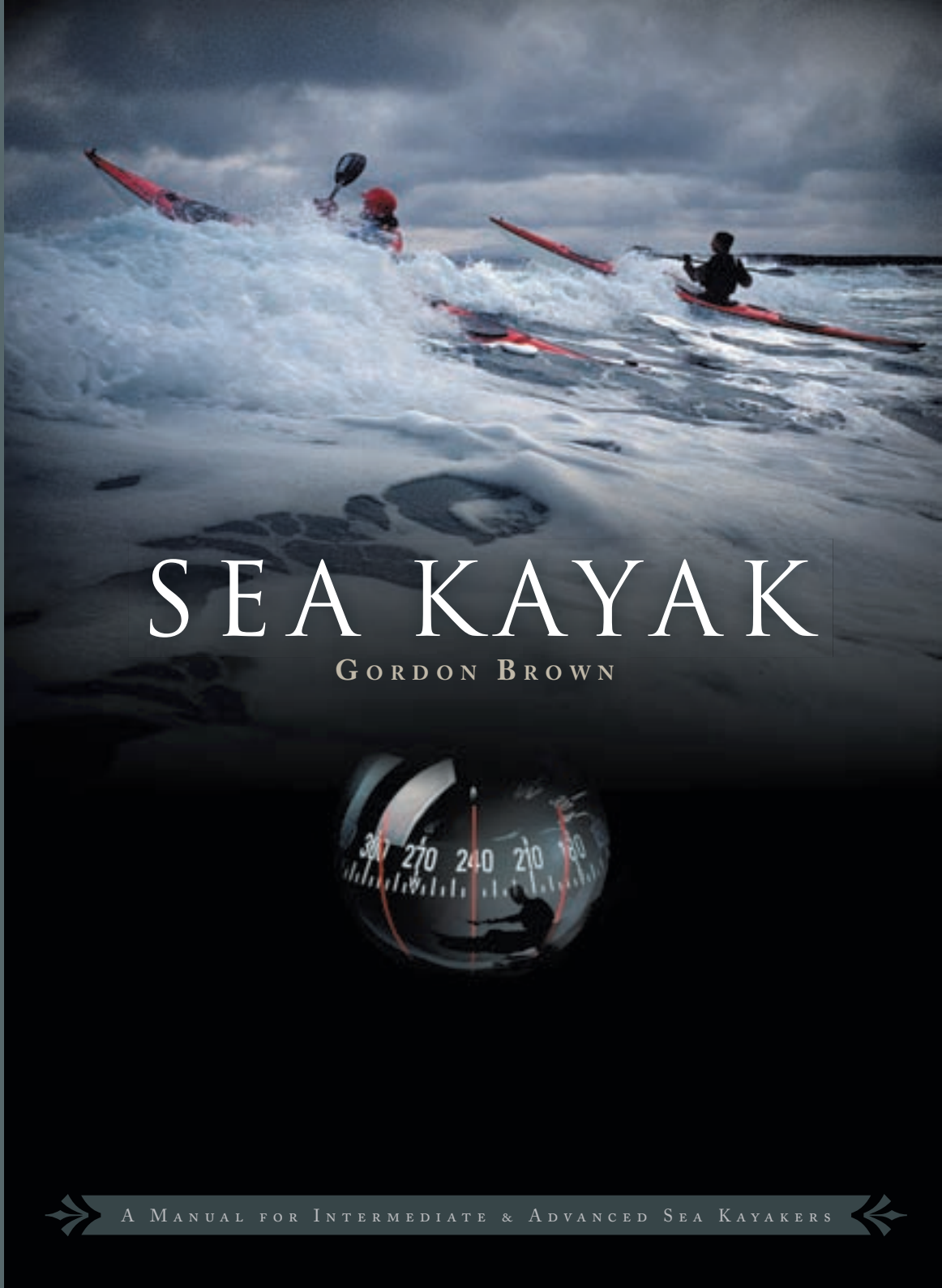

SEA KAYAK

GORDON BROWN

A MANUAL FOR INTERMEDIATE & ADVANCED SEA KAYAKERS

A Manual for Intermediate & Advanced Sea Kayakers

SEA KAYAK

Gordon Brown

Pesda Press LTD

www.pesdapress.com

Front cover: *Paddling out through the surf, North Skye.*

Back cover: *Resting in a basalt cave south of Loch Bracadale, Skye.*

First published in Great Britain 2006 by Pesda Press
Unit 22, Galeri
Doc Victoria
Caernarfon
Gwynedd
LL55 1SQ

Reprinted 2007
Reprinted 2009

ISBN-10: 0-9547061-7-X
ISBN-13: 9780954706173

Printed and bound in Poland. www.polskabook.pl

About the author

Gordon Brown is quick to admit that he has the best job in the world, kayaking almost every day from his home on the Isle of Skye.

