Contemporary Narratives (M5X01708)

Visual Research Document

Jacqueline Anne Morgan - 1807554
BA Documentary Photography & Visual Activism

THE ULTIMATE ACT

What if the world's corruption nears,
The consequence they dare not name?
We shall but realize our fears
And having tasted them go on,
Neither from hope of grace nor fame,
Delivered from remorse and shame,
And do the things left to be done
For no sake other than their own.
The quarry shall be stalked and won,
The bed invaded, and the game
Played till the roof comes tumbling down
And win or lose are all the same.
Action at such a pitch shall flame
Only beneath a final sun.

(A Change of World by Adrienne Rich)

The theory that inspired this body of work is based around the notion of Inheritance.

By that, for me, defines itself as the practise of passing on assets and knowledge.
Asset, by definition, is a useful thing or person;
Which is a mass array of things, that being defined by one's own perspective of value.
Thing, by definition, we associate with an object,
And an object generally we think of in terms of ownership.
This is considered a normal way of thinking about the notion of Inheritance.
And this acts as a social construct and cultural
A bi-product of a culture imposed through inherent habits and traditions.

I think, when we think of the term inheritance we think of materialistic assets and possessions, their value in terms of currency and importance.
We tend not to think of the environmental and social inherent habits that are passed through generations and societal and cultural norms, this is woven into our behaviours, tendencies, who we are, how we live and the connections and disconnections we make.

We are bound by these habits and this inherent vulnerability, both consciously and unconsciously. They set boundaries that we abide by and we are taught not to question. What I want to be able to talk about specifically is the intimate inheritance of the natural environment or more so, the lack of it.

This book acts as a poetic reflection and response to the notion of Inheritance, a pschycogeoraphical drift through time and place, an exploration of landscape and a perspective of home. It's focus being the deterioration and degradation based on traditional agricultural and fishing forms and it's economic and environmental effects. A place that was home to a booming cockling, fishing and farming trade which is now near to non-existent; due to over-fishing, trawling and dredging of the estuary and degenerative farming methods that filter their waste through those waters, all done to fuel the production and standardization of products for mass-consumption and economic gain.

I have taken my own images, taken from past shoots of one walk that I take and have taken since I was very young, this walk being the walk in which my great-great grandmother would take, one of the 150 women who were pioneering cockle gatherers from the 1900's.
I've combined my own images with archival photos, taken from the same place and views but from the same period as she would been.

I wanted to experiment with the notion of photobook as research documentation and use various forms of my research in collage and double exposure as a form of sequencing, ultimately to create a visual narrative. This notion produced a number of different variations and techniques that gave me very different perspectives to play with, I did struggle with visualizing an outcome, both in terms of an online based outcome and a physical outcome. I think it is this that split my creative intention and therefore gave me very different ways of working and various different drafts of the final piece.

I played with different ideas of using natural materials, cyanotypes, plant documentation and seeded planting paper. I wanted this to be a physical provocation for reconnection to the natural world, a sensory exploration with the reader and respect paid to historical inherited methods and habits.

I took inspiration from various artist's books that used these methods, those especially that used multimedia visual forms and combined image and text.
The text I originally planned to use within the book, was a creative writing piece that was an experimentation and acted as a poetic response to the walk, my intention was to use it as a form of emotional provocation and vulnerability which paired with the images would create an affective space.

After experimenting with different structures and placement in the book, when I did this and looked at the relationship between text and image, I didn't feel as though it was coherent. I think the creative writing piece acted as a piece that would work well in the form of spoken word if I were to develop this further into a moving image or installation piece.

This then inspired the use of different forms of text, that being previously written pieces and notes taken from research documents. I liked the idea of using factual referencing as a form of provocative collage and giving little structure so that the reader has the power to read without consistency. I used printed, torn and scanned images and aimless placement separate to the images to emphasize this.

I tried also to be conscious of space, giving the reader time to process each image and text and my use of rotating images, smaller and faint text was meant to encourage engagement and movement, as opposed to conventional reading.

I think that the final outcome is a work in progress, there is a coherent flow and contrast between image, archive and text but I feel as though it needs work on it's content. I think after viewing it as an Ebook, I think it reads as unfinished and demands more visual experimentation and possibly a collaboration of all three drafts.

Dysconnectivity;

Our immoral and defunctive relationship with the earth and its bounties.

In past times it was a necessity to harvest food from the sea and surrounding lands, be that fishing, foraging or farming. A small village and its residents would rely heavily on the mutual responsibility to feed the whole community, of course, this wasn't an easy burden.

The term community here, holds far more prominence than that of what we know it today. Connected by the common goal for survival; people would simply have to rely on one another to be able to eat and live. The importance of precipitation was indisputable, but also seen as completely equal, for everyone had a skillset and commodity to contribute.

In comparison to our sense of community today, where a small group of people join together to share common interests or identities, with no other purpose than that of a sense of equality within a world of difference and prejudice. It seems as though the both are worlds apart.

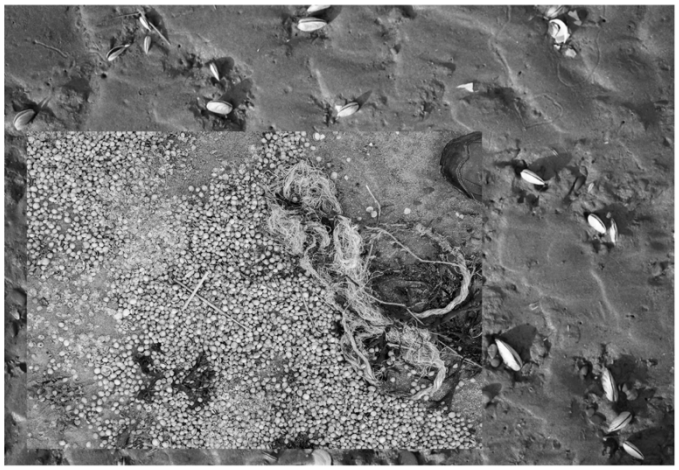
We, within modern society, seemingly need not to rely on anyone but ourselves. Is this a mental constrain, a metaphysical common ground which we have constructed through misogynistic and egotistical tendencies, a capitalistic conformity we've inherited through habit, or is it a complete lack of purpose and community, connection and dependence on those and that which surrounds us.

Draft Development Timeline –

Draft 1 – InDesign Development *'An Ode to Elders'*











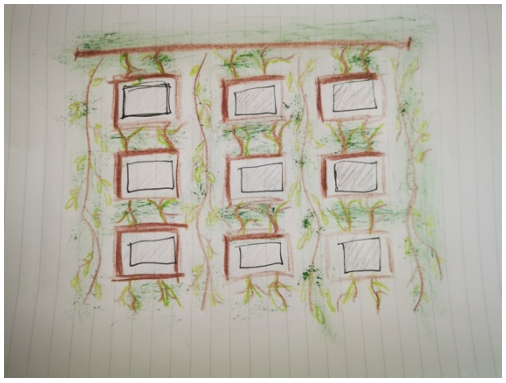


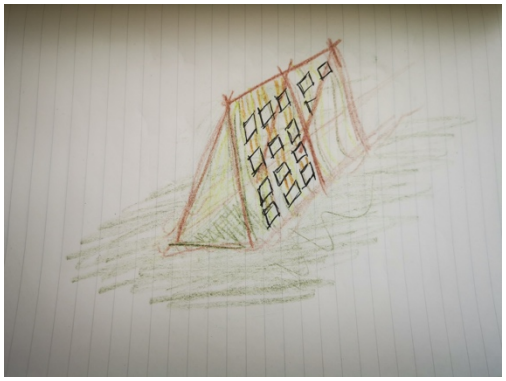


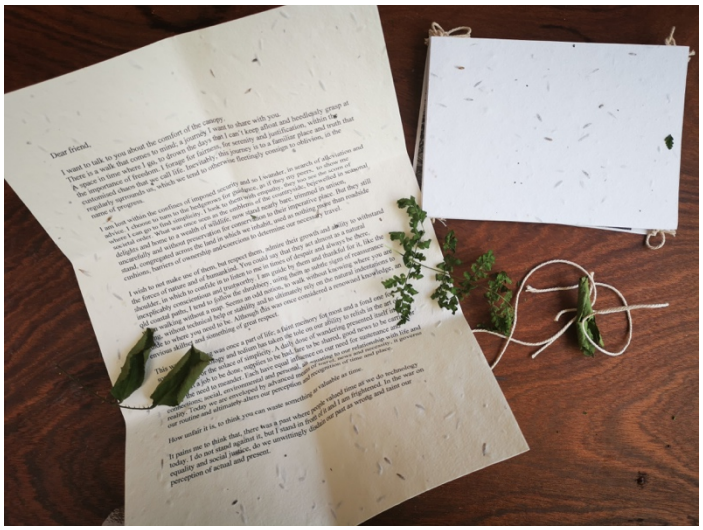


Draft 2- Installation Development and Physical Book Dummy








Dear friend,





Draft 3 – InDesign (Take 2) *'An Anti-blueprint Ode to Elders'*










WARNING
MAE'N BERYGLUS YMDROCHI YMA O GWBL
IT IS DANGEROUS TO BATHE IN THIS AREA












MF2003







Artist Research

Examples –



Yusuf Sevincli

Tourmaline

TOURMALINE is the outcome of an artist-in-residence program hosted by InCadaquès Festival, Spain.

