINGLET</option>
<option value="RECR">RECR - RED CROSSBILL</option>
<option value="REDH">REDH - REDHEAD</option>
<option value="REVI">REVI - RED-EYED VIREO</option>
<option value="RHWO">RHWO - RED-HEADED WOODPECKER</option>
<option value="RLHA">RLHA - ROUGH-LEGGED HAWK</option>
<option value="RNDU">RNDU - RING-NECKED DUCK</option>
<option value="RNGR">RNGR - RING-NECKED GREBE</option>
<option value="RNPH">RNPH - RING-NECKED PHEASANT</option>
<option value="RODO">RODO - ROCK DOVE</option>
<option value="RSHA">RSHA - RED-SHOULDERED HAWK</option>
<option value="RTHA">RTHA - RED-TAILED HAWK</option>
<option value="RTHU">RTHU - RUBY-THROATED HUMMINGBIRD</option>
<option value="RUBL">RUBL - RUSTY BLACKBIRD</option>
<option value="RUDU">RUDU - RUDDY DUCK</option>
<option value="RUGR">RUGR - RUFFED GROUSE</option>
<option value="RWBL">RWBL - RED-WINGED BLACKBIRD</option>
<option value="SAVS">SAVS - SAVANNAH SPARROW</option>
<option value="SCTA">SCTA - SCARLET TANAGER</option>
<option value="SEOW">SEOW - SHORT-EARED OWL</option>
```

```
<option value="SEPL">SEPL - SEMIPALMATED PLOVER</option>
<option value="SESA">SESA - SEMIPALMATED SANDPIPER</option>
<option value="SEWR">SEWR - SEDGE WREN</option>
<option value="SNBU">SNBU - SNOW BUNTING</option>
<option value="SNEG">SNEG - SNOWY EGRET</option>
<option value="SNGO">SNGO - SNOW GOOSE</option>
<option value="SORA">SORA - SORA</option>
<option value="SOSA">SOSA - SOLITARY SANDPIPER</option>
<option value="SOSP">SOSP - SONG SPARROW</option>
<option value="SPSA">SPSA - SPOTTED SANDPIPER</option>
<option value="SSHA">SSHA - SHARP-SHINNED HAWK</option>
<option value="SUTA">SUTA - SUMMER TANAGER</option>
<option value="SWSP">SWSP - SWAMP SPARROW</option>
<option value="SWTH">SWTH - SWAINSON'S THRUSH</option>
<option value="SWWA">SWWA - SWAINSON'S WARBLER</option>
<option value="TEWA">TEWA - TENNESSEE WARBLER</option>
<option value="TRHE">TRHE - TRICOLORED HERON</option>
<option value="TRSW">TRSW - TREE SWALLOW</option>
<option value="TUSW">TUSW - TUNDRA SWAN</option>
<option value="TUTI">TUTI - TUFTED TITMOUSE</option>
<option value="TUVU">TUVU - TURKEY VULTURE</option>
<option value="UNKNOWN">UNKNOWN - UNKNOWN</option>
<option value="UPSA">UPSA - UPLAND SANDPIPER</option>
<option value="VEER">VEER - VEERY</option>
<option value="VESP">VESP - VESPER SPARROW</option>
<option value="VIRA">VIRA - VIRGINIA RAIL</option>
<option value="WAVI">WAVI - WARBLING VIREO</option>
<option value="WBNU">WBNU - WHITE-BREASTED NUTHATCH</option>
<option value="WCSP">WCSP - WHITE-CROWNED SPARROW</option>
<option value="WESA">WESA - WESTERN SANDPIPER</option>
<option value="WEVI">WEVI - WHITE-EYED VIREO</option>
<option value="WEWA">WEWA - WORM-EATING WARBLER</option>
<option value="WIFL">WIFL - WILLOW FLYCATCHER</option>
<option value="WITU">WITU - WILD TURKEY</option>
<option value="WIWA">WIWA - WILSON'S WARBLER</option>
<option value="WIWR">WIWR - WINTER WREN</option>
<option value="WODU">WODU - WOOD DUCK</option>
<option value="WOTH">WOTH - WOOD THRUSH</option>
<option value="WPWI">WPWI - WHIP-POOR-WILL</option>
<option value="WTSP">WTSP - WHITE-THROATED SPARROW</option>
<option value="WWCR">WWCR - WHITE-WINGED CROSSBILL</option>
<option value="WWSC">WWSC - WHITE-WINGED SCOTER</option>
<option value="YBCH">YBCH - YELLOW-BREASTED CHAT</option>
<option value="YBCU">YBCU - YELLOW-BILLED CUCKOO</option>
<option value="YBFL">YBFL - YELLOW-BELLIED FLYCATCHER</option>
<option value="YBSA">YBSA - YELLOW-BELLIED SAPSUCKER</option>
<option value="YCNH">YCNH - YELLOW-CROWNED NIGHT-HERON</option>
<option value="YEWA">YEWA - YELLOW WARBLER</option>
<option value="YRWA">YRWA - YELLOW-RUMPED WARBLER</option>
<option value="YTVI">YTVI - YELLOW-THROATED VIREO</option>
<option value="YTWA">YTWA - YELLOW-THROATED WARBLER</option>
</select>

