STEVENAGE UNDERWATER PHOTOGRAPHIC SOCIETY

WIDE ANGLE PHOTOGRAPHY

BOB ALLEN

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- Talk on wide angle photography
- Introduction about me
- Under water wide angle skills and techniques
- Photographic equipment advantages and disadvantages
- Wide angle lens choice
- Photographs to illustrate choice
- Why use a wide angle lens
- Distorting effects of wide angle lenses
- Lighting wide angle lens subjects
- Choosing which wide angle lens to use
- Training your eye to “see” in wide angle
- Top tips

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INTRODUCTION

- Bob Allen
- Started diving in 1969 – Lulworth Cove
- Started underwater photography 1980 – Kingsbridge, Bigbury Bay, Wreck of Persia, Dive 108
- Completed 1588 dives
- Early equipment – Nikonos III (Circa 1975), one Oceanic 2001 flash and Oceanic light metre
- Started with print film 100 ASA but quickly changed to slide film 50 ASA and 100 ASA
- Most wanted to take wide angle photos
- Unlike others, I had success with wide angle, whereas macro was a real problem with high failure rates

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- Wanted to transport non divers – friends and family – into the underwater world
- Wanted to give them a glimpse of what I was seeing and what I was so passionate about

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WIDE ANGLE SKILLS AND TECHNIQUES

- Under water and above water wide angle very much alike

- Many ideas for good under water pictures are stimulated from images taken above water

- Many skills and techniques required to take above water wide angle photos directly transportable to under water

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Images include:

- Natural light
- Balanced natural light with fill in flash
- Close focus wide angle
- Working with models
- Shooting large groups
- Shooting large structures
- Shooting large subjects
- Shooting in low visibility
- Split level images

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ADDITIONAL UNDER WATER WIDE ANGLE SKILLS AND TECHNIQUES

•Key additional skills for under water wide angle involve managing low visibility and light levels

•Constantly striving to reduce the amount of water between camera and subject

•Reducing amount of suspended particles in water between lens and subject

•Master positioning of flashguns to eliminate bright light reflecting directly back off particles between lens and subject

- Wide angle and ultra-wide angle lenses are extremely good at helping with above

  Capable of:

  – focusing very close – but not close-up lenses

  – including very large subjects in image frame

  – including large subjects when very close to them

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PHOTOGRAPHIC EQUIPMENT ADVANTAGES AND DISADVANTAGES FOR WIDE ANGLE

- SLR AND DSLR ADVANTAGES
  - Subject viewing through view finder
  - Provision of high quality and resolution images (24 mega pixels)
  - Fast and accurate auto focus systems
  - Absence of shutter lag
  - Raw and JPEG image recording
  - Direct connection to additional flash guns (electric and fiber optic)
  - Large selection of dedicated lenses
  - Large selection of ultra wide, wide angle, wide angle 200 m with fixed apertures

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- SLR AND DSLR DISADVANTAGES
  - Cameras, lenses and flash guns are large and heavy
  - Housings and ports are large and heavy
  - Cameras, lenses, flash guns, housings and ports are expensive
  - Camera attached flash

- COMPACT CAMERA ADVANTAGES
  - Cameras, lenses and flash guns are small and light
  - Housings and ports are small and light
  - Direct connection to additional flash guns (electric and fiber optic)

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- COMPACT CAMERA DISADVANTAGES
  - Subject viewing from screen on back of camera – especially in very bright ambient conditions
  - Provision of lower quality and resolution images (12 mega pixels but improving)
  - JPEG image recording (some raw)
  - Slow and less accurate focusing systems
  - Shutter lag resulting from sensor changing from viewing to recording mode
  - Limited lens zoom range with variable aperture
    - 4.5 mm – 63 mm OR 25 mm – 200 mm in 35 mm or DSLR format angle of view
  - Camera attached flash
- Good deal of DSLR equipment available in good condition and well priced in SUPS

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WIDE ANGLE LENS CHOICES

- Historical note regarding Nikonos III lens optical quality

- Standard lens:
  - Nikkor 35 mm **F2.5** (RSA lens)

- Additional lenses:
  - Nikkor 20 mm **F2.8** }
  - Nikkor 28 mm **F3.5** } all expensive
  - Nikkor 15 mm **F2.8** }
  - Nikkor 80 mm **F4** }

