A Minimal Book Example

John Doe

2022-03-22

Contents

Chapter 1

About

This is a *sample* book written in **Markdown**. You can use anything that Pandoc's Markdown supports; for example, a math equation $a^2 + b^2 = c^2$.

1.1 Usage

Each **bookdown** chapter is an .Rmd file, and each .Rmd file can contain one (and only one) chapter. A chapter *must* start with a first-level heading: `# A good chapter`, and can contain one (and only one) first-level heading.

Use second-level and higher headings within chapters like: `## A short section` or `### An even shorter section`.

The `index.Rmd` file is required, and is also your first book chapter. It will be the homepage when you render the book.

1.2 Render book

You can render the HTML version of this example book without changing anything:

1. Find the **Build** pane in the RStudio IDE, and
2. Click on **Build Book**, then select your output format, or select "All formats" if you'd like to use multiple formats from the same book source files.

Or build the book from the R console:

```
bookdown::render_book()
```

To render this example to PDF as a `bookdown::pdf_book`, you'll need to install XeLaTeX. You are recommended to install TinyTeX (which includes XeLaTeX): https://yihui.org/tinytex/.

1.3 Preview book

As you work, you may start a local server to live preview this HTML book. This preview will update as you edit the book when you save individual .Rmd files. You can start the server in a work session by using the RStudio add-in "Preview book", or from the R console:

```
bookdown::serve_book()
```

Chapter 2

Motivation

A Learning Management System Nightmare

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frontiers in Marine Science

POLICY AND PRACTICE REVIEWS
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Marine Conservation Begins at Home: How a Local Community and Protection of a Small Bay Sent Waves of Change Around the UK and Beyond

Bryce D. Stewart[1†], Leigh M. Howarth[2†], Howard Wood[3], Kerri Whiteside[4], William Carney[5], Éilis Crimmins[1], Bethan C. O'Leary[1], Julie P. Hawkins[1] and Callum M. Roberts[1]*

[1] Department of Environment and Geography, University of York, York, United Kingdom, [2] Oceanography, Life Sciences Centre, Dalhousie University, Halifax, NS, Canada, [3] Community of Arran Seabed Trust, Lamlash, United Kingdom, [4] Fauna & Flora International, Cambridge, United Kingdom, [5] Marine Management Organisation, Newcastle upon Tyne, United Kingdom

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Fiorenza Michell, Stanford University, United States

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Claudia Baldwin, University of the Sunshine Coast, Australia
Andrew M. Fischer, University of Tasmania, Australia

****Correspondence:***
Bryce D. Stewart
bryce.beukers-stewart@york.ac.uk

[†]These authors share first authorship

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The Firth of Clyde, on the west coast of Scotland, was once one of the most productive fishing grounds in Europe. However, successive decades of poor management and overfishing led to a dramatic loss of biodiversity and the collapse of finfish fisheries. In response, concerned local residents on the Isle of Arran, which lies in the middle of the Clyde, formed the Community of Arran Seabed Trust (COAST) in 1995. After 13 years of campaigning, a small (2.67 km^2) area in Lamlash Bay became Scotland's first no-take zone (NTZ) in 2008, and only the second in the UK. Since protection, biodiversity has increased substantially, along with the size, age and density of commercially important species such as the king scallop, *Pecten maximus*, and the European lobster, *Homarus gammarus*. Arguably more important, however, is the influence the Lamlash Bay NTZ and COAST have had on UK marine protection in general. Most notably, detailed research has created a case study that clearly demonstrates the benefits of protection in an area where little such evidence is available. This case has been used repeatedly to support efforts for increased protection of UK waters to help rebuild marine ecosystems and enhance their resilience in an uncertain future. In Scotland specifically, lobbying by COAST led to the designation of a much larger marine protected area (MPA, >250 km^2) around the south of Arran, one of 30 new MPAs in the country. Evidence from Lamlash Bay has supported development of strong protection for these MPAs, seeing off lobbyist efforts to weaken management. Arran's conservation success has been recognized internationally and is inspiring greater involvement of local communities around the UK, and further afield, to take the destiny of their coastal waters into their own hands. Successful marine conservation begins at home.