His first career was as a car mechanic, working in his father's garage in Ayrshire, although his first love was always kayaking. In this, his first book, Gordon draws upon thirty years of sea kayaking and coaching experience, from early days exploring Scotland's west coast in a home-built wood and canvas kayak, to paddling in Greenland, New Zealand, Tasmania, Sri Lanka, Norway, Iceland, Canada and the USA. He spent three months coaching on the rivers of Nepal and has kayaked throughout the United Kingdom, including all the outlying islands. This wealth of knowledge, supplemented by forays into whitewater and surf coaching, has been distilled into the pages of this book.

Gordon owns and runs Skyak Adventures with his wife Morag. As well as introducing novices to the sport in one of the most beautiful yet challenging parts of the world, Gordon trains and assesses to the highest level within the British Canoe Union. He is helping to develop a new awards scheme for the BCU and remains Scotland's only American Canoe Association advanced open water instructor.

It is surely difficult to disagree with Gordon's own assessment. He probably does have the best job in the world!

Photo: Morag Brown.

Acknowledgements

This book would not have been possible without the generous support of many people, too many to list, but you know who you are. Thank you.

However, I must single out some for special mention: The team at Pesda Press for encouragement, advice and hard work; Lendal for excellent paddles; Valley Sea Kayaks for their continued support; Knoydart Kayaking Systems and Kokatat for clothing; and Reed Chillcheater for coping with my strange requests!

Finally, and most of all I'm hugely grateful to all of my family, and especially my wife Morag, for support, advice, inspiration and for allowing me the time to write... and to kayak.

All photos by Gordon Brown, except where noted. Photographic contributors; Morag Brown, Duncan Winning, Simon Willis, Douglas Wilcox, Trys Burke, Les Wilson, Jeff Allen, Johan Wagner, Franco Ferrero, Alun Hughes, Nigel Dennis, the Shetland Museum and the Norwegian National Library.

CONTENTS

PLATE XXIII *Paddler about to disappear.*
Photo: Douglas Wilcox

15 Big Swell

Big swell paddling is a delight, land appears and disappears, you lose sight of your buddies and they of you; breaking waves seem to appear out of nowhere, lie in wait and explode just as you get really close.

Swell is generally caused by atmospheric conditions, with the wind being the obvious culprit. Friction from the wind interacting with the water causes waves, the longer and stronger the wind the bigger the wave. Swell travels in a straight line away from the area of origination until it reaches an obstacle. The size of a swell can increase or decrease as it interpolates with other swell patterns.

Other phenomena that cause swell are earthquakes, massive landslips and meteorite impacts, each of which may generate tsunami (tidal waves). The power of a tsunami can be truly awesome as observed in the Indian Ocean, December 2004. Caused by an underwater earthquake, the resulting surface wave was only a few centimetres high, but the wave was full-depth (its effect went from the surface to the ocean floor). When it came close to land the first indication was that the water drained from beaches and reefs only to be replaced by a very much larger lump of sea. If you are on the water when a tsunami occurs, the best option for your survival is to turn out to sea and paddle as if your life depended on it, because it probably does.

Check out the chapter on Surf & Surfing for more on forecasting swell. However it is a big subject, so just choose an Internet search engine and type 'swell forecasting'. There are a few addresses in the Further Reading section that I have found useful and interesting.

Most information displayed is primarily for surfers and although you might not be going to surf, you will still benefit from knowing what size of waves are forecast. Remember that, like a weather forecast, predicting waves is not an exact science. If you visit a place often you can build up a picture of what size the swell actually is for any given forecast data.

A nautical chart is because, knowing the depths, you can work out the breaks that are likely to happen given a certain amount of swell. If there is a swell of three metres running and a rock with charted depth of two metres, there is a chance that when the swell meets with the rock there will be a breaking wave formed. Waves start to 'feel' bottom when the depth is around half the wavelength or approximately one and a half times the wave height.

Wave height is the vertical distance from trough to peak of a wave. **Wavelength** is the horizontal distance from a peak to the peak of the next wave. Further explanation is given in the next chapter, Surf & Surfing.

Look well in front of where you are paddling. This will give you reliable information as to what is likely to be happening when you get close to any critical areas. If you also look farther out to sea you will get a feel for any larger than normal swell coming towards you; this will give you a chance to react and change your direction if need be.

15.1 POSITION FIX FROM SWELL CHARACTERISTICS

The wave height and shape of a swell will reveal clues about the local depth of water. Assuming you are using a chart for navigation rather than a topographical map, you can read the sea state and relate this to what you are looking at on paper. For instance, when a shallow area jacks up the swell, you can pinpoint your position fairly easily. This is similar in method to that which a sailor might use when making soundings.

15.2 THE BEHAVIOUR OF WAVES

Reflection - Waves will be reflected by steep shores, cliffs or sea walls. If, like me, you can remember some of the basic physics that our patient teachers tried to infuse our brains with, there may be a recollection of interference patterns and waves – when two wave crests of equal height meet the result is a crest that is twice the height of the original. Furthermore, the angle of reflection is equal to the angle of incidence.