  - Sea and Sea 15 mm **F3.5** (RSA lens)

NIKONOS III LENS CHOICE
15 mm wide angle

NIKONOS III LENS CHOICE
20 mm wide angle

NIKONOS III LENS CHOICE
35 mm wide angle

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DSLR WIDE ANGLE LENS CHOICE

- **Nikon DX cameras (cropped sensor)**

- Nikkor
  - 10.5 mm fisheye
  - 10 mm – 24 mm wide angle 200 m
  - 12 mm – 24 mm wide angle zoom

- Tokina
  - 10 mm – 17 mm fisheye zoom

- Sigma
  - 10 mm – 20 mm fisheye zoom

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- **Nikon FX cameras (full frame sensor)**
- Nikkor
  - 16 mm fisheye
  - 17 mm – 35 mm wide angle zoom
- Sigma
  - 15 mm wide angle

- **Canon cameras (full frame and cropped sensor)**
- Canon
  - –14 mm wide angle
  - –16 mm – 35 mm wide angle zoom
  - –17 mm – 40 mm wide angle zoom
  - –10 mm – 22 mm wide angle zoom
- Sigma
  - –15 mm wide angle

LENS CHOICES I HAVE MADE
Nikkor AF Fisheye DX 10.5 mm F1.28 G

LENS CHOICES I HAVE MADE

Nikkor AF-S DX 12 mm – 24 mm F1.4 G Zoom 12 mm Focal Length

LENS CHOICES I HAVE MADE

Nikkor AF-S DX 12 mm – 24 mm F1.4 G Zoom 24 mm Focal Length

LENS CHOICES I HAVE MADE

Tamron SP 17 mm – 50 mm F2.8 Zoom 17 mm Focal Length

LENS CHOICES I HAVE MADE

Tamron SP 17 mm – 50 mm F2.8 Zoom 50 mm Focal Length

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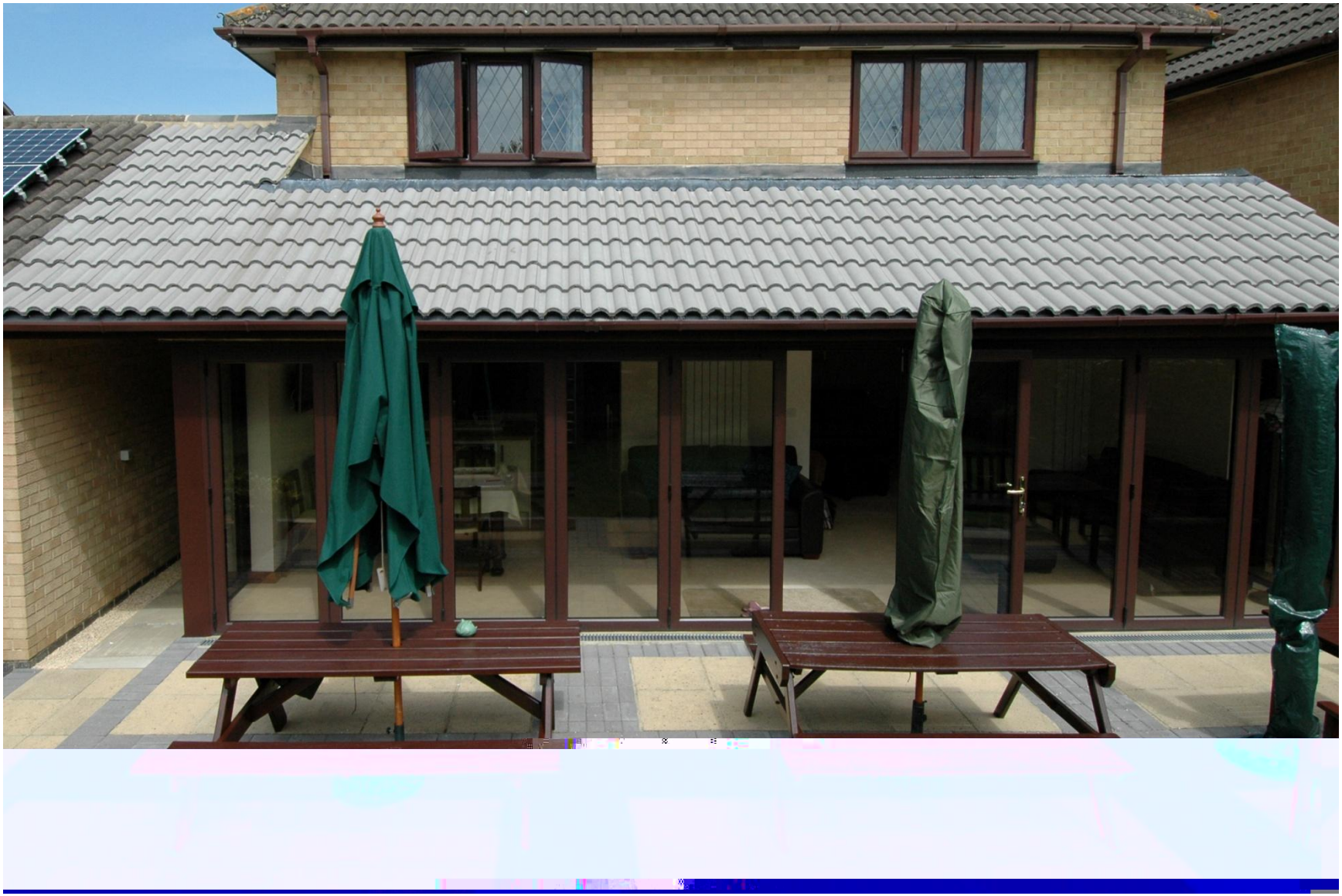
Slide merge 1 – 7