The photographs featured in the book were shot in June 2019, over the course of ten days, in the northern Catalonia coastal region of Cadaquès and Cap de Creus.

The lunar topography of granite rocks that sparkle and glow under the heat of the early summer sun makes one lose the sense of reality. The dark blue volume of the sea crashes with the arid shore, and earth, nature and wind, dominate the five senses.

These images are the outcome of the photographer's immersion in a region, whose untamed landscape was, according to Salvador Dalí, 'made for gods rather than men'. A passage through an uninhabited world of whispers, reveries and luminous metamorphoses.

https://vimeo.com/484488062





YASUHIRO OGAWA

THE DREAMING

"My new book The Dreaming contains 86 black and white images selected from my 27 years' career in photography and traveling. When I turned 50 last year, I decided to go through all the black & white negatives I had taken so far. Every moment of the journeys may have been vision of dreams – that's what I thought when I tracked down my archive and such a thought gave me a hint to make this book."

https://vimeo.com/392449626

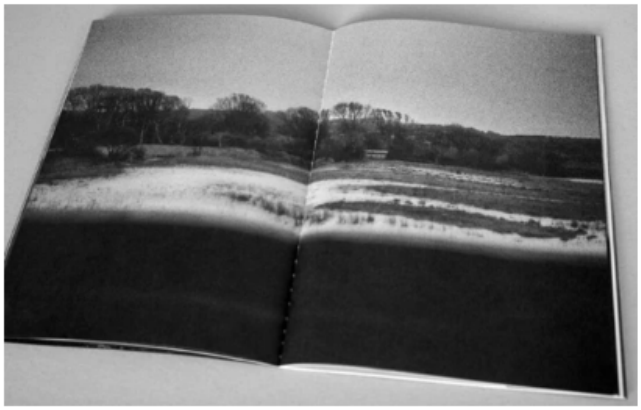


AWOISKA VAN DER MOLEN

THE LIVING MOUNTAIN

This is the third publication in which Awoiska probes deeply into the essence of the remote unspoiled natural worlds where her images are created. The book is published alongside the music composition 'The Living Mountain' written by Thomas Larcher as composer-in-residence at the Concertgebouw in Amsterdam (2019-2020). The music piece draws inspiration from photographs that Awoiska made for Larcher in the mountains of his native Tirol (Austria). The monochrome landscapes are combined with reproductions of Larcher's scores and remnants. The title for both the composition and this book is taken from Nan Shepherd's book of poetic prose on the Cairngorms mountains that she wrote in 1942 and which was first published in 1977.

‘Regardless of how personal the starting point of my work may be, in the end I hope my images touch the strings of a universal knowledge, something lodged in our bodies, our guts, an intuition that reminds us of where we came from ages ago. A memory of our core existence, our bedrock, unyielding certainty in a very precarious world’.





CHRISTOPHER DE BÉTHUNE

INVISIBLE WAVES

"You always said that I dreamt too much.
Hearts and minds of those who tried,
by the sea and the salt.
You were the Ra and I was the seed.
And despite the heavy clouds,
I hope that flowers will bloom,
where the sun, only once shown."

This book is a two years endless blink of happiness.

Edition of 400 copies. Silver silkscreened covered book including a booklet printed on silver paper and a signed 13 x 18 cm print (white bird).





DAFNA TALMOR

CONSTRUCTED LANDSCAPES

This ongoing body of work consists of staged landscapes made of collaged and montaged colour negatives shot across different locations, merged and transformed through the act of slicing and splicing. The resulting photographs are a conflation, 'real' yet virtual and imaginary. This conflation aims to transform a specific place – initially loaded with personal meaning, memories and connotations – into a space of greater universality. In dialogue with the history of photography, 'Constructed Landscapes' references early Pictorialist processes of combination printing as well as Modernist experiments with film. While distinctly holding historical references, the work also engages with contemporary discourses on manipulation, the analogue/digital divide and the effects these have on photography's status. Through this work, Talmor creates a space that defies specificity, refers to the transient, and metaphorically blurs place, memory and time.

HTTPS://VIMEO.COM/475879640



G R A C I E L A I T U R B I D E
DES OISEAUX

A major figure of Latin-American photography, Graciela Iturbide's approach combines the documentary and the lyrical. Off-centre compositions, graphic effects, and heavy shadows create a poetic universe where a feeling of strangeness is combined with one of harsh reality. The powerful equilibrium of her compositions produces skies filled with birds, comical, unexpected situations where chickens are pictured sitting wisely on market stalls, while elsewhere chirping flocks appear to invade the scene in agile, flowing movements. For Iturbide, living birds represent freedom. But death is never far away in her work, nor indeed is a certain sense of the surreal. An organic dimension, linked to blood, flesh, mud, sweat, and the earth also permeates most of Graciela Iturbide's images, for she has a special relationship with reality, choosing to capture unique moments with her lens. Birds and men cohabit and rub up against each other. From India to Mexico, gulls, eagles, pigeons, herons, and ravens invade man's space or insinuate their way into it in a serendipitous, solitary fashion. This publication is part of the *Des oiseaux* (On birds) collection celebrating, through the vision of different artists, their immense presence in a world where they are now vulnerable. Accompanying these photographs, the ornithologist Guilhem Lesaffre writes a special essay. For this title, Lesaffre focuses on the different environments birds live in and their unbelievable capacity to adapt themselves whether it is in the sky, water or at the highest summits.

https://vimeo.com/468904333



MARINA CANEVE

ARE THEY ROCKS OR CLOUDS?

This book addresses the history of hydrogeological events in the Dolomite mountains and, more broadly, how our cultural memories of such incidents are shaped. The publication explores how human habitation persists in locations that have established patterns of landslides, floods, and other such possible catastrophes. The work comprises a blend of research and archival images, texts, and recent photographs woven together to address the themes of Destruction, Protection, Experience, and Resilience in areas with centuries-long cycles of human vulnerability in the face of natural disasters. 'Are They Rocks or Clouds' balances information, history and visual pleasure as the reader is asked to confront the risks we take, as humans, in our effort to live comfortably while also pushing the limits of how we interact with the natural world.

https://vimeo.com/385246174

Provoke

Provoke was a Japanese magazine which rejected glossy commercial imagery and the style of documentary photography. The Provoke era refers to its influence on photography made in post-war Japan

*Takuma Nakahira * Yutaka Takanashi * Daido Moriyama*

HTTPS://WWW.YOUTUBE.COM/WATCH?V=7AVJQ8UOPRE&FEATURE=YOUTU.BE

Positioning Provoke within a socio-historical context of major political upheaval, the book analyses the influence and legacy of this powerful group that broke the boundaries between protest, photography and the performative arts in Japan.

The book features full reprints of the three Provoke issues, students' “Protest books”, important theoretical texts of the period translated from Japanese for the first time, works from major performative artists/groups and interviews with Moriyama Daidō, Araki Nobuyoshi, and Hosoe Eikō, as well as previously unpublished critical and curatorial essays.

ANTONE DOLEZAL & LARA SHIPLEY

DEVIL'S PROMENADE



HTTPS://VIMEO.COM/505659584

Dolezal and Shipley return to their home region of the Ozarks in the American Midwest, where locals persist in their search for a legendary floating orb of light that can only be seen from the Devil's Promenade. It's a lushly wooded road in an area where wanderers flock to seek possible redemption, or just to escape the boredom and darkness of ordinary rural life. Subtle but revealing portraits are mixed with archives and reinterpretations of mythical, folkloric tales. It's a nuanced, mysterious and tender representation by photographers returning to the place where they grew up, but also reveals the current, stark realities of a remote place in America.

Longtime collaborators, Antone and Lara currently live at nearly opposite ends of the United States (Nevada and Michigan), but their point for making this work meets in the middle, at the physiographic intersection of four heartland states. Together they have documented Ozark people and landscape over a period of almost 10 years, drawn first by a desire to reconnect with their past, then compelled to relate something of the character and rituals of an area where locals can become skittish around strangers.

Their photographic interests encompass culture, identity, folklore and mythology of place—but forming a clear picture of this isolated place is complicated.

"Ozarkers always have been somewhat dualistic, believing that two great forces—one good and one evil—battle for control in each person." – Stanley Burgess

The roots of Ozark folklore were formed by 19th century pioneer settlers from Scotland, Ireland, Britain and Germany. From early on they had a penchant for sharing jokes and colorfully embellished stories within their community, passing down superstitions and lore to younger generations. The locals' jubilant gatherings also involved square dancing to their self-proclaimed "hillbilly" country songs.

Meanwhile, religion is central to social life in the Ozarks, having strongly shaped the area over more than two centuries. Evangelical and Fundamentalist organizations have long held world headquarters there, and Mennonites and Amish have formed substantial settlements. The locals are generally proud of their rural values and individualistic, traditional approach to life.

