Virginia 4-H Geocoin Adventure

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4-H Geocoin

In 4-H there are many project opportunities in the areas of Science, Engineering and Technology (SET). The *4-H Geocoin Project* gives you practice in using GIS/GPS technology to map and document the path of a Virginia 4-H Geocoin across the country (and the world) while learning about the area land use and culture of the community where it is cached.

You will need to ensure that your 4-H geocoin is properly placed into a geocache, and "put into circulation". You will then have the opportunity to watch the coin's movements (using GoogleEarth) as it moves from cache to cache. We have developed intensive instructions to provide you with everything that you need to know about geocaching and trackable Geocoins to track and document successfully. Enjoy your travels!

So you want to get started? Just follow these steps:

1. Be sure to copy the serial number (usually 6 characters) that is stamped on your geocoin here for future reference: _____. In the event that you lose this number, contact the Virginia Geospatial Extension Program at: _____They've got the number on file.

2. Create a geocaching account (http: www.geocaching.com) if you do not have an account already. Please note that you will need to provide your email address, and will need to verify your account before it is activated!

3. While the geocoin has been given to you (and you physically have it in your possession) you will need to virtually "grab" the coin from its current holder or owner (see page 8: How to retrieve a trackable item).

4. After you have "grabbed" the geocoin from its current owner, you are ready to navigate to and place the geocoin in the geocache (where it will go next; see Page 10: How to Drop Off a Trackable Item).

5. After you have placed the geocoin in a geocache, you will need to return to geocaching.com, and log or associate your geocoin with the geocache using the serial number above (see page 9: How to Drop Off a Trackable Item).

6. Now you are ready to "watch" where your geocoin travels! To receive email notifications when your geocoin is moved from cache to cache, simply add the geocoin to you watchlist (see page 11: How to Watch a Trackable Item).

Table of Contents

What is the *Virginia 4-H Geocoin Adventure*?

The *Virginia 4-H Geocoin Adventure* is a 4-H Technology Project as part of 4-H SET (Science, Engineering, and Technology).   It can be one project in a 4-H Community Club or it could be a 4-H Project Club where all members do the same project.

Goal: To increase geospatial and geographical awareness and to encourage everyone to learn more about land use, their communities, and their world. Most of all... have fun outdoors! In addition to keeping maintaining a project record book , you are encouraged to post pictures (on geocaching.com), and maintain a log or provide a written history, of what you are learning, including interesting stories and fun facts about each community where the geocoin travels.

About this item:

This coin was developed as part of a collaborative Extension, outreach and education effort through the Virginia Geospatial Extension Program (http://www.cnr.vt.edu/gep), Virginia Cooperative Extension 4-H (http://www.4-h.ext.vt.edu) and the National Geospatial Technology Extension Network (NGTEN - http://www.geospatialextension.org).

What is Geocaching?

- A high-tech entertaining adventure game for GPS users

- The idea is to "hunt" for hidden containers (geocaches or caches) that have been placed in the landscape

- Pick an item from the cache and leave an item

- Geocaching is enjoyed by people of all ages, and provides strong community connection and support for the environment

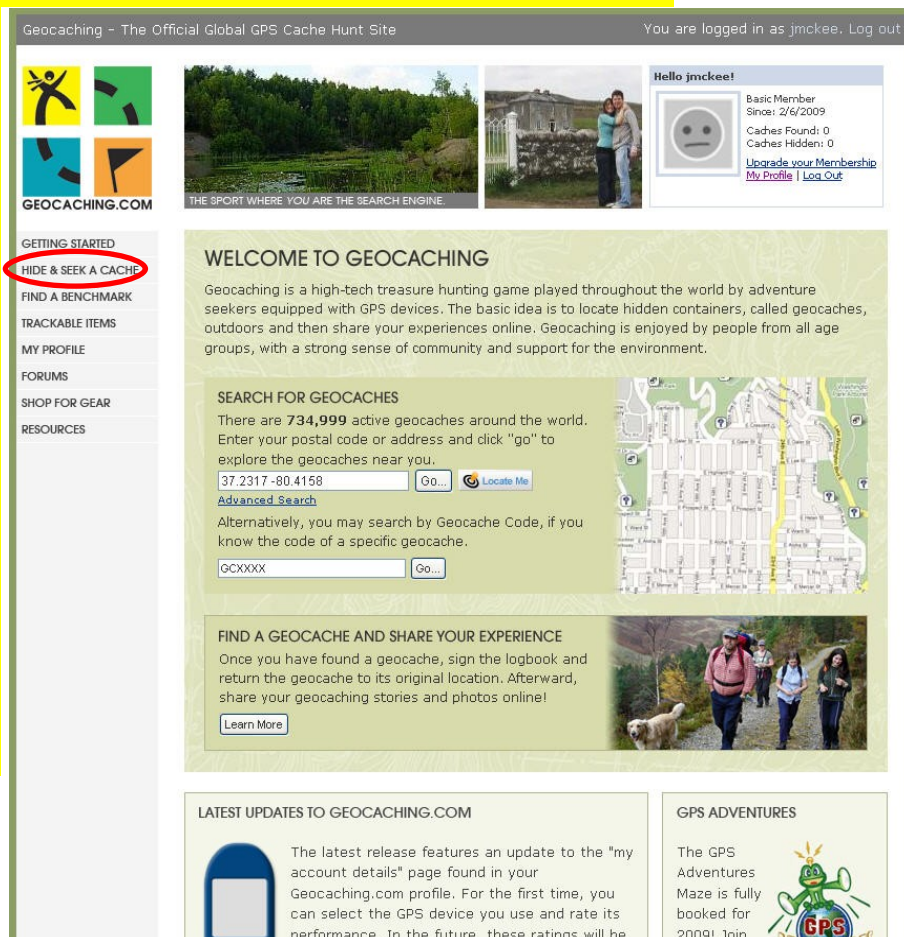- This trackable coin has a unique serial number which enables you to map it's move-

Figure 1: After creating an account, you can log on to Geocaching.com and locate a geocache near you!

ments!

