

## Copy Instructions

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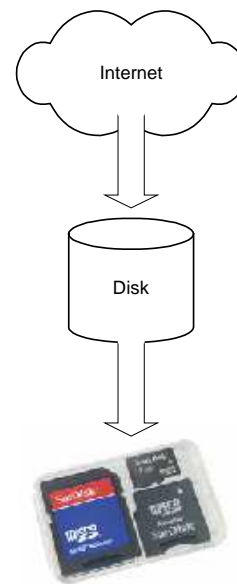
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### 1. Overview

One of the advantages of electronic field guides is that they are easier to update than paperback field guides, and that becomes more important as changes become more frequent. In the 47-th supplement to the American Ornithologists' Union (AOU) checklist published in July 2006, the AOU wrote

“Changes of classification of entire genera, tribes, subfamilies, and even families will become more frequent as DNA evidence continues to provide new or confirm old concepts of relationships.”



The typical path for downloaded ufg topic multimedia and topic text starts at Internet servers, follows a download to a computer's hard disk drive (e.g., C:\My Downloads), and finally a copy to an SD card, where it is accessed by the universal field guide application. This document is primarily about copying ufg topic multimedia and topic text to your SD card. For documentation about downloading topic multimedia and topic text to your computer's hard disk drive, see the 'Download Instructions' at [www.eduneer.com/ufg/download\\_instructions.pdf](http://www.eduneer.com/ufg/download_instructions.pdf)

## 2. Which Memory Card?

### 2.1 Card Capacity

Table 2-1-1 shows the memory required by universal field guide multimedia. Adding about 50% for short-term growth, Table 2-1-2 shows the minimum recommended card capacity.<sup>1</sup> Table 2-1-3 shows the maximum card capacity allowed by certain Palm OS devices.<sup>2</sup> If your Palm OS device is not listed in Table 2-1-3, you should do some research about the card capacity limits imposed by your Palm OS device before you buy an SD card. For those who have a Palm OS device that doesn't yet support SDHC cards (e.g., Palm TX, Palm TX, LifeDrive, Tungsten C, Tungsten E2, Tungsten T5, Zire 31, Zire 72), there is an SDHC driver available at <http://www.palmpowerups.com>

	birds of North America multimedia
160x160 pixel images	558 Mbyte
320x320 pixel images	734 Mbyte

**Table 2-1-1. Size of Multimedia**

	birds of North America multimedia
160x160 pixel images	1 Gbyte
320x320 pixel images	1 Gbyte

**Table 2-1-2. Minimum Recommended Card Capacity**

<sup>1</sup> Flash memory capacity seems to be like closet space in that if you have it, it will eventually get filled with something.

<sup>2</sup> These maximum card capacities were determined by tests performed by Palm Inc and documented at [http://www.palm.com/cgi-bin/cso\\_kbURL.cgi?ID=34080](http://www.palm.com/cgi-bin/cso_kbURL.cgi?ID=34080)

Palm OS Device	Maximum Card Capacity
Tungsten E2, T, T2, T3, Zire 31, 71	1 Gbyte
LifeDrive, Treo 600, 650, 680, 700p, Tungsten T5, Zire 72	2 Gbyte

**Table 2-1-3. Max Card Capacity of Some Palm OS Devices**

### 2.2 Card Speed

The universal field guide application has no need for high speed when writing to flash memory, a capability that can be very useful for serious photographers.

### 2.3 Card Type

**Secure Digital (SD) card** – Most universal field guide users store the universal field guide multimedia on an SD card. Since I have not read or received any disparaging reports about a certain brand of SD card not working, all SD card brands are equally recommended.

**Secure Digital High Capacity (SDHC) card** – SDHC cards are designed for capacities from 4 Gbyte to 32 Gbyte. Although Palm does not yet officially support the use of SDHC cards in all of its devices, there is an SDHC driver available at <http://www.palmpowerups.com>.

**Secure Digital plus Universal Serial Bus (SD/USB)** – This is a nifty gadget, but it costs more than the combined cost of an SD card and an SD card writer/reader. It also seems less mechanically reliable: the act of snapping one open is filled with anticipation, like pulling on a wishbone. **Not recommended.**

**Shoot & Store Secure Digital** – Cheaper, but it is a write-once memory. **Not recommended** for use with the universal field guide.

**MultiMediaCard (MMC)** – Because they do not have a unique ID to allow card specific encryption, MMCs cannot be used with encrypted universal field guide multimedia. **Not recommended.**

**Memory Stick (MS)** – Typically limited to use with Sony devices. Memory Sticks do not have unique IDs to allow card specific encryption. Therefore, like MMCs, they do not work with encrypted universal field guide multimedia. **Not recommended.**

MagicGate Memory Stick – Same form as Memory Stick and same limitation to Sony devices, but they have a unique ID. Unfortunately it appears that no Sony device has the drivers to report the unique ID to the Palm OS. Therefore, like MMCs, they do not work with encrypted universal field guide multimedia. **Not recommended.**

## 2.4 Card Size

SD cards come in full size (about the size of a postage stamp), mini size (about half the size of a postage stamp), and micro (about one quarter the size of a postage stamp). Early in 2007, SanDisk started selling microSD Mobile Memory Kits: a microSD card along with mini and full size adapters. Although memory kits typically cost a dollar or two more, having the adapters will save you money if you ever switch to a device that requires a different card size.

