

# High Dynamic Range Photography (HDR)

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**ERC Camera Club Meeting**

# What is HDR Photography?

- High dynamic range photography is a set of techniques that allows a greater dynamic range of luminances between light and dark areas of a scene than normal digital imaging techniques.
- An HDR image is created by using special computer software to process three or more photographs of the same scene taken under different exposure settings.
- HDR images contain more detail in bright and dark areas than ordinary images.



Misty Fjords National Monument, Alaska. Before HDR processing.



Misty Fjords National Monument, Alaska. After HDR processing.





# Steps in HDR Photography

1. Photograph a scene at different exposure values.

*In photography, exposure value (EV) denotes all combinations of camera shutter speed and relative aperture that give the same exposure.*

*Exposure value also is used to indicate an interval on the photographic exposure scale, with 1 EV corresponding to a standard power-of-2 exposure step, commonly referred to as a “stop”.*

# Steps in HDR

1. Photograph a scene at different exposure values.
  - Camera must not move between shots—use tripod.
  - Usually hold aperture constant and modify EV with shutter speed.
    - Use Aperture Priority, Auto-Exposure Bracketing (AEB) with an exposure increment of +/- 2 (for 3 images).
    - Three exposure example:  $EV = -2, 0, +2$
    - Five exposure example:  $EV = -2, -1, 0, +1, +2$
    - Preferably use Continuous Shooting mode.

# *Alternate Step 1 Using RAW Data “Pseudo-HDR”*

- 1. Photograph a scene at normal exposure and save in RAW data format.*
  - Load RAW data into Photoshop and adjust EV.*
    - Save image with a EV -2.*
    - Save image with a EV +2.*
    - Optionally also save images with EV -1 and +1.*

# Steps in HDR

2. Load images into the HDR software.
3. Generate HDR image.
4. Perform tone mapping.
5. Save final HDR photo.
6. Optional. Touch up with Photoshop or other photography software (e.g., sharpen, noise reduction, color adjustment, etc).



# HDR Software

- Photomatix Pro 3; \$99
  - -15% with coupon (see later)
  - Free trial version adds watermark to image.
  - Plugins for Photoshop, Lightroom, Aperature
- Adobe Photoshop CS4; \$699
- Dynamic Photo HDR; \$55
- Free HDR Software examples:
  - Qtpfsgui
  - Essential HDR
  - FDRTools Basic
  - Picturenaut

HDRsoft

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## Photomatix

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### Increase the dynamic range of your photographs



HDR image (created from the 3 left photos) + Tone Mapping

If you have ever photographed a high contrast scene, you know that even the best exposure will typically have blown out highlights and flat shadows. Photomatix offers two ways to solve this problem:

- ▶ **HDR Tone Mapping:** Reveal highlight and shadow details in an HDR image created from multiple exposures.
- ▶ **Exposure Fusion:** Merge differently exposed photographs into one image with increased dynamic range.

[See examples of how it works](#)

View samples in the [User Gallery](#)

Get started with a [quick tutorial](#)

[Download a free trial version](#)

Watch introduction and tone mapping tutorial [videos](#)

Photomatix Pro is a stand-alone program that creates and processes HDR (High Dynamic Range) images, and runs on Mac OS X and Windows 98/Me/2000/XP/Vista. Some of the features of Photomatix Pro are also available as a Filter plug-in of Photoshop CS2/CS3/CS4 and an Edit plug-in of Aperture 2.1.

One license for Photomatix Pro costs US\$99.

#### Quotes from magazines reviews:

"Photomatix Pro 3.0 is an excellent tool for creating high dynamic range photographs."

*Stuart Gripman, Mac Life, issue # 17, 2008*

"Using a trial download of Photomatix I came almost immediately to prefer it to CS3. Simpler and faster, I also thought it did a better job with mid-tones, shadows and saturation."

*Adam Woolfitt, The International Journal of Photographic Art & Practice, issue # 51, 2008*

"Details Enhancer is the option that I and many others photographers use exclusively because of the many creative and interpretative controls."

*Tony Sweet, Shutterbug, issue # 454, 2008*

"HDRsoft's Photomatix is currently the most sophisticated and robust, yet easy-to-use solution"

*John Paul Caponigro, Digital Photo Pro, Jan/Feb 2009*

#### News

13-Jul-09: Release Photomatix Pro [version 3.2](#).

7-Apr-09: Release HDR Tone Mapping [plug-in for Aperture](#).

4-Feb-09: Release [Photomatix Pro](#) version 3.1.3 with improved version of [Lightroom Export plug-in](#).

1-Nov-08: Tone Mapping Plug-In now compatible with 64-bit Photoshop CS4.

Photomatix  
example

Normal exposure  
1/125 sec  
f/11  
ISO 100





Photomatix  
example

Underexposed  
1/500 sec  
f/11  
ISO 100



Photomatix  
example

Overexposed  
1/30 sec  
f/11  
ISO 100



Photomatix  
example

Final  
tone mapped  
HDR image







Input image from Canon 1D MarkII (Exposure time: 1/180 sec., Aperture: f/6.7, ISO: 100) - Image is © Jacques Joffre.



Photomatix example, Venice. Input image from Canon 1D MarkII (Exposure time: 1/750 sec., Aperture: f/6.7, ISO: 100) - Image is © Jacques Joffre.