- Geocaching is increasingly used in recreation and tourism. Virginia 4-H has adopted the *4-H Geocoin Adventure* to get more kids involved in using GPS and to share their learning electronically.

How to Geocache

1. Make sure you have acquired satellites outside with your GPS receiver prior to before you Geocache

2. Create account on http://www.geocaching.com

3. Log into Geocaching.com

4. Navigate to "Hide and Seek a Cache" (menu, left side; see Figure 1).

5. Enter location information (zip code, address, location; see Figure 2).
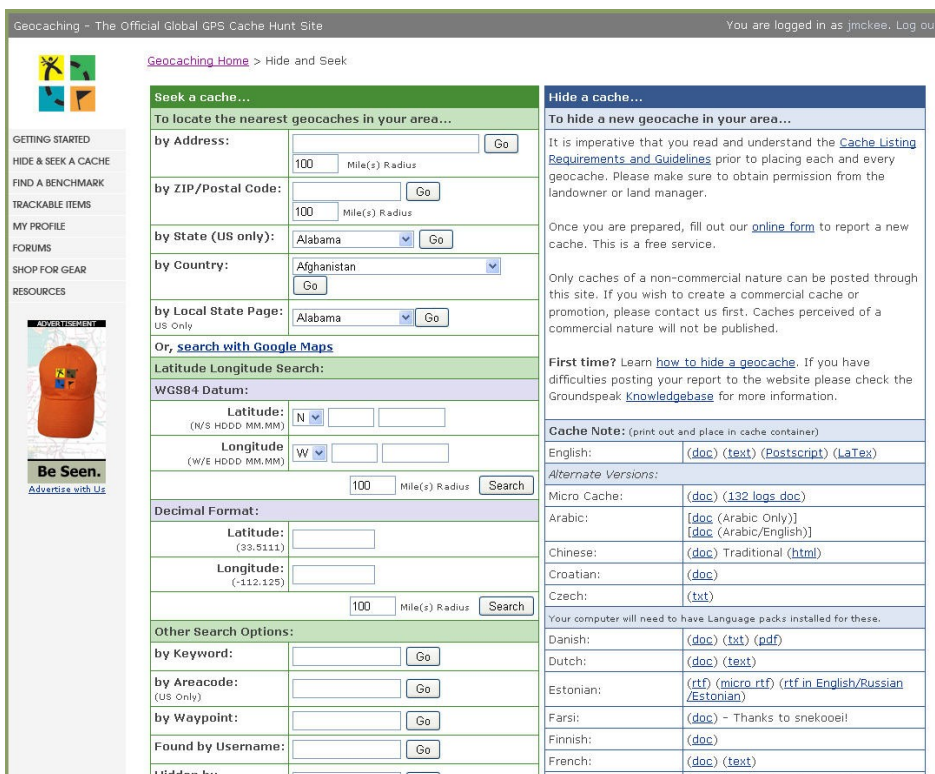

Figure 2: Locating a geocache. Caches can be located by address, ZIP/Postal code, State, as well as many other ways.
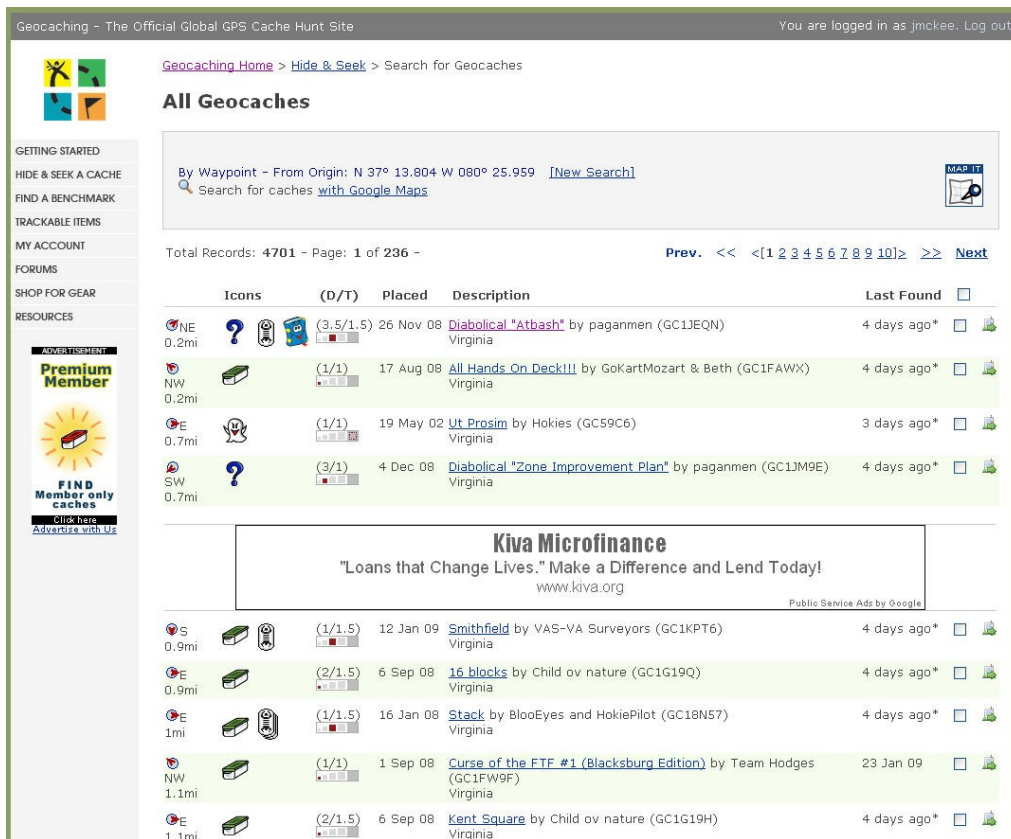
Figure 3: After inputting your search criteria, you will see your geocache search results.

