

The art and science of

PHOTOGRAPHY

Storytelling in pictures

A picture is worth a thousand words, or so the saying goes.

This is true, pictures have the power to tell very compelling stories, but the story needs to be decided on before the image is made.

In general, every image should have a point of focus—the subject. The subject is the object you choose to draw the viewers' attention to, it can be big and dominate the photograph or appear very small and vulnerable, you as photographer get to choose.

Start by choosing your subject, then decide what story you want it to tell and how you want people to react.

Once you have decided on your message, it is your mission to create the photo that tells your story.

Composition is the arrangement of the visual ingredients (elements) of a photograph— putting the elements together to tell a story, and look good.

Choosing what to put where in your photograph can make a big difference to telling your story. Sometimes what you choose to leave out, rather than include, can change your photo completely. See the story of the orange hut in the side panel.

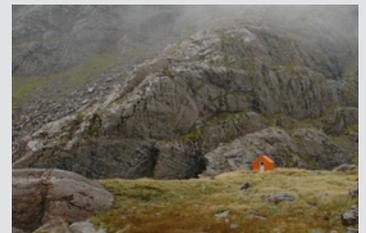
The following techniques are some for you to try that will help you tell your story and make your photos stand out and get noticed.

With practise these techniques become natural and you don't even have to think about them —that is when you can concentrate on telling a good stories with your images.

Photos of science are important for telling the stories of the scientists and their discoveries. Photos are also used by scientists for collecting data to do the science itself. The following activities will introduce you to both approaches.

The story of the orange hut

By choosing how you compose a photo you can tell different stories.



The hut is so tiny it is almost lost in the vast landscape.



The hut is alone in a remote valley, surrounded by tussock grasses and rain filled clouds.



The hut stands strong against the elements, built tough to withstand the harshest of weather.

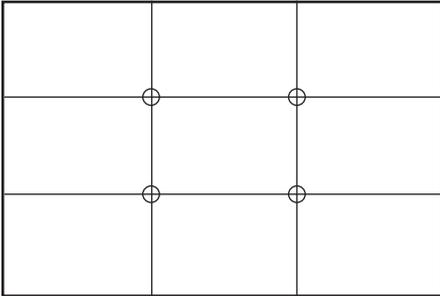


The hut is a welcome sight to the weary hiker, providing a warm and dry place to shelter from the cold rain.



Composition techniques

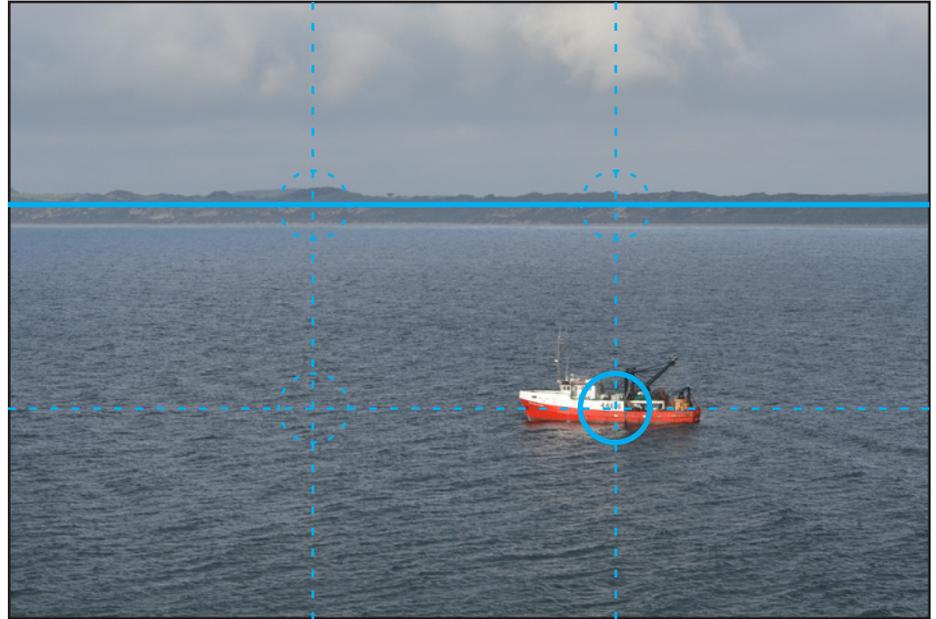
Rule of thirds



How to

This rule breaks the image into 9 boxes, dividing the image into three rows and three columns.

