

Exiv2 - Bug #1189

Updating time changes Makernote

29 May 2016 20:22 - Stan Kaminski

Status:	Closed	Start date:	29 May 2016
Priority:	Normal	Due date:	
Assignee:	Robin Mills	% Done:	100%
Category:	makernote	Estimated time:	6.00 hours
Target version:	0.26		
Description			
I have a bunch of Nikon D90 photos (jpg+nef) that I need to update timezone for (actually, both timezone and date, since, you know...)			
I used command: exiv2 -a -07 adjust test.nef			
Then I compared original tag with the updated one - unfortunately, Makernotes were changes as well as time/date tags!			
Attaching extracted metadata files.			
I compared the files manually, it seems that the last 28 bytes of original Makernote were truncated.			
Related issues:			
Related to Exiv2 - Feature #992: Better raw file support and test		Assigned	18 Sep 2014

Associated revisions

Revision 4316 - 08 Jun 2016 17:08 - Robin Mills

#1189 See issue report for discussion.

Revision 4321 - 13 Jun 2016 05:49 - Robin Mills

#1189 Use in-memory file to dump Nikon MakerNote tag 0x927c

Revision 4350 - 20 Jul 2016 19:23 - Robin Mills

#1189 Code change provided by private email from Taras. Thank You Taras.

History

#1 - 30 May 2016 16:02 - Robin Mills

- Category set to makernote
- Status changed from New to Assigned
- Assignee set to Robin Mills
- Target version set to 0.26
- % Done changed from 0 to 10
- Estimated time set to 3.00 h

What version of exiv2 are you using?

```
$ exiv2 -vV # verbose version
```

You're going to have to help me to get onto "the same page" as you. I have a D5300. I've run the following commands:

```
$ curl -O --silent http://clanmills.com/files/DSC_0001.NEF
$ exiv2 -pa DSC_0001.NEF | sort > before.txt
$ exiv2 -a -07 DSC_0001.NEF
$ exiv2 -pa DSC_0001.NEF | sort > after.txt
$ diff before.txt after.txt
```

The output seems fine to me! Sure the makernote has been rewritten and is a slightly different length. The location of the image has moved and so on. However the metadata seems preserved and OK (evidence below):

```

665 rmills@rmillsmbp:~/temp/foo $ diff before.txt after.txt
4c4
< Exif.Image.DateTime           Ascii      20  2016:04:20 08:00:13
---
> Exif.Image.DateTime           Ascii      20  2016:04:20 01:00:13
6,7c6,7
< Exif.Image.ExifTag            Long       1  2544
< Exif.Image.GPSTag            Long       1  177664
---
> Exif.Image.ExifTag            Long       1  3328
> Exif.Image.GPSTag            Long       1  177846
22,23c22,23
< Exif.Image.StripOffsets       Long       1  178176
< Exif.Image.SubIFDs           Long       3  236032 236152 236380
---
> Exif.Image.StripOffsets       Long       1  177864
> Exif.Image.SubIFDs           Long       3  2866 2984 3210
25c25
< Exif.Image.XMLPacket         Byte       2048 (Binary value suppressed)
---
> Exif.Image.XMLPacket         Byte       2378 (Binary value suppressed)
29c29
< Exif.MakerNote.Offset        Long       1  3088
---
> Exif.MakerNote.Offset        Long       1  3810
55c55
< Exif.Nikon3.Preview          Long       1  23766
---
> Exif.Nikon3.Preview          Long       1  23740
122c122
< Exif.NikonPreview.JPEGInterchangeFormat Long       1  24038
---
> Exif.NikonPreview.JPEGInterchangeFormat Long       1  23846
145,146c145,146
< Exif.Photo.DateTimeDigitized Ascii      20  2016:04:20 08:00:13
< Exif.Photo.DateTimeOriginal  Ascii      20  2016:04:20 08:00:13
---
> Exif.Photo.DateTimeDigitized Ascii      20  2016:04:20 01:00:13
> Exif.Photo.DateTimeOriginal  Ascii      20  2016:04:20 01:00:13
160c160
< Exif.Photo.MakerNote        Undefined 174576 (Binary value suppressed)
---
> Exif.Photo.MakerNote        Undefined 173976 (Binary value suppressed)
176c176
< Exif.SubImage1.JPEGInterchangeFormat Long       1  1239552
---
> Exif.SubImage1.JPEGInterchangeFormat Long       1  235464
197c197
< Exif.SubImage2.StripOffsets  Long       1  4171776
---
> Exif.SubImage2.StripOffsets  Long       1  3167648
201c201
< Exif.SubImage3.JPEGInterchangeFormat Long       1  236544
---
> Exif.SubImage3.JPEGInterchangeFormat Long       1  21326300
666 rmills@rmillsmbp:~/temp/foo $

```

The maker note is decoded into tags Exif.NikonN.XXXX. There are 112 of them and they seem to have been transferred safely.

```

Exif.NikonFi.FileName          Short      1  1
669 rmills@rmillsmbp:~/temp/foo $ exiv2 -pa --grep Nikon/i ~/Pictures/2016/Raw/DSC_0001.NEF > orig.txt
670 rmills@rmillsmbp:~/temp/foo $ exiv2 -pa --grep Nikon/i DSC_0001.NEF > adju.txt
671 rmills@rmillsmbp:~/temp/foo $ diff orig.txt adju.txt
12c12
< Exif.Nikon3.Preview          Long       1  23766
---
> Exif.Nikon3.Preview          Long       1  23740
17c17
< Exif.NikonPreview.JPEGInterchangeFormat Long       1  24038
---
> Exif.NikonPreview.JPEGInterchangeFormat Long       1  23846
672 rmills@rmillsmbp:~/temp/foo $ wc orig.txt adju.txt
  112    550   7688 orig.txt
  112    550   7688 adju.txt
  224   1100  15376 total

```

```
673 rmills@rmillsmbp:~/temp/foo $
```

It appears that Exiv2 has "shortened" the preview. My hunch is that Exiv2 enforces the rule that there should be no metadata in a preview. You can extract the previews on the original and adjusted files and inspect the extracted previews for metadata. I haven't bothered to do this because I'm on vacation at the moment!!