12 mm – 50 mm

6 m distance



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ILLUSTRATIONS OF WIDE ANGLE LENS IMAGE

REDUCING CAMERA TO SUBJECT DISTANCE

Nikkor AF – S DX 12 mm – 24 mm F1.4 zoom Focal length 12 mm

Distance 6 m

Nikkor AF – S DX 12 mm – 24 mm F1.4 zoom Focal length 12 mm

Distance 4 m

Nikkor AF – S DX 12 mm – 24 mm F1.4 zoom Focal length 12 mm

Distance 2 m

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WHY USE A WIDE ANGLE LENS

- Longer lenses (greater 20 mm) force photographer to move away from subject
- If photographer is distant from subjects, water column is increased, decreasing colour saturation, sharpness of image and strength of silhouettes
- For large subjects give better detail, colour and sharpness
- Ultra wide angle lenses increase creativity
- Bending straight lines and ability to frame 170° or more of angle enable photographers to be uniquely artistic and imaginative
- On land, distorting effect of lens can be disadvantage but under water not such a problem
- Natural under water world blesses us with irregular lines, curves and spheres which favour wide angle lenses

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DISTORTING EFFECTS OF WIDE ANGLE LENSES UNDER WATER

- Distortion
  - Near subjects appear larger and closer than actual size
  - Far subjects appear smaller and much further away than actual size
  - Increases the appearance of scale of under water visibility – background appears much more distant
  - Size of close subjects are exaggerated against distant subjects

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- Depth of field
  - The wider the angle of the lens, the greater the depth of field
  - A full frame fisheye lens of 10.5 mm focused at 1 metre, is in focus from 0.5 meters to infinity at an aperture of F8
  - Straight lines are severely bent by increasing the wider angle of lens
  - Straight lengths of steel beams in wrecks will be curved by 10.5 mm lens

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LIGHTING WIDE ANGLE SUBJECTS (EXPOSURE)

- The lens aperture, camera shutter speed and camera sensitivity combine together to create a correctly exposed image record
- Camera sensor sensitivity (ISO) set the total amount of light needed to make a correctly exposed image record
- Higher sensitivity settings:
  - Require less light to make correct exposure
  - Allow higher shutter speeds and smaller apertures
- DSLR and Compact camera sensor sensitivity can be manually set
- Values of approximately ISO 100 to 150 1600 can be set in many increments
- To start in good natural light we can set ISO 200
- The lens aperture (F number) and shutter speed are set in relation to each other to allow the correct amount of light to fall on the sensor