With *Devil's Promenade*, the photographers take us along their journey into the thick woods where anything might happen; you may either bathe in the light of salvation, or come face-to-face with the Devil on a bridge, in the inky dark.

JIM GOLDBERG

THE LAST SON & FINGERPRINT

https://vimeo.com/196430394
https://vimeo.com/502175038



Cambio is an ongoing investigation conducted by Studio Formafantasma into the extraction, production and distribution of wood products, commissioned by Serpentine Galleries. The website collects the research outcomes and compiles an archive of documents, videos, books and articles on the topic.

Cambio, from the medieval Latin cambium, ‘change, exchange’, is an ongoing investigation conducted by Formafantasma into the governance of the timber industry. The evolution of this form of commerce over time, and its tentacular expansion across the globe, has made it difficult to regulate. It grew out of the bioprospecting that took place throughout colonial territories during the nineteenth century, becoming one of the largest industries in the world both in terms of the revenue it generates and the impact it has on the planet’s biosphere.

The earliest objects in the exhibition are samples of rare hardwoods first exhibited in the Great Exhibition of 1851, a few hundred metres from this building, which represent trees logged to the point of extinction. The newest are the exhibition display furniture and seating designed by Formafantasma, all of which were made from a single tree blown over in a storm in northern Italy in 2018. Contained in every piece of wood is an archive of climatic change and the movement of natural materials around the world.

Cambio also references the cambial layer, a membrane that runs around the trunk of trees, producing wood on the inside, a record of the tree’s past, and bark on the outside, enabling it to keep growing. Like the rings of a tree, the central spaces of the exhibition present data and research in the form of interviews, reference materials and two films made by Formafantasma in response to their research, while the perimeter spaces offer a series of case studies that provide insight into the way wood is sourced and used. Each of these investigations represents a collaboration with experts from the fields of science, conservation, engineering, policymaking and philosophy. Together, they move from a microscopic analysis of wood and its ability to store carbon dioxide, to a metaphysical understanding of trees as living organisms.

This multidisciplinary exhibition highlights the crucial role that design can play in our environment, and its responsibility to look beyond the edges of its borders. The future of design can and must attempt to translate emerging environmental awareness into a renewed understanding of the philosophy and politics of trees that will encourage informed, collaborative responses.

The exhibition opens with two pieces that introduce the physical matter of wood and its properties; a two-screen projection, and two sections of a tree trunk. Together, they offer a re-evaluation of trees – as sources of information, constantly recording global climate change, as the solution for mitigating these changes by storing carbon dioxide as they grow, and as a warning against over-management and monocultured forests that are more vulnerable to intense weather events. The smell, developed by smell researcher and artist Sissel Tolaas, evokes the wet earth and flora of a forest, offering an immersive reminder of what is at stake when we lose this environment.

Constructed in the format of a visual essay, this film investigates how the industry of timber has evolved over time. It asks how a networked understanding of materials can be applied to a more holistic approach to design, and draws connections between timber's physical materiality and the abstract but pervasive conditions of exploitation, colonialism, and consumerism.

The film starts with the appearance of primordial plants on Earth, their evolution into trees, and the subsequent flourishing of human life across the planet. It continues with the global expansion of the timber industry in conjunction with the European imperialist agenda, and its later shift towards the development of sustainable forestry practices and environmental conservation.

Shot in a former Italian plantation for paper production, it makes use of chroma key compositing – a process by which it is possible to 'layer' images over existing footage by introducing green screens into the frame while shooting, and collaging other images or footage in later. Various different colours have been used in television and film to achieve this effect, but green has become one of the most commonly used – as with most technologies – due to human features. The

human eye evolved to differentiate movement and depth against the green of the forest, and what has become an instinctive disregard for flora in favour of the potentially dangerous fauna has been called ‘plant blindness’. Here, the forest is never a background – it is the subject matter and focus of the film.



One side of this central space is dedicated to a film that focuses on the governance of the timber industry and how this is structured today, touching upon the major European and global regulations and regulatory bodies involved in
it. The four reading points on the other side, meanwhile, have been designed by Formafantasma, and offer direct access to a website that holds reference materials collected by the design studio over the course of the past eighteen months. These include filmed interviews with the specialist collaborators that informed the projects on display in this exhibition, reading materials, reference images and links form a

living archive of the designers' research-led practice. Together, the resources in this space aim to offer a greater level of transparency, both in the research and thinking of design practice, and in the structure of a global industry.

The film Seeing the wood for the trees addresses the current state of the timber industry, showing images and documents set against the forest floor and also using the green screen technique that was employed for Cambio, shown in the next room. The text of the voiceover was conceived in conversation with Formafantasma and written by Vanessa Richardson of the European Investigation Agency. Organisations like the EIA fight against the practice of illegal logging and to uphold the principles of sustainable forestry using international certification systems such as the FSC and PFSC.
Like the film in the space next door, Seeing the wood for the trees employs green screen, or chroma key compositing, to illustrate the text, but offers only the forest floor as a background; the viewpoint of the camera, pointing straight down, echoes the film's discussion of forest governance 'from above'.

https://vimeo.com/394186750



Cambio –

https://vimeo.com/396661243



Cambio, from the medieval Latin cambium, ‘change, exchange’, is an ongoing investigation conducted by Formafantasma into the governance of the timber industry. The evolution of this form of commerce over time, and its tentacular expansion across the globe, has made it difficult to regulate. It grew out of the bioprospecting that took place throughout colonial territories during the nineteenth century, becoming one of the largest industries in the world both in terms of the revenue it generates and the impact it has on the planet’s biosphere.

Cambio – Catalogue (2020)
For this project, Formafantasma collaborated with experts from the fields of science, conservation, engineering, policymaking and philosophy. They have gathered a range of texts, interviews and visual materials for the publication that pose questions about the role that design can play in translating emerging environmental awareness into informed, collaborative responses.

Extending the principals of this project to the catalogue, the paper used in the book has been microscopically investigated to confirm it doesn’t contain cells from endangered species.

The catalogue includes texts by: Jennifer L. Anderson, Paola Antonelli, Emanuele Coccia, Formafantasma, Lesley Green, Rebecca Lewin, Vanessa Richardson, Paolo Tavares. Additionally, the catalogue includes interviews with: Faustino Londoño & Nelson Ortiz, Frederic Lens, Mark Nesbitt & Caroline Cornish, Phillipp Pattberg and Pieter Baas. It is designed by SJG/Joost Grootens and Dimitri Jeannottat.

Anna Atkins's cyanotypes: the first book of photographs-

English botanical artist, collector and photographer Anna Atkins was the first person to illustrate a book with photographic images.

Her nineteenth-century cyanotypes used light exposure and a simple chemical process to create impressively detailed blueprints of botanical specimens.

Anna's innovative use of new photographic technologies merged art and science, and exemplified the exceptional potential of photography in books.

Andrea Hart, Library Special Collections Manager at the Museum, says, 'With the introduction of photography, you get a whole new opening up of how natural history and science can be presented in print.

'Before Atkins's book on British algae and the photographic process, botanical images would have been restricted to the traditional printing processes of engraving or woodcuts, although the art of nature printing was also in its early stages around Atkins's time'

Who was Anna Atkins?

Anna was born in Kent, southeast England, in 1799. She was raised by her father John George Children, who worked at the British Museum.

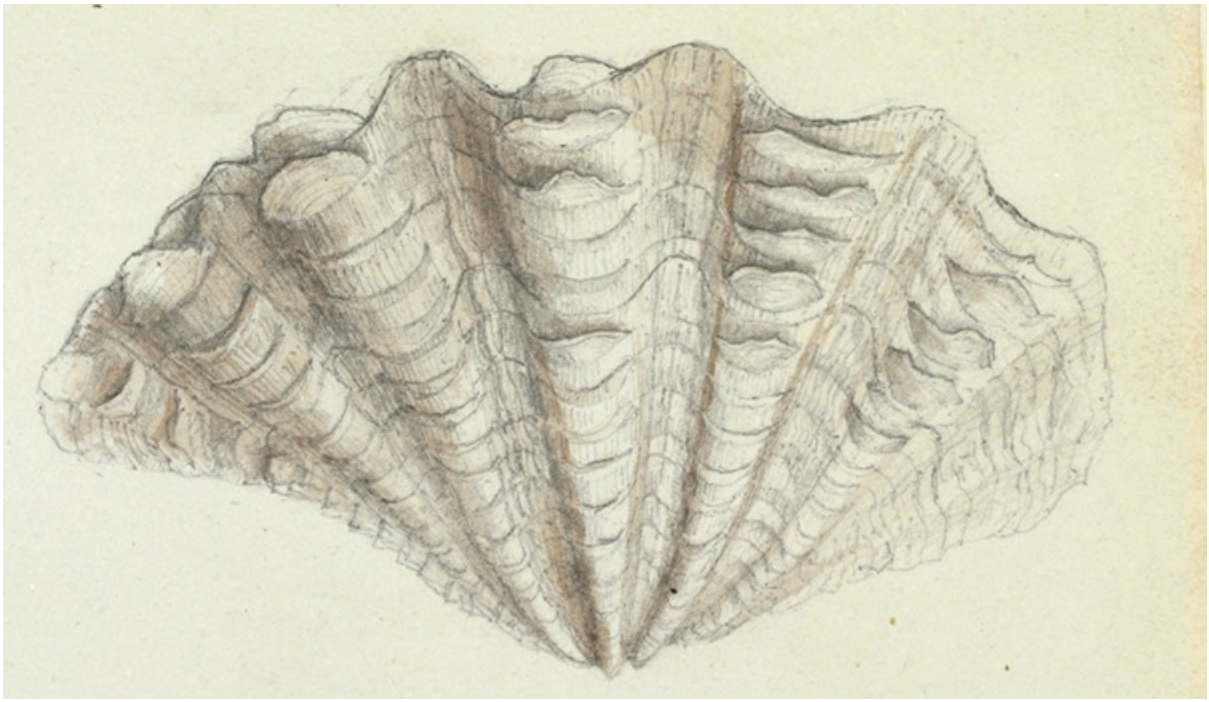
Photographic portrait of Anna Atkins

'She lost her mother very early in life and as a result formed a close bond with her father,' ' Andrea says. 'Her father was a well-respected scientist and the first president of the Royal Entomological Society of London, which in turn opened doors for Anna to participate in science that would not have been possible for many women at that time.'