Figure 4 (below): Geocache details.

| a | b | c | d | e | f | g |

6. View list of potential caches (Figure 3)

- The search results will give you many different details about each geocache (Figure 4).

- The left column (a) will have a compass direction and mileage. This is the direction and distance to the geocache from the search criteria that you provided in Figure 2

- The **Icons** column (b) gives details about the geocache itself, whether it's a traditional, virtual or multi-cache geocache. Icons are also associated with trackable items (geocoins or a travel bugs)

- The **(D/T)** column (c) gives information about the geocache physical size, as well as the difficulty and terrain. The bar graph indicates the size of the cache (left is small, right is large), the (1/3) indicates the level of Difficulty (choice of 1 out of 5) and the Terrain is a 3 /5 (where 1 is the easiest and 5 the hardest).

Figure 5: Send to GPS window. To find your device, click the Find Device button. If you device is turned on and connected to your computer it should be found.
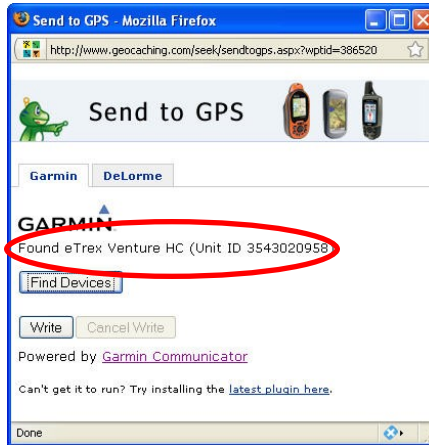
Figure 6: After finding your device, the Send to GPS window should display your unit details.

Figure 7: After clicking the Write button you should get this message in the Send to GPS window if it was successful.

- The **Placed** column (d) shows when the geocache was created or placed in its current location.

- The **Description** column (e) gives more details about the geocache. You can select this to discover more details.

- The **Last Found** column (f) indicates the most recent discovery of the cache.

- The last column (g) allows you to download the coordinates of the geocache to your GPS unit, by clicking on the Send to GPS icon (g). Multiple caches can be downloaded at once by checking the box.

7. Enter the coordinates of the cache onto your receiver using one of two options:

A. If your GPS receiver is NOT geocaching enabled (older models), then you will need to manually enter the coordinates of the cache into the GPS (use the little keyboard on the GPS receiver and refer to your user's manual as needed).
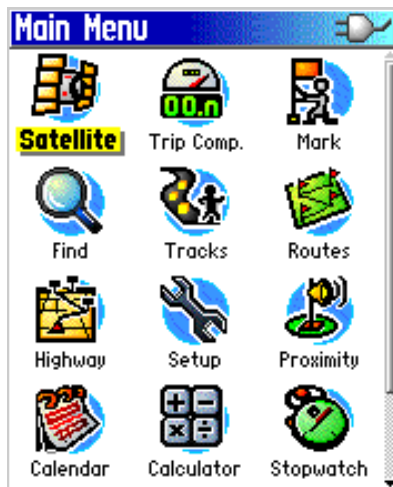

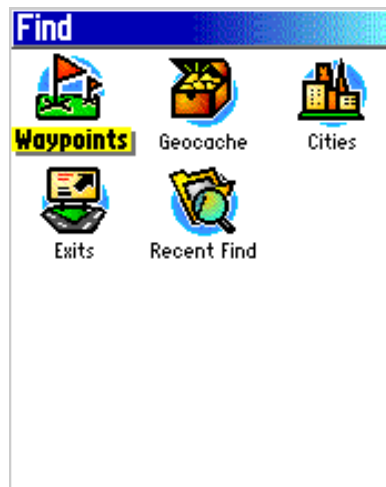Figure 8: Garmin GPS receiver (Venture HC) Main Menu page.

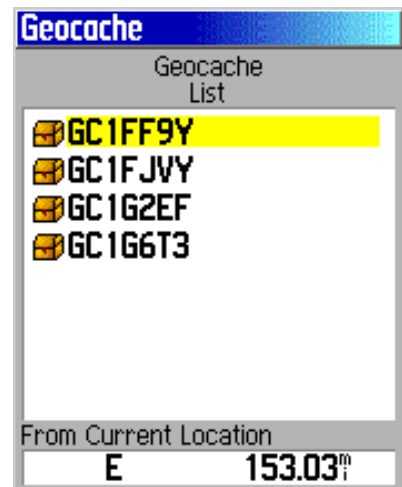Figure 9: Garmin GPS receiver (Venture HC) Find page.

Figure 10: Garmin GPS receiver (Venture HC) geocache list.