#2 - 30 May 2016 19:12 - Robin Mills

- % Done changed from 10 to 80

#3 - 30 May 2016 20:01 - Stan Kaminski

Version is current Arch for ARMv5tel:

```
$ exiv2 -vV
exiv2 0.25 001900 (32 bit build)
Copyright (C) 2004-2015 Andreas Huggel.
```

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```
exiv2=0.25.0
platform=linux
compiler=G++
bits=32
dll=1
debug=0
version=5.3.0
date=Dec 11 2015
time=11:41:06
svn=0
ssh=0
curl=0
id=$Id: version.cpp 3800 2015-05-08 22:26:36Z robinwmills $
executable=/usr/bin/exiv2
library=/usr/lib/libstdc++.so.6
library=/usr/lib/libgcc_s.so.1
library=/usr/lib/libc.so.6
library=/lib/ld-linux.so.3
library=/usr/lib/libz.so.1
library=/usr/lib/libexpat.so.1
library=/usr/lib/libdl.so.2
library=/usr/lib/libm.so.6
have_regex=1
have_strerror_r=1
have_gmtime_r=1
have_inttypes=1
have_libintl=1
have_lensdata=1
have_iconv=1
have_memory=1
have_memset=1
have_lstat=1
have_stdbool=1
have_stdint=1
have_stdlib=1
have_strlib=0
have_strchr=1
have_strerror=1
have_strerror_r=1
have_strings_h=0
have_strtol=1
have_mmap=1
```

```
have_munmap=1
have_sys_stat=1
have_timegm=1
have_unistd_h=0
have_sys_mman=1
have_libz=0
have_xmptoolkit=1
have_bool=1
have_strings=1
have_sys_types=1
have_unistd=1
have_unicode_path=0
enable_video=1
enable_webready=0
```

It seems I missed that exiv2 decodes the "binary blob" as proper tags? I thought that exiv2 says "binary blob" because it's unable to decode proprietary "blobs", I'm happy that I was mistaken.

Can we somehow check what metadata is lost? But you are, of course, right - matter of a quick script to restore this.

Just a quick question before I file another unnecessary bug: exiv2 does not modify "Exif.Image.DateTimeOriginal" on purpose, so I'll have to update it manually, right?

PS. I'm very impressed with your speed - thanks for taking care of such a useful tool!

#4 - 30 May 2016 20:39 - Robin Mills

- % Done changed from 80 to 100

In all honesty, I don't believe any metadata is being lost. However, I invite you to prove me wrong!

In general, exiv2 will allow you to modify almost any item of metadata. However, it is not a metadata policeman. It doesn't enforce the standard. It gives you enough power to hang yourself. There are some items of metadata that cannot be changed. For example, you can't change the image sizes. However tags such as **Exif.Image.DateTimeOriginal** are no protected.

```
747 rmills@rmillsmbp:~/temp/foo $ exiv2 -pa --grep Dimen http://clanmills.com/Stonehenge.jpg
Exif.Photo.PixelXDimension      Short      1    6000
Exif.Photo.PixelYDimension      Short      1    4000
```

I believe when Andreas started writing exiv2, it was simply intended to modify some dates and options such as -t appeared at that time. So, -t might update more than one tag at a time. In general this approach is no longer part of our philosophy, although -t continues to be supported.

So, to answer your question, "Yes, you should update *Exif.Image.DateTimeOriginal* manually". Easy to sync this in bash:

```
783 rmills@rmillsmbp:~/gnu/exiv2/bigstiff $ file=Stonehenge.jpg
784 rmills@rmillsmbp:~/gnu/exiv2/bigstiff $ cp ~/$file .
785 rmills@rmillsmbp:~/gnu/exiv2/bigstiff $ DateTime=$(exiv2 -PEv -K Exif.Image.DateTime $file)
786 rmills@rmillsmbp:~/gnu/exiv2/bigstiff $ echo $DateTime
2015:07:16 20:25:28
787 rmills@rmillsmbp:~/gnu/exiv2/bigstiff $ exiv2 -pa --grep DateTime $file
Exif.Image.DateTime             Ascii      20    2015:07:16 20:25:28
Exif.Photo.DateTimeOriginal      Ascii      20    2015:07:16 15:38:54
Exif.Photo.DateTimeDigitized     Ascii      20    2015:07:16 15:38:54
788 rmills@rmillsmbp:~/gnu/exiv2/bigstiff $ exiv2 -M"set Exif.Photo.DateTimeOriginal $DateTime" $file
789 rmills@rmillsmbp:~/gnu/exiv2/bigstiff $ exiv2 -pa --grep DateTime $file
Exif.Image.DateTime             Ascii      20    2015:07:16 20:25:28
Exif.Photo.DateTimeOriginal      Ascii      20    2015:07:16 20:25:28
Exif.Photo.DateTimeDigitized     Ascii      20    2015:07:16 15:38:54
790 rmills@rmillsmbp:~/gnu/exiv2/bigstiff $
```

#5 - 31 May 2016 07:24 - Robin Mills

- Status changed from Assigned to Closed

- Estimated time changed from 3.00 h to 2.00 h

Stan

I'm going to mark this "Closed". You are welcome to update this issue and I will respond. I will re-open the issue if we discover further work has to be done.

Robin
Exiv2Logo.png

#6 - 31 May 2016 10:34 - Stan Kaminski

Hi Robin,

I'm afraid this either necessitates more clarification, or it's something to be fixed...

I tried doing Makernote transplant between files, but it still loses about 100 bytes. Sequence:

```
$ exiv2 ad -a +7 test.nef
$ exiv2 -b -Pkv test2.nef -g Exif.Photo.MakerNote > origin.exif
$ exiv2 -b -Pkv test.nef -g Exif.Photo.MakerNote > timezone.exif
$ ls -la

-rw-r--r-- 1 stan stan 428344 May 31 12:30 origin.exif
-rw-r--r-- 1 stan stan 12913969 May 29 21:25 test2.nef
-rw-r--r-- 1 stan stan 6568533 May 29 22:09 test.jpg
-rw-r--r-- 1 stan stan 12913969 May 31 12:30 test.nef
-rw-r--r-- 1 stan stan 428243 May 31 12:30 timezone.exif
```

Interesting (perhaps?) note: sizes of test.nef and test2.nef match, but size of extracted metadata differs.

```
$ cat origin.exif | sed -E -e "s/^/set /" > foo.cmd
$ exiv2 -mfoo.cmd test.nef
$ exiv2 -b -Pkv test.nef -g Exif.Photo.MakerNote > timezone2.exif
$ ls -la

-rw-r--r-- 1 stan stan 428348 May 31 12:30 foo.cmd
-rw-r--r-- 1 stan stan 428344 May 31 12:30 origin.exif
-rw-r--r-- 1 stan stan 12913969 May 29 21:25 test2.nef
-rw-r--r-- 1 stan stan 6568533 May 29 22:09 test.jpg
-rw-r--r-- 1 stan stan 12913969 May 31 12:30 test.nef
-rw-r--r-- 1 stan stan 428243 May 31 12:30 timezone2.exif
-rw-r--r-- 1 stan stan 428243 May 31 12:30 timezone.exif
```

And here you can see that the size of "timezone.exif" and "timezone2.exif" is the same, and different from the size of "origin.exif" (which I tried to import).

Based on what you stated above, does exiv2 parser silently strips some data there? Can we do something about it? (import Makernote 1:1)

#7 - 31 May 2016 12:43 - Robin Mills

I didn't write Exiv2, so I can't say off-hand exactly why we rewrite the file with a slightly different makernote lengths.

More important is to see if metadata has been lost in the rewrite. You'll see in the note#1 above, I compared orig.txt and adju.txt <http://dev.exiv2.org/issues/1189#note-1>

Can you repeat that investigation on your files. You can also extract the previews and compare them (pixel by pixel) before and after. You'll need solid evidence to convince me that there is something wrong here. Just saying "the lengths are different" isn't evidence that the data has been corrupted. When the bytes of the graphics are written to file, the offsets will be different and that can/could easily explain the difference.

I'm on vacation, so my time is limited at present.

#8 - 31 May 2016 20:41 - Robin Mills

I've had another little look at this using my file DSC_0001.NEF

Previews (Thumbnails)

The preview images have not been disturbed by the -t option. For sure the physical location of the preview/subImages has changed, however their content has not.

```
698 rmills@rmillsmbp:~/temp $ del thumbs *preview*
699 rmills@rmillsmbp:~/temp $ file=DSC_0001.NEF
700 rmills@rmillsmbp:~/temp $ cp ~/Pictures/2016/Raw/$file .
701 rmills@rmillsmbp:~/temp $ exiv2 -pa $file | sort > orig.txt
702 rmills@rmillsmbp:~/temp $ exiv2 --verbose -ep $file
File 1/1: DSC_0001.NEF
Writing preview 1 (image/tiff, 160x120 pixels, 57852 bytes) to file ./DSC_0001-preview1.tif
Writing preview 2 (image/jpeg, 640x424 pixels, 150119 bytes) to file ./DSC_0001-preview2.jpg
Writing preview 3 (image/jpeg, 1620x1080 pixels, 1002500 bytes) to file ./DSC_0001-preview3.jpg
Writing preview 4 (image/jpeg, 6000x4000 pixels, 2932184 bytes) to file ./DSC_0001-preview4.jpg
703 rmills@rmillsmbp:~/temp $ mkdir thumbs
704 rmills@rmillsmbp:~/temp $ mv *preview* thumbs
705 rmills@rmillsmbp:~/temp $ exiv2 -a -07 $file
706 rmills@rmillsmbp:~/temp $ exiv2 -pa $file | sort > adju.txt
707 rmills@rmillsmbp:~/temp $ exiv2 --verbose -ep $file
```

