

Binoculars and Telescopes for Birdwatchers

Binoculars

So you have started to notice birds in your garden and want a closer look - or maybe you want to upgrade that old heavy brass pair of binoculars grandfather gave you. There are literally hundreds of different types and sizes of binoculars on the market, not all suitable for watching birds. Your final decision for the suitability of a pair of binoculars will likely end up as a compromise between size, performance, durability and of course the price. This brochure should help you to make a more informed choice.

What do the numbers mean?

There will be two numbers engraved on the body, the first is the **magnification**. The second is the **diameter** (in millimetres) of the **object lens** (the front one). The most common are between 7x and 10x but also 12x, 16x and even 20x. The object lens sizes range from 20-80mm but usually are 35 to 50mm. These figures are displayed as 7x35, 8x40, 10x50 and so forth. Generally the larger the object lens the more light-gathering power, resulting in a brighter image reaching the eye. Other factors come into this equation, a badly designed binocular with less **coating** on the lenses will not transmit as much light as one with highly coated lenses and better-constructed barrels.

Some binoculars also have letters after the numbers such as 'B', meaning they are suitable for spectacle users - the eye-cups fold, push or twist down affording minimal field of view loss. 'GA' means that the binocular is protected against wear by being covered in rubber.

What type of binocular do I need?

The two most common binocular designs are **roof-prism** (sometimes called **Dach**) and **porro-prism**. Roof-prism have their eye pieces and object lenses aligned in a straight line like two small tubes; they are generally lighter and more compact. This design has internal focussing which gives the optics greater protection from dust and sand as well as being more robust, however manufacturing costs make them more expensive than the Porro-prism design. The porro-prism design has the eyepiece offset to the object lens making them more bulky but cheaper to manufacture.

The smaller magnifications (7x and 8x) have a wider field of view, usually closer minimum focus distance, a brighter image and less likelihood of image shake. The larger magnifications (9x, 10x and 12x) have a narrower field of view and the cheaper models have a duller image, making it difficult to focus on birds quickly. They are usually heavier and more difficult to hold steady. Anything over 10x is not recommended because of the likelihood of hand shake. **Zoom** binoculars are usually heavier and difficult to focus quickly and give inferior performance at given magnifications than conventional binoculars.

Fixed focus or **focus free** binoculars are not recommended as their minimum focussing distance is usually too far away to focus on birds, especially in the rainforest. These type of binoculars are set at just less than maximum sharpness, for watching objects at infinity such as distant scenery and rely on your eyes to adjust for optimum focus. These binoculars are OK if you spend all your time on a boat gazing out to sea or possibly looking at waders (shorebirds).

To watch waders or seabirds a higher magnification (10x) is useful. The birds are often far-away, therefore the close focus ability is not so important. **Image-stabilised** binoculars are useful (especially over 12x magnification) but the close focus ability is not as good as non-image-stabilised ones. However the design of these optics is always improving.

For general birdwatching and especially for beginners, who usually have trouble locating a bird quickly, 8 x 40 is an ideal choice. The wider field of view and a brighter image are more important than higher magnification. Compact binoculars are good if you are travelling and weight is a consideration but they will give inferior performance in low light, such as in rainforest. There are some good brands in the 8x25 and 10x25 ranges, usually costing over \$300.00.

Make sure the brand that you choose has a good repair facility and spare parts are readily available. Accidents do happen and you want to be sure you can get your binoculars fixed quickly.

How do I test them?

The price range for binoculars is huge (\$50 – \$3000+). Decide your price range before you start testing but be prepared to pay more once you see the quality of the higher priced models. Try out as many brands and types as possible. Ask other birdwatchers for their opinions and ask them to let you look through theirs. Try others out at the store. Test the ones you like under low light conditions (eg. indoors). Ask yourself if they feel comfortable in the hand and are they easy to focus. Are they too light or too heavy to use for five minutes continuously? Consider waterproof binoculars if you are going to use them on a boat or live in a very damp humid environment.