Women were restricted from professionally practicing science for most of the nineteenth century as it was an area dominated by men. Botany, however, was a subject that was accessible to all - in particular botanical art and illustration, which were considered a suitably genteel hobby for women.

Working at her father's side, Anna became an accomplished illustrator.

Prior to pursuing her botanical interests, in her early twenties she completed 256 scientifically accurate drawings of shells, which were published in her father's English translation of Jean Baptiste de Lamarck's catalogue titled Genera of Shells (1822-24). This volume of delicate watercolour and graphite illustrations is now held in the Museum's Library.



Original illustration of a giant clam by Anna Children for the English translation of Lamarck's Genera of Shells, c1820

In 1825 she married John Pelly Atkins and in the 1830s began to assemble her own collection of preserved plants.

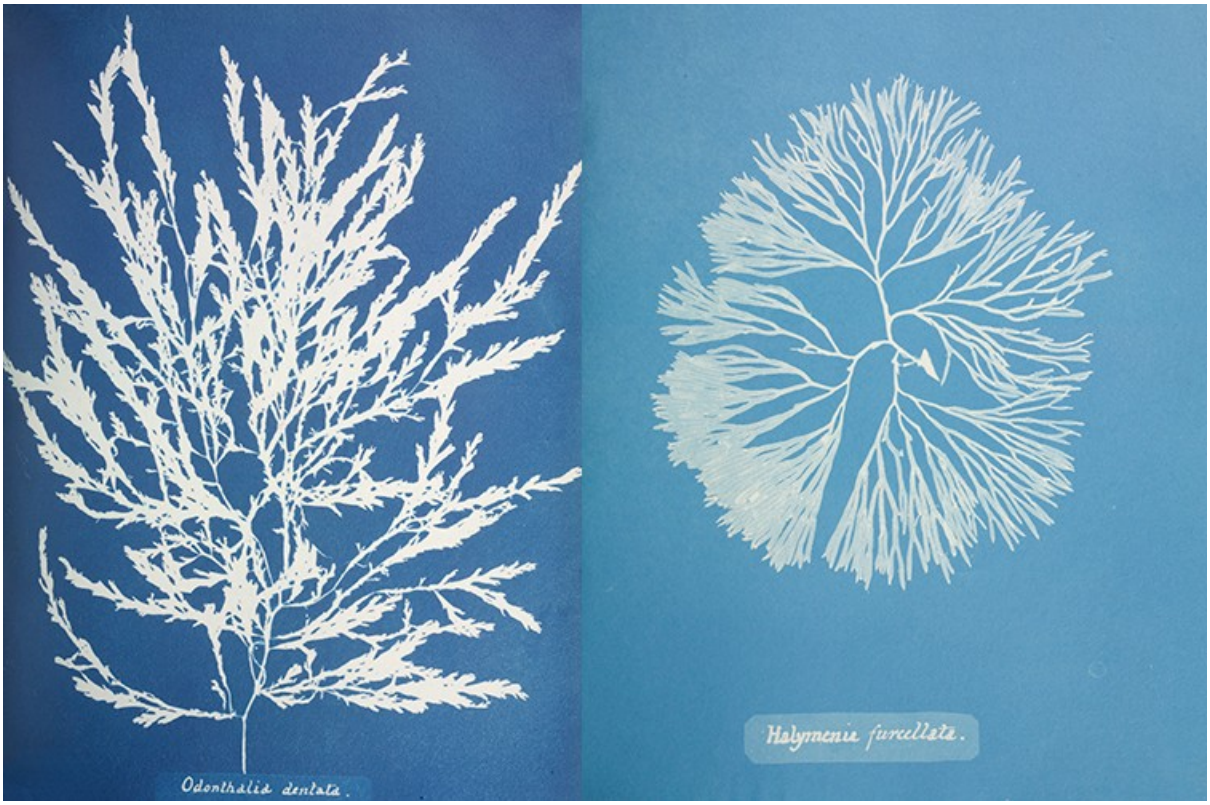
Anna supplied specimens to renowned botanists at Kew Gardens. Her herbarium of British plants was donated to the British Museum in 1865.


MRS. ATKINS' HERBARIUM
MRS. ATKINS' HERBARIUM

Herbarium sheet showing seed plants specimens collected by Anna. In this case a single sheet is shared with her father John Children and close childhood friend Anna Dixon, a distant cousin to Jane Austen.

The couple were also closely acquainted with William Henry Fox Talbot, who invented the photographic process. Anna received a camera in 1841, though none of her works that used this apparatus have survived.

Instead, it was the cyanotype photographic process that would offer her the best photographic innovation to affordably document her specimens.



Not only did Anna's cyanotype impressions provide enough detail to distinguish one species from the next, they were also imaginative compositions.

'It just shows what a brilliant, creative and innovative mind Anna had to apply this brand new process to botanical specimens. But it's important to remember that she wasn't working in isolation.' Andrea says.

'She had access to a scientific education from an early age as well as having connections to and influences from other scientists and experts - but also attended meetings, including those at the Royal Society, where innovations around science and photography were being discussed.'

The first book with photographs

Before the invention of photography, scientists relied on detailed descriptions and artistic illustrations or engravings to record the form and colour of botanical specimens.

Anna's self-published her detailed and meticulous botanical images using the cyanotype photographic process in her 1843 book, Photographs of British Algae: Cyanotype Impressions. With a limited number of copies, it was the first book ever to be printed and illustrated by photography.

You can **view images from the book** held in the Library and Archive's Special Collections.

Two more volumes were produced between 1843 and 1853. In the volumes held at the Museum there are 411 plates each, with their scientific names handwritten by Anna.

There are thought to be only 20 known copies of Anna's book, 15 of which are substantially complete. She made every print herself.



The text pages and captions were photographic facsimiles of Anna's handwriting. In some cases, lettering appears to be formed by delicate strands of seaweed.

Anna's contribution to photography is commemorated by a blue Photographic Heritage plaque at Halsted Place School in Kent, where she lived until her death in 1871.

How to make a cyanotype

This blueprint process uses paper coated with a light-sensitive solution produced with ferric salts.

To make a print, a specimen is placed directly onto dry paper and exposed to light for between 10 and 40 minutes.

The image is fixed by washing in water, appearing as a white negative on a blue (cyan) coloured background.



The method for creating cyanotypes was developed by Sir John Herschel, who was also a family acquaintance.

Compared to the then-new field of photography, cyanotypes were a much lower-cost method for creating printed impressions.

Cyanotypes were also widely used by architects and engineers to create copies of plans - hence the term blueprint.

THE ANTI-BLUEPRINT?

"WHAT DO YOU WANT TO BE WHEN YOU GROW UP?"

When we're young people ask us this on repeat

The way teachers, parents and careers advisors ask these questions you'd think there is a simple route to navigate the world. I suppose there is an ordinary route. Go to school, study hard, go to the best university you can, get in debt, get a job, work to pay off that debt and then make your way in the world. However, that route is just that – ordinary. I mean who wants to be ordinary?

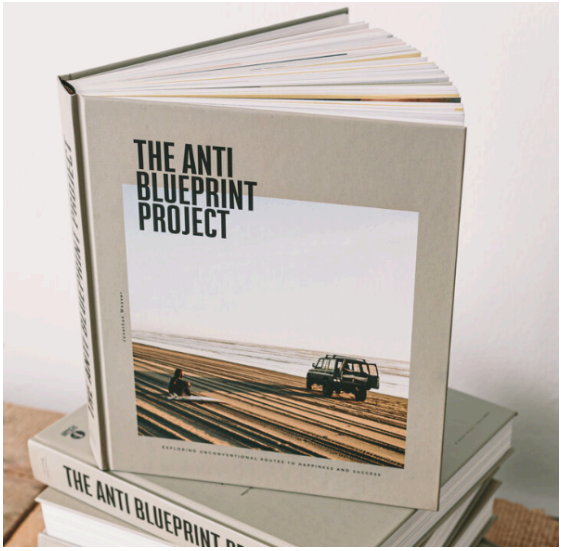
I've long been intrigued by the paths that many successful people have taken in their careers and lives, and how many are somewhat unconventional. Whether that's creators, writers and explorers, or plant based Olympians, Oscar winning film makers and Michelin Star accredited chefs, "making it" means something completely different to each of us.