```

File 1/1: DSC_0001.NEF
Writing preview 1 (image/tiff, 160x120 pixels, 57852 bytes) to file ./DSC_0001-preview1.tif
Writing preview 2 (image/jpeg, 640x424 pixels, 150119 bytes) to file ./DSC_0001-preview2.jpg
Writing preview 3 (image/jpeg, 1620x1080 pixels, 1002500 bytes) to file ./DSC_0001-preview3.jpg
Writing preview 4 (image/jpeg, 6000x4000 pixels, 2932184 bytes) to file ./DSC_0001-preview4.jpg
708 rmills@rmillsmbp:~/temp $ ls -lt thumbs/*
-rw-r--r--+ 1 rmills staff 57852 31 May 21:08 thumbs/DSC_0001-preview1.tif
-rw-r--r--+ 1 rmills staff 150119 31 May 21:08 thumbs/DSC_0001-preview2.jpg
-rw-r--r--+ 1 rmills staff 1002500 31 May 21:08 thumbs/DSC_0001-preview3.jpg
-rw-r--r--+ 1 rmills staff 2932184 31 May 21:08 thumbs/DSC_0001-preview4.jpg
709 rmills@rmillsmbp:~/temp $ ls -lt *preview*
-rw-r--r--+ 1 rmills staff 57852 31 May 21:10 DSC_0001-preview1.tif
-rw-r--r--+ 1 rmills staff 150119 31 May 21:10 DSC_0001-preview2.jpg
-rw-r--r--+ 1 rmills staff 1002500 31 May 21:10 DSC_0001-preview3.jpg
-rw-r--r--+ 1 rmills staff 2932184 31 May 21:10 DSC_0001-preview4.jpg
710 rmills@rmillsmbp:~/temp $ diff orig.txt adju.txt
4c4
< Exif.Image.DateTime Ascii 20 2016:04:20 08:00:13
---
> Exif.Image.DateTime Ascii 20 2016:04:20 01:00:13
6,7c6,7
< Exif.Image.ExifTag Long 1 2544
< Exif.Image.GPSTag Long 1 177664
---
> Exif.Image.ExifTag Long 1 3328
> Exif.Image.GPSTag Long 1 177846
22,23c22,23
< Exif.Image.StripOffsets Long 1 178176
< Exif.Image.SubIFDs Long 3 236032 236152 236380
---
> Exif.Image.StripOffsets Long 1 177864
> Exif.Image.SubIFDs Long 3 2866 2984 3210
25c25
< Exif.Image.XMLPacket Byte 2048 (Binary value suppressed)
---
> Exif.Image.XMLPacket Byte 2378 (Binary value suppressed)
29c29
< Exif.MakerNote.Offset Long 1 3088
---
> Exif.MakerNote.Offset Long 1 3810
55c55
< Exif.Nikon3.Preview Long 1 23766
---
> Exif.Nikon3.Preview Long 1 23740
122c122
< Exif.NikonPreview.JPEGInterchangeFormat Long 1 24038
---
> Exif.NikonPreview.JPEGInterchangeFormat Long 1 23846
145,146c145,146
< Exif.Photo.DateTimeDigitized Ascii 20 2016:04:20 08:00:13
< Exif.Photo.DateTimeOriginal Ascii 20 2016:04:20 08:00:13
---
> Exif.Photo.DateTimeDigitized Ascii 20 2016:04:20 01:00:13
> Exif.Photo.DateTimeOriginal Ascii 20 2016:04:20 01:00:13
160c160
< Exif.Photo.MakerNote Undefined 174576 (Binary value suppressed)
---
> Exif.Photo.MakerNote Undefined 173976 (Binary value suppressed)
176c176
< Exif.SubImage1.JPEGInterchangeFormat Long 1 1239552
---
> Exif.SubImage1.JPEGInterchangeFormat Long 1 235464
197c197
< Exif.SubImage2.StripOffsets Long 1 4171776
---
> Exif.SubImage2.StripOffsets Long 1 3167648
201c201
< Exif.SubImage3.JPEGInterchangeFormat Long 1 236544
---
> Exif.SubImage3.JPEGInterchangeFormat Long 1 21326300
711 rmills@rmillsmbp:~/temp $

```

200 Keys are unchanged. No keys lost

```
734 rmills@rmillsmbp:~/temp $ wc orig.txt adju.txt
```

```

208    991    14386 orig.txt
208    991    14381 adju.txt
416   1982   28767 total
735 rmills@rmillsmbp:~/temp $

```

XMLPacket

The tag Exif.Image.XMLPacket has a different length before and after the use of -t. However, the XML (*xmp*) is identical. It's formatted differently for reasons I have not investigated.

```

720 rmills@rmillsmbp:~/temp $ orig=orig.nef
721 rmills@rmillsmbp:~/temp $ adju=adju.nef
722 rmills@rmillsmbp:~/temp $ file=DSC_0001.NEF
723 rmills@rmillsmbp:~/temp $ cp ~/Pictures/2016/Raw/$file $orig
724 rmills@rmillsmbp:~/temp $ cp ~/Pictures/2016/Raw/$file $adju
725 rmills@rmillsmbp:~/temp $ exiv2 -a -07 $adju
726 rmills@rmillsmbp:~/temp $ exiv2 -pa --grep XMLPacket $orig $adju
orig.nef                Exif.Image.XMLPacket                Byte                2048 (Binary value suppressed)
adju.nef                Exif.Image.XMLPacket                Byte                2378 (Binary value suppressed)
727 rmills@rmillsmbp:~/temp $ exiv2 -pX $orig | xmllint --pretty 1 - > orig.xmp
728 rmills@rmillsmbp:~/temp $ exiv2 -pX $adju | xmllint --pretty 1 - > adju.xmp
729 rmills@rmillsmbp:~/temp $ ls -alt *.xmp
-rw-r--r--+ 1 rmills  staff   350 31 May 21:23 adju.xmp
-rw-r--r--+ 1 rmills  staff   359 31 May 21:22 orig.xmp
-rw-r--r--+ 1 rmills  staff  3867 18 Jan 07:32 ttt.xmp
-rw-r--r--+ 1 rmills  staff  3867 18 Jan 07:32 trunk.xmp
-rw-r--r--+ 1 rmills  staff  3332  8 Jan 11:15 exv.xmp
-rw-r--r--+ 1 rmills  staff  4854  8 Jan 11:09 eX.xmp
-rw-r--r--+ 1 rmills  staff  4178  8 Jan 10:56 raw.xmp
730 rmills@rmillsmbp:~/temp $ del ttt.xmp trunk.xmp exv.xmp eX.xmp raw.xmp
731 rmills@rmillsmbp:~/temp $ cat adju.xmp
<?xml version="1.0"?>
<?xpacket begin="  " id="W5M0MpCehiHzreSzNTczkc9d"?>
<x:xmpmeta xmlns:x="adobe:ns:meta/" x:xmptk="XMP Core 4.4.0-Exiv2">
  <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
    <rdf:Description xmlns:xmp="http://ns.adobe.com/xap/1.0/" rdf:about="" xmp:Rating="0"/>
  </rdf:RDF>
</x:xmpmeta>
<?xpacket end="w"?>
732 rmills@rmillsmbp:~/temp $

```

Exif.Image.Exif

Don't know what this is. Changed? Yes. Why? Don't know.

