Minutes of the Second HerpNET Meeting,
12 December 2003, University of Kansas, Lawrence, KS

The following participants were present at the second HerpNET meeting:
Elisa Bonaccorso (KU), Stan Blum (CAS), Oscar Flores-Villela (UNAM), Rob Gales
(KU), Michelle Koo (CAS), Andrew Kuhns (INHS), Carl Lieb (UTEP), Jesse Meik
(UTA), Leticia Ochoa (UNAM), José Rosado (MCZ), John Simmons (KU), Carol
Spencer (MVZ), Linda Trueb (KU), Kathryn Vaughan (TCWC), Dave Vieglais (KU),
Jens Vindum (CAS), Jim Whittome (UAMZ). A summary of the meeting is given below.

Outline:
1. Current progress and future goals for HerpNET.
   - Goals
   - Website Progress
   - Claiming of Localities
   - Georeferencing Progress

2. Current progress of georeferencing at individual institutions

3. DiGIR Protocol/ Distributed Databases

4. Discussion of timeline and filters on making distributed databases available on servers.

5. Georeferencing methods
   - Searching the Gazetteer
   - Electronic Resources Available
   - Automated Georeferencing

6. NSF REU collaborative grants
   - REU funding
   - Suggestions for REU Topics

Complete Minutes:
1. **Current Progress and Future Goals:**

- **Goals:**
Carol Spencer presented an overview of the goals and progress of HerpNET to date
(See http://www.herpnet.org/documents.html). The focus of HerpNET is to produce
a distributed database among 36 North American institutions using DiGIR protocol,
and to georeference all localities in these collections. The initial geographic focus of
georeferencing efforts are North and South American localities, although other
localities are being added based on regional expertise of institutions. Our aim is to
use a consistent methodology and error assessment when determining the coordinates.

- **Website Progress:**

To date our current progress has been publishing a website (http://www.herpnet.org) with web pages specifying the following: georeferencing resources (e.g., maps, on-line gazetteer and libraries), standard georeferencing methods and steps, a georeferencing calculator for determining error, and establishing a listserv (automated e-mail list) to facilitate communication and questions among participants. All unique locality data were collected from 35 institutions (Bell Museum is still digitizing their collection) and currently are being transformed into the appropriate format to make these available on the gazetteer.

- **Claiming of Localities:**

A method was developed where institutions could claim regions for georeferencing on the HerpNET listserv. The project coordinator then approves these claims and the claimed region is highlighted on the georeferencing checklist (http://www.herpnet.org/Gazetteer/GeorefChecklist.html). Once the gazetteer is available, institutions should also list how many localities they have downloaded for each claim.

- **Georeferencing Progress:**

Georeferencing is progressing at individual institutions for regions they have claimed. There are approximately 650,000 unique localities, for about 3.5 million specimen records. Of these unique localities, 110,000 are MVZ localities, which have all been georeferenced previously during other projects. This leaves a total of 540,000 localities to be georeferenced, of which ~325,000 (60%) have been claimed. So only 40% are left to be claimed in the future. Fifty-four of 173 regions have been claimed on the Georeferencing Checklist, by 15 institutions. (See table at bottom of this document.) Of a total of 89 regions in North and South America, 37 regions with 406,406 unique localities have been claimed. It should be noted that these unique locality numbers are not based on the final gazetteer; thus, the numbers may not coincide precisely with the final number of localities for which each institution is responsible. Some institutions claimed very large numbers of localities (e.g., CAS, UTA), partly because the gazetteer was not available to check locality numbers when making claims. These institutions will be splitting or reapportioning these claimed localities as other institutions become involved in the project, or as funding runs out. (For example, CAS probably will split California localities with MVZ and SDNHM. UTA will share Texas localities with UTEP, Texas A& M, and possibly UT Austin.)

2. Georeferencing progress by individual institutions present at the meeting:
The following was reported by the institutions present at the meeting on their progress to date:

CAS: They have finished the following unique localities: 115 for Uganda, 730 for Kenya and Tanzania, all for their collection. Currently they have completed 11% of the Philippines collections at CAS, and will complete Northern California and Burmese localities. They would like to split the georeferencing CA with SDNHM

and/or MVZ, as this is very large and they cannot finish with their georeferencing budget.

