CHAPTER 7

PRODUCT USE AND AVAILABILITY

7.1 How To Obtain the Products

It is the goal of the Gap Analysis Program and the USGS Biological Resources Division (BRD) to make the data and associated information as widely available as possible. Use of the data requires specialized software called geographic information systems (GIS) and substantial computing power. Additional information on how to use the data or obtain GIS services is provided below and on the GAP home page (URL below). While a CD-ROM of the data will be the most convenient way to obtain the data, it may also be downloaded via the Internet from the national GAP home page at:

http://www.gap.uidaho.edu/gap

The home page will also provide, over the long term, the status of our state's project, future updates, data availability, and contacts. Within a few months of the project's completion, CD-ROMs of the final report and data should be available at a nominal cost – the above home page will provide ordering information. To find information on this state GAP project status and data, follow the links to "project information" and then to the particular state of interest.

In addition to availability of the Pennsylvania data through the national GAP program, much of the data will also be accessible through the PASDA (Pennsylvania Spatial Data Access) website at the http://www.pasda.psu.edu URL. PASDA is operated at Penn State University on behalf of the Pennsylvania Department of Environmental Protection. PASDA offers a wide array of other spatial data for Pennsylvania, including the digital orthophoto quarter-quads (DOQQs) and compressed satellite imagery used in conducting our gap analysis. Under the auspices of PASDA, we have also produced a CD-ROM configured for convenient analysis of our PAKAGE (PA Kilometer-Aggregated Gap Elements) database. This database constitutes a geographic hyper-distribution of habitats along with characteristics of Pennsylvania's landscapes. It has been the basis for analyses presented in Chapter 5, and will also be the basis for more technical analyses that are planned as a continuation of research reported here. A website located by links from the National GAP home page will have postings of progress in this regard.

All of the Pennsylvania Gap Analysis data have been structured for analysis via ArcView© GIS by ESRI® and its companion software facilities (see website http://www.esri.com). These databases are all large enough that many GIS operations require several minutes to transpire, even on well-equipped computers. Time required to complete such operations will increase considerably if the computer has a slow processor or meager memory.

7.2 Disclaimer

Following is the official Biological Resources Division (BRD) disclaimer as of 29 January 1996, followed by additional disclaimers from GAP. Prior to using the data, you should consult the GAP home page (see How to Obtain the Data, above) for the current disclaimer.

Although these data have been processed successfully on a computer system at the BRD, no warranty expressed or implied is made regarding the accuracy or utility of the data on any other system or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. This disclaimer applies both to individual use of the data and aggregate use with other data. It is strongly recommended that these data are directly acquired from a BRD server [see above for approved data providers] and not indirectly through other sources which may have changed the data in some way. It is also strongly recommended that careful attention be paid to the content of the metadata file associated with these data. The Biological Resources Division shall not be held liable for improper or incorrect use of the data described and/or contained herein.

These data were compiled with regard to the following standards. Please be aware of the limitations of the data. These data are meant for use at a scale of 1:100,000 or smaller (such as 1:250,000 or 1:500,000) for the purpose of assessing the conservation status of animals and vegetation types over large geographic areas. The data may or may not have been assessed for statistical accuracy. Data evaluation and improvement may be ongoing. The Biological Resources Division makes no claim as to the data's suitability for other purposes. This is writable data that may have been altered from the original product if not obtained from a designated data distributor identified above.

7.3 Metadata

Proper documentation of all information sources used to assemble GAP data layers is central to the scientific defensibility of GAP. The information used to describe GAP data is called metadata. Metadata are information about data. Metadata contain information about the source(s), lineage, content, structure, and availability of a data set. Metadata also describes intentions, limitations, and potential uses, allowing for the informed and appropriate application of the data. Descriptions of metadata function have recently been published by the Federal Geographic Data Committee (FGDC 1994, 1995).

The GAP metadata standards have been closely matched to the FGDC standards to ensure current and future compatibility. As the FGDC standards evolve beyond the current publication, we anticipate corresponding refinements in GAP documentation. The format of the GAP metadata consists of eight major documentation sections (Table 7.1) containing one or more metadata elements. Each element is named (e.g., Map Projection Name), and the "Type" of entry (text, integer, date, time) and "Domain" of the entry (i.e. x>0) are also defined.

Table 7.1 Metadata Data Element Categories.

I. Identification Information: What the data set is called, file format description.
II. Data Quality Information: Accuracy, consistency, and data sources.
III. Spatial Data Organization Information: Data structure – raster, vector, point, etc.
IV. Spatial Reference Information: Coordinate units, map projection, spatial resolution.
V. Entity and Attribute Information: Attribute codes and reference citations.
VI. Distribution Information: How to order the data, on-line access, transfer size.
VII. Metadata Reference Information: Date of the metadata, contact for metadata updates.
VIII. Contact Information: General data contact, mail, voice, fax, web, e-mail.

Demands for metadata will increase as electronic networks expand across the national and international scene, and more requests are made for distribution of information. As the number of users and the diversity of disciplines and programs sharing the data expand, the information carried by metadata will become increasingly important. One of the goals in defining today's metadata standards is to anticipate these future needs.