This fascination started out with a blog post, which became a LinkedIn post, which then pushed me to have conversations, catch up with friends and friends of friends to ask questions through the 2020 Coronavirus lockdown and uncover the stories behind their journey.

What I discovered was the very real journey we're all on. That the narrative we're fed about needing life mapped out is so harmful to our own creativity and passion that we likely suppress so much of our own potential along the way. Most of us are still figuring it out anyways. There isn't really a blueprint for any of this.

In the midst of the conversations I quickly realised that there were so many overlapping themes that needed to be pulled together as guideposts for anyone reading this book. These chapters are nothing to do with what to study or where to work. They are how things work, why we need to set goals, look for our passion, understand money, be nice to each other and the need to look after ourselves, stop worrying what other people are doing, focus on what makes us happy and go after that.

This started as a blog, that then became a LinkedIn discussion, which led me to talk to 50 inspiring people who have cultivated themselves a unique role in the world. I wanted to dig beneath the surface to understand what it takes to "make it." What I discovered along the way was a set of commonalities, many of which we're seemingly taught at school which we can all learn from, myself included. The result is an ongoing project for anyone looking to explore their own efficiency and long term sustainability, or an alternative career path in a constantly evolving world.



https://www.theantiblueprintproject.com/about

https://www.youtube.com/watch?v=gmbX47HCAxk&feature=youtu.be

ARCHIVE, MAPS & HISTORY RESEARCH –









‘Sewage spills’ may be cause of cockle deaths

Chad Welch










FERRYSIDE 'COCKLE GATHERERS' 1903





Greetings

from

FERRYSIDE

Ferryside.




Unloading Cockle Boat, Laugharne.
B. R. Thomas & Co., Drapers, Laugharne


COCKLE GATHERERS, FERRYSIDE.




A RUSTIC SCENE, FERRYSIDE.

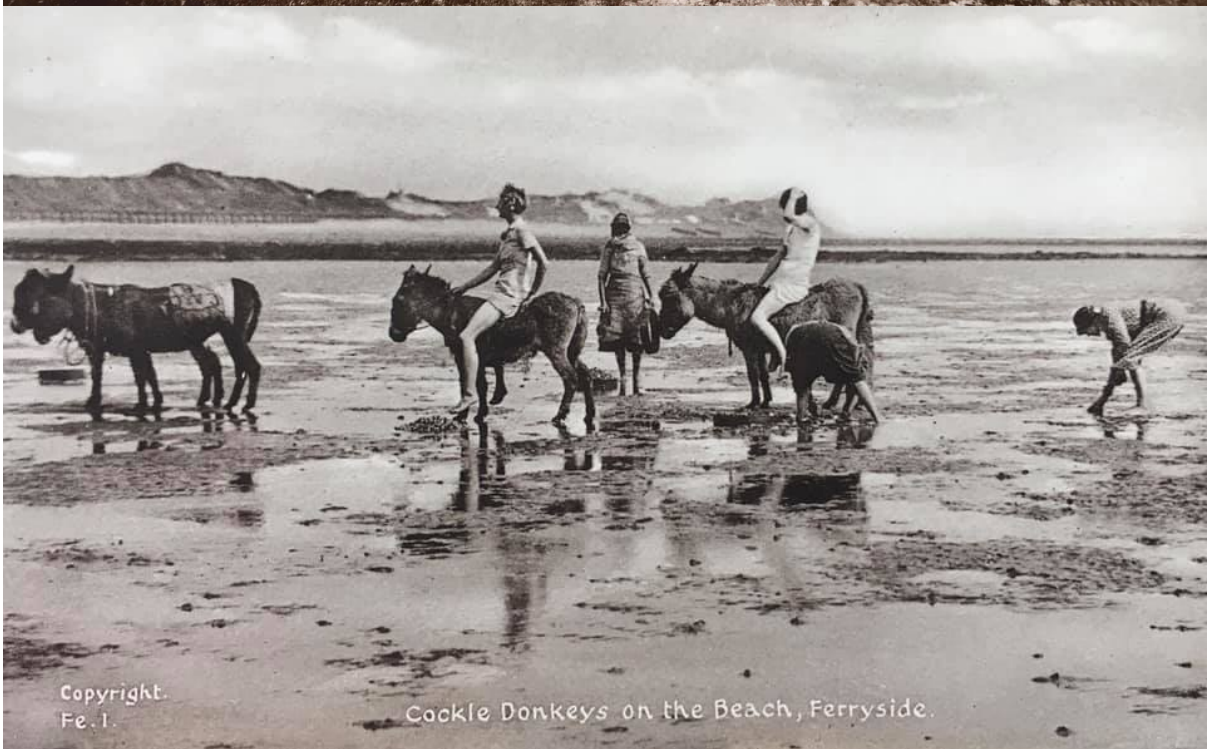




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COCKLE GATHERERS AT FERRYSIDE.

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A social and economic impact assessment of cockle mortality in the Burry Inlet and Three Rivers cockle fisheries, South Wales UK

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A social and economic impact assessment of cockle mortality in the Burry Inlet and Three Rivers cockle fisheries, South Wales UK

Project Code: SEA-1109



FINAL REPORT

JULY 2015

Submitted by

Maritek Worldwide Ltd

*All following notes taken directly from research paper.

The Three Rivers: As an unregulated fishery with lower economic value than Burry Inlet, mortality events have been less well studied and documented. Mortalities were observed in the Laugharne beds between April to June 2005 and the first mass loss of up to 6000t (2003 and 2004 year classes) occurred on the Llanstephan beds in late July 2005. Strangely denser cockle beds (2004 year class only) on the Gwendraeth beds survived and became the focus of the 2006 fishery along with areas of the Laugharne beds unfished in 2005. However most of these cockles died by the end of summer.

As in the Burry Inlet in 2005 problems were compounded by a sewage 'flush' which also lead to bathing closures from early June 2006 and loss of a prospective.

In 2007 limited mortalities were observed from as early as February including for the first time, under one year old juveniles (potentially weather related).

Chronic (rather than mass) mortalities then persisted in the Laugharne, Gwendraeth and Llanstephan beds for which a 4000t September tonnage had been estimated.

Mortalities peaked in mid-June, correlating again with a sewage flush event. Gathering ended in mid-July with mortalities still on-going.

No in-depth causal studies of the kind undertaken on the Burry Inlet have been conducted. Management by the Welsh Government (Marine and Fisheries Division) instead relies on 'snap-shot' stock assessments on which to base fishery opening decisions.

Poor stock-levels linked to on-going mortality have meant that only one sizeable harvest occurred in the last five years when the fishery was opened for several weeks in 2010. This yielded close to 2000t of relatively low value smaller cockles.

Consistent with an ecosystem management approach, regulation of both fisheries also entails environmental as well as social and economic objectives, further complicating any cost-benefit analysis. Such assessments, which would require application of contingent valuation methods to monetize social and environmental value of these functions to different interest groups is beyond the scope of this report. It is clear however that on-going improvement in the management of sewage treatment and effluent disposal should continue to take high priority. Not to do so risks incurring sizeable financial penalties for breach of EU environmental and public health directives. Improved management may also contribute to upgrading of the E. coli classification of the BI and TR cockle fisheries thus supporting direct-marketing of high-value whole-live cockle by gathers (elevated E. coli concentrations have also been linked to spring-tide inundation of Llanrhidian salt-marsh sheep grazing on the south BI shore).

Gatherers have correlated more serious sewage spill events with acute mortality episodes though whether, and to what extent sewage effluents are contributing to on-going chronic mortalities is highly contentious. It should be noted that improved sewage management may also reduce nutrient inputs that were likely to have contributed to the pre-mortality productivity of the cockle fishery

Findings pointed to the multi-factorial nature of the problem with the added complexity of different factors potentially prevailing in different years as well as uncertainties between causes and effects. Nevertheless the study concluded that nutrient conditions were conducive to good growth and found no clear evidence to implicate pollution in water or sediments as a primary mortality cause. Rather, results pointed to a combination of high parasite loads, over-crowding, energy imbalance and/or loss of condition after spawning as the most probable primary causal factors (with sedimentation conditions as a lesser effect). The report will contribute to a new NRW Burry Inlet management plan currently in development, incorporating specific measures to address these factors. However, inconclusiveness around the findings clearly contributed to a lukewarm response to the report by some of the gatherers interviewed, who remain convinced of a linkage with inadequately treated sewage effluents (Figure 5). Consequently, some of the same gatherers are processing a formal complaint regarding the enforcement of EU-directives and regulation linked to CSO discharges in support of their on-going claims for compensation for loss of livelihood.

Gatherers have correlated more serious sewage spill events with acute mortality episodes though whether, and to what extent sewage effluents contribute to on-going chronic mortalities is highly contentious.