Place the subject or important elements of the photo along one of the lines or at one of the circles.



In this photograph the fishing boat is placed at one of the circle intersection points. Also the ocean makes up around two-thirds of the image and the sky one third, making a second use of the rule of thirds.

Negative space

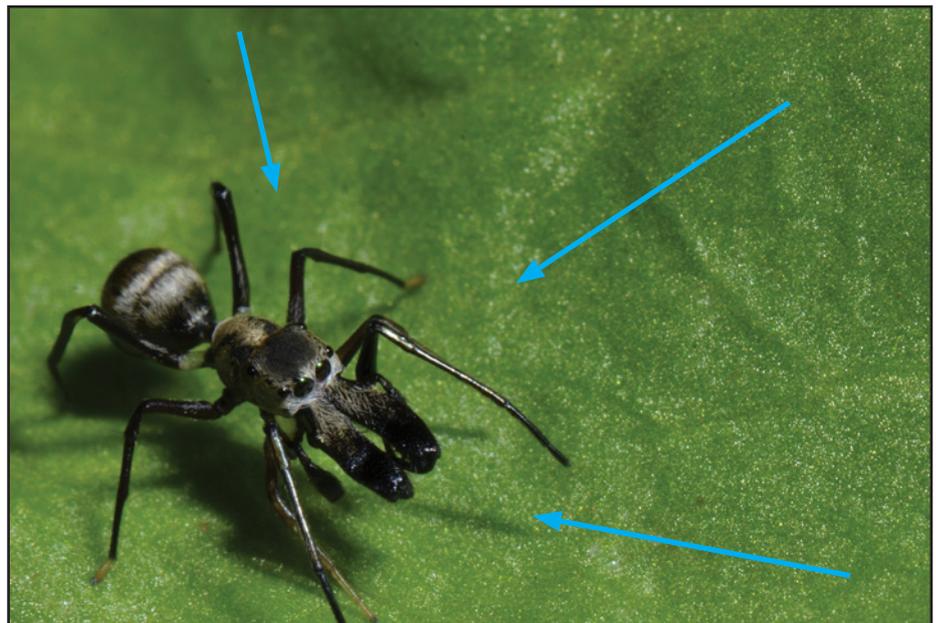


How to

Negative space is the space around the main subject of interest in the photo.

This can draw the eye to a smaller point of interest.

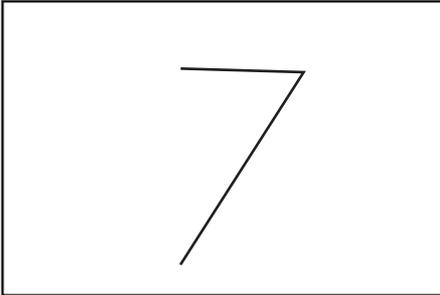
Think of it as breathing space, but it does not have to be completely empty.



The background of green causes the view to focus on the spider and especially the eyes, even though they are small. Also notice how the photo follows the rule of thirds.

Cool science: This spider is an ant-mimic, by disguising its appearance it can walk into an ant nest to hunt ants without being attacked.