For additional information via Internet:

GAP home page address: http://www.gap.uidaho.edu/gap

Cogan, C. B., and T. C. Edwards. 1994. Metadata standards for GAP. Gap Analysis Technical Bulletin 3. Idaho Cooperative Fish and Wildlife Research Unit, University of Idaho, Moscow, Idaho. 28 pp. (A postscript file is available from the GAP web page listed above.)

For a postscript version of the current FGDC Metadata Standards (8 June 1994): Waisqvarsa.er.usgs.gov (anonymous ftp, cd to wais/docs, get FGDCmeta6894.ps)

Federal Geographic Data Committee. 1995. Content Standards for Digital Geospatial Metadata workbook (March 24). FGDC. Washington D.C. (Describes the FGDC metadata standards.)
http://geochange.er.usgs.gov/pub/tools/metadata/standard/metadata.html

7.4 Appropriate and Inappropriate Use of These Data

All information is created with a specific end use or uses in mind. This is especially true for GIS data, which is expensive to produce and must be directed to meet the immediate program needs. For GAP, nominal standards were set (see A Handbook for Gap Analysis, Scott et al. 1993) to meet program objectives. These standards include: scale or resolution (1:100,000 or 100 hectare minimum mapping unit), accuracy (80% accurate

at 95% confidence), and format (ARC/INFO coverage tiled to the 30' x 60' USGS guadrangle). Since those standards where determined, however, normal computer capacity has increased by several orders. Likewise, ArcView-compatible shapefiles and grids have become more generally accessible and more readily portable than ARC/INFO coverages. Therefore, Pennsylvania data layers are integral rather than tiled, and shapefiles have been used in preference to coverages for vector data. Any desired geographic subset can thus be extracted directly without first having to mosaic tiles. ARC/INFO has capability to convert shapefiles to coverages if this should become advantageous for particular purposes.

Recognizing, however, that GAP would be the first, and for many years likely the only, source of statewide biological GIS maps, the data were created with the expectation that they would be used for other applications. Therefore, we list below both appropriate and inappropriate uses. This list is in no way exhaustive, but should serve as a guide to assess whether a proposed use can or cannot be supported by GAP data. For most uses, it is unlikely that GAP will provide the only data needed, and for uses with a regulatory outcome, field surveys should verify the result. In the end, it will be the responsibility of each data user to determine if GAP data can answer the question being asked, and if they are the best tools to answer that question.

Scale: First we must address the issue of appropriate scale to which these data may be applied. The data were produced with an intended application at the ecoregion level, that is, geographic areas from several hundred thousand to millions of hectares in size. The data provide a coarse-filter approach to analysis, meaning that not every occurrence of every plant community or animal species habitat is mapped, only larger, more generalized distributions. The data are also based on the USGS 1:100,000 scale of mapping in both detail and precision. When determining whether to apply GAP data to a particular use, there are two primary questions: do you want to use the data as a map for the particular geographic area, or do you wish to use the data to provide context for a particular area? The distinction can be made with the following example: You could use GAP land cover to determine the approximate amount of a cover type occurring in a county, or you could map the cover type with aerial photography to determine the exact amount. You then could use GAP data to determine the approximate percentage of the cover type in the region or state that contains the county, and thus gain a sense of how important the county's distribution is to maintaining that cover type.

Appropriate Uses: The above example illustrates two appropriate uses of the data; as a coarse map for a large area such as a county, and to provide context for finer-level maps. Following is a general list of applications:

- Statewide biodiversity planning.
- Regional (Councils of Government) planning.
- Regional habitat conservation planning.
- County comprehensive planning.
- Large-area resource management planning.

- Coarse-filter evaluation of potential impacts or benefits of major projects or plan initiatives on biodiversity, such as utility or transportation corridors, wilderness proposals, regional open space and recreation proposals, etc.
- Determining relative amounts of management responsibility for specific biological resources among land stewards to facilitate cooperative management and planning.
- Basic research on regional distributions of plants and animals and to help target both specific species and geographic areas for needed research.
- Environmental impact assessment for large projects or military activities.
- Estimation of potential economic impacts from loss of biological resource based activities.
- Education at all levels and for both students and citizens.

Inappropriate Uses: It is far easier to identify appropriate uses than inappropriate ones, however, there is a "fuzzy line" that is eventually crossed when the differences in resolution of the data, size of geographic area being analyzed, and precision of the answer required for the question are no longer compatible. Examples include:

- Use of the data to map small areas, typically requiring mapping resolution at 1:24,000 scale and using aerial photographs or ground surveys.
- Combining GAP data with other data finer than 1:100,000 scale to produce new hybrid maps or answer queries.
- Generating specific areal measurements from the data finer than the minimum mapping unit.
- Establishing exact boundaries for regulation or acquisition.
- Establishing definite occurrence or non-occurrence of any feature for an exact geographic area.
- Determining abundance, health, or condition of any specific feature.
- Establishing a measure of accuracy of any other data by comparison with GAP data.
- Altering the data in any way and redistributing them as a GAP data product.
- Using the data without acquiring and reviewing the metadata and this report.