INHS: University of Illinois has 3500 records total, all of which have been georeferenced by INHS. Error has been completed on 1000. Currently, they are completing the georeferencing on 19,000 specimen records in the INHS collection.

KU: Finished georeferencing Dominican Republic and Haiti for KU/MVZ (3000 localities). Are currently 90% complete for Venezuelan localities for all HerpNET participants (total of 1110 localities) and finished 72% of all Ecuadorian localities.

MCZ: They have completed all of Cuba and Puerto Rico for MCZ and KU (10,000 specimen records) and currently working on Argentina, which they have completed 1000 records for KU and MCZ.

MVZ: They have completed the following countries (# of localities) for all of HerpNET: El Salvador (1042), Belize (758), and Hungary (99). Currently they are working on Honduras (3297) and Romania (144).

TCWC: They have 87,000 total specimens; they have completed 40–50% of their Texas/Latin American holdings, for a total of 15,000 records. They will split the TX localities for all HerpNET with UTA and UTEP.

UAMZ: Of their total 4000 localities, they have completed ~ 90%, with about 500 left.
Their collections consist of 75% Alberta localities, with the remaining being Western Canada and Mexico.

UNAM: They have completed ~10,000 unique localities, the equivalent of 20,000 specimen records. This is the entire UNAM collection. They will next start on the UTA Mexican localities.

UTA: They have completed 500 unique TX localities, and 500 unique Guatemalan localities, for a total of 1000 localities.

UTEP: They have 20,000 specimens total with 8200 unique localities in their collection. They have completed 30% of their total holdings, and plan on finishing the rest for HerpNET. These consist of localities in Texas, AZ, NM, Mississippi, and Mexico. They will split up the TX localities with UTA and TCWC, and possibly TNHC (UT Austin).

Table of Institutions, Countries Claimed and Number of Localities

	Institution	Country/State claimed	No. of Unique localities*
1	AUM	Alabama, Panama	7580
2	BPBM	New Guinea	5684
3	BYU	Utah	4863
4	CAS	California, Myanmar, Philippines, Kenya, Tanzania, Uganda	69540
5	FMNH	Brunei, Cambodia, Egypt, Indiana, Laos, Libya, Malaysia, Michigan, Singapore, Taiwan, Thailand, Trinidad & Tobago	12112
6	INHS	Bermuda, Guyana, Illinois, Iowa, Kentucky, Missouri, Nicaragua, Tennessee, West Indies, Wisconsin	30691
7	KU	Ecuador, Hispaniola, Venezuela	13510
8	MCZ	Argentina, Brazil, Cuba, Puerto Rico	12213
9	MSB	Galapagos, New Mexico	23588
10	MVZ	Belize, El Salvador, Honduras, Hungary, Romania	5340
11	PSM	Oregon, Washington	13363
12	RMMU	British Columbia, Quebec	2261
13	UAZ	Arizona	35426
14	UNAM	Mexico	100028
15	UTA	Guatemala, Texas	55468
Total	**15**	**54**	**391,667**

*unique locality numbers taken from preliminary gazetteer and are not necessarily completely accurate.

3. DiGIR Protocol and Distributed Databases
Presented by Stan Blum. See the PowerPoint presentations on the documents website for HerpNET: http://www.herpnet.org/documents.html

4. Discussion of timeline for putting servers on-line and installing filters on individual databases at institutions:

A discussion took place concerning when to make servers with data available on-line. Some institutions would be interested in making a core of localities, say from Central America, available soon, within the next 1 or 2 years, on servers at their institution. These institutions would be picked based on their current level of expertise and ability to install the DiGIR software quickly. Other institutions would prefer to wait until the end of Year 5 to make any data available, and limit what would be available then. Some items that specific institutions expressed concern over revealing include collector name, localities for species of special concern, catalog numbers, and even specific localities of entire countries, such as Mexico. It was stated that each institutions has the ability to control only what is made available from their own institutions' collections. The following collections might be interested in setting up their servers early, as they have sufficient in-house technical staff or were previous participants in MaNIS: CAS, FMNH, KU, MCZ, MVZ, PSM, UAMZ.