B. If your GPS receiver is Geocaching enabled, you do not need to manually type in the coordinates of the Cache. You can Download Geocaching locations directly to your GPS receiver from geocaching.com

- Click on the Send to GPS icon (g in Figure 4) to download waypoint information to your GPS unit (follow any directions that the website prompts you… may have to install Garmin software)

- A new internet browser "SendToGPS" window will open, click "Find Devices" (Figure 5) and your GPS unit should be listed

- Click "Write"

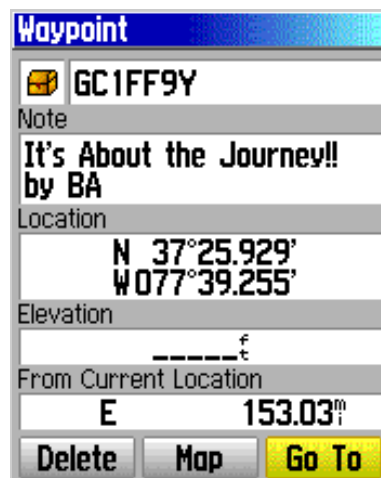- You should receive the following message "Geocache [name].gpx saved successfully.

Figure 11: Garmin GPS receiver (Venture HC) waypoint details.

8. On your GPS unit, navigate to the Main Menu page (Figure 8)

9. Select "Find" & click Enter (Figure 9)

10. Select "Waypoint" & click Enter

11. Select the geocache you would like to locate (Figure 10)

12. Select "Go To" (Figure 11)

13. Follow the onscreen directions to locate your selected geocache. If it's located near or off of a trail, hike the trail then follow the onscreen directions.

How to Retrieve a Trackable Item (geocoin)

If someone has mailed/given you a trackable item, or if you have found a trackable item, you will need to virtually "grab it" from its current holder (owner) before placing it in a different geocache.
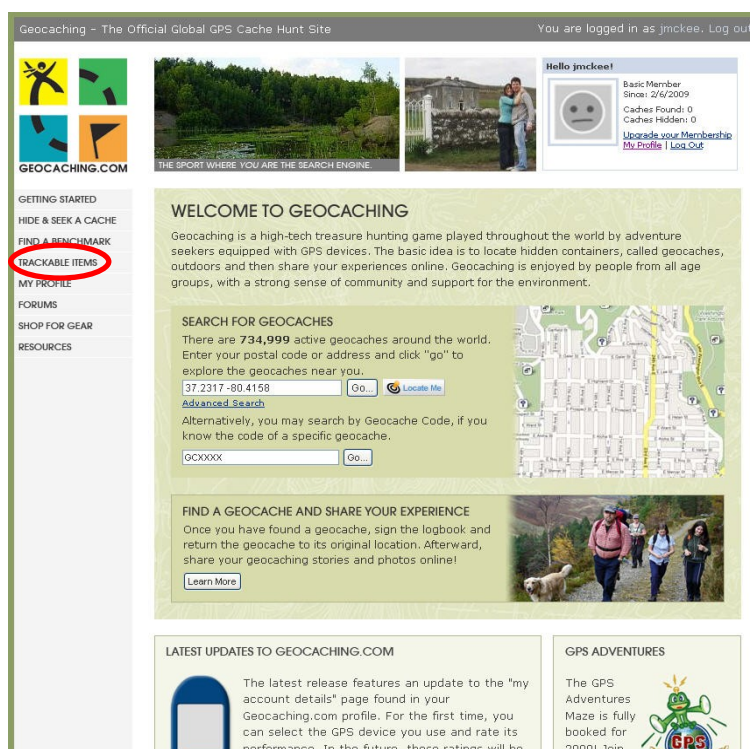
1. Log in to Geocaching.com

Figure 12: After locating a geocache and finding a trackable item you can claim it on Geocaching.com to let others where it is and who has
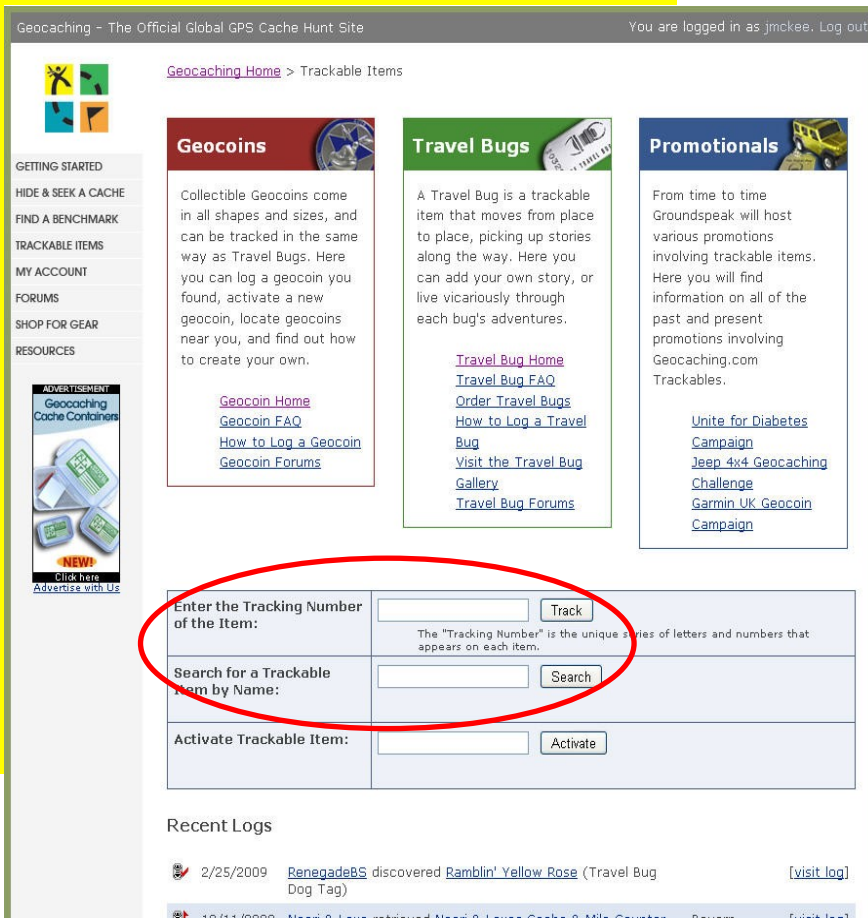
Figure 13: Trackable items. To find a trackable item enter in the tracking number or the item's name (for example Virginia 4-H Geocoin).