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- When the amount of light falling on the sensor correctly matches the sensitivity set, the image recorded by the sensor will be correctly exposed
- Set the camera shutter speed for wide angle images at speeds between 1/15th and 1/125th
- Match the shutter speed with lens apertures of F5.6 to F11 or higher to give best depth of field to image
- Speeds are set to lower to accommodate low natural light levels and to enable higher aperture selection
- The longer the shutter speed and higher the aperture (F number) the greater saturation, colour and sharpness of image under ambient light conditions
- Previous setting combinations of shutter speeds and apertures could easily prevent correct amount of light hitting sensor, especially in foreground

- To light foreground, introduce flash lighting
- Adding flash ensures the correct amount of light is reflected from relatively small and close areas of subject
- The reflected flash light and background ambient light should combine together and pass through lens aperture at high enough level for the shutter speed to control the correct total level of light falling on the sensor to match the ISO exposure
- Light matching process (balancing) is easier today with flash guns having a range of power settings
- Generally, point flash guns away from the camera on arms no longer than 90 cm

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- Position flash guns so light emitted comes from behind camera dome port where there is shade
- Position one flash from above in landscape or portrait shots
- Aim flash guns above subject so bottom edge of light beam cuts in front of subject. Subject will be illuminated by outer edge of beam as opposed to centre
- Generally, for static or slow moving subjects use quite slow speeds

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- Faster speeds and continuous release modes can be used for action photos under water but is limited.

- Blue water or contrasting backgrounds will make the subject appear to jump out of picture

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PROBLEMS OF AUTOMATIC EXPOSURE MODE

•Automatic exposure mode problems:

- Does not know you are under water – very different to above water
- Thinks you are in a dark place
- Will try to give as much natural light as possible
- Will reduce shutter speed to provide light
- Low shutter speeds result in shutter shake and blurred photos
- Will reduce aperture (low aperture numbers)
- Low aperture numbers will reduce depth of field and focus sharpness

Using manual exposure mode eliminates problems of automatic exposure mode caused by its above water metering profile

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WHICH WIDE ANGLE LENS OR WHICH END OF WIDE ANGLE ZOOM LENS TO USE

•Key to which to use is the ability of photographer to get close to subject

•Good examples of subjects you can get close to and with wide angle lenses :

- Wrecks and sea scapes – my choice 10.5 mm fisheye
- Large shoals and large fish – my choice 12 mm – 24 mm or 15 mm – 50 mm wide angle zoom
- Fish portraits and background detail – my choice 17 mm – 50 mm wide angle zoom
- Large subjects in low visibility, especially if move quickly – my choice 10.5 mm fisheye

•If you cannot get close use 10mm – 17mm zoom fisheye which will give more flexibility for distant subjects

•Flexibility means a lot in under water photography and relative costs of the two lenses are similar

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TRAINING YOUR EYE TO SEE IN WIDE ANGLE

•Mostly, under water photographers indulge passion from armchair, computer, prints and slide shows from trips

•All become accustomed to seeing photos in strong intensive colours

•Under water world not like this. We see rich vivid colours only with help of artificial light

•Under water world is in varied shades of blue, grey and green

•When first below water possible to become quite dejected when colour saturation and clarity seen in photos appears to be an illusion

•Help is available – digital photography allows us to see the reds, oranges and purples at click of button and review of image on screen

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- Always waste a few shots on dark and even black subjects - sometimes surprised by brilliant reds – only takes a second to take and delete

- Successful under water photographers train their eyes and develop ability to “see in pictures”

- Stop and examine coral formations, test for colours, compose through viewfinder and test pictures moving round subjects

- Train eyes to view scene through imaginary wide angle viewfinder. Take time to visualise how things may be recorded – wealth of possibilities right under nose

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TOP TIPS

- Get close to subjects
- If circumstances and subject matter require shooting in continuous release mode (peak of the action) then try it
- Continuous focusing mode becoming a popular technique
- Ensure shoot at eye level or upwards towards surface
- When sun low on horizon, swim towards the sun – effective way to "see in pictures" more easily when vital spark of sunlight in view
- Always fire flash guns before entering water
- Before entering water, set aperture at F8 and focus distance to 1 metre, turn flashes on and position to light subjects about 1 metre away from lens – often within seconds of entering water opportunities appear out of nowhere