Nevertheless on-going improvements in the management of sewage treatment and effluent disposal should continue to take high priority.

Improved management may contribute to upgrading of the E. coli classification of BI and TR cockle beds, potentially supporting direct marketing of high-value whole-live cockle by gathers.

To be effective such efforts must be coordinated with improved regulation of other potential contamination sources.

It should be noted that improved sewage management may reduce nutrient inputs that were likely to have contributed to the productivity of the cockle fishery.

Heavy sewage discharges associated with a broken pipe and discharge of primary effluent from storage lakes are alleged to have occurred in June and July of 2005 which, if true, would have compounded already severe mortalities.

CEFAS estimated mortality levels of 99.5% (north-shore) and 96% (south-shore) between their May and November stock assessment surveys.

The south beach was closed for bathing in June and contemporary reports noted 'the smell of decaying cockles spread for miles inland' in late July. In 2006 SWSFC again permitted fishing of undersize cockle.

The first clear indication of the emergence of cockling in the region was noted in 1862 when a cockle fishery was marked on Llanrhidian sands in an Admiralty chart.

Thereafter records show the fishery gained importance initially as a means for women to supplement the family income.

Traditionally women harvested cockles whilst men worked in industrial manufacturing and local mines. At the start of the 20th century, around 500 people were estimated to be working in cockle gathering and processing.

This included 250 exclusively female gathers in Penclawdd each collecting 60-150kg per day using donkeys to recover their harvest.

An additional 150 female gatherers from Ferryside and Llansaint on the Three Rivers Estuary.

Consistent with these observations, Wright (1927) reported 500-600 families were involved in the BI fishery.

Landings were cooked near the gatherers homes and most of the output of this cottage-industry was also locally retailed by the gatherers themselves - dividing their time between the various production and marketing activities.

The introduction of horse-drawn carts permitted gatherers to increase their individual harvest to around 500kg per day.

The possibility of recovering more cockles within narrow tidal-limits also required a matched increase in physical effort and inevitably more male gatherers entering the industry as a full-time occupation and primary source of household income.

Simultaneously, the numbers of women who had previously gathered cockles to augment family income began to decline. The introduction of a hand-dredge finally banned by the SWSFC in 1969 further re-enforced this trend. As the intensification of hand-fishing increased, the lack of any formal regulation started to put excessive pressure on the cockle stocks.

This prompted the SWSFC to impose the first minimum landing size (MLS) limit of ¾" in 1921 to protect breeding stock. However enforcement was a challenge and whilst this was compatible with market demand for whole-live product, gathering of 5/8" (15.4mm square) stock for cooking remained the norm. The level was lowered to an intermediate 11/16" (17.1mm square) in 1953, revised back to ¾" (18.3mm) after the first scientific stock assessment by MAFF in 1959 and finally standardised at the current metric 19mm square level after the Burry Inlet regulating order was introduced in in 1965 (Table 16).

Prior to the regulating order, a reduced number of 40-50 gatherers regularly worked, casual entrants increasing the number to around 80 when stocks were plentiful. Only 23% of these gathers were men; the majority were still women. However, as the men were likely to be more dependent on the fishery they were also given greater priority in the issue of the first 50 licensed.

An economic impact assessment of cockle mortality in the Burry Inlet and Three Rivers cockle fisheries, South Wales UK 24 gatherers whilst women were more likely to go on the waiting list further skewing the gender balance in favour of men.

Today only 3 women hold licenses, all granted in the 1960's and 1970's pointing to on-going lack of female recruitment in primary production.

The configuration of the contemporary supply chain is shown in Figure 6 and described in the following sections. Up to the early 1990's the Burry Inlet fishery essentially remained a cottage industry. However, whilst restrictions on intensive harvesting practice helped conserve the small-scale gathering base, changing markets and investment needs associated with more stringent EU food safety regulation have since driven considerable consolidation in the processing sector. Although most harvest is still cooked by local primary processors, the number has declined from a peak of nine in the 1980's to the current situation of just three Lack of local supply during the mortality era has also increased the dependence of the single remaining secondary processor on raw materials sourced from other regional fisheries especially the Thames, Wash and Dee.

One simple modification that has evolved is the use of battery powered-bilge pumps and hose for rinsing cockle in the sieve. However the main change in practice has been the introduction of 4-wheel drive vehicles in the from the mid-80's (Plate 10) prior to which gatherers remained dependent on horse-drawn carts (and boats) to recover cockles (Section 4.1). This meant those based on the southern and northern shores were each more likely to focus effort on more local beds all other things being equal. Today, reduced vehicular travel-time between the two main northern and southern centres of the fishery; Llanelli and Penclawdd (less than 9 miles and 20 minutes by vehicle) gatherers from both shores are now more likely to concentrate their efforts on the most productive beds wherever they may be located on the inlet. Although the concentration of all primary processing around Penclawdd on the southern shore still necessitates regular journeys to the south by north based gatherers, the same enhanced mobility also makes this less of an impediment to regular participation by those based further afield.

Although hand-gathering of cockle is always undertaken independently vehicle-use is often shared. Two extended-family members observed doing this during October field-work also pooled and shared (equally) income from their landings. This necessitated working in close proximity - whilst a third 'independent' gatherer ranged around the same area moving his vehicle more frequently. To endure, such cooperation requires trust in equivalence of returns to individual effort. The joint-effort was also clearly more intense in this instance, the pair collecting almost twice as much cockle as the third independent gatherer on the morning in question. The most active gathering team, working all three days gathered 180kg, 147kg and 300kg i.e. 60%, 49% and 100% of the 300kg daily quota. Although there are no formal contractual obligations, most gatherers maintain long term affiliations and exclusive supply arrangements with individual processors (Section 4.4)

Potential for rapid decomposition coupled with the high costs of transporting whole live cockle (of which at least 50% by weight is shell) has always necessitated co-location of primary processing capacity within short journey times from cockle-beds. Today ever more stringent quality requirements for an internationalised market make it essential to ensure as little time as possible elapses between landing, processing and delivery to the client, necessitating good logistics as well as modern processing storage and distribution facilities. Today, just three primary processors serving the Burry Inlet and the Three Rivers fisheries remain, all clustered in Penclawdd on the south shore of estuary. One secondary processor, Parsons Pickles Ltd. a bottling plant is located in Burry Port on the North Shore.

Mergers and acquisition: The greater structure and increased reliability of supply following the introduction of the 1965 regulating order saw the first wave of processing consolidation. In the 1960's and early 1970's Severnside Foods owned by the Jones brothers from Bristol and based in Birkenhead, Merseyside dominated cockle marketing in the UK and Europe. The company also established a factory in Penclawdd; one of the owners marrying into a local family. However rapid over-expansion contributed to the companies collapse in the 1970's. A Dutch-based company, Hazelwoods Foods then took on a dominant buying role up to around 1994/95 when the company divested itself of its shellfish division (citing high capital investment required to bring its facilities in line with EU food hygiene regulations8). 8 http://www.independent.co.uk/news/business/hazlewood-sells-shellfish-unit-1567877.html Plate 10: Four wheel drives head out to northshore beds on neap low water tide (Oct 2014) Plate 11: Tractor and trailer for harvesting cockles from the back-shore (Oct 2014) An economic impact assessment of cockle mortality in the Burry Inlet and Three Rivers cockle fisheries, South Wales UK 28 By the early 1990s six local processors remained operational around the Burry Inlet (Boulter 1994) down from 9 in the 1980's (Gatherer, Pers. Com.); all still primarily servicing local UK and Irish retail markets. Scaleopportunities associated with the ongoing internationalisation of the (wholesale) cockle market (Section 4.4) together with growing capital requirements linked to the introduction of more stringent EU/UK shellfish food safety control laws in the early 1990's continued to drive further consolidation.

Developments in cockle cooking methods linked to such legislative change are briefly summarised below to highlight their influence on the current industry configuration. Despite cooperation efforts, following successive buy-outs ultimately the original small, family-owned factories in Penclawdd were replaced by two large, modern foreign-owned

factories Selwyn's Penclawdd Seafoods Ltd and Penclawdd Shellfish Ltd located in the adjacent village of Crofty. With processing capacities of around 10- 12t of cockles per hour, both were designed to export product to new markets in continental Europe (Section 4.4). A detailed description of the contemporary local primary and secondary processing value chain now concentrated entirely around the BI and its recent history is given in Appendix 7. We finish this section by summarising changes in public-health legislation and their role in industry consolidation over recent years.

Prior to 1990's more than 90% of locally produced cockle were cooked and eaten in Wales and any surplus sold in Swansea, Neath and other local markets.

Gatherers traditionally took place from Monday to Wednesday and the rest of the week spent processing and marketing them as far as Cardiff.

From the 1960's vans were used for open-air market, Gower caravan sites, beach and house to-house sales along with the Welsh delicacy laverbread produced from seaweed and other local produce.

Traditionally cockles were fried with bacon and laverbread for breakfast, though local demand for both products has declined particularly amongst the younger generation.