2. Navigate to "Trackable Items" (Figure 12)

3. Enter the tracking code into "Enter the Tracking Number of the Item:" or the enter the item name into "Search for a Trackable Item by Name:"(Figure 13)

4. Claim the geocoin by clicking on "Found It? Log it!" (Figure 14)

5. Grab it from the current holder by setting the "Type of Log" to "Grab it from current holder: [name]". You must also fill in the "Travel Bug Tracking #" and the Comments field (Figure 15). Click "Submit log entry" when you're done.
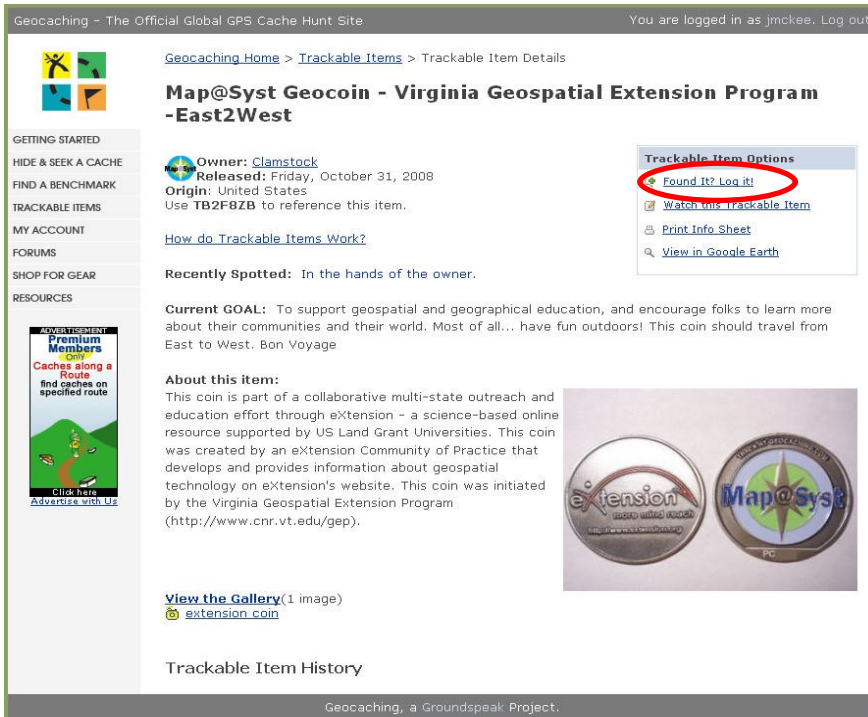

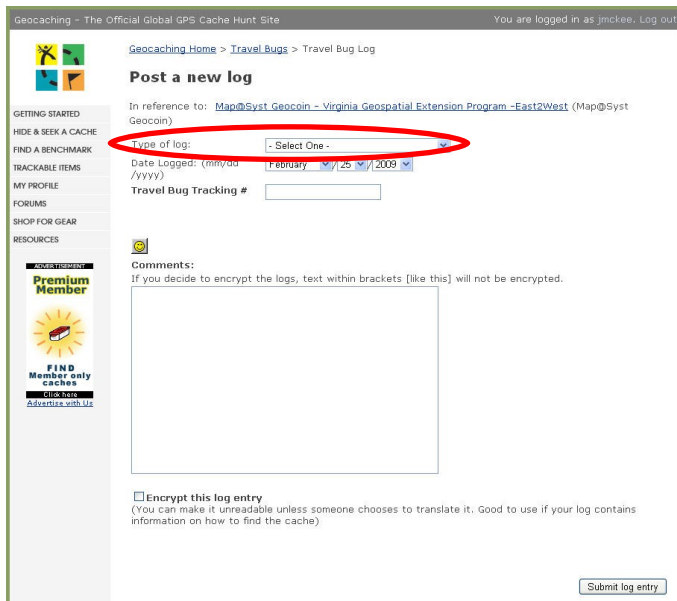Figure 14 (left): Claiming a trackable item. Click on "Found it? Log it!"

Figure 15: Grabbing a trackable item from its current holder. To grab it, you need to set the "Type

How to Drop Off a Track-able Item

Once you have found a geocoin you need to place it in a new geocache!

1. Log in to Geocaching.com

2. Navigate to "Hide and Seek a Cache" (Figure 1)

3. Find a cache where you would like to drop off your geocoin and download the location to your GPS unit (page 6-Download Geocaching locations to your GPS receiver)

4. Once you have visited the cache and placed the geocoin in the cache you need to let others know you've put it there! To let others know, locate the cache on geocaching.com.