The number 7

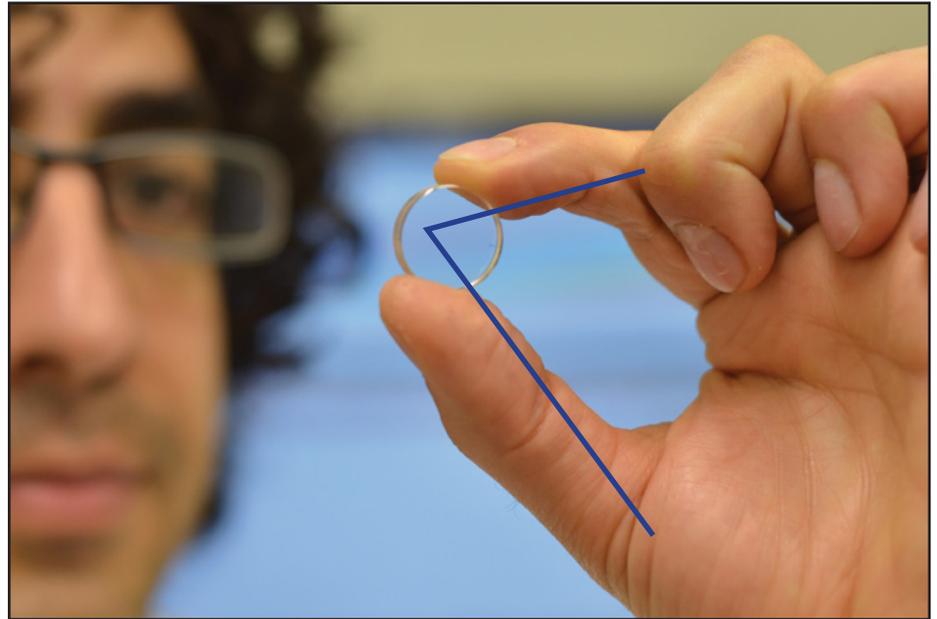


How to

Angles grab attention, in particular sharp angles like the number 7.

Triangles can also be used to achieve this effect.

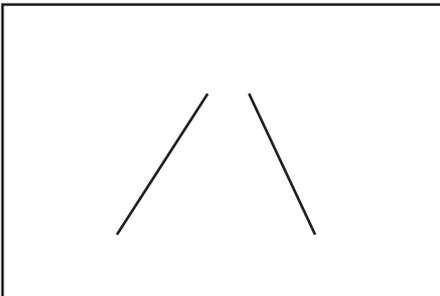
Circles, with their never ending line are also powerful composition elements that capture the viewers eye and force them to pause.



The finger and thumb make a strong number 7, which draws the viewers eye to the circular piece of glass being held up. The use of hands also give a sense of scale to the view can gain an idea of the size of the object.

Cool science: By including the scientist (Dr Ali Reza Nazmi) in the image you can make the research they are doing more personable and friendly.

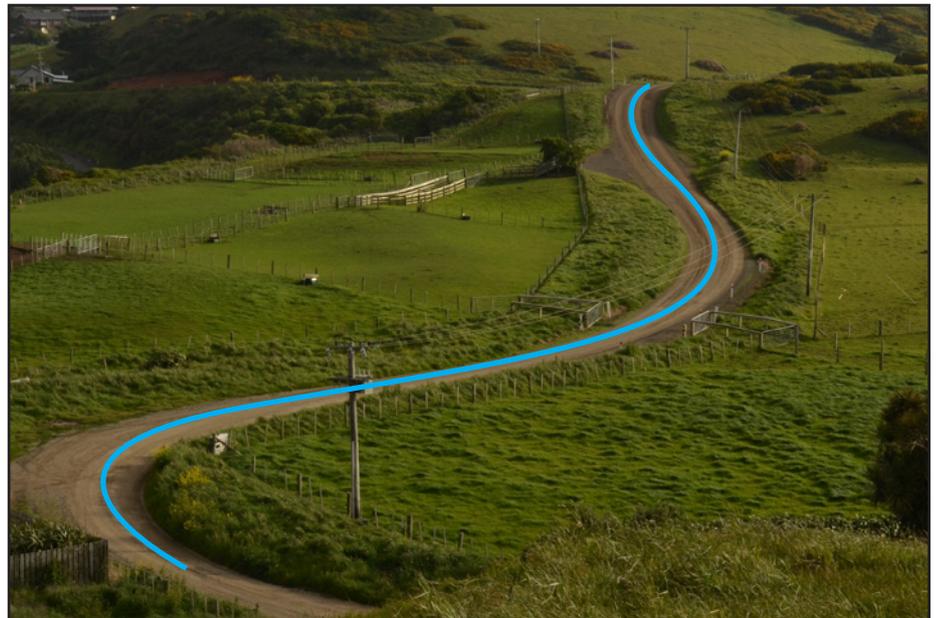
Leading lines



How to

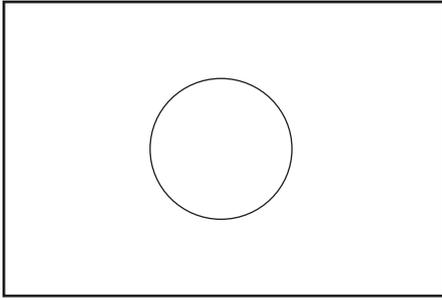
Lines and repeating objects can form strong visual attraction, the lines can be straight or curved.