```

< Exif.Image.ExifTag                Long                1    2544
---
> Exif.Image.ExifTag                Long                1    3328

```

Exif.Image.GPS

Don't know what this is. Changed? Yes. Why? Don't know.

```

< Exif.Image.GPSTag                Long                1    177664
---
> Exif.Image.GPSTag                Long                1    177846

```

Right. I'm in Largs in Scotland. I was born here. I haven't been "home" for 3 years. The weather is perfect. About 24°C today and not a cloud in the sky.

1010

#9 - 01 Jun 2016 05:54 - Robin Mills

Stan

Another beautiful sunny morning in Scotland. I've taken a careful look at your note #6 above: <http://dev.exiv2.org/issues/1189#note-6>

I don't know that copying a makernote from one file to another is too wise, however I believe it will work. I'm a little lost about the difference between test.nef and test2.nef. Perhaps you can use Dropbox or something to send me the files for investigation.

#10 - 01 Jun 2016 09:58 - Stan Kaminski

You know, this issue is probably not important enough to warrant looking at the screen instead of looking at this incredible vista :-)

I've been doing some digging myself, but it's taking me time to get up-to-speed with how EXIF information works.

I did some tests with exiftool, just to compare results, and man, this one changes even more stuff. At least I could confirm that the preview has not changed at all. So back to exiv2 :-)

I found that in the Makernote, the 100-byte difference is just 28 characters (28 bytes), in my case: "71 14 168 208 168 96 49 156 66 149 217 195 50 159 182 148 37 210 59 252 209 131 130 82 185 255 217 0". If that'd be all 0's then I don't care, but clearly here is some information that is lost. Original size is 120624 bytes, after modification it's 120597 bytes.

Now the interesting part is that apart from losing 28 bytes at the end, the rest is identical between versions. Is it possible that exiv2 does not know the tags at the end and quietly deletes them? Looking at the code, it should report even unknown tags (that's also something I checked, there's no difference in unknown tags between versions).

Also, there's no xmp data in my NEFs, exiv2 even throws relevant warning.

When I do "adjust" it actually changes only times, does nothing to Exif.Image.GPSTag and Exif.Image.ExifTag.

Here's the photo I'm doing my tests on (12 MB): <https://www.dropbox.com/s/whpww59cc1kjkns/2016-05-20%2008.28.54.nef?dl=0> - let me know when you get it, so I can remove it from public folder.

#11 - 01 Jun 2016 10:01 - Stan Kaminski

Can't edit previous update: I just wanted to state the obvious, it looks like exiv2 is prematurely finishing writing Makernote. Either that, or it's reading too much? (I mean, dump = read -> too long, or update = write -> too short).

#12 - 01 Jun 2016 10:21 - Robin Mills

- Status changed from Closed to Assigned
- % Done changed from 100 to 50
- Estimated time changed from 2.00 h to 4.00 h

Thanks, Stan. I've got you file.

I don't know what's in those 28 bytes. Will have to step the code in the debugger to find out what's going on.

You might be interested to see the output from exiv2 -pS (v0.25) and even more interested to see exiv2 -pR (trunk). Here's what I see in your file:

```
506 rmills@rmillsmbp:~ $ exiv2 -pR ~/Downloads/2016-05-20\ 08.28.54.nef
STRUCTURE OF TIFF FILE (MM): /Users/rmills/Downloads/2016-05-20 08.28.54.nef
address | tag | type | count | offset | value
10 | 0x00fe | NewSubfileType | LONG | 1 | 1
22 | 0x0100 | ImageWidth | LONG | 1 | 160
34 | 0x0101 | ImageLength | LONG | 1 | 120
46 | 0x0102 | BitsPerSample | SHORT | 3 | 316 | 8 8 8
58 | 0x0103 | Compression | SHORT | 1 | 65536 | 1
70 | 0x0106 | PhotometricInterpretation | SHORT | 1 | 131072 | 2
82 | 0x010f | Make | ASCII | 18 | 324 | NIKON CORPORATION
94 | 0x0110 | Model | ASCII | 10 | 344 | NIKON D90
106 | 0x0111 | StripOffsets | LONG | 1 | 121656 | 121656
118 | 0x0112 | Orientation | SHORT | 1 | 524288 | 8
130 | 0x0115 | SamplesPerPixel | SHORT | 1 | 196608 | 3
142 | 0x0116 | RowsPerStrip | LONG | 1 | 120 | 120
154 | 0x0117 | StripByteCounts | LONG | 1 | 57600 | 57600
166 | 0x011a | XResolution | RATIONAL | 1 | 356 | 356/0
178 | 0x011b | YResolution | RATIONAL | 1 | 364 | 364/0
190 | 0x011c | PlanarConfiguration | SHORT | 1 | 65536 | 1
202 | 0x0128 | ResolutionUnit | SHORT | 1 | 131072 | 2
214 | 0x0131 | Software | ASCII | 10 | 372 | Ver.1.00
226 | 0x0132 | DateTime | ASCII | 20 | 384 | 2016:05:20 08:28:54
238 | 0x014a | SubIFDs | LONG | 2 | 404 | 179256 179376
STRUCTURE OF TIFF FILE (MM): /Users/rmills/Downloads/2016-05-20 08.28.54.nef
address | tag | type | count | offset | value
179258 | 0x00fe | NewSubfileType | LONG | 1 | 1 | 1
179270 | 0x0103 | Compression | SHORT | 1 | 393216 | 6
179282 | 0x011a | XResolution | RATIONAL | 1 | 179360 | 48288/2
179294 | 0x011b | YResolution | RATIONAL | 1 | 179368 | 48296/2
179306 | 0x0128 | ResolutionUnit | SHORT | 1 | 131072 | 2
179318 | 0x0201 | JPEGInterchangeFormat | LONG | 1 | 179648 | 179648
179330 | 0x0202 | JPEGInterchangeFormatLeng | LONG | 1 | 1547046 | 1547046
179342 | 0x0213 | YCbCrPositioning | SHORT | 1 | 131072 | 2
END /Users/rmills/Downloads/2016-05-20 08.28.54.nef
250 | 0x0214 | ReferenceBlackWhite | RATIONAL | 6 | 412 | 0/0 1/0 255/0 1/0 0/0 ...
262 | 0x8769 | ExifTag | LONG | 1 | 480 | 480
STRUCTURE OF TIFF FILE (MM): /Users/rmills/Downloads/2016-05-20 08.28.54.nef
```