<p>
<label> </label>
<br>
<strong>Sex</strong><br>
<font size="-1">Choosing male or female will limit the search to Riparian,
Road, and Point Count Surveys. </font>
<!--Form that queries the user for the sex of the birds of interest.-->
<blockquote>
<label>
<input type="radio" name="sex" value="M">
Male</label>
<br>
<label>
<input type="radio" name="sex" value="F">
Female</label>
```

```
<br>
<label>
<input type="radio" name="sex" value="E" checked>
Either</label>
</blockquote>
<strong></p>Detection Method</strong><br>
<font size="-1"> Checking any of these boxes will limit the search to the Owl,
Raptor, Road, and Point Count Surveys. Checking multiple boxes will search for
all options that are either option, or both.</font>
<!--Form that queries the user for what kind of detection methods should be
queried.-->
<blockquote>
<input type="checkbox" name="vcheck" value="V">
Visual<br>
<input type="checkbox" name="scheck" value="S">
Song<br>
<input type="checkbox" name="ccheck" value="C">
Call
</blockquote>
<div align="left"><br>
<br>
<!-- submit button -->
<input name="button1" type="submit" value="Display">
</div>
</form>




<br><BR>
</body>
                                    </html>
```

Appendix G:
arcimsparam.js

```
// ArcIMSparam.js
// javascript file with parameters specific to calling page

//*****************************************************************
******
//*                 parameters File for HTML Template            *
//*****************************************************************
******

// get machine name
var hostName = document.location.host;
// common portion of url
var esriBlurb = "/servlet/com.esri.esrimap.Esrimap?ServiceName="
// make URL for getting mapservice catalog
var catURL = "http://" + hostName + esriBlurb + "catalog";
// make prefix for URL
var serverURL  = "http://" + hostName + esriBlurb;



//*****************************************************************
//*                 parameters set by Designer
*
//*****************************************************************
var imsURL =
'http://152.1.32.120/servlet/com.esri.esrimap.Esrimap?ServiceName=vafob
ird';
var imsOVURL =
'http://152.1.32.120/servlet/com.esri.esrimap.Esrimap?ServiceName=vafob
ird';
var imsQueryURL = '';
var imsGeocodeURL = '';

//initial map extent
var startLeft = 459701.28125;
var startRight = 464544.125;
var startTop = 4441394.0;
var startBottom = 4436670.5;
//maximum map extent
var limitLeft = 458869.543525736;
var limitRight = 464821.415945083;
var limitTop = 4441650.17585356;
var limitBottom = 4436380.56935257;

var usePan=true;
var usePanNorth=true;
var usePanWest=true;
var usePanEast=true;
var usePanSouth=true;
var useZoomIn=true;
var useZoomOut=true;
var useFullExtent=true;
var useZoomActive=true;
var useZoomLast=true;
var useIdentify=true;
var useMeasure=true;
var useSetUnits=true;
var useSelect=true;
```

```
var useQuery=true;
var useFind=true;
var useGeocode=false;
var useStoredQuery=false;
var useClearSelect=true;
var usePrint=true;
var useGeoNetwork=false;
var useBuffer=true;
var useExtract=false;

var MapUnits = "Degrees";
var ScaleBarUnits = "Miles";