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- Take a polaroid picture/snap of subjects and backgrounds to check out exposure, colour, condition of subject before composing properly – not with sensitive creatures
- If feel obsessive in quest for technical perfection let go a bit. Technical aspects of photography can cloud artistic ability – can always shoot more pictures
- Learn wide angle photography above water and trust it under water
- Learn to use the histogram to determine correct exposure
- Of all subjects under water, 70% are not photographable because of location on reef. If you cannot shoot subject without fear of damage or harm, move on and find something in an easier position

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EXAMPLES OF WIDE ANGLE PHOTOGRAPHS

- Natural light
- Balanced natural light with fill in flash
- Close focus wide angle
- Working with models
- Shooting large groups
- Shooting large structures
- Shooting large subjects
- Shooting in low visibility
- Split level images

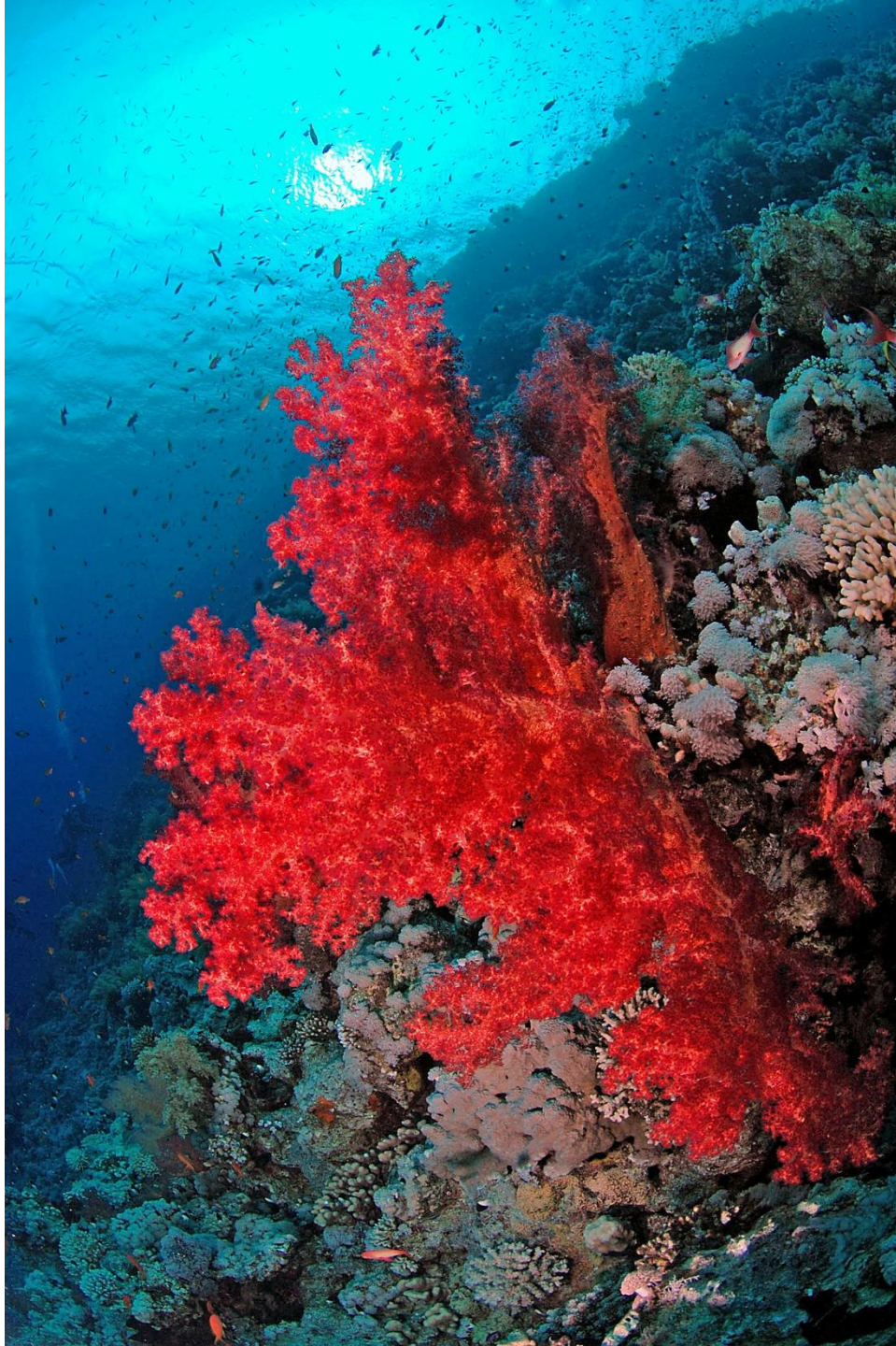
Natural light

Natural light