```

address | tag | type | count | offset | value
482 | 0x829a ExposureTime | RATIONAL | 1 | 872 | 872/0
494 | 0x829d FNumber | RATIONAL | 1 | 880 | 880/0
506 | 0x8822 ExposureProgram | SHORT | 1 | 0 | 0
518 | 0x8827 ISOSpeedRatings | SHORT | 1 | 18350080 | 280
530 | 0x9003 DateTimeOriginal | ASCII | 20 | 888 | 2016:05:20 08:28:54
542 | 0x9004 DateTimeDigitized | ASCII | 20 | 908 | 2016:05:20 08:28:54
554 | 0x9204 ExposureBiasValue | SRATIONAL | 1 | 928 | 928/0
566 | 0x9205 MaxApertureValue | RATIONAL | 1 | 936 | 936/0
578 | 0x9207 MeteringMode | SHORT | 1 | 327680 | 5
590 | 0x9208 LightSource | SHORT | 1 | 0 | 0
602 | 0x9209 Flash | SHORT | 1 | 1572864 | 24
614 | 0x920a FocalLength | RATIONAL | 1 | 944 | 944/0
626 | 0x927c MakerNote | UNDEFINED | 120624 | 1012 | Nikon.....MM.*.....6.....
.0210 ...
638 | 0x9286 UserComment | UNDEFINED | 44 | 952 | ASCII...
...
650 | 0x9290 SubSecTime | ASCII | 3 | 808452096 | 00
662 | 0x9291 SubSecTimeOriginal | ASCII | 3 | 808452096 | 00
674 | 0x9292 SubSecTimeDigitized | ASCII | 3 | 808452096 | 00
686 | 0xa217 SensingMethod | SHORT | 1 | 131072 | 2
698 | 0xa300 FileSource | UNDEFINED | 1 | 50331648 | .
710 | 0xa301 SceneType | UNDEFINED | 1 | 16777216 | .
722 | 0xa302 CFAPattern | UNDEFINED | 8 | 996 | .....
734 | 0xa401 CustomRendered | SHORT | 1 | 0 | 0
746 | 0xa402 ExposureMode | SHORT | 1 | 0 | 0
758 | 0xa403 WhiteBalance | SHORT | 1 | 0 | 0
770 | 0xa404 DigitalZoomRatio | RATIONAL | 1 | 1004 | 1004/0
782 | 0xa405 FocalLengthIn35mmFilm | SHORT | 1 | 2424832 | 37
794 | 0xa406 SceneCaptureType | SHORT | 1 | 0 | 0
806 | 0xa407 GainControl | SHORT | 1 | 0 | 0
818 | 0xa408 Contrast | SHORT | 1 | 0 | 0
830 | 0xa409 Saturation | SHORT | 1 | 0 | 0
842 | 0xa40a Sharpness | SHORT | 1 | 0 | 0
854 | 0xa40c SubjectDistanceRange | SHORT | 1 | 0 | 0
END /Users/rmills/Downloads/2016-05-20 08.28.54.nef
274 | 0x8825 GPSTag | LONG | 1 | 121636 | 121636
286 | 0x9003 DateTimeOriginal | ASCII | 20 | 460 | 2016:05:20 08:28:54
298 | 0x9216 TIFFEPStandardID | BYTE | 4 | 16777216 | ...
END /Users/rmills/Downloads/2016-05-20 08.28.54.nef
507 rmills@rmillsmbp:~ $

```

The interesting tag is:

```

626 | 0x927c MakerNote | UNDEFINED | 120624 | 1012 | Nikon.....MM.*.....6.....
.0210 ...

```

Clearly the MakerNote is a TIFF. I thought I had code to recursively dump that tag, maybe not. There's fun ahead with this. But not today. The sun's shining and I'm "home" for the first time in 3 years.

#13 - 08 Jun 2016 17:08 - Robin Mills

- Status changed from Assigned to Closed

- % Done changed from 50 to 100

[r4316](#). I've updated -pR to recursively dump the TIFF that's embedded in the MakerNote. I don't really believe the output. This will require more investigation which we'll factor into [#992](#) (which is the top priority item for v0.27). I have no more time available to spend on this if I'm going to make the schedule to be code-complete on v0.26 in June 2016.

#14 - 13 Jun 2016 06:03 - Robin Mills

- Estimated time changed from 4.00 h to 6.00 h

I've spent another couple of hours on this. I've used an in-memory file (using the bytes in the 0x927c tag) to perform the recursive dump. The output of -pR now seems sensible.