Keywords: marine protected areas, marine reserve, community based conservation, ecosystem – based management, fisheries, marine biodiversity, Lamlash Bay, Isle of Arran

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Benefits of closed area protection for a population of scallops

Bryce D. Beukers-Stewart*, Belinda J. Vause, Matthew W. J. Mosley, Helen L. Rossetti, Andrew R. Brand

Port Erin Marine Laboratory, University of Liverpool, Port Erin, Isle of Man IM9 6JA, British Isles

ABSTRACT: Despite the current interest in using closed areas for fisheries management, few studies have actually examined the benefits for invertebrate fisheries such as scallops. This study details the dynamics of a population of great scallops *Pecten maximus* (L.), within a closed area and an adjacent fished area off the Isle of Man, over a 14 yr period (1989 to 2003). Scallop densities were very low in both areas when the closed area was set up, but increased at an accelerated rate over time within the closed area. Scallop densities also increased on the adjacent fishing ground, but not to the same extent. Consequently, the density of scallops above the minimum legal landing size (110 mm SL) was more than 7 times higher in the closed area than in the fished area by 2003. There was also a shift towards much older and larger scallops in the closed area and, correspondingly, lower estimates of total mortality. Experimental dredging of 2 plots within the closed area confirmed that fishing drove these differences in population dynamics and structure. These patterns of scallop density, age and size structure resulted in the exploitable biomass (adductor muscle and gonad) of scallops being nearly 11 times higher in the closed area than in the fished area by 2003, and the reproductive biomass was 12.5 times higher. This is significant for fisheries management because the build up of high densities of large *P. maximus* individuals enhanced local reproductive potential and therefore the likelihood of export of larvae to the surrounding fishing grounds. Along with these direct benefits of closed area protection, juvenile scallops had higher survival and individual growth rates in the closed area, apparently in response to reduced fishing disturbance. Although juvenile scallops are not subject to direct removal by fishing, protection during this critical phase therefore appeared to assist the recovery of the closed area population. In summary, this study joins a growing number indicating that the use of closed areas offers a range of benefits over more traditional methods of managing fisheries. Fisheries for relatively sedentary and long-lived species such as *P. maximus* appear to be particularly suitable for this type of management.

KEY WORDS: Closed areas · Marine reserves · Fisheries management · Fishing effects · Larval export · *Pecten maximus*

INTRODUCTION

Research into the use of closed areas for fisheries management has increased at an almost exponential rate over the last decade as traditional management methods continue to fail (Mosquera et al. 2000, Pauly et al. 2002). This interest is due to a range of perceived benefits offered by closed area management for both target species and the environment. Perhaps not surprisingly, numerous studies have now shown that closed area protection can increase the abundance and mean size of target species (Mosquera et al. 2000, Halpern & Warner 2002, Halpern 2003). This is thought to enhance local reproductive output and therefore lead to export of larvae to surrounding areas that are open to fishing (Roberts et al. 2001, Gaines et al. 2003, Gell & Roberts 2003, Grantham et al. 2003). For mobile species, there can also be spillover of juveniles/adults to adjacent areas through emigration or density-dependent dispersal (Lizaso et al. 2000, McClanahan &

*Email: brycebs@liverpool.ac.uk

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RESEARCH

The Brexit deal and UK fisheries—has reality matched the rhetoric?

Bryce D. Stewart[1] · Chris Williams[2] · Richard Barnes[3,4] · Suzannah F. Walmsley[5] · Griffin Carpenter[6]