Objects like paths, streams and beaches can make strong lines within an image. This effect can also be achieved by a person looking or pointing.



A line of the winding road draws the viewers into the distance. It directs your eye into and through the image making you wonder where it leads to.

Isolate your subject



How to

Getting up close to your subject allows it to dominate the photo and draw the viewers eye in.

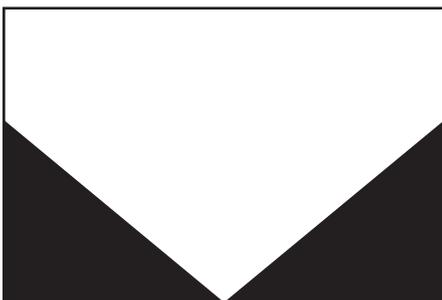
The background will also be out of focus causing the viewers eye to remain on your chosen subject.



By getting down low and moving in close the black robin has become the centre of attention in this photograph.

Remember to always respect wildlife and give them space when photographing

Adding depth



How to

There are several ways to add depth.

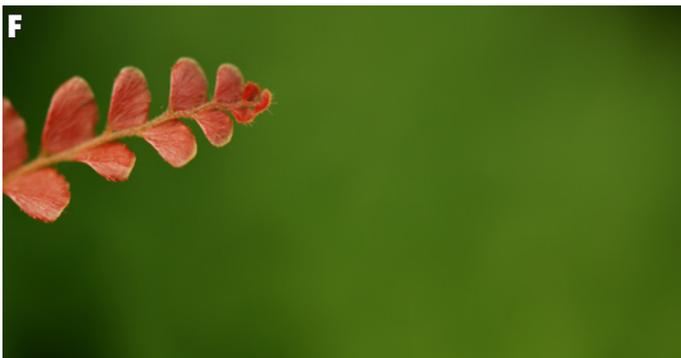
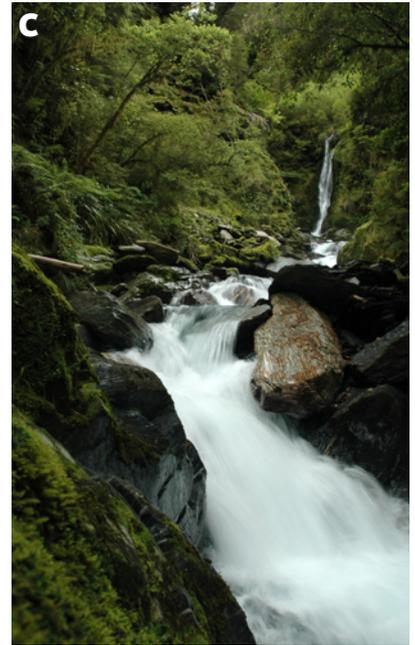
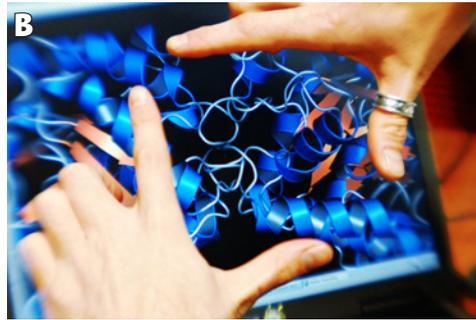
A bottom band of elements causes the eye to jump over them to get to the main image. Alternatively the subject can be revealed from behind a foreground object or a large foreground object can anchor the image.



A ring of green plants forces the viewers eye to jump through them to reach the main subject, Josie.

Activity 1. Identify composition techniques

Which techniques can you identify in the images below? There may be more than one technique used in a photo.



Activity 2. Make an art photo

1. First practice taking some photos using the different techniques described to become familiar with them. You may combine multiple techniques together.
2. Now select a subject for your art photo.
3. Think of a story you want your image to tell.
4. Which techniques would help you tell this story?
5. Have a go at make your photo as planned.
6. Review the image, are you happy with it?
7. Show your photo to someone else and ask them what story it tells to them. Did their story match yours?
8. How could you to change your composition to make it even better?

