Data Recovery on Failed Media

PhotoRec, part of the Testdisk software

PhotoRec is available for Windows and Linux. It reads directly from the disk sector by sector if the superblock or volume record is bad. If not it will use the disks file tables to help find files. It will try to read the blocks of data directly and then recover the data by looking at the file headers to determine what type of file it is seeing. It can read files other than photo files as support has been added for many other file formats.

If the disk is failing bad enough to have I/O errors, it can make it hang up the machine and/or make it run slowly as the processor(s) will spend a lot of time in a busy-wait state while the disk is read.

The program creates a session file in the directory that it is run from, so if it hangs and the PC needs to be restarted, the session can be resumed. The program creates directories named *recup_dir.**, where * is a number starting with 1 and incrementing every time it is run and resumed. In the folders the recovered files will be found with a number for a file name followed by the appropriate extension.

http://www.cgsecurity.org/wiki/PhotoRec

I have tried it using Linux, which can be run from a Live CD, (Linux Mint XFCE 17.3 stable https://www.linuxmint.com/edition.php?id=214 or Lubuntu 14.04.2 https://help.ubuntu.com/community/Lubuntu/GetLubuntu/LTS are good ones to use for a Live CD)

It is installed by using the command line command *sudo apt-get install photorec* and run via the command *photorec* from the command line. It is best to run it without any other applications open and in it's own virtual terminal, using *Ctrl-Alt-F1* to open the terminal. If used in a virtual terminal it is possible to see messages via *dmesg* appear, if the disk is having I/O issues, this gives clues to just how bad the disk is. Running the command 'top' in another terminal allows monitoring of how things are going, if the processor load gets high over 5 or so, the program is spending a lot of time trying to read the disk and might be starting to get hung up because of I/O errors. If the screen that photorec is running under stops updating, it is hung and a reboot is required.

Ddrescue

ddrescue is a tool available for Linux (**install:** *sudo apt-get install gddrescue* **run:** *ddrescue*). It will make an image of a drive. Therefore you need some place to put the image file that it will rescue that is the size of the media that you are trying to rescue. It will try over and over to extract more data from the disk if it has bad sectors, it won't give up like a typical drive cloning tool will. One the image is copied to another drive it can be mounted and hopefully the data can be read, or a tool like PhotoRec might be able to even pull more data from the disk image.

https://www.gnu.org/software/ddrescue/manual/ddrescue_manual.html
http://www.bootmed.com/using-ddrescue-for-windows-machines/

http://erick.mynetgear.com/erick/Data%20Recovery.pdf