5. Once you have found the cache and are viewing the cache details you can log your visit and drop of the geocoin (Figure 16)

6. On the right side of the page click on "log your visit" (Figure 16)

7. To log your visit you need to fill in the following information on the Post a New Log page (Figure 17): Type of
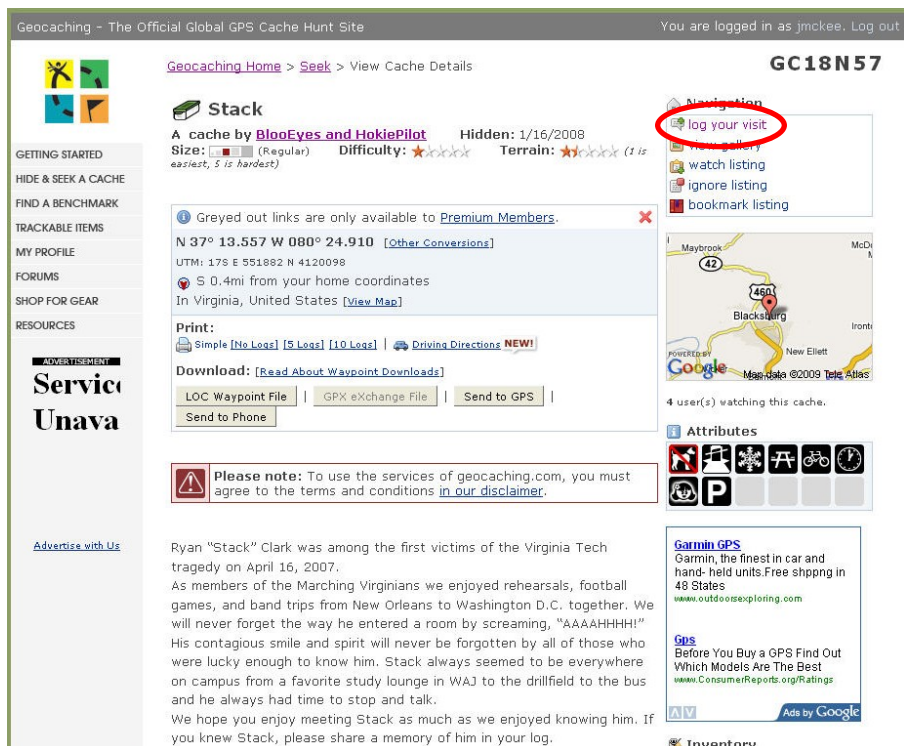
Figure 16: Logging your visit to a cache. Click on "log your visit"

Log (a), Date Logged (b- date you found the cache), and Comments (c). If you dropped off a geocoin or trackable item specify this at the bottom of the page (d) by highlighting the trackable you had previously claimed and click "Submit log entry"

How to Watch a Trackable Item

You can add a geocoin or other trackable item to your Watchlist. This will help you keep track of it!

1. Log in to Geocaching.com

2. Navigate to "Trackable Items" (Figure 12)

3. Enter the tracking code into "Enter the Tracking Number of the Item:" or the enter the item name into "Search for a Trackable Item by Name:" (Figure 13)

4. To watch an item, click on "Watch this Trackable Item" (Figure 18)
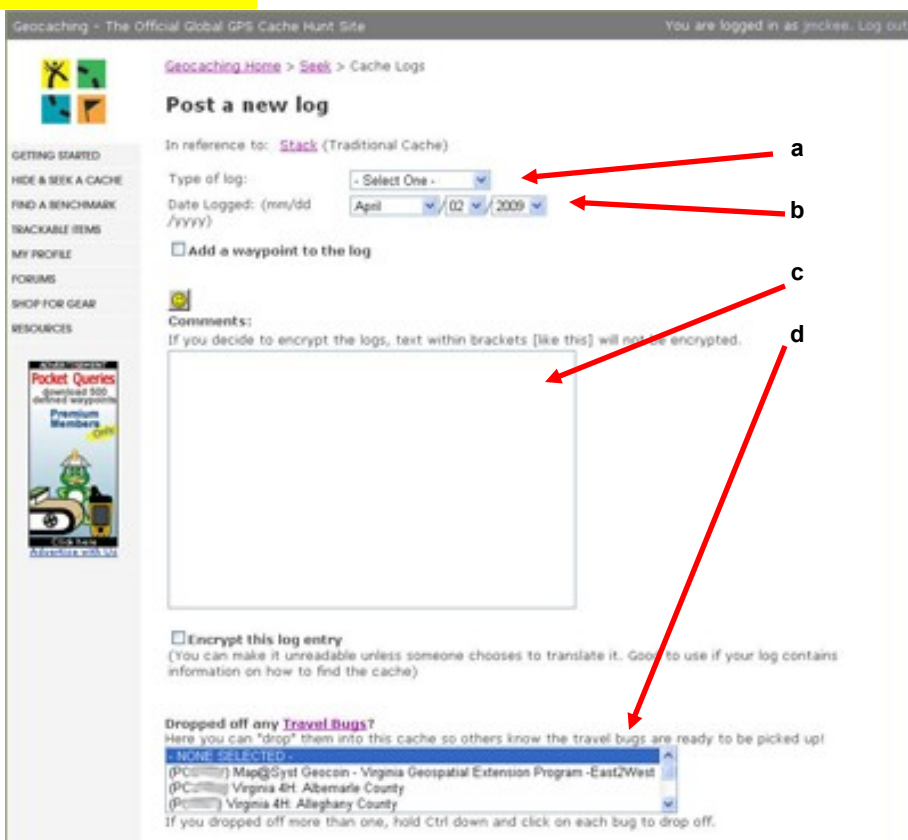
5. Your Watchlist will