Balanced natural light and fill in flash

Balanced natural light and fill in flash

Close focus wide angle



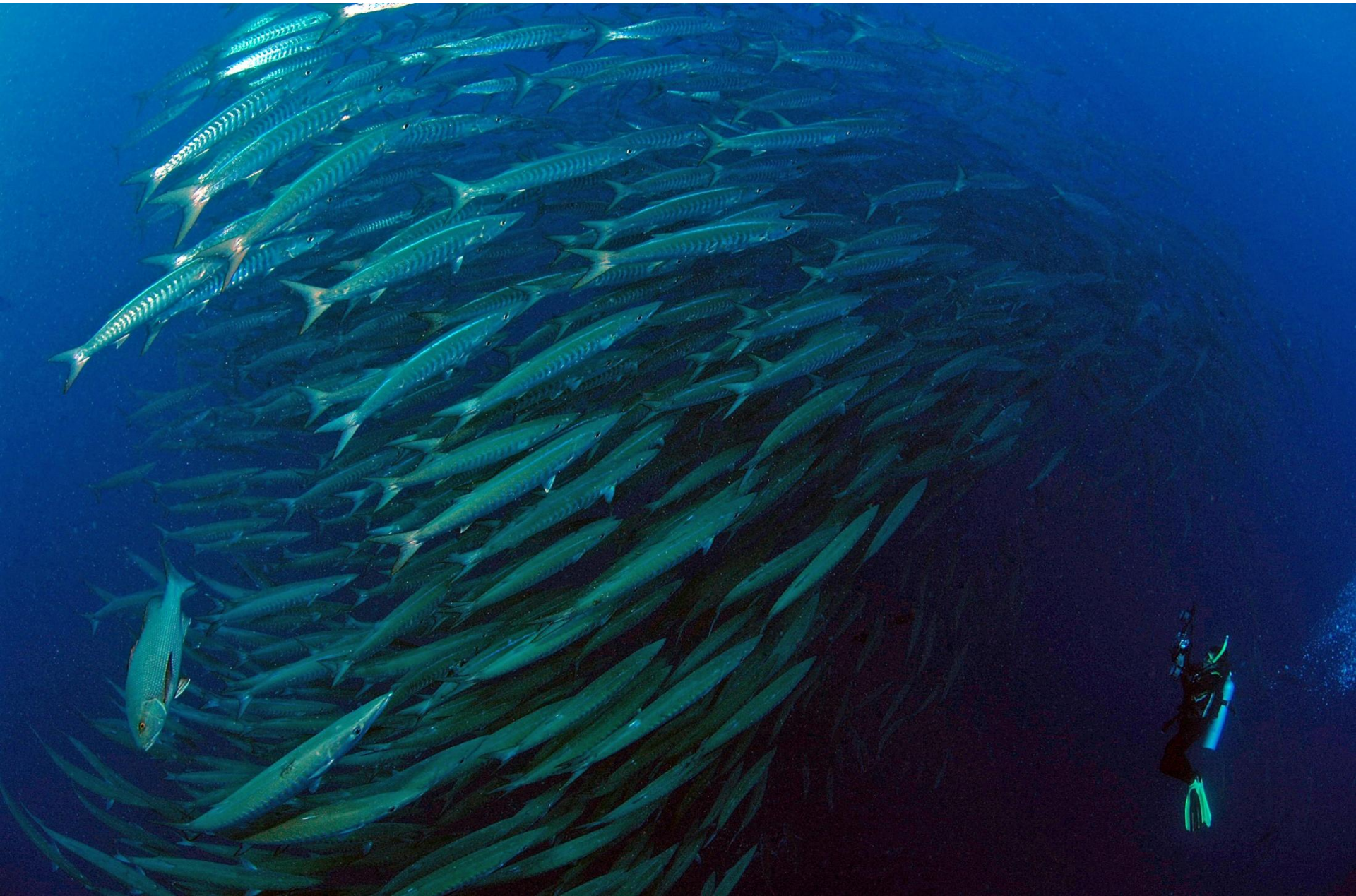
Close focus wide angle

Working with models

Working with models

Shooting large groups

Shooting large groups

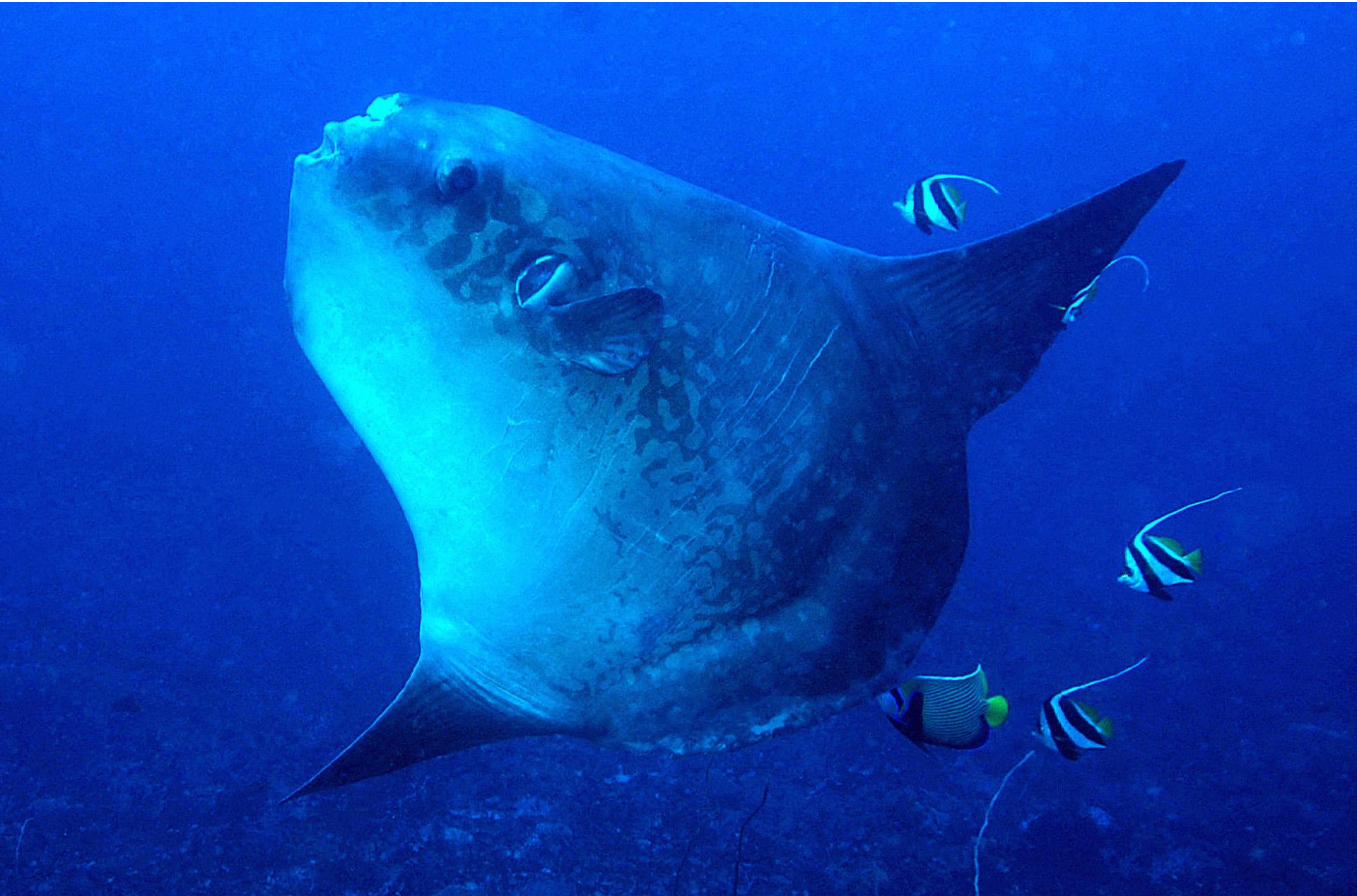


Shooting large structures

Shooting large structures

Shooting large subjects

Shooting large subjects



Shooting large subjects in low visibility

Shooting large subjects in low visibility

Shooting split field images

Shooting split field images