## 3. Where to Buy an SD Card?

SD card prices continue to drop. Online stores (e.g., Amazon.com) seem to be able to follow the dropping price faster than brick-and-mortar stores (e.g., Walmart). Also when you buy from an online store, you may be given the option of getting a ‘bulk’ version of the SD card as opposed to a ‘retail’ version. Both the ‘bulk’ and ‘retail’ versions are new, but with the bulk version you avoid paying for the retail version’s PVC blister pack that is made extra large to discourage shoplifting. Therefore choosing the bulk version reduces packaging waste, and also saves you money.

## 4. Which Copy Method?

You’ll need some method to copy files to your SD card. There are several options:

- If available, use the SD card writer/reader built-in to your PC. For example, some Dell laptops have a built-in SD card writer/reader slot located near the USB ports.
- If available, use DriveMode capabilities that are inherent to some recent Palm devices.
- Buy an SD card writer/reader (Walmart sells them for about \$15... make sure the device can write to your SD card in addition to reading from it).

- Buy an SD card with built-in USB capabilities (e.g., the SanDisk SD plus USB: part # SDSDPH-512-901).
- Buy USB drive software (e.g., Softick Card Export II for Palm OS).

Note that Palm’s Quick Install application is not a recommended method for copying the /ufg directory to your SD card because it alters the /ufg directory structure, moving .wav audio files to the /AUDIO directory and moving .prc image files to the /PALM/Launcher directory. It is possible to use a free file manager application such as FileZ<sup>3</sup> to restore the /ufg directory structure on your SD card. However moving files with FileZ is a slow process.

## 5. Switching SD Cards

The universal field multimedia is encrypted according to your SD card’s ID. The universal field guide application will not properly play/display the multimedia if it is copied to a different SD card.

With the advances by the memory technology industry that keep improving capacity and price, a time may come when you want to use the universal field guide multimedia on a new SD card (e.g., a higher capacity card for swap-free use with multiple applications). To get the universal field guide multimedia re-encrypted for a new SD card

- (optionally) wait for the next update of the universal field guide multimedia (multimedia updates occur about once per year),
- buy an update to the multimedia and specify your new SD card ID in the order completion form (your old SD card ID will be disabled so it cannot be updated).

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<sup>3</sup> FileZ (not to be confused with FileZilla, the free FTP application) is freeware available at <http://www.palmgear.com/software/showsoftware.cfm?podid=9992>

## 6. Differential Updates

The American Ornithologists' Union updates their AOU checklist about every year. The universal field guide topic multimedia is expected to change about every year also. The universal field guide application is expected to change as improvements are implemented, perhaps every month. The universal field guide topic text is expected to change even more often, perhaps every week.

The ufg components (i.e., topic multimedia, topic text, and ufg application) are linked together by the user (by selecting the ufg application classification list's 'select/link' menu item). Therefore, to perform an update, the user needs to download only the changed component(s), which saves some time. To save even more time, the user can update only the changed portions of the changed component(s), which is called a differential update.

There are two parts to a ufg differential update.

- The differential download to your PC's hard disk is described in the download instructions (at [www.eduneer.com/ufg](http://www.eduneer.com/ufg)), and performed by the FileZilla FTP client application.
- The differential copy to your SD card is performed by the ufgdu (universal field guide differential update) Windows OS console application, which is open source (GNU GPL).

Simply put, once you have your /ufg directory updated on your PC's hard disk (e.g., C:\My Downloads\ufg), run ufgdu to copy only the changed portions of the /ufg directory to your SD card. The ufgdu application saves time by reducing the number of writes to your SD card, which also extends your SD card's life.

To install the ufgdu application, download and unzip ufgdu.exe to your PC (running Windows).

To use the ufgdu application,

- create a copy of the ufg directory on your PC's hard disk drive (e.g., C:\My Downloads\ufg),
- whenever you download an update to topic multimedia or topic text, download it to the ufg directory on your PC's hard disk drive,

- insert your SD card and run ufgdu.exe to synchronize the contents of your SD card with your ufg master copy.

There is one noteworthy detail about using the ufgdu application: the update direction "to SD card" does not delete any files. Therefore, remnant multimedia files will accumulate on your SD card as older multimedia files are replaced by newer ones. Although there is no harm in having remnant multimedia files on your SD card, you can easily remove them by performing the following steps.

- 1) Select the ufg application classification list's 'select/link and delete unlinked' menu item. This deletes the multimedia files on your SD card that are not referenced by the multimedia databases.
- 2) Run the ufgdu application and specify the "from SD card" update direction. This removes the remnant multimedia files from the /ufg directory on your PC's hard disk by deleting any multimedia file there that does not also occur on the SD card.

## Appendix. Change Log

2009 March 01:

- added 'Overview' section
- extended 'Differential Updates' section

2009 January 12:

- added 'Differential Update of Your SD Card' section

2009 January 07:

- added 'Replace or Not?' section
- added 'Backing Up SD Card' section
- added note about SDHC driver available at <http://www.palmpowerups.com>
- replaced old references to /Eduneer directory with new references to /ufg directory
- updated eduneer logo and table of contents

2008 June 16:

- updated tables in section '2.1 Card Capacity' to include information about 480x480 pixel images
- added eduneer logo and table of contents to first page