Today, Holland, France, Spain and Portugal are the major consuming and producing countries in mainland Europe. The Dutch fishery is of particular interest; with cockle production on average double that of the UK in recent years (Table 4). Up to the 1970's large Dutch Dredge fisheries were operated by British Cockle Merchants to supply the then strong demand at competitive prices in the UK. A serious failure of the Dutch cockle fishery in 1969 further increased demand, gathering effort and prices for British cockles over the next few years (Franklin 2001). As outlined above this relationship has effectively been reversed over the last few decades with Dutch and Spanish multi-nationals now dominating the UK industry to supply strong mainland European demand. Even following an 'austerity-related' downturn in the Spanish market, the EU market is generally under-supplied and export segments still offer greatest profitability if suitably sized cockle can be procured.

In the 1990's, to succeed in the primary continental market for canned cooked-product Selwyn's had to compete with the newly established international PSP/Lenger entity for limited supplies. It began paying a premium to around 200 gatherers formally gathering for the Dutch company on the non-regulated ThreeRivers Ferryside, Llansteffan and Laugharne cockle beds followed by other further such sites around the UK. The subsequent buy-out of Selwyn's by DANI in 2003 saw the two companies competing for UK supplies on a more even footing with their similar mix of UK acquisitions. Local direct marketing: As at least 50% of cockle weight is shell, unless a high premium exists i.e. for larger whole cockles it is only economic to cook or send them to relatively local markets. In addition to supplying Parson's Pickles with smaller cooked product for pickling (see below), PSP also sell cooked produce to local markets in Neath and Swansea. To improve acceptability on this market during the

main summer months, the company was also reported to have frozen some 20-30t of larger sized meats to mix with smaller product (Gatherer, Pers. Com.).

In addition some larger sized cockle is depurated at the Crofty factory for live sales to the continent, mainly Spain. Selwyn's were also reported to be purchasing small amounts of cooked product from PSP for local sales. Today only two local families regularly operate traditional seafood stalls selling cockles, laverbread and other local produce on Swansea and Llanelli markets; one family associated with PSP, the other an independent husband and wife team both holding BI gathering licenses. During the visit the latter businesses was selling small amounts of larger (19mm) live cockle of selectively gathered in small quantities, 9 Worth a total of £210,800 i.e. averaging £400 per ton at first landing. An economic impact assessment of cockle mortality in the Burry Inlet and Three Rivers cockle fisheries, South Wales UK 31 whilst smaller grades were cooked for ready-to-eat sales (with salt & vinegar: Plates 12-15). During the winter when supplies are least reliable and meat quality declines, the business sources individually quick frozen (IQF) cockles from Holland with a 10% glaze. IQF product was reported to last much longer in storage (up to 12 months) than block-frozen product; the norm for commodity processing by local processors. Sales of fresh laverbread had recently been depressed after 17 cases of salmonella were detected in south Wales in March 10, 2015.

Licensed gatherers are currently represented by and strengthened in their lobbying efforts by two producer organisations the 'Burry Inlet Hand Gatherers Association' (BHGA) and the 'Penclawdd Shell Fishermen's Association' (PSFA). A third group the 'Burry Inlet Waiting List Association' represents aspiring licensees. The primary role of the organisations was to make representation to the management authorities i.e. the SWSFC, then NRW.

The BHGA helped scored a notable success for it is members lobbying the introduction of 4x4 vehicles to the fishery in the early 1980's.

Whilst relations between the producer organisations and the management authorities have on occasion been strained in the past, the existence of two organisations serving a relatively small number of licensees also points to a degree of polarisation amongst producer interests.

The PSFA was reported to have broken away from BHGA in the early 1990's, the PSFA becoming established to represent gathers that formed the PSP cooperative. Thereafter the two groups remained broadly divided in their loyalties to the two remaining large-commercial processors Selwyn's and Penclawdd Shellfish Processing Co. Ltd. Divisions between the two groups were further exacerbated by PSFA's lobbying for the abolition of hereditary licence transfer rights in the early 1990's, at a time when the then youngest 16 year-old heir to Plate 20; Nori-style seaweed snacks produced by Selwyn's Ltd (for online sales) An economic impact assessment of cockle mortality in the Burry Inlet and Three Rivers cockle fisheries, South Wales UK 34 Selwyn's business hoped, and finally succeeded11, in obtaining his recently deceased grand-fathers licence (Kelsey 2012).

Today the BHGA appears once again to be the more active producer organisation; the Chair and Secretary taking a lead on the campaign to seek compensation for gatherers from the

Welsh Government for loss of earnings associated with the cockle mortality. During the 2012/13 season, gatherer's staged a production strike as the price being offered by PSP then the only large-scale company still processing for small BI cockles averaging 11-12mm square fell from £400 to only £300 per tonne. Although not all the active gatherers complied with the strike which last 1-2weeks, PSP increased the price back to £400/tonne.

In the past despite regulation, accounts of licence holders taking excess quota and undersize cockle when market opportunities arose were common. Incentives increased as crops became ever more valuable with growing internationalisation of the cockle market during the 1990's.

This exacerbated litigation and conflict with various interested parties including poachers and those on the waiting list who felt their legitimate rights to the fishery were being adversely affected.

Waiting list members have always tended to prioritise lower quotas and more licences as means of accelerating their access to the fishery, whilst those on the waiting list tend view 'bumper' crops as rewards for periods of lean production (SWSFC 2005).

In 2012 17 cases of 'nonlicenced illegal fishing' were recorded on the Burry Inlet. Around half of these incidents were attributed to licence holders collecting above their quota or using illegal methods such as less selective net bags rather than riddles to gather cockle.

Although the NRW (and the SWSFC before it) appear to have done a good job at enforcing regulatory control and accountability, whether this represents good value for money compared to other fisheries priorities in terms of social value and equity is a more complex question

Three Rivers: Although more erratic than the BI the TR also had a series good production years in the premortality decade 1991-2001; with an annual mean of 1,395, CoVar of 107% and only 1 year with no recorded production. High catches in 1993 correspond with the 'cockle wars' which saw fighting between rival local and 'immigrant' gangs from England. The introduction of the permit on request system from 1998 as a mean by which returns would be collected from named individuals may have helped reduce under-reporting levels during official fishery openings thereafter.

From 2000 a combination of poor stock levels, mass mortalities and temporary closures linked to water quality issues and undersized stocks resulted in negligible or no recorded yield in all but five of the years to 2014. Low and undersize stock estimates have resulted in concurrent closure of all the Three Rivers cockle beds since June 2012 under byelaw 24 which permits 'Temporary closure for the protection of shellfish'.

The latest notice extends the closure to the 31st March 2015 (Welsh Govt. 2014). Stock surveys undertaken by the Marine and Fisheries Division between March to May 2013 indicated a total of only 872t of cockles within the entire Three Rivers Estuary, compared to

3,498t in March 2012. The latest survey in March 2014 indicated a total stock of 2,272t (+/-624t) after a good spat-fall in 2013, though only around 2% (52t) is above the minimum legal 19mm square size which unlike the BI is still imposed on the TR fishery under Byelaw 13 (Shellfish minimum sizes) of the former SWSFC.

There was some difference of opinion whether hand-gathering produced a superior product to dredging. One processor suggested hand gathered cockles close more quickly, taking in less detritus, reducing depuration requirement. Another felt that the rinsing action involved in the dredging process was superior to rinsing during hand gathering. All agreed mortality and loss due to shell damage was greater for dredged product, however here there have been significant improvements over recent years resulting in mean losses falling from 10% to 5% and according one respondent as low as 1%. Unfortunately since the vast majority of the cockles from different fisheries are combined at the processing stage, any potential quality related aspects that could differentiate between sourcing and harvesting methods are effectively lost. Furthermore the fact that both the BI and Dee cockle fisheries have been certified as sustainable fisheries under the Marine Stewardship Council (MSC) quality accreditation scheme has little or no value to the gatherers unless the cockles attain a premium price through the value chain and the processors are unlikely to want or need to go down this route. This raises the question as to whether or not there is any point in maintaining this accreditation and if it is deemed so, then there could be a case for additional support to be offered the Dee and BI cockle gatherers to help them find new markets which would recognise and reward the value that the MSC certification should bring them although it is unclear whether such an approach would result in anything more than a small, niche market.

Industry estimates tend to be much higher still; a 2012 newspaper article (Misstear 2012b) stated ‘around £70m worth of cockles have been lost in the past decade in south Wales’. Presumably the figure refers also to both the BI and Three-Rivers fisheries - but again assumptions are not clear. During the current field work a gatherer observed that "in 2002 a gatherer could earn up to £60,000 per year whereas in 2013 this figure was closer to £9,000 per year. It may be that such estimates are based on best and worse-case scenarios. Actual turnover and profit data provided by BI gatherers more accurately reflects the high natural background variability in fishery output with mean profits ranging from only £2,000 to £18,500 over five seasons between 2009 and 2014 (Figure 17). Gatherers also tended to quote prices for larger cockle grades when comparing other fisheries with the BI. In contrast, prices quoted in Table 8 are likely to be weighted means being calculated from total tonnage and firstlanding value. At reported 2002 prices (£175t, Table 8) £60,000 would correspond to an improbable individual gatherer harvest of 340t per year; and may more realistically refer to the exceptional 2003 year when with prices at a record £872/t (SWSFC data), £60,000 would correspond to an annual total of 69t (still very respectable, averaging 287kg/day over 240 working days). Historic under-reporting of landings may also contribute to the difference. Based on observations in Section 4.7 (market failures) applying an underreporting multiplier of 1.17 increase our intermediate BRP3 upper loss estimates to £15,794,999 (S2, RPI adjusted) and £32,405,569(S3, RPI adjusted) and worst-case BRP2 upper loss estimates to £26,292,128 (S2, RPI adjusted) and £53,941,844(S3, RPI adjusted).