```

STRUCTURE OF TIFF FILE (MM): /Users/rmills/Downloads/2016-05-20 08.28.54.nef
address | tag | type | count | offset | value
10 | 0x00fe NewSubfileType | LONG | 1 | 1 | 1
22 | 0x0100 ImageWidth | LONG | 1 | 160 | 160
34 | 0x0101 ImageLength | LONG | 1 | 120 | 120
46 | 0x0102 BitsPerSample | SHORT | 3 | 316 | 8 8 8
58 | 0x0103 Compression | SHORT | 1 | 65536 | 1
70 | 0x0106 PhotometricInterpretation | SHORT | 1 | 131072 | 2

```

82		0x010f	Make		ASCII		18		324		NIKON CORPORATION
94		0x0110	Model		ASCII		10		344		NIKON D90
106		0x0111	StripOffsets		LONG		1		121656		121656
118		0x0112	Orientation		SHORT		1		524288		8
130		0x0115	SamplesPerPixel		SHORT		1		196608		3
142		0x0116	RowsPerStrip		LONG		1		120		120
154		0x0117	StripByteCounts		LONG		1		57600		57600
166		0x011a	XResolution		RATIONAL		1		356		356/0
178		0x011b	YResolution		RATIONAL		1		364		364/0
190		0x011c	PlanarConfiguration		SHORT		1		65536		1
202		0x0128	ResolutionUnit		SHORT		1		131072		2
214		0x0131	Software		ASCII		10		372		Ver.1.00
226		0x0132	DateTime		ASCII		20		384		2016:05:20 08:28:54
238		0x014a	SubIFDs		LONG		2		404		179256 179376

STRUCTURE OF TIFF FILE (MM): /Users/rmills/Downloads/2016-05-20 08.28.54.nef

address		tag		type		count		offset		value	
179258		0x00fe	NewSubfileType		LONG		1		1		1
179270		0x0103	Compression		SHORT		1		393216		6
179282		0x011a	XResolution		RATIONAL		1		179360		48288/2
179294		0x011b	YResolution		RATIONAL		1		179368		48296/2
179306		0x0128	ResolutionUnit		SHORT		1		131072		2
179318		0x0201	JPEGInterchangeFormat		LONG		1		179648		179648
179330		0x0202	JPEGInterchangeFormatLeng		LONG		1		1547046		1547046
179342		0x0213	YCbCrPositioning		SHORT		1		131072		2

END /Users/rmills/Downloads/2016-05-20 08.28.54.nef

250		0x0214	ReferenceBlackWhite		RATIONAL		6		412		0/0 1/0 255/0 1/0 0/0 ...
262		0x8769	ExifTag		LONG		1		480		480

STRUCTURE OF TIFF FILE (MM): /Users/rmills/Downloads/2016-05-20 08.28.54.nef

address		tag		type		count		offset		value	
482		0x829a	ExposureTime		RATIONAL		1		872		872/0
494		0x829d	FNumber		RATIONAL		1		880		880/0
506		0x8822	ExposureProgram		SHORT		1		0		0
518		0x8827	ISOSpeedRatings		SHORT		1		18350080		280
530		0x9003	DateTimeOriginal		ASCII		20		888		2016:05:20 08:28:54
542		0x9004	DateTimeDigitized		ASCII		20		908		2016:05:20 08:28:54
554		0x9204	ExposureBiasValue		SRATIONAL		1		928		928/0
566		0x9205	MaxApertureValue		RATIONAL		1		936		936/0
578		0x9207	MeteringMode		SHORT		1		327680		5
590		0x9208	LightSource		SHORT		1		0		0
602		0x9209	Flash		SHORT		1		1572864		24
614		0x920a	FocalLength		RATIONAL		1		944		944/0
626		0x927c	MakerNote		UNDEFINED		120624		1012		Nikon.....MM.*.....6.....

.0210 ...

STRUCTURE OF TIFF FILE (MM): MemIo

address		tag		type		count		offset		value	
10		0x0001	Version		UNDEFINED		4		808595760		0210
22		0x0002	ISOSpeed		SHORT		2		280		0 280
34		0x0004	Quality		ASCII		8		662		RAW
46		0x0005	WhiteBalance		ASCII		13		670		AUTO
58		0x0007	Focus		ASCII		7		686		AF-A
70		0x0008	FlashSetting		ASCII		13		694		NORMAL
82		0x0009	GPSStatus		ASCII		20		710		
94		0x000b	ProcessingSoftware		SSHORT		2		0		0 0
106		0x000c	GPSSpeedRef		RATIONAL		4		730		459/0 256/0 371/0 256/0
118		0x000d	GPSSpeed		UNDEFINED		4		67072		...
130		0x000e	GPSTrackRef		UNDEFINED		4		68608		...
142		0x0011	GPSImgDirection		LONG		1		13954		13954
154		0x0012	GPSMapDatum		UNDEFINED		4		67072		...
166		0x0013	GPSDestLatitudeRef		SHORT		2		280		0 280
178		0x0017	GPSDestBearingRef		UNDEFINED		4		67072		...
190		0x0018	GPSDestBearing		UNDEFINED		4		67072		...
202		0x0019	GPSDestDistanceRef		SRATIONAL		1		762		762/0
214		0x001b	GPSProcessingMethod		SHORT		7		770		0 4352 2868 4352 2868 ...
226		0x001c	GPSAreaInformation		UNDEFINED		3		67072		...
238		0x001d	GPSDateStamp		ASCII		8		786		7034901
250		0x001e	GPSDifferential		SHORT		1		131072		2
262		0x001f			UNDEFINED		8		794		0100...
274		0x0022			SHORT		1		4294901760		65535
286		0x0023			UNDEFINED		58		802		0100STANDARD.....S

TANDARD ...

298		0x0024			UNDEFINED		4		3932160		.<.
310		0x0025			UNDEFINED		14		862		N.....N.....
322		0x002c			UNDEFINED		94		878		0100...d.....

.....

334		0x0083			BYTE		1		234881024		.
-----	--	--------	--	--	------	--	---	--	-----------	--	---