// End of Designer set parameters

var useHyperLink=true;
var useHyperLinkAny=false;
var useIdentifyAll=false;
var useBufferShape=false;
var hasToolBarOnLayer=false;
   // useHyperLink takes priority - both cannot be true
if (useHyperLink) useHyperLinkAny=false;
   // useIdentify takes priority - both cannot be true
if (useIdentify) useIdentifyAll=false;
   // allow debugging
var setDebug=true;


/**************************************
* Basic Map parameters
**************************************/

// variables for setting component colors
var mapBackColor = "";
var ovBoxColor = "#ff0000";
var ovBoxSize = 3;
var zoomBoxColor = "#ff0000";

// variables for using individual components
var hasOVMap = true;
var hasTOC = true;
var useModeFrame = true;

// variables for map pixel offset from upper left corner of frame
   // horizontal offset
var hspc = 0;
   // vertical offset
var vspc = 0;

//panning factor for arrow buttons
var panFactor = 85/100;
//zoom factors for v.3
var zoomFactor = 2

// margin factor for zooming in on selected lines and polygons - based
on feature width and height. . . margin will be selectMargin * width or
height
var selectMargin = 25/100;
// margin margin factor for zooming in on selected points - based on
full extent. . . margin will be selectPointMargin * fullWidth or
fullHeight
var selectPointMargin = 25/1000
```

```
// show the scale factor
var showScalePercent=true;
// display coords in status line
var showXYs=true;

// Have ArcXML responses URL encoded? Will not work with multi-byte
characters
var doURLencode = false;

// automatically adjust for ArcMapServer, if necessary
   // North Arrow size is smaller from ArcMapServer
var autoAdjustForArcMapServer = true;
// if it is an ArcMap Service, is it using a Personal Database?
   // critical for correct sql expression on queries on date fields
   // Syntax for date fields is different for layers from a Personal
Database than for other ArcMap Service data sources
var isPersonalDatabase = false;

//variables for MapDrawing
   // North Arrow
var drawNorthArrow = true;
var NorthArrowType = "4";
var NorthArrowSize = "15";
var NorthArrowCoords = "20 35";
var NorthArrowAngle = "0";
   // Scale Bar
var drawScaleBar = true;
   // MapUnits=DEGREES,FEET,METERS
   // can MapUnits be changed by user?
var setMapUnits=false;
   // ScaleBarUnits=KILOMETERS,METERS,MILES,FEET
var ScaleBarBackground = "false";
var ScaleBarBackColor = "0,0,0";
var ScaleBarFontColor = "0,0,0";
var ScaleBarColor = "128,128,128";
var ScaleBarFont = "";
var ScaleBarStyle = "Regular";
var ScaleBarRound = "1";
var ScaleBarSize = "9";
var ScaleBarWidth = "5";
var ScaleBarPrecision = 2;
var numDecimals = ScaleBarPrecision;
   // Scale Bar 2
var drawScaleBar2 = false;
var ScaleBar2Units = "KILOMETERS";
var ScaleBar2Background = "false";
var ScaleBar2BackColor = "0,0,0";
var ScaleBar2FontColor = "0,0,0";
var ScaleBar2Color = "128,128,128";
var ScaleBar2Font = "";
var ScaleBar2Style = "Regular";
var ScaleBar2Round = "1";
var ScaleBar2Size = "9";
var ScaleBar2Width = "5";
var ScaleBar2Precision = 2;

   // Copyright blurb
var drawCopyright = true;
var CopyrightFont = "";
var CopyrightStyle = "Regular";
var CopyrightSize = "8";
var CopyrightCoords = "3 3";
var CopyrightColor = "0,0,0";
```

```
var CopyrightBackground = "True";
var CopyrightBGColor = "255,255,255";
var CopyrightGlow = "False";
var CopyrightGlowColor = "255,255,255";
var CopyrightShadow = "False";
var CopyrightShadowColor = "32,32,32";
var CurrentYear = new Date().getFullYear();
var CopyrightText = "Map created with ArcIMS - Copyright (C) 1992-" +
CurrentYear + " ESRI Inc.";