To test binoculars, move the two barrels closer together or further apart until you can see through both eyepieces comfortably and the image appears as one. To focus close your right eye and look at a distant object, adjust the **centre focussing wheel** until the image comes into focus. Your eye will try to adjust as well, so look away, wait a few seconds until it relaxes and look back again and re-adjust the focus. Don't touch the centre focus wheel but close your left eye and adjust the **dioptr correction** (usually on the right eyepiece but sometimes on the front of the centre column) until this becomes sharp. Once this is done you shouldn't have to touch the dioptr adjustment again as all the focussing will now be done using the centre wheel.

To check that the optics are aligned with the mechanical axis (collimation), focus on an object with horizontal lines (power/telephone lines). Quickly bring the binoculars up to your eyes and you should see a continuous single line. If you see two lines that quickly merge your eyes are compensating and you will get eye strain. To check for distortion focus on an object which has vertical and horizontal lines (eg. a brick wall). The lines should appear straight right across the field of view with no curvature toward the edges.

After these tests you should be able to look continuously through a pair of binoculars for five minutes without getting a mega headache which will be the result of eye strain, due to one of the above criteria not being met.

Updated April 2013

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Buy your binoculars and enjoy your
birdwatching!

WHO ARE WE?

BirdLife Northern Queensland

is a branch of the national organisation BirdLife Australia, formed in 2012 by the merger of Birds Australia and BOCA.

BirdLife Northern Queensland organizes both scientific and social activities. These include bird surveys, outings, workshops and presentations with guest speakers. The regular field trips and campouts cater for all levels of expertise from beginner to professional and emphasise fun as well as worthwhile conservation projects.

Members receive a quarterly newsletter *Contact Call* detailing local activities and also enjoy *BirdLife Australia* magazine dealing with national bird issues.

You can join BirdLife Australia and help the conservation of Australian birds at
www.birdlife.org.au

The **catadioptric mirror telescope** is shorter but has a larger diameter barrel than spotting scopes. It uses a reflective optical system offering high magnifications such as 80x without light loss, also some have the image reversed which can be difficult at first. They are extremely expensive and require a heavy duty tripod to keep the image steady.

Testing As with binoculars, test out scopes before you buy (preferably in the field). There is a huge price range (around \$500-\$4000+). Make sure you purchase a **tripod** that has a rigid base and a smooth action head - a fluid one designed for video cameras is ideal. This is especially important if you intend to watch or count numbers of waterbirds/waders. There is no such thing as a lightweight rigid tripod. A lightweight tripod would render even the best scope useless. A **car window mount** is another useful support - your car makes a good hide.

TELESCOPES

A *telescope* has much higher magnification than binoculars, an advantage for watching waders, seabirds (from land) and other waterbirds. It helps identification of some of these more challenging birds, much easier.

There are several different designs of telescope - not all are suitable for birdwatching. **Draw tube prismatic telescopes** have extendable barrels which need to be pulled out before using and are difficult to hold steady, so are not recommended.

The **fixed body prismatic telescope** - more commonly referred to as a '**spotting scope**' or just '**scope**' - is of a single barrel construction. These are the most suitable and popular design as they usually have interchangeable eyepieces which range in magnification from 20x to 60x and above.

Zoom eyepieces are also available, usually 20-60x, and are very useful. Bear in mind that the image will generally be duller and any magnification over about 40x will compress our tropical heat haze and make the picture fuzzier, however the high end zooms are very good now. A 25x or 30x wide angle is the most suitable **fixed magnification**. The object lenses range in size from 50mm to 100mm with 62, 77 and 80mm being the most common. **Low dispersion glass** (also referred to as ED, APO-Apochromatic, high definition or fluorite) is another option, this coated glass allows the light to pass through the barrel with less loss and better colour reproduction. This is recommended if you intend to use the scope for photography and you can afford the extra expense.

Another choice to make is a **straight or angled eyepiece**. The straight eyepiece models are easier to use for beginners and they can also be used with a **shoulder-pod**. The angled eyepiece models are easier to watch birds in the treetops, birds in flight and don't require the tripod to be erected as high, so are more stable. Most spotting scopes will allow the use of a **photo-adaptor** and good results can be obtained with a **rigid tripod**, which is essential. '**Digiscoping**' is the term used to describe attaching a digital camera to a telescope and good results can be obtained this way.

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BINOCULARS and TELESCOPES

.. a guide to choosing and using



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Birding Information No 3



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