Current licence holders are roughly equally divided between the North and South shores i.e. 17 from Carmarthenshire CC (47%) and 19 from Swansea City & CC (53%) with waiting list shares respectively at 60% and 35% for the same areas (5% from other regional councils). Licence holder ages range from 38-73 whilst waiting list ages range from 18-66 supporting our finding that the waiting list system excludes younger entrants. Results indicate low current female participation and future interest i.e. of 36 current licence holders 5 (14%) are female whilst only 3 (3.4%) on the waiting list of 88 persons are female. Of the gatherers currently licensed under the BI regulating order, 12 belonged to five long-established families (1-3 licences per family) with multi-generational involvement in the fishery. Members of two of these families also manage the two remaining primary processing factories (Section 4.4). Very few new licences have been issued since 2002 as natural wastage has allowed numbers to be reduced by 30% with the current NRW 5 year management plan envisaging maintaining numbers at 36. Thus negligible opportunity exists for those on the waiting list, which has also been closed to new applications. Furthermore many gatherers are likely to hold their licences well into retirement age or until they die hence the existing licensed gatherers therefore constitute an aging workforce. Whereas until relatively recently many licensed gathers gained full-time employment in the sector i.e. through a combination of harvesting, cottage-processing, with the possible exception of the processing factory managers today most others must also secure other full or part-me salaried work in unrelated sectors (cited occupations included taxi-driving, joinery, and a bailiff whilst one had their own business). An economic impact assessment of cockle mortality in the Burry Inlet and Three Rivers cockle fisheries, South Wales UK 66 More positively the same consolidation has created a significant number of full-time salaried positions in the processing sector, in fact with 34 reported positions almost exactly the same as the number of gatherers. Whereas the primary processing also relies on a large number of seasonal part-time workers, most of the fulltime jobs (25) are in the secondary processing i.e. Parsons Pickles. However it should be remembered that more than two-thirds of the raw materials for this factory are routinely sourced from other cockle fisheries and around 40% of the income generated by the factory comes from production of other foods. Unfortunately no interviews were conducted with the staff of these factories though it is certain that more women are employed (in administration and production) than in the gathering sector.

Whereas the gatherers have proved very adept at using the media to convey their grievances and individual misfortunes (two older male gatherers without alternative income have lost their homes in recent years), as employees there seems to have been very little comparable public space or opportunity for processing factory workers to voice their opinions regarding the future of the fishery. A small number (three) of Burry Inlet gatherers managed to gain licences on the Dee by demonstrating their involvement in the fishery prior to its regulation in 2008, whilst other 'Burry Inlet/ Three Rivers' residents are also on the waiting list. This has caused some division and antagonism amongst both Burry inlet and Dee estuary licence holders. Some of the Burry Inlet gatherers who had participated on the Dee but lacked necessary documentation required to prove this felt disenfranchised, while those from the Dee area felt access should be prioritised for local residents.

Consequently the latter group were reported to be content to keep daily quota low as a disincentive to other southerners on the waiting list who have cover the additional expense

and inconvenience of relocating to north Wales during the Dee season. At £1,500 per year the annual licence cost for the Dee is also almost triple the cost for the Burry Inlet (£684 for 2014/15). Over and above any economic loss, even during our short association with some of the more active gatherers, it was readily apparent that there remains a strong cultural attachment and sense of identity associated with lifelong participation in this iconic fishery in its stunning setting. One respondent spoke strongly of his dissatisfaction with his second, part-time occupation compared to cockling; thus there is also a non-financial quality of life aspect that must also be considered in any assessment of the mortality impact.

Any management recommendation is complicated by ongoing uncertainty regarding mortality cause and its future incidence on the BI and TR. Available BI records going back to 1931 (Section 5.2) reveal several 3-4yr lean production year series in the past. However none have endured anywhere near as long the current episodes on the BI and TR, nor have any atypical mortality episodes observed on other UK fisheries (Section 3.4.3).

The problem has parallels with the emergence of other multi-factorial mortality syndromes affecting other species e.g. the early mortality syndrome epizootic affecting farmed shrimp stocks around the world and colony collapse disorder resulting from abrupt mortality of worker bees from honey-bee colonies.

Hopes that the cockle mortality problem was abating following a good BI production year in 2012 now seem premature, although the acute mass mortalities of the early 2000's do seem to have been replaced by more chronic trends.

In the worst-case scenario the fisheries may have passed an ecological threshold (or 'tipping-point') and the ecosystem may no longer be able to return to its previous state. If the change is reversible, the return path from altered to original state may also hold considerable uncertainty.

This also raises the question of whether or not the Three Rivers cockle fishery should be brought under regulating order (RO). Historic records (Section 5.2) point to marked production improvement after the Dee fishery was brought under regulating order in 2008, both in terms of its overall economic output and the production consistency necessary to provision sustainable livelihoods. The Three Rivers permit-based management system which brings sporadic benefits to many casual entrants arguably serves more of a social 34 53 full licensees each paying £1300 per licence per year An economic impact assessment of cockle mortality in the Burry Inlet and Three Rivers cockle fisheries, South Wales UK 73 than a stock management or economic-optimisation function i.e. in mitigating conflicts between multiple resource users likely to prevail under lighter-touch or open-access regulation. If an RO was introduced under the prevailing mortality conditions, then a limited number of licensed gathers would also have to be permitted to take a proportion of their quota as 'undersized' cockle as on the BI to ensure sufficient consistency of output. Assuming mortality levels decreased, consistent and increased output from a regulated TR could also provide critical mass along with the BI to retain significant primary processing investment.

The co-location of the BI and TR could to some extent minimise additional regulatory costs assuming responsibility for the RO was also transferred to NRW. However the geography of the TR with its much longer coastline per unit area of cockle bed compared to the BI (with only six defined access points for gatherers) would also present a much greater enforcement challenge along with additional associated costs. This could be addressed to some extent by inclusion of a closed season as is applied on the Dee Estuary. A similar standardised cost-saving transition should also be considered for the BI fishery. Most effort is already concentrated between May to October with gatherers being more dependent on other income-sources during winter months. Similarly, processors have already diversified supply options and both primary and secondary businesses are increasingly freezing raw materials to even-out supply shortages. Formal closed seasons may also bring environmental benefits i.e. allowing stock recovery and minimisation of disturbance to wild bird populations.

Consistent with an ecosystem management approach, regulation of both fisheries also entails environmental as well as social and economic objectives, further complicating any cost-benefit analysis.

Such assessments, which would require application of contingent valuation methods to monetize social and environmental value of these functions to different interest groups is beyond the scope of this report.

It is clear however that on-going improvement in the management of sewage treatment and effluent disposal should continue to take high priority.

Not to do so risks incurring sizeable financial penalties for breach of EU environmental and public health directives. Improved management may also contribute to upgrading of the E. coli classification of the BI and TR cockle fisheries thus supporting direct-marketing of high-value whole-live cockle by gathers.

Gatherers have correlated more serious sewage spill events with acute mortality episodes though whether, and to what extent sewage effluents are contributing to on-going chronic mortalities is highly contentious.

It should be noted that improved sewage management may also reduce nutrient inputs that were likely to have contributed to the pre-mortality productivity of the cockle fishery.

Exactly what resources the Welsh Government choose to devote to the fishery in future will also be shaped by political factors, including trade-offs between on-going public expenditure cutting and the iconic and cultural value of these historic cockle fisheries to south Wales.

That I might all forget the human race,
And, hating no one, love but only her!
Ye elements!—in whose ennobling stir
I feel myself exalted—Can ye not
Accord me such a Being? Do I err
In deeming such inhabit many a spot?
Though with them to converse can rarely be our lot.

CLXXVIII.

There is a pleasure in the pathless woods,
There is a rapture on the lonely shore,
There is society, where none intrudes,
By the deep Sea, and Music in its roar:
I love not Man the less, but Nature more,
From these our interviews, in which I steal
From all I may be, or have been before,
To mingle with the Universe,[1] and feel
What I can ne'er express—yet can not all conceal.

CLXXIX.

Roll on, thou deep and dark blue Ocean—roll!
Ten thousand fleets sweep over thee in vain;

Mountains and seas divide us, but I claim
No tears, but tenderness to answer mine:
Go where I will, to me thou art the same—
A loved regret which I would not resign.
There yet are two things in my destiny,—
A world to roam through and a home with thee.

"The first were nothing—had I still the last,
It were the haven of my happiness."]

1. [Compare *Childe Harold*, Canto III. stanza lxxii. lines 8, 9; and *Epistle to Augusta*, stanza xi.]