   // place bar behind Copyright text and scalebars
var drawBottomBar = false;
var bottomBarColor = "255,255,255";
var bottomBarOutline = "0,0,0";
var bottomBarHeight = "18";

   // Mode on Map
var drawModeOnMap = false;
var modeRefreshMap = false;
var modeMapColor = "255,255,255";
var modeMapGlow = "128,0,255";

var ovImageVar;
var ovBorderWidth = 2;
var ovExtentBoxSize = 2;

// map image background transparent? - requires gif or png8 types
var mapTransparent=false;

// setup test for Nav 4.0
var isIE = false;
var isNav = (navigator.appName.indexOf("Netscape")>=0);
var isNav4 = false;
var isIE4 = false;
var is5up = false;
//alert(navigator.appVersion);
if (isNav) {

   if (parseFloat(navigator.appVersion)<5) {
         isNav4=true;
         //alert("Netscape 4.x or older");
   } else {
         is5up = true;
   }
} else {
   isIE4=true;
   isIE=true;
   if ((navigator.appVersion.indexOf("MSIE 5")>0) ||
(navigator.appVersion.indexOf("MSIE 6")>0)) {
         isIE4 = false;
         is5up = true;
         //alert("IE5");
   }
}

/***************************************
* Extended Map parameters
***************************************/

// variables for ovmap offset
var ovHspc = 0;
var ovVspc = 0;

// color for Main Map zoombox in html hex RGB format
```

```
//var zoomBoxColor = "#ff0000";

// index of initial active layer. . . if more than or equal to layer
count top layer used
var ActiveLayerIndex=99;

// variables for using individual components
var useTextFrame=true;
// use external window for dialogs
var useExternalWindow=false;

// colors for tables
var textFrameBackColor="Silver";
var tableBackColor="White";
var textFrameTextColor="Black";
var textFrameLinkColor="Blue";
var textFrameFormColor="Gray";

// LayerList visible at service load
var showTOC=true;
// set layer visibility according to LayerList or by custom programming
var toggleVisible = true;
// set layer visibility of OVMap according to LayerList or by custom
programming
   // imsURL must equal imsOVMap - depends on one LayerList
var toggleOVVisible = false;
// will the LayerList show all layers, not just those available at
current scale
var listAllLayers = false;

// toggle the check of non-listing of layers in LayerList and Legend
// if true, noListLayer array must have an element defined for each
layer
var hideLayersFromList=false;
// layers that will be listed in the LayerList or Legend
   // Note: This does not affect map display
var noListLayer = new Array();
// noListLayer[0] = false;
// noListLayer[1] = false;
// noListLayer[2] = false;
// noListLayer[3] = true;  // this one will not be listed
// noListLayer[4] = false;

   // Mode on floating layer
var drawFloatingMode = false;
var modeLayerOn = false;
var modeLayerColor = "Black";
var modeLayerShadowColor = "White";
var modeLayerFont = "Arial";
var modeLayerSize = "4";

   // does the overview map a layer on top of map?...
var ovMapIsLayer=true;

var webParams = "";
if (parent.MapFrame!=null) {
   webParams = parent.document.location.search;
} else {
   webParams = document.location.search;
}

/*************************************
* Interactive Map parameters
*************************************/
```

```
// Click points - Measure/Shape Select/Shape Buffer
var clickMarkerColor="255,0,0";
var clickMarkerType="Circle";
var clickMarkerSize="6";


/***************************************
* Identify/Select/Query/Buffer parameters
***************************************/

// search tolerance in pixels around click
var pixelTolerance=4;
// color of selected features in decimal RGB format
var selectColor="255,255,0";
// color of highlighted feature in decimal RGB format
var highlightColor="255,0,0";
// level of transparency of selected and highlighted color
var transparentLevel = "0.5";
   // zoom to selected feature if only one is returned?
var zoomToSingleSelect = false;
   // use only unique values in sample field value lists
var onlyUniqueSamples = true;
   // are string queries case insensitive?
         // false by default to match Java Viewer and ArcExplorer
var queryCaseInsensitive=false;