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Abstract
Fisheries management has been a strongly contested aspect of the UK's position in the EU since UK accession, with the fishing industry frequently questioning both the efficacy and fairness of arrangements. During the campaign for UK exit (Brexit) from the EU, and the subsequent negotiations of a new legal and political relationship from 2016 to 2020, senior UK political leaders strongly committed to deliver radically changed fisheries arrangements with respect to the three central issues: regulatory autonomy; access to waters; and quota shares, all while maintaining minimal trade impacts. The Trade and Cooperation Agreement diverges from this Brexit rhetoric. While some regulatory independence has been achieved, UK fisheries management continues in a state of interdependence and significant EU access to UK waters remains, even in the 6–12 nautical mile territorial waters. While the UK gained an increase in quota shares which is estimated to reach 107 thousand tonnes of landed weight annually by 2025 (an increase of 21.3% for quota species and 16.9% for all species, or 17.8% and 12.4% by value), this pales in comparison to the UK Government's stated ambitions for zonal attachment (achieving 68% by weight and by value - a potential shortfall of 229,000 tonnes / £281 million). This modest change explains the negative reaction of the fishing industry and claims of betrayal in the face of the UK Government's announcement of a "successful" deal. The stark delivery gap between rhetoric and reality means the UK government faces a challenging start to managing fisheries outside of the Common Fisheries Policy.

Keywords Fisheries management · Seafood · Trade · Politics · Zonal attachment

Introduction

Achieving sustainable management of fisheries can be considered a "wicked" socio-ecological problem (Jentoff and Chuenpagdee 2009), but the challenges involved are dramatically amplified when fish stocks cross jurisdictional boundaries. Achieving sustainable and equitable management in this arena requires international cooperation, but this situation also frequently leads to political conflict (Pomeroy et al. 2007; Jensen et al. 2015; Steinsson 2016). Politicising the management of fisheries can raise the public interest and attention on what is often otherwise a very small sector of the economy and employment (House of Commons 2017a, European Commission 2020), but also risks raising expectations beyond what is feasible in terms of sustainability (avoiding overfishing) or the economy (impacts on larger sectors). In the North East Atlantic, management of many shared fish stocks has largely been conducted through the European Union's (EU) Common Fisheries Policy (CFP) since 1973; however, many in the United Kingdom (UK) fishing industry have long felt this arrangement was biased against them (Phillipson and Symes 2018; Hatcher 2020). The UK vote to leave the EU in 2016 therefore relied heavily on using fishing as a totemic issue for the UK Government to get voter support, but did this approach of politicising the issue deliver on the expectations the industry had?

The UK prides itself on being a maritime nation with a rich history connected to the sea (Redford 2014). Indeed, many coastal communities have been shaped by fishing (Stead 2005), and fish and chips is said to be the national dish (Murcott 2013). From the 1950s to the 1970s, the British fishing

✉ Bryce D. Stewart
bryce.stewart@york.ac.uk

[1] Department of Environment and Geography, University of York, York YO10 5NG, UK
[2] New Economics Foundation, 10 Salamanca Place, London SE1 7HB, UK
[3] Lincoln Law School, University of Lincoln, Bridge House, Lincoln LN6 7TS, UK
[4] Norwegian Centre for the Law of the Sea, University of Tromsø, Hansine Hansens veg 18, 9019, Tromsø, Norway
[5] ABPmer Ltd, Quayside Suite, Medina Chambers, Town Quay, Southampton SO14 2AQ, UK
[6] Brussels, Belgium

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REVIEW

ECOLOGY

Big data approaches lead to an increased understanding of the ecology of animal movement

Ran Nathan*, Christopher T. Monk, Robert Arlinghaus, Timo Adam, Josep Alós, Michael Assaf, Henrik Baktoft, Christine E. Beardsworth, Michael G. Bertram, Allert I. Bijleveld, Tomas Brodin, Jill L. Brooks, Andrea Campos-Candela, Steven J. Cooke, Karl Ø. Gjelland, Pratik R. Gupte, Roi Harel, Gustav Hellström, Florian Jeltsch, Shaun S. Killen, Thomas Klefoth, Roland Langrock, Robert J. Lennox, Emmanuel Lourie, Joah R. Madden, Yotam Orchan, Ine S. Pauwels, Milan Říha, Manuel Roeleke, Ulrike Schlägel, David Shohami, Johannes Signer, Sivan Toledo, Ohad Vilk, Samuel Westrelin, Mark A. Whiteside, Ivan Jarić

Nathan *et al.*, *Science* **375**, eabg1780 (2022)