Photo notes

My subject is:

My story is:

Techniques I have chosen to use are:

Self review

Did it work?

What could I change next time?

Scientific photography

Photographs are used for recording features of many different scientific specimens, these include plants, insects, marine creatures and even planets.

Scientific photos are taken for recording specimen details, often for later identification or data analysis.

These types of photo must clearly show the subject as it is seen in real life.

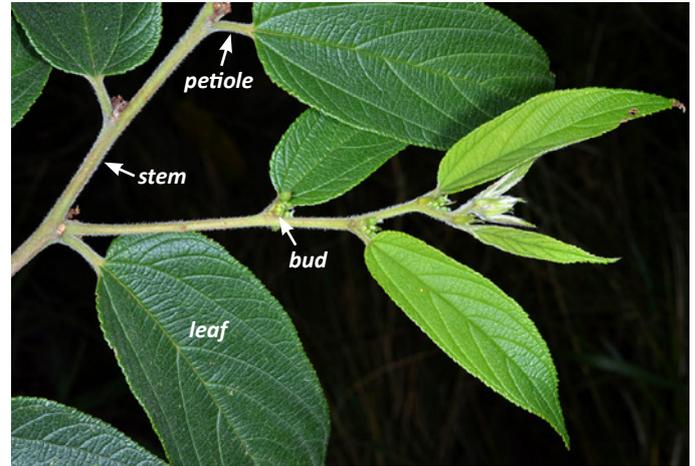
It is helpful to know some of the diagnostic characters for identifying the specimen, this allows you to take photos of the right parts, but this is not always possible so photographing as many different features as possible is a good idea.

Plants are a great first specimen as they are easy to find, do not run away and big enough to photograph with out any specialised equipment.

Helpful hints:

- Use a simple background to help the specimen stand out from other organisms.
- Multiple photos are often needed of the same specimen to show the diagnostic characters.
- Including a scale can be useful to later measure size. Alternatively measure the features with a ruler and record them.
- Make the specimen fill much of the photo, so that small features are clearly visible.
- Record details of features you may not see in the photo

Guide to some plant parts



A leaf has a bud at the base of the petiole where it attaches to the stem. A compound leaf has leaflets, the leaflets have no bud at their base.

This activity could be extended to the use of iNaturalist as part of a citizen science module. Images could be uploaded and identified to become part of the permanent collection.

Further resources: iNaturalist Teacher's Guide <https://www.inaturalist.org/pages/teacher's+guide>

Activity 3. Make a scientific observation



1. Select a plant to photograph, this is best if it is growing wild rather than in a garden. Garden plants are often trimmed and grown in an artificial habitat. It is also good if it has flowers and/or fruits as this makes identification easier later.
2. Record as much data as you can on the plant data sheet.
3. Photograph as many of its features as you can, tick off on the list those that you have captured.
4. If you are feeling confident you can attempt to identify your specimen.

Plant photography data

Observer

Photographer name

Photo file names

Photography date

Site

Location

.....

Habitat (what does the general area look like)

.....

.....

Features photographed

- Habitat
- Growth habit
- Branch
- Stem
- Leaf, upper surface
- Leaf, lower surface
- Leaves
- Leaflets
- Leaf attachment
- Leaf bud
- Leaf surface detail
- Flower (photograph front and back)
- Inflorescence (when flowers are produced in groups)
- Fruits
- Seeds

Description

Habit (tree, shrub, herb, grass, fern).....

Vegetative (leaf/stem) characters

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.....

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.....

Reproductive (flower/fruit) characters

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Notes on features that are not able to be photographed

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Identification (optional)

Family

Species.....

.....

Common/Maori name

Identification can be very difficult, sometimes requiring knowledge of microscopic parts of the plant and complex words. There is a whole branch of biology that involves classifying and identifying plants - this is called plant taxonomy and systematics. Modern techniques often involve analysis of the plants' DNA to understand how related it is to other plants. If you would like to try, this online key can be used to determine the family <https://hort.ifas.ufl.edu/floragator/key.html> The New Zealand Plant Conservation Network has photographs and information on plants found in New Zealand www.nzpcn.org.nz iNaturalist is an online community for recording species around the world. If you have an account you can upload your photos and experts will help you identify them.

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