// fields to be returned in identify/selection/query request. . .
#ALL#=all fields
var selectFields= "#ALL#";
//var selectFields= "#ID# #SHAPE#";
// swap out the list of returned fields?
//If true, a list must be defined in selFieldList[n] for each layer to
update selectFields
var swapSelectFields=false;
// array for each layer's returned fields if swapSelectFields=true
var selFieldList = new Array();
// sample set for world - if not #ALL#, id and shape fields required.
Separate with a space
selFieldList[0]="NAME COUNTRY POPULATION #ID# #SHAPE#";
selFieldList[1]="URL #ID# #SHAPE#";
selFieldList[2]="#ALL#";
selFieldList[3]="#ALL#";
selFieldList[4]="#ALL#";
selFieldList[5]="NAME CONTINENT #ID# #SHAPE#";
selFieldList[6]="#ALL#";

// use the field alias in the data display?
//If true, a list must be defined in fieldAliasList[n] for each layer
defining aliases for those fields needing them
var useFieldAlias=false;
// array for aliases for each layer's returned fields if
useFieldAlias=true
var fieldAliasList  = new Array();
// sample set for world - fieldname:alias pairs separated by a bar
(|)... if no aliases, use empty string ("")
fieldAliasList[0]="NAME:City Name|POPULATION:Population";
fieldAliasList[1]="";
fieldAliasList[2]="";
fieldAliasList[3]="";
fieldAliasList[4]="";
fieldAliasList[5]="NAME:CountryName";
fieldAliasList[6]="";
```

```
// Hide the ID field display? The ID Field must be included in field
list, but we don't have to show it.
var hideIDFieldData = false;
// Hide the shape field display? The Shape Field must be included in
field list, but we don't have to show it.
var hideShapeFieldData = false;


// parameters for setting up hyperlinks in data display
var hyperLinkLayers = new Array(); // layers to have hyperlink
var hyperLinkFields = new Array();     // field in those layers to be
used for hyperlink
var hyperLinkPrefix = new Array();  // prefix (if any) to place before
field value to make hyperlink url
var hyperLinkSuffix = new Array();  // suffix (if any) to place after
field value to make hyperlink url

hyperLinkLayers[0] = "Survey Points";
hyperLinkFields[0] = "LINK";
hyperLinkPrefix[0] = "";
hyperLinkSuffix[0] = "";


// will the returned data be displayed in text frame?
var showSelectedData=true;
// will the returned features be drawn?
var showSelectedFeatures=true;
// maximum number of features returned from query
var maxFeaturesReturned=25;
// for ID All - List all visible layers in response - default is false
   // if false only visible layers with idenitified features written to
table
   // if true the names of all visible layers will be diplayed even if
no features returned
var listAllLayersInIDAll = false;


// number of data samples retrieved for query form
var numberDataSamples = 50;



/***************************************
* Legend parameters - aimsLegend.js
***************************************/

// legend map size
var legWidth=170;
var legHeight=300;
var legFont="Arial";
var legTitle="Legend";

/***************************************
* Options parameters - aimsOptions.js
***************************************/

// allowing user to set options
var allowOptions=false;

/***************************************
* ClassRender parameters - aimsClassRender.js
***************************************/

// parameters for custom class rendering... overrides default renderer
```

```
var ClassRenderLayer = new Array();  // layers to have custom renderers
var ClassRenderString = new Array(); // initial custom renderer XML
string for the layers
ClassRenderLayer[0] = "Cities";
ClassRenderString[0] = "";
/*
ClassRenderString[0] ='<VALUEMAPRENDERER
lookupfield="population">\n<RANGE LOWER="0"
UPPER="1000000">\n<SIMPLEMARKERSYMBOL color="255,0,255" type="circle"
size="4" />\n</RANGE>';
ClassRenderString[0] = ClassRenderString[0] + '<RANGE LOWER="1000000"
UPPER="2500000">\n<SIMPLEMARKERSYMBOL color="255,0,255" type="circle"
size="6" />\n</RANGE>';
ClassRenderString[0] = ClassRenderString[0] + '<RANGE LOWER="2500000"
UPPER="5000000">\n<SIMPLEMARKERSYMBOL color="255,0,255" type="circle"
size="9" />\n</RANGE>';
ClassRenderString[0] = ClassRenderString[0] + '<RANGE LOWER="5000000"
UPPER="10000000">\n<SIMPLEMARKERSYMBOL color="255,0,255" type="circle"
size="12" />\n</RANGE>';
ClassRenderString[0] = ClassRenderString[0] + '<RANGE LOWER="10000000"
UPPER="30000000">\n<SIMPLEMARKERSYMBOL color="255,0,255" type="circle"
size="16" />\n</RANGE>\n</VALUEMAPRENDERER>';
*/