So the reflected waves will interpolate with the incoming waves in a largely predictable and regular pattern (an interference pattern) causing an area of disturbed water where wave heights spike (this can be quite explosive) – expect to find this 'clapotis' anywhere there is a sheer coastline or harbour wall. A headland bluff that is in the path of a swell is probably best given a wide berth. There will however, be a null point quite close to the rock where the water is less chaotic and almost calm compared with the sea around you.

fig. 15.1 *Reflected waves can cause explosive clapotis. ©iStockphoto.com / YuriyVZ*

Refraction – is a change in the speed of propagation of a wave due to variation in the depth of water in which it is travelling. Where the wave approaches shallow water at an angle or the shallow water is irregular in shape this will result in a bend in the previously parallel and straight waves. This effect explains why waves never break at an angle on a beach, but are refracted toward the beach as it becomes ever more shallow.

Wave height will tend to be focussed on points and reefs, and dissipated into bays and coves. The varied bathymetry of a coastline will produce an assortment of refraction effects along its length. The refraction effect will be stronger the longer the period of the swell, and so too the wave height upon breaking will be greater (than for a shorter period swell of the same height in deep water).

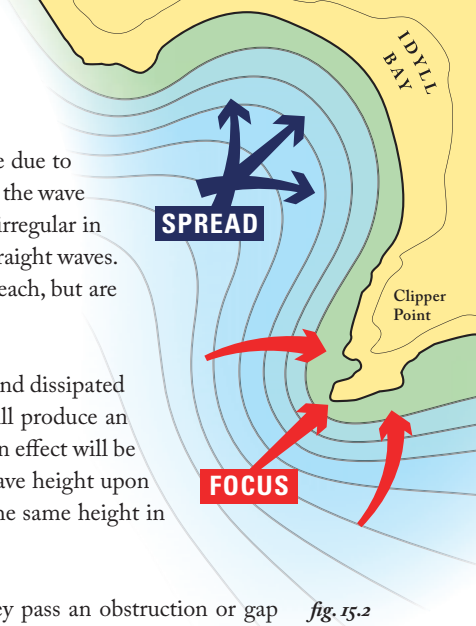

fig. 15.2 *Focussing effect of refraction on headlands.*

Diffraction – is the bending and interference of waves as they pass an obstruction or gap (normally seen as edge diffraction around a headland). The angle at which the wave is bent is proportional to the wavelength and inversely proportional to the width of the obstruction.

You may take shelter behind an island; if the swell were 100% on the exposed side, a rule of thumb would be that on its sheltered side it would have dropped to 10% of the original height. Unfortunately what also happens is that the bigger waves continue around the island and come together some distance away on the downwind side, resulting in an area of interference where the waves jack up. Sometimes this area is shown on a chart as overfalls, sometimes it is not and only your knowledge of the sea and its moods will predict where, when and how severe the conditions will be. If the island is close inshore the effect of the interference may not be noticeable at all, due to the added effects of reflection and refraction.

fig. 15.3 *Wave diffraction around an iceberg, creating a regular interference pattern.*

15.3 REEFS

Swell lands on the exposed side of a reef and generally pours over, then off the sheltered side. So when paddling in the shelter of a reef, although you will be paddling against a current flowing from the reef you should have less swell to deal with.

15.4 HARBOURS

Are very obvious safe places from swell. What is important to remember is that there will be a lot of other traffic using these areas. All rules of the road, at least power giving way to sail and sail to human power, go out of the window when there is a big swell setting across the entrance. The best thing to remember is that 'MIGHT HAS RIGHT'. For your own safety ensure you are not in a position which could end up with you and a larger vessel competing for the entrance, you are small enough to manoeuvre and your kayak is much more seaworthy than anything else on the water. Make sure you are in the safest position you can be and that you give way to everything else.

15.5 ESTIMATING HEIGHT OF SWELL & WAVES

Estimating swell and wave height whilst at sea is not a science or even an art, it's sooth-saying. There are many methods written about in equally as many publications – for our purposes it is best to keep things simple.

If you have a distant horizon the waves are less than one metre.

If your horizon is the crest of the wave immediately in front, the waves are over a metre.

Anything bigger than this is only talk for the party afterwards, over one metre and communication within your group becomes difficult. If you are paddling by yourself there is less to concern you, as there is no need to watch out for another kayaker. You do however have to remember to watch out for other water users.

PLATE XXIV *Ensure adequate space between paddlers in swell conditions.*

SEA KAYAK

Gordon Brown

Gordon Brown is a BCU Level 5 sea coach based on the Isle of Skye, Scotland. He shares his knowledge with you in his own succinct humorous style and very visual approach.

In this book Gordon covers topics of kayaking history, physiology, boat and paddle dynamics, seamanship and navigation, safety and rescue, weather forecasting, caves, rockhopping and tidal races, expeditions and overnighting, as well as a wealth of tips and resources for the sea paddler.

Over seventy photographs and illustrations help to make this an essential modern manual for the sea kayaker.

ISBN 0-9547061-7-X

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