```

346 | 0x0084 | RATIONAL | 4 | 974 | 180/0 10/0 1050/0 10/0
358 | 0x0087 | BYTE | 1 | 0 |
370 | 0x0089 | SHORT | 1 | 0 | 0
382 | 0x008a | SHORT | 1 | 131072 | 2
394 | 0x008b | UNDEFINED | 4 | 1073810432 | @..
406 | 0x008c | UNDEFINED | 578 | 1006 | IO.....
.....
418 | 0x0091 | UNDEFINED | 6600 | 1586 | 0213.....y"....+.....2
.W2...*. ...
430 | 0x0093 | SHORT | 1 | 262144 | 4
442 | 0x0095 | ASCII | 5 | 8186 | OFF
454 | 0x0096 | UNDEFINED | 624 | 8194 | D .H.H.H.H..... .0.@.P.
.p.....
466 | 0x0097 | UNDEFINED | 1302 | 8818 | 0211.....
.....
478 | 0x0098 | UNDEFINED | 33 | 10122 | 02041...E..^GPH.....
.W10o.k ...
490 | 0x0099 | SHORT | 2 | 142607770 | 2176 1434
502 | 0x009e | SHORT | 10 | 10158 | 0 0 0 0 0 ...
514 | 0x00a3 | BYTE | 1 | 0 |
526 | 0x00a4 | UNDEFINED | 4 | 808595504 | 0200
538 | 0x00a7 | LONG | 1 | 4736 | 4736
550 | 0x00a8 | UNDEFINED | 22 | 10178 | 0103.....
562 | 0x00ab | ASCII | 16 | 10202 | AUTO
574 | 0x00b0 | UNDEFINED | 16 | 10218 | 0100.....
586 | 0x00b1 | SHORT | 1 | 0 | 0
598 | 0x00b6 | UNDEFINED | 8 | 10234 | .....
610 | 0x00b7 | UNDEFINED | 30 | 10242 | 0100.....
....
622 | 0x00b8 | UNDEFINED | 172 | 10274 | 0100...d.....
.....
634 | 0x00bb | UNDEFINED | 6 | 10446 | 0100.
646 | 0x00bc | UNDEFINED | 3500 | 10454 | 0100.D.".....P..p..
@...A...
END MemIo
638 | 0x9286 UserComment | UNDEFINED | 44 | 952 | ASCII...
...
650 | 0x9290 SubSecTime | ASCII | 3 | 808452096 | 00
662 | 0x9291 SubSecTimeOriginal | ASCII | 3 | 808452096 | 00
674 | 0x9292 SubSecTimeDigitized | ASCII | 3 | 808452096 | 00
686 | 0xa217 SensingMethod | SHORT | 1 | 131072 | 2
698 | 0xa300 FileSource | UNDEFINED | 1 | 50331648 | .
710 | 0xa301 SceneType | UNDEFINED | 1 | 16777216 | .
722 | 0xa302 CFAPattern | UNDEFINED | 8 | 996 | .....
734 | 0xa401 CustomRendered | SHORT | 1 | 0 | 0
746 | 0xa402 ExposureMode | SHORT | 1 | 0 | 0
758 | 0xa403 WhiteBalance | SHORT | 1 | 0 | 0
770 | 0xa404 DigitalZoomRatio | RATIONAL | 1 | 1004 | 1004/0
782 | 0xa405 FocalLengthIn35mmFilm | SHORT | 1 | 2424832 | 37
794 | 0xa406 SceneCaptureType | SHORT | 1 | 0 | 0
806 | 0xa407 GainControl | SHORT | 1 | 0 | 0
818 | 0xa408 Contrast | SHORT | 1 | 0 | 0
830 | 0xa409 Saturation | SHORT | 1 | 0 | 0
842 | 0xa40a Sharpness | SHORT | 1 | 0 | 0
854 | 0xa40c SubjectDistanceRange | SHORT | 1 | 0 | 0
END /Users/rmills/Downloads/2016-05-20 08.28.54.nef
274 | 0x8825 GPSTag | LONG | 1 | 121636 | 121636
286 | 0x9003 DateTimeOriginal | ASCII | 20 | 460 | 2016:05:20 08:28:54
298 | 0x9216 TIFFEPStandardID | BYTE | 4 | 16777216 | ...
END /Users/rmills/Downloads/2016-05-20 08.28.54.nef

```

Many of the tags are not being identified by name. For example 0x0084 is Lens:

```

689 rmills@rmillsmbp:~/gnu/exiv2/bigtifff $ grep -H 0084 src/*.cpp
src/nikonmn.cpp: TagInfo(0x0084, "Lens", N_("Lens"), N_("Lens"), nikon3Id, makerTags, unsignedRational,
-1, print0x0084),
src/nikonmn.cpp: std::ostream& Nikon3MakerNote::print0x0084(std::ostream& os,
src/quicktimevideo.cpp: { 0x2000084, "Xmp.video.LensModel" },
690 rmills@rmillsmbp:~/gnu/exiv2/bigtifff $ exiv2 -pR ~/Downloads/2016-05-20\ 08.28.54.nef | grep 0084
346 | 0x0084 | RATIONAL | 4 | 974 | 180/0 10/0 1050/0 10/0
691 rmills@rmillsmbp:~/gnu/exiv2/bigtifff $ exiv2 -pv --grep Lens$ ~/Downloads/2016-05-20\ 08.28.54.nef
0x0084 Nikon3 Lens Rational 4 180/10 1050/10 35/10 56/10
692 rmills@rmillsmbp:~/gnu/exiv2/bigtifff $

```

I don't have time to investigate further in v0.26.

Files

original.exif	435 KB	29 May 2016	Stan Kaminski
adjusted.exif	435 KB	29 May 2016	Stan Kaminski