/**************************************
* Geocode parameters - aimsGeocode.js
**************************************/

// maximum geocode candidates returned - default = 20
var maxGeocodeCandidates=20;
// minimal acceptable geocode score for candidate
var minGeocodeScore=50;
var geocodePointColor = "255,0,0";
var geocodePointSize = "15";
var geocodeLabelSize = "12";
var geocodePointType = "star";
var currentGeocodePointIndex = 0;

// custom functions needed for Reverse Geocoding - RouteServer
extension required
var useReverseGeocode = false;
var useRoute=false;

// the starting point. . . it all starts here on loading
function checkParams() {
   appDir = getPath(document.location.pathname);
   // global for overview map. . . change if not on same frame as Map
   ovImageVar = document.ovImage;
   debugOn = 0;
   if (parent.TextFrame==null) {
         useTextFrame = false;
         useExternalWindow=true;
   }
   if (!hasLayer("measureBox")) useMeasure=false;
   if ((!useMeasure) && (!drawScaleBar)) useSetUnits=false;
   if (ovImageVar==null) hasOVMap = false;
   if (parent.TOCFrame==null) hasTOC = false;
   if (parent.ModeFrame==null) useModeFrame = false;


   if (isIE)   {
         if (hasLayer("theTop")) document.all.theTop.style.cursor =
"crosshair";
         if (hasOVMap) ovImageVar.style.cursor = "hand";
```

```
}

if (hasOVMap) {
      // size of ov map image
      i2Width = parseInt(ovImageVar.width);
      i2Height = parseInt(ovImageVar.height);
      forceNewOVMap = false;
      // position of ov map
      //ovMapLeft = iWidth - (i2Width + 6);
      //ovMapTop = 2;
}
if (webParams!="") {
      //alert(webParams);
      getCommandLineParams(webParams);
}
// if starting extents zero'd then flag to get start from mapservice
if ((startLeft!=0) && (startRight!=0)) getStartingExtent=false;
// if limit extents zero'd then flag to get max from mapservice
if ((limitLeft!=0) && (limitRight!=0)) {
      getLimitExtent=false;
      enforceFullExtent=true;
}
if (ovBoxColor=="") ovBoxColor = "255,0,0";
//ovBoxColor = convertHexToDec(ovBoxColor);
checkCoords();
if (aimsNavigationPresent) {
      // Set up event capture for mouse movement
      if (isNav4) {
            document.captureEvents(Event.MOUSEMOVE);
            document.captureEvents(Event.MOUSEDOWN);
            document.captureEvents(Event.MOUSEUP);
            //document.captureEvents(Event.MOUSEOUT);
      }
      document.onmousemove = getMouse;
      //document.onmousedown = chkMouseDown;
      document.onmousedown = mapTool;
      document.onmouseup = chkMouseUp;
      //document.onmouseout = chkMouseOut;
} else {
      usePan=false;
      usePanNorth=false;
      usePanWest=false;
      usePanEast=false;
      usePanSouth=false;
      useMeasure=false;
      useZoomIn=false;
      useZoomOut=false
      //useFullExtent=false;
      useZoomActive=false;
      //useZoomLast=false;
}

if (!aimsBufferPresent) {
      useBuffer=false;
}
if (!aimsQueryPresent) {
      aimsBufferPresent=false;
      useQuery=false;
      useFind=false;
      useBuffer=false;
      useStoredQuery=false;
}
if (!aimsSelectPresent) {
      aimsQueryPresent=false;
```