5. Georeferencing Methods:

- **Searching the Gazetteer:**

Carol Spencer (See PowerPoint presentation on the documents website, http://www.herpnet.org/documents.html) gave a short presentation on the current procedures for georeferencing. It is important to follow the georeferencing steps and guidelines as closely as possible to insure that each institution is georeferencing the HerpNET localities consistently. Currently, collections have been georeferencing their own collections, but soon the gazetteer will be available on-line. When this is available, collections should search for their region of interest in the "Country" or "Geographic Region" fields. This will give them the maximum number of records that match their locality. These localities can then be "Viewed" and downloaded into a text-file format. There is an Access-format template that is available on the Georeferencing Steps page
(http://www.herpnet.org/Gazetteer/HerpnetGeorefSteps.html).

After downloading the data, import it into the Access97 template. Then collections should claim the localities they just downloaded, stating how many localities they will georeference. For institutions that have already started georeferencing their own data for a specific region, they should finish this first. Then download the localities for their claimed region, and delete their own localities from these downloaded data. This will keep museums from georeferencing their own localities twice. Also, no MVZ (Museum of Vertebrate Zoology) localities should be georeferenced. All the MVZ localities have been finished; therefore they should not be re-georeferenced.

- **Electronic Resources Available:**

There are many references for free GIS software, electronic maps, and gazetteers available on the Georeferencing Resources webpage
(http://www.herpnet.org/Gazetteer/GeorefResources.htm). Georeferencers can use any resources available, including paper maps, as long as they record the datum and source in the "DeterminedRef," "OrigCoordSystem, " and "Datum" fields of the database. Some of the highly recommended resources are the Alexandria Digital Library, Terraine Navigator for U.S. localities, the Getty Thesaurus of Geographic Names, the GeoNet Names Server and the Digital Chart of the World. All of these are useful resources that can be used in conjunction with paper maps, and each institution should consult them before starting georeferencing to see what resources are available.

One question that was posed is how to deal with UTM and Town and Range data. Carol will add a reference to the Georeferencing resources page for how to do this. Another useful place to search for answers to questions about HerpNET are the MaNIS and HerpNET archives, available on the bottom of the Georeferencing Resources page.

- **Automated Georeferencing:**

Automated georeferencing was discussed again at this meeting. Reed Beaman, who developed BioGeoMancer, stated in an e-mail that he could make extents of cities available on BioGeoMancer for use by HerpNET by the time the gazetteer is finished. Eventually, he also could calculate an error estimate automatically, thereby eliminating the need for the georeferencers to determine the extents from a map, or to have to use the error calculator. BioGeoMancer also could provide the output in a format friendly to the HerpNET data field schema. However, georeferencers still will have to verify localities determined by BioGeoMancer. This would speed up our ability to georeference North American localities. Thus, when the gazetteer is available, we will investigate the ways in which georeferencers might use BioGeoMancer. We plan on doing this sometime in spring 2004.

6. NSF and granting possibilities:

- **REU Funding:**

Linda Trueb and Carol Spencer discussed the possibility of additional funding from NSF. Although we do not qualify for supplemental funding, we may be able to apply for a REU (Research Experience for Undergraduates) site grants or REU supplements from NSF. If we applied for a collaborative REU site grant, KU would be the lead institution; however, each institution would prepare their own proposal consisting of a budget justification and small project description, and they would receive their own money directly from NSF. KU would provide the major text for the grant. Each institution must be associated with an educational institution. We could provide workshops for the students, possibly with GIS training and species modeling at KU and MVZ.

- **Suggested topics for REU:**

A number of topics were suggested for the undergraduate research experience. Undergraduates will learn geography and applications of geographical data; they will obtain training in cartography and history of maps. Students can be trained in museum science and curation. Students can test models of expected distributions of organisms by conducting fieldwork to verify their hypotheses. They can learn spatial modeling techniques, as well as techniques related to the database, such as GARP and parsimony analyses. These grants can provide a foreign research experience for Canadian and Mexican students, or for U.S. students in Canada or Mexico. Institutions at the meeting interested in participating include TCWC, CAS, INHS, KU, MVZ, MCZ, INHS, UTA, UNAM, and UAMZ. We would apply for 3-year grants, and the applications are due on 15 Sep 2004. A workshop to discuss the grant was suggested for the ASIH Joint Meeting in Norman, OK in May 2004. Carol Spencer will meet with NSF prior to this to discuss the possibility of obtaining REU funding.