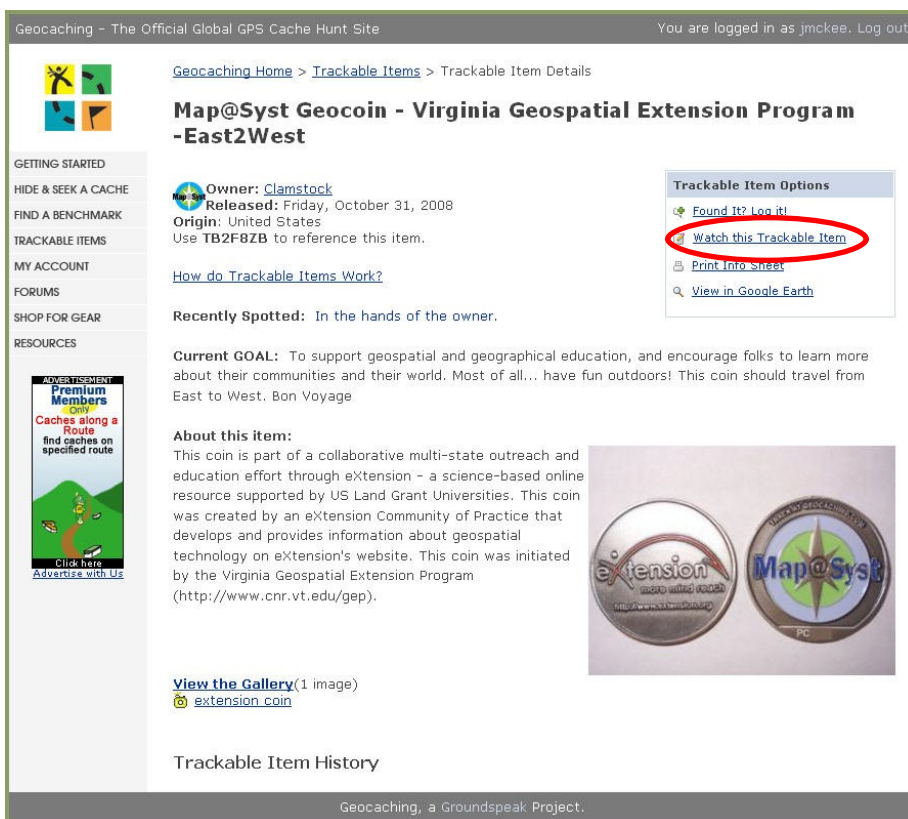Figure 17: Logging a visit to a cache & dropping off a geocoin or trackable item.

Figure 18: Watching a trackable item. Click on "Watch this Trackable Item"

Figure 19 (right): Items your are watching will be listed in your Watchlist.

then come up (Figure 19).

6. You can get to your Watchlist in list multiple ways. One way is to log into Geocaching.com and click on the link "My Profile" (Figure 20)

7. Your profile page will then come up listing your logs for the last 30 days as well as links to your Watchlist as well Geocaches (mine), Travel Bugs (mine), Benchmarks, Member Features, and My friends (Figure 21)
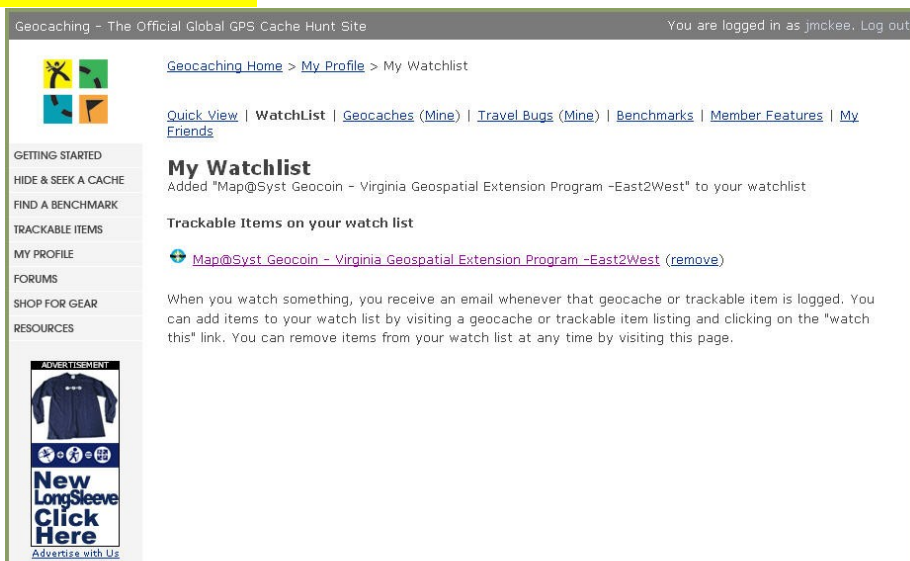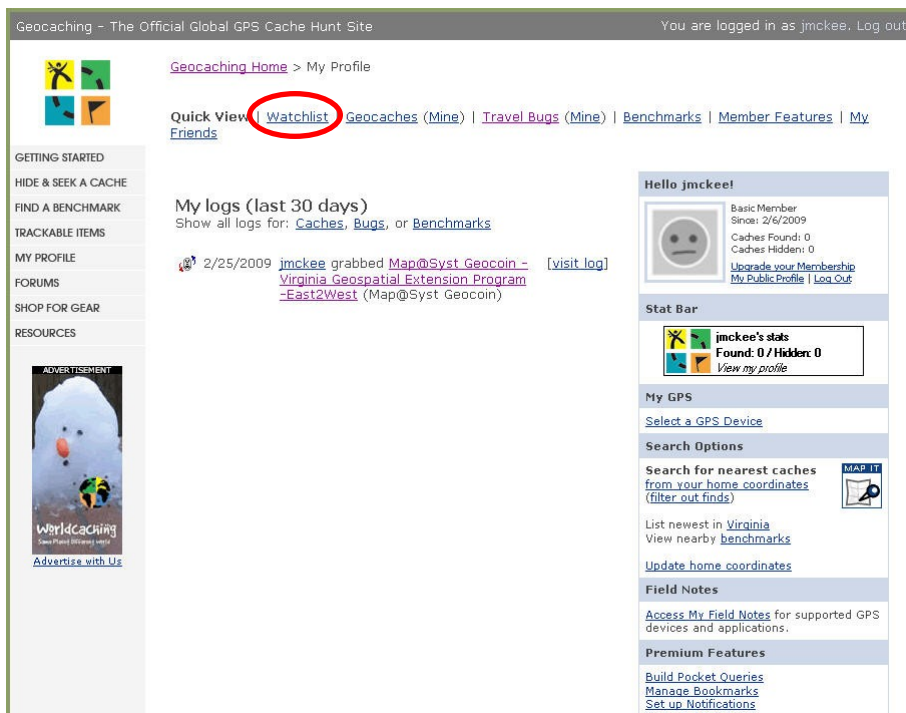
Figure 20 (above): To find your Watchlist from the Geocaching.com homepage, click on the "My Profile" link.