```
        aimsBufferPresent=false;
        useSelect=false;
        useQuery=false;
        useFind=false;
        useBuffer=false;
        useStoredQuery=false;
        useClearSelect=false;
    }
    if (!aimsIdentifyPresent) {
        aimsSelectPresent=false;
        aimsQueryPresent=false;
        aimsBufferPresent=false;
        canQuery=false;
        useIdentify=false;
        useSelect=false;
        useQuery=false;
        useFind=false;
        useBuffer=false;
        useStoredQuery=false;
        useHyperLink=false;
        useHyperLinkAny=false;
        useIdentifyAll=false;
    }
    if (!aimsGeocodePresent) {
        useGeocode=false;
        useReverseGeocode=false;
    }
    if (!aimsPrintPresent) {
        usePrint=false;
    }
    if (!aimsOptionsPresent) {
        allowOptions=false;
    }
    if ((aimsXMLPresent) && (aimsMapPresent)) {
        if (aimsClickPresent) clickFunction("zoomin");
        if (parent.ToolFrame!=null)
parent.ToolFrame.document.location="toolbar.htm";
        startMap();
    } else {
        alert(msgList[0]);
    }
}
```

Appendix H:
viewer.htm

```
<META HTTP-EQUIV="Pragma" CONTENT="no-cache">
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-
1">
<HTML>
<HEAD>
   <SCRIPT LANGUAGE="JavaScript" SRC="javascript/aimsResource.js"
TYPE="text/javascript"></SCRIPT>
   <SCRIPT TYPE="text/javascript" LANGUAGE="JavaScript">

         // Designer will set the next variable - theTitle
         var theTitle = "Valley Forge - Comprehensive Inventory Program
for Birds";
         if (theTitle.indexOf("###TITLE##")!=-1) theTitle =
titleList[0];
         var cmdString = document.location.search;

         var webParams = cmdString;
         var reloadTimer=0;
         var browser = navigator.appName;
         //var moreStuff = "";
         var moreStuff = 'onresize="reloadApp()"';
         var addNS = 0;
         if (browser=="Netscape") {
               //moreStuff = 'onresize="reloadApp()"';
               addNS = 3;
         }

         var formURL = "jsForm.htm";
         var connectorType = "Servlet"; //Types are "Servlet" or "JSP"
         if (connectorType=="JSP") formURL = "jspForm.jsp";

         document.writeln("<TITLE>" + theTitle + "</TITLE>");

         function doIt() {
               MapFrame.useJava=false;
               MapFrame.checkParams();
         }
         function replacePlus(inText) {
              var re = /\+/g;
               inText = inText.replace(re," ");
              return inText;
         }

         function reloadApp() {
                     //document.location = "default.htm";
                     window.clearTimeout(reloadTimer);
                     reloadTimer = window.setTimeout("document.location
= 'viewer.htm' + cmdString",1000);
         }


   document.writeln('</HEAD>');
   document.writeln('<FRAMESET ROWS="' + (30+addNS) + ',*,30,0"
FRAMEBORDER="No" FRAMESPACING="0" onload="doIt()" BORDER=0 ' +
moreStuff + '>');
   document.writeln('      <FRAME NAME="TopFrame" SRC="top.htm"
MARGINWIDTH="5" MARGINHEIGHT="0" SCROLLING="No" FRAMEBORDER="0"
NORESIZE>');
```