Input image from Canon 1D MarkII (Exposure time: 1/45 sec., Aperture: f/6.7, ISO: 100) -  
Image is © Jacques Joffre





Tone Mapping with Details Enhancer - Strength: 60%, Color saturation: 80%, Light Smoothing: 0, White Clipping: 4.2, Black Clipping: 0.02 - other settings to default values

Normal exposure  
1/60 sec  
f/5  
ISO 200



Skagway, AK



Underexposed  
1/1250 sec  
f/8  
ISO 200



Skagway, AK



Overexposed  
1/125 sec  
f/4  
ISO 200



Skagway, AK

HDR tone  
mapped,  
details  
enhanced



Skagway, AK





HDR Tutorial: <http://www.stuckincustoms.com/hdr-tutorial/> (15% off coupon for Photomatix)









[http://www.dpchallenge.com/image.php?IMAGE\\_ID=519849](http://www.dpchallenge.com/image.php?IMAGE_ID=519849)



<http://nathanguinnphotography.zenfolio.com/>











Before HDR...





After HDR !





HDR isn't just for photos with clouds!



Trey Ratcliff, [www.stuckincustoms.com](http://www.stuckincustoms.com)



View from Butchart Gardens, Vancouver Island. Before HDR processing.





View from Butchart Gardens, Vancouver Island. After HDR processing.









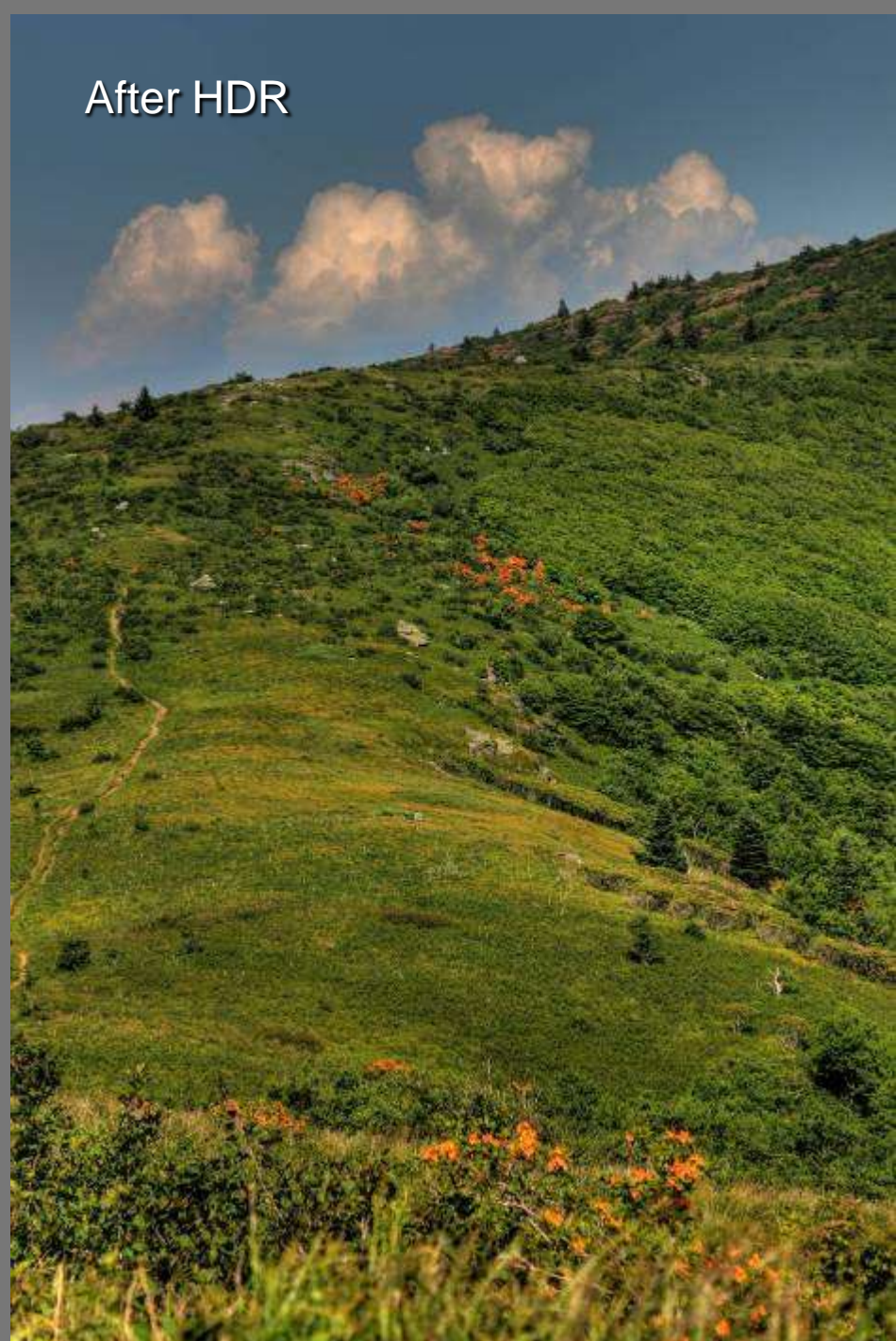




Before HDR



After HDR





# Many good HDR examples at dpchallenge.com

High Dynamic Range (HDR) - DPChallenge Galleries - Mozilla Firefox

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http://www.dpchallenge.com/photo\_gallery.php?GALLERY\_ID=53

DPChallenge - A Digital Photography Contest High Dynamic Range (HDR) - DP... Purchase HDR photo software Photom... HDR Tutorial | High Dynamic Range Tu... RAW HDR Processing | Andre Gunther...

## dpchallenge

a digital photography contest

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 <p>Grand Finale digifotojo</p>	 <p>Blowing in the Breeze SaraR</p>	 <p>The Dam in Mid-Summer Free Study 2009-07 davidw</p>	 <p>Union Station Free Study 2009-07 dswann</p>	 <p>Summer Bloom Free Study 2009-07 jbsmithana</p>
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 <p>Username: Orme (The Great Orme -</p>	 <p>Rural Sunset</p>	 <p>City Sunset</p>	 <p>Waterfall</p>	 <p>Summer Bloom</p>

Done