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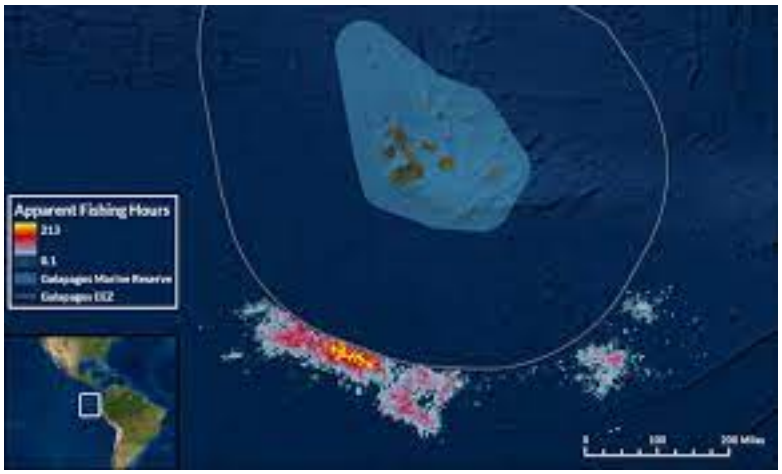

Chapter 3

Real life example

It's nice to know exactly what you did when your original data requires wrangling.

Chapter 4

Cross-references

Cross-references make it easier for your readers to find and link to elements in your book.

4.1 Chapters and sub-chapters

There are two steps to cross-reference any heading:

1. Label the heading: `# Hello world {#nice-label}`.
    - Leave the label off if you like the automated heading generated based on your heading title: for example, `# Hello world` = `# Hello world {#hello-world}`.
    - To label an un-numbered heading, use: `# Hello world {-#nice-label}` or `{# Hello world .unnumbered}`.
2. Next, reference the labeled heading anywhere in the text using `\@ref(nice-label)`; for example, please see Chapter 4.
    - If you prefer text as the link instead of a numbered reference use: any text you want can go here.

4.2 Captioned figures and tables

Figures and tables *with captions* can also be cross-referenced from elsewhere in your book using `\@ref(fig:chunk-label)` and `\@ref(tab:chunk-label)`, respectively.

See Figure 4.1.

```
par(mar = c(4, 4, .1, .1))
plot(pressure, type = 'b', pch = 19)
```

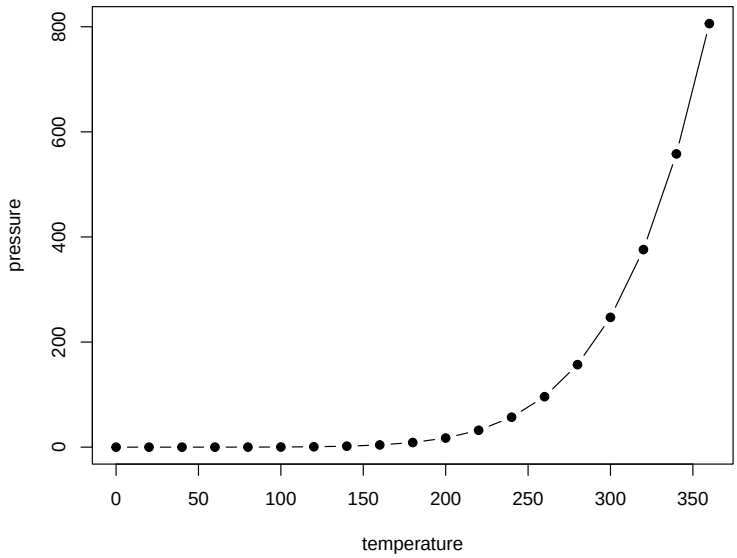

Figure 4.1: Here is a nice figure!

Don't miss Table 4.1.

```
knitr::kable(
  head(pressure, 10), caption = 'Here is a nice table!',
  booktabs = TRUE
)
```

Table 4.1: Here is a nice table!

temperature	pressure
0	0.0002
20	0.0012
40	0.0060
60	0.0300
80	0.0900
100	0.2700
120	0.7500
140	1.8500
160	4.2000
180	8.8000