```
   document.writeln('      <FRAMESET COLS="' + (50+addNS) + ',*,370"
FRAMEBORDER="No" FRAMESPACING="0" BORDER=0>');
   document.writeln('            <FRAME NAME="ToolFrame"
SRC="blank.htm" MARGINWIDTH="0" MARGINHEIGHT="0" SCROLLING="No"
FRAMEBORDER="0" NORESIZE FRAMESPACING="0" BORDER="0">');
   document.writeln('            <FRAMESET ROWS="*,110"> ');
   document.writeln('                  <FRAME NAME="MapFrame"
SRC="MapFrame.htm" MARGINWIDTH="0" MARGINHEIGHT="0" SCROLLING="No"
FRAMEBORDER="Yes" RESIZE="YES">');
   document.writeln('                  <FRAME NAME="TextFrame"
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FRAMEBORDER="Yes" RESIZE="YES">');
   document.writeln('            </FRAMESET> ');
   document.writeln('            <FRAMESET ROWS="300,*"> ');
   document.writeln('                  <FRAME NAME="TOCFrame"
SRC="TOCFrame.htm" MARGINWIDTH="0" MARGINHEIGHT="0" SCROLLING="No"
FRAMEBORDER="Yes" RESIZE="YES">');
   document.writeln('                  <FRAME NAME="Form"
SRC="../../vafo/formvafo.html" MARGINWIDTH="4" MARGINHEIGHT="0"
SCROLLING="Auto" FRAMEBORDER="Yes" RESIZE="YES">');
   document.writeln('            </FRAMESET> ');
   document.writeln('      </FRAMESET>');
   document.writeln('      <FRAMESET COLS="180,*" FRAMEBORDER="0"
BORDER=0 FRAMESPACING="0">');
   document.writeln('            <FRAME NAME="ModeFrame"
SRC="bottom.htm" MARGINWIDTH="0" MARGINHEIGHT="0" SCROLLING="No"
FRAMEBORDER="No" NORESIZE>');
   document.writeln('            <FRAME NAME="BottomFrame"
SRC="bottom.htm" MARGINWIDTH="0" MARGINHEIGHT="0" SCROLLING="No"
FRAMEBORDER="No" NORESIZE>');
   document.writeln('      </FRAMESET>');
   document.writeln('      <FRAME NAME="PostFrame" SRC="' + formURL +
'" MARGINWIDTH="0" MARGINHEIGHT="0" SCROLLING="No" FRAMEBORDER="0"
NORESIZE FRAMESPACING="0" BORDER="0">');
   document.writeln('</FRAMESET>');
</SCRIPT>

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</BODY>
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</HTML>
```

Appendix I:
Detailed Instructions for Moving the ArcIMS Application

1. Install Java 2 SDK, Apache, Tomcat, and ArcIMS following the instructions at http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=28450
2. Install PHP using the instructions at http://www.ricocheting.com/server/php.html
3. Install MySQL using the instructions at http://www.ricocheting.com/server/mysql.html
4. Copy the folder C:\ArcIMS\Shapefiles_VAFO\ to the C:\ArcIMS\ folder on the new computer or server.
5. Copy the file C:\ArcIMS\Axl\vafo.axl to the C:\ArcIMS\Axl\ folder on the new computer or server
6. Copy the folder C:\Apache\Apache2\htdocs\vafo\ to the C:\Apache\Apache2\htdocs\ folder on the new computer or server.
7. In a text editor open each file in :\Apache\Apache2\htdocs\vafo\ that ends in .php and edit the connection statement at the top of the file to the login and password you input into MySQL during installation. If you did not input a user name, then leave the word *root*.
8. Copy the folder C:\VAFO\txt\ and paste it into the folder C:\VAFO\ on the new computer or server. Create the folder VAFO if necessary.
9. Open ArcIMS Author and open vafo.axl to confirm that it is properly referencing the shapefiles, save and exit.
10. Open ArcIMS Administrator. Create a new service called vafobird, which uses the Map File vafo.axl and ImageServer1. Under Server Output change the HTTP Location (URL) to http://*your_ip_address*/output . Click OK.
11. Open ArcIMS Designer. Name the web site directory *vafobird*. Title the webpage *Valley Forge – Comprehensive Inventory Program for Birds*. Click Next.
12. Change the ArcIMS host name to http://*your_ip_address* . Select and vafobird and click the right arrow button. Click Next.
13. Select the HTML Viewer and click Next.
14. Click Next again.
15. Click Next again.
16. Choose vafobird for the Overview map. Click Next.
17. Set Data Source Units to meters and Scale Bar Units to Miles. Click Next.
18. Leave all default buttons. Click Next.
19. Leave the default web directory. Click Create Web Site. Exit ArcIMS Designer.
20. Copy the file C:\ArcIMS\Website\vafobird\ArcIMSparam.js to the folder C:\ArcIMS\Website\vafobird\. Replace the existing file.
21. Copy the file C:\ArcIMS\Website\vafobird\viewer.htm to C:\ArcIMS\Website\vafobird\. Replace the existing file.
22. Open the MySQL Command line Client
23. Type *CREATE DATABASE VAFOBIRD;*
24. Type *USE VAFOBIRD;*

25. Copy each CREATE TABLE statement from Appendix C, in the order presented, into the MySQL command prompt and press enter. Do not copy the bold titles.
26. Copy each LOAD DATA statement from Appendix D, in the order presented, into the MySQL command prompt and press enter. Do not copy the bold titles.