Good luck Geocaching!

Figure 21 (left): Your profile page shows your logs for the last 30 days as well as links to your Watchlist.

4-H Geocoin Adventure Reflection in Learning
Land Use or Land Cover

Acknowledgements: Kathleen Jamison and Jeff Kirwan

The following questions can be answered in a log book or incorporated into your online log. You will need to provide your responses to your club leader as part of your project record keeping process. Turn in your log book or share your online log with your leader. You can create a presentation individually or with your club of what was learned about the sites you visited and share it with your community at fairs, community gatherings, government meetings, libraries, museums, etc. You could also prepare a learning station using the information to teach younger children about what you learned.

4-H Geocoin Adventure: **Land Use**

Complete the exploration and reflection activities on land use below using a cache site of your coin that is of particular interest to you. You will answer questions about the site and compare that site to where you live.

All reflection Questions will address the Essential Question: How do subtle or incremental changes in landscapes over time impact your communities and communities downstream?

1. Using a way point or geocache of a given area of interest from your online adventure, interpret aerial photography. Describe any of the following that you can identify in your map area of interest . For example, "I seen a big parking lot that is black and probably asphalt.:
   - A. asphalt and concrete
   - B. forests or trees
   - C. agricultural areas such as crops or pastureland
   - D. manicured lawns
   - E. structures or roof tops
   - F. roads
   - G. parking lots
   - H. swimming pools
   - I. sidewalks
   - J. natural water features (lakes, ponds, streams, rivers, marsh)
   - K. alternative transportation (bike trails/pedestrian paths/rail lines)
   - L. parks and recreation areas
   - M. Other
2. Describe how any of the features identified above in your area of interest contribute to the following issues:
   - A. Urban heat island effect

B. water quality (surface or ground water)

C. transportation/ congestion

D. personal safety

E. presence or absence of wildlife

F. carbon footprint

3. List similarities and differences between your map area of interest and your neighbor-hood or community that might influence the following:

A. air quality

B. heat

C. water quality and run off

D. how people get from place to place

E. personal safety

F. presence or absence of wildlife/biodiversity

G. carbon footprint

4. Compare differences in the LULC in the map area of interest over two time periods (hint: in Google Earth use the time slider function)

A. What are the two dates of photographs you are examining?

B. Identify and describe differences in the landscape within your area of interest Between the two photographs for each of the following:

Asphalt or concrete

Abundance or lack of vegetation, especially trees

Agricultural areas (crops or pasture land)

Roof tops

Parking lots

Swimming pools

Sidewalks

Natural water features (ponds streams, rivers, marsh)

Alternative transportation (bike trails and rail lines)

Other:

C. Estimate (by percent) the changes in land use or land cover for a give land-scape feature between the two dates; for example "In 1998 there was approx-Imately 80% forest cover for the area of interest. In 2007 there was approx-Imately 50% forest cover for the area of interest.

D. Describe what might have caused this change (development of large build-

C. Estimate (b percent) the changes in land use or land cover for a give land-scape feature between the two dates; for example "In 1998 there was approx-Imately 80% forest cover for the area of interest. In 2007 there was approx-Imately 50% forest cover for the area of interest.

D. Describe what might have caused this change (development of large buildings, massive parking lot, new roads, new house developments, man-made ponds that could be storm water basins.

E. How could you more accurately quantify land use change in your photographs? For example, how could you more accurately estimate how many acres of agri-cultural land or forested areas have been lost over the period?

F. Describe some of the impacts to the environment and to the community that may be associated with these changes in land cover over time.

7. What did you notice that is most interesting about land use across time?

8. What surprised you in this exploration of land use at your chosen site?

9. What action can you take to curb negative impacts associated with land use change?

10. Who would be a potential community collaborator to help you in your efforts?

11. How could you inform